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ANALYSIS OF FINANCIAL RISKS AS AN IMPORTANT STAGE IN THE FORMATION OF FINANCIAL STRATEGY OF THE COMPANY

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Irina Filippova, Kazan Federal University

ABSTRACT

This paper deals with the analysis of the problems of the formation of financial strategy, subject to the need to ensure the growth of shareholder value of a company, considering the benefits of the company in comparison to its competitors, the analysis of alternative development of the company, and the influence of the uncertainty on the implementation of goals achieved.

Strategic risk management is considered as an integral part of the financial strategy. The proposed methodology will ensure implementation of a long-term goal of the company in terms of growth of shareholder value. The authors have presented a range of relative indicators characterizing the risks of decrease in liquidity and mobility, loss of solvency, deterioration of financial stability and decrease in profitability. As the resulting indicators reflecting the changes in the value of the company, the following three were used: MBR1, MBR2, EVA. To determine the composition of the key indicators of internal financial risks, we conducted a correlation-regression analysis to identify the closeness and type of relation between the relative and the resulting indicators in GRETL environment.

Based on the results of the statistical analysis, five key indicators of financial risks were defined, reflecting the mobility, financial stability and profitability. During econometric modeling, the recommended values of key risk indicators were calculated on the basis of the zonal method of risk assessment.

The companies can use this methodology within the framework of the formation and implementation of financial strategies for finding a compromise in the field of financial security and the value increase.

Keywords: *financial health, financial risks, comprehensive assessment, financial strategies.*

INTRODUCTION

The financial strategy of the company should ensure a dynamic growth of its value, monitoring of the real growth of the value, the need to assess the impact of financial risk on the implementation of the goals and the major problems in the long term (Andreeva O.V., 2014, p. 125). Development and implementation of the financial strategy are aimed at solving the following important tasks: integration of the overall strategy of the company's business development and the financial strategy; justification of managerial decisions taken in terms of the growth of shareholder value; and maximum use of the company's internal financial capacity (Filippova I.A., 2011, p. 66).

Risks in this context should be regarded as a kind of effect exerted by the uncertainty on the implementation of the general long-term development strategy, and as a result of an alternative solution made by the holders and the management (Jon Danielsson, Kevin R. James, 2016, p. 79).

Development of the company's risk management strategy requires a number of important tasks to be addressed: identification of all significant risks; selection of the assessment methods and risk management measures; formation of an organizational structure; assignment of responsibility and authority; assessment of the required and available resources; formation of the information security; introduction of corporate culture of risk management; and monitoring and evaluation of the effectiveness of the risk management system (Y. Wu, C. Gaunt, S. Gray, 2010, p. 34).

A particular attention in the formation of the risk management strategy should be paid to the company's financial risks. According to the author's interpretation, financial risks are a multifaceted category that reflects the possibility of losses or additional revenue occurring during the implementation of the financial strategy of the company, as well as possible deviation of actual results from the planned level as a consequence of conscious actions and the influence of the uncertainty of the economic environment (Filippova I.A., 2012, p. 58).

As a promising direction of the formation of financial strategy we should mention the development of the policy of internal financial risk management, which will be the subject of our further analysis. The group of the most important domestic financial risks involves the risks of decrease in liquidity and mobility, deterioration of financial stability and decrease in profitability. A specific objective of strategic risk management should be the prevention of company's bankruptcy (Liang, Chia-Chi Lu, Chih-Fong Tsai, Guan-An Shih, 2016, p. 561).

The objects of the empirical base for the study were two sectors of the Russian economy: the chemical and petrochemical sector and the oil and gas sector. The sample included up to 184 observations over 23 domestic companies during 8 years.

During the study, we initially selected 25 dependent variables. In the course of the study, the authors identified a type of correlation between five indicators and the resulting signs; constructed regression equation, reflecting the type of the correlation on the basis of six diverse tests; modeled the regulatory values of these factors for each of the three groups considered: an optimum situation, a critical situation, and a catastrophic situation.

The authors have proposed a complex method, which implementation will ensure integration of the general development strategy of the company's business, financial strategy, financial risk management strategy, and formation of a comprehensive long-term financial strategy for the achievement of the set goals.

Each stage of the procedure is described and disclosed in detail. During the study, we obtained the weight coefficients of the regression equation subject to the simulated regulatory values for three types of groups.

The results of the correlation and regression analysis show that the identification of the range of indicators characterizing the level of domestic financial risks of the company and the values recommended thereto will allow us to find the optimal ratio of risk and return, and will contribute to the long-term growth of its value. The procedure will ensure determination of the correlation between some indicators of financial security and the company's values.

The results of the study allow us to consider financial management strategy as an independent, advanced integral part of the corporate finance.

METHODS

The practical application of the integrated model in the author's concept should be based on the inclusion of key internal financial risk indicators, characterizing the level of decrease in liquidity, loss of solvency, deterioration of financial stability, and decrease in profitability, in this model (Hernandez Tinoco M., Wilson N., 2013, p. 394).

Practical construction of the model will include the following stages: determination of the composition of the key indicators of financial risks; identification of standards for each risk group; ranking of the indicators in order of importance; assignment of a certain maximum number of points to each indicator and each of the three risk groups; calculation of actual values for each of the indicators; determination of the boundaries of each class; summation of scores of all indicators and of all model groups; assignment of the company to one of three classes in accordance with the level of bankruptcy risk, or comparison of the company with its competitors.

As the resulting indicators reflecting the changes in the value of the company, we used the following three: MBR1, MBR2 and EVA.

MBR1 is calculated by formula 1 (Pochitaev A.Y., Yarovinskaya M.S., Filippova I.A., 2014, p. 28):

$$\text{MBR 1} = \text{Market capitalization} / (\text{Retained earnings} + \text{Share capital}), \quad (1)$$

MBR 2, calculated on the basis of the cost estimate of the entire company's capital, involves checking the ratio of market value to book value, which is a more common variant of the indicator (Pochitaev A.Y., Yarovinskaya M.S., Filippova I.A., 2014, p. 28):

$$\text{MBR 2} = \text{Market capitalization} / \text{Book value} \quad (2)$$

$$\text{EVA} = (\text{ROIC} - \text{WACC}) * \text{IC} \quad (3)$$

To determine the composition of the key indicators of internal financial risks, we conducted a correlation analysis to identify the closeness of relation between the relative and the resulting indicators. The initial composition of the analyzed relative indicators is shown in Table 1 (Savitskaia G.V., 2005, p.425).

Table 1
INDICATORS OF THE FINANCIAL SECURITY STRATEGY (REGRESSION EQUATION FACTORS)

Indicators	Calculation procedure
X1: A1 / P1	(Cash + Short-term financial investments) / Accounts payable
X2: A2 / P2	(Short-term accounts receivable + Other current assets) / (Short-term borrowed funds + Other short-term liabilities)
X3: A3 / P3	(Reserves + Long-term investments) / Long-term credits and loans (IV)
X4: A4 / P4	(Fixed assets (I) - Long-term financial investments + Long-term accounts receivable) / (Shareholders' equity (III) + Deferred income + Contingent liabilities - VAT)
X5: Abs. liq. ratio	(Cash + Short-term financial investments) / (Short-term liabilities (V) - Deferred income - Contingent liabilities)
X6: Quick ratio	(Cash + Short-term financial investments + Short-term accounts receivable) / (Short-term liabilities (V) - Deferred income - Contingent liabilities)
X7: Cur. liq. ratio	(Cash + Short-term financial investments + Short-term accounts receivable +

	$\text{Reserves} + \text{Other current assets} / (\text{Short-term liabilities (V)} - \text{Deferred income} - \text{Contingent liabilities})$
X8: Working capital coverage ratio	$(\text{Shareholders' equity (III)} - \text{Fixed assets (I)}) / \text{Reserves}$
X9: Working capital and long-term loan coverage ratio	$(\text{Working capital} + \text{Long-term liabilities (IV)}) / \text{Reserves}$
X10: Financial resources coverage ratio	$(\text{Working capital} + \text{Long-term liabilities (IV)} + \text{Short-term borrowed funds}) / \text{Reserves}$
X11: Equity ratio	$\text{Shareholders' equity (III)} / \text{Assets (Balance)}$
X12: Financial leverage	$\text{Borrowed equity (IV+V)} / \text{Shareholders' equity (III)}$
X13: Working capital to equity ratio	$(\text{Shareholders' equity (III)} - \text{Fixed assets (I)}) / \text{Shareholders' equity (III)}$
X14: Assets mobility ratio	$\text{Current assets (II)} / \text{Assets (Balance)}$
X15: Current assets mobility ratio	$\text{Cash} / \text{Current assets (II)}$
X16: Stress ratio	$\text{Borrowed equity (IV+V)} / \text{Assets (Balance)}$
X17: Net fixed asset index	$\text{Fixed assets (I)} / \text{Shareholders' equity (III)}$
X18: Long-term debt raising ratio	$\text{Long-term liabilities (IV)} / (\text{Long-term liabilities (IV)} + \text{Shareholders' equity (III)})$
X19: Return on sales	$\text{Sales profit} / \text{Revenue}$
X20: Net profit margin	$\text{Net profit} / \text{Revenue}$
X21: Product profitability	$\text{Sales profit} / \text{Actual cost}$
X22: Return on assets	$\text{Net profit} / \text{Average annual value of assets}$
X23: Return on shareholders' equity	$\text{Net profit} / \text{Opening shareholders' equity}$
X24: Return on borrowed equity	$\text{Net profit} / \text{Average annual value of liabilities}$
X25: Return on fixed equity	$\text{Net profit} / \text{Average annual value of fixed equity}$

RESULTS

We conducted nine tests for identification of the relation between the factors shown in Table 1 and the value indicators. The first and second tests were carried out for companies of the chemical and petrochemical sectors, based on 64 observations with the resulting signs MBR 1 and MBR 2, respectively. The third and fourth tests were carried out for companies of the oil and gas sectors, based on 64 observations with the resulting signs MBR 1 and MBR 2, respectively. The fifth and sixth tests were carried out for companies of all sectors stated, based on 128 observations with the resulting signs MBR 1 and MBR 2, respectively. The seventh tests were carried out for companies of the chemical and petrochemical sectors, based on 96 observations with the resulting signs EVA. The eighth tests were carried out for companies of the oil and gas sectors, based on 88 observations with the resulting signs EVA. The ninth tests were carried out for companies of all sectors stated, based on 184 observations with the resulting signs EVA.

We should note that the Snedecor F-test (if $p < 0.01$, then the model is significant) is performed for all nine tests, as well as F des. $> F$ crit. with a 99% probability. Other data on the conducted correlation and regression analysis are shown in Tables 2 - 7.

Table 2
FIRST TEST OF THE HYPOTHESIS: STATISTICAL CALCULATIONS

	Coefficient	St. error	t-statistics	P-value	Significance level
Const.	1.5481	0.2785	5.559	6.34e-07	0.01
X4	0.4544	0.0968	4.693	1.56e-05	0.01
X15	-4.7746	2.0854	-2.290	0.0255	0.05
R-squared, %	28.43				

Table 3
SECOND TEST OF THE HYPOTHESIS: STATISTICAL CALCULATIONS

	Coefficient	St. error	t-statistics	P-value	Significance level
X15	2.0624	0.5108	4.038	0.0002	0.01
X22	2.5837	0.5332	4.845	8.81e-06	0.01
R-squared, %	60.04				

Table 4
THIRD TEST OF THE HYPOTHESIS: STATISTICAL CALCULATIONS

	Coefficient	St. error	t-statistics	P-value	Significance level
X8	-0.0885	0.0239	-3.707	0.0005	0.01
X10	0.1393	0.0340	4.090	0.0001	0.01
X22	5.7252	1.9040	3.007	0.0038	0.01
R-squared, %	69.09				

Table 5
FOURTH TEST OF THE HYPOTHESIS: STATISTICAL CALCULATIONS

	Coefficient	St. error	t-statistics	P-value	Significance level
X8	-0.0225	0.0084	-2.679	0.0095	0.01
X10	0.0669	0.0120	5.581	5.84e-07	0.01
X22	2.4703	0.6702	3.686	0.0005	0.01
R-squared, %	78.39				

Table 6
FIFTH TEST OF THE HYPOTHESIS: STATISTICAL CALCULATIONS

	Coefficient	St. error	t-statistics	P-value	Significance level
X8	-0.1116	0.0270	-4.138	6.39e-05	0.01
X10	0.2005	0.0279	7.191	5.18e-011	0.01
X15	5.8757	1.6683	3.522	0.0006	0.01
R-squared, %	51.41				

Table 7
SIXTH TEST OF THE HYPOTHESIS: STATISTICAL CALCULATIONS

	Coefficient	St. error	t-statistics	P-value	Significance level
X10	0.0662	0.0091	7.272	3.40e-011	0.01
X15	1.4450	0.4455	3.244	0.0015	0.01
X22	1.8965	0.4562	4.157	5.93e-05	0.01
R-squared, %	72.69				

Table 8
SEVENTH TEST OF THE HYPOTHESIS: STATISTICAL CALCULATIONS

	Coefficient	St. error	t-statistics	P-value	Significance level
Const.	-0.1148	0.0131	-8.782	8.32e-014	0.01
X4	0.0143	0.0047	3.059	0.0029	0.01
X15	-0.1514	0.0765	-1.978	0.0509	0.1
X22	1.0226	0.0720	14.21	6.36e-025	0.01
R-squared, %	71.49				

Table 9
EIGHTH TEST OF THE HYPOTHESIS: STATISTICAL CALCULATIONS

	Coefficient	St. error	t-statistics	P-value	Significance level
Const.	-0.1062	0.0223	-4.767	7.76e-06	0.01
X8	-0.0032	0.0009	-3.509	0.0007	0.01
X10	-0.0067	0.0022	-3.059	0.0030	0.01
X22	1.3036	0.1001	13.02	7.44e-022	0.01
R-squared, %	71.29				

Table 10
NINTH TEST OF THE HYPOTHESIS: STATISTICAL CALCULATIONS

	Coefficient	St. error	t-statistics	P-value	Significance level
Const.	-0.0967	0.0093	-10.36	5.22e-020	0.01
X8	-0.0023	0.0008	-2.813	0.0054	0.01
X10	-0.0059	0.0013	-4.670	5.87e-06	0.01
X22	1.1235	0.0565	19.90	2.53e-047	0.01
R-squared, %	69.25				

Based on results of the correlation analysis between the input and the resulting parameters on the empirical basis of study we have selected the indicators presented in Table 2 as key indicators of financial risk and reflected the recommended limit values.

Table 11
NORMALIZATION OF INDICATORS CONNECTED WITH THE INDICATORS OF THE COMPANY'S VALUE ON THE BASIS OF ECONOMETRIC MODELING

Indicators	Optimal situation	Critical situation	Catastrophic situation	Factor significance in points
X4: A4 / Π4	[0.25; 2]	>2	< 0.25	$0.9 + 0.1 = 1$
X8: Working capital coverage ratio	> 1	[-2; 1]	< -2	$0.1 + 0.1 + 0.4 + 0.1 + 0.1 = 0.8$
X10: Financial resources coverage ratio	[0.5; 2]	< 0.5 and > 4	(2; 4]	$0.3 + 0.3 + 0.6 + 0.4 + 0.1 + 0.1 = 1.8$
X15: Current assets mobility ratio	[0; 0.03)	[0.03; 0.05]	>0.05	$9.1 + 4.4 + 19 + 8.5 + 1.3 = 42.3$
X22: Return on assets	Above the average for the sector	The average for the sector	Below the average for the sector	$5.6 + 9.6 + 9.6 + 11.1 + 8.6 + 9.8 + 19.8 = 74.1$

The presented data were obtained by modelling of the entire sample and identification of changes in the relation of factors and cost indicators depending on the transformation of the sample composition (Richard Brealey, Stewart Myers, 2008). Basic steps: removal of needless observations on certain criteria from both sides from the sample and the search for a trend: the way the relation changes with respect to the initial sample.

As for the importance of each factor in the comprehensive assessment, it can be set according to their share in the presented regression equations. The coefficient preceding the factor on the overall sample (128) must be 2 times greater than the coefficient on a separate sector (64). Thus, the relation in one of the first four tests corresponds to 10 points. In the fifth and sixth tests: 20 points. In the seventh and eighth tests: 10 points. In the ninth test: 20 points. Total maximum 120 points. Points for each test are distributed in proportion to the coefficients. Factors reflected in the final equation are of greater importance, since less subject to fluctuations in the economy sectors (Savitskaia G.V., 2005, p.425).

Thus, according to the first test, the sum of the coefficients is 5.299. Accordingly, we calculate the share of each factor in this amount and multiply it by 10 (the calculations are given with an accuracy of tenths of points). The negative effect is also an option, especially due to the fact that we have found the optimal cost-maximizing positions for each indicator.

DISCUSSION

Since this paper is methodological and exploratory in nature, we will not perform the classification of specific companies. We should only note that the companies can use this procedure for finding a compromise in the field of financial security and the value increase. This strategy can be modeled both with respect to increase in the cost, and improvement of the company's position in relation to its competitors.

This is rather a procedure than a predictive model, which ensures assessment of the effectiveness of implemented long-term strategy of the company in recent years, and allows forming a future compromise business development strategy. The formation of the composition of the key indicators of financial risks within the framework of the proposed method, the determination of their limit values, and the application of the classifying score models ensure

early diagnosis of potential default and prompt prevention of unwanted shocks and losses.

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PREDICTION OF MARKET CAPITALIZATION OF INVESTMENT IN INTELLECTUAL CAPITAL IN COMPANIES

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ABSTRACT

The innovative course of development of our country and the world community on the whole determines the increasing importance of the intangible assets for the Russian companies to grow and develop. Intellectual resources are the main sources of qualitative and quantitative changes in any economic systems and create the basis of opportunities for innovative development of the enterprises. Intellectual capital is equally important in the formation of enterprise value, along with the tangible, physical assets. In this regard, the issues of identification of intellectual assets, their evaluation, analysis, and the question of determining the optimal investments in them for their further capitalization and development become actual. In the course of the study we used the method of factor analysis, econometric modeling, correlation and regression analysis.

Gain in volume of investments in the element of IC by 1% will entail an increase in market capitalization since it has been found that:

– *increase in market capitalization as a result of increase of investments by 1% in the human capital of the PC “Nizhnekamskneftekhim” will be 1,16411682 billion roubles with all other variables being equal;*

– *increase in market capitalization as a result of increase of investments by 1% in the market capital of PC “Nizhnekamskshina” will be 0,636191339 billion roubles with all other variables being equal;*

- *increase in market capitalization as a result of increase of investments by 1% in the organizational capital of PC “Kazanorgsintez” will be 0,16032888 billion roubles with all other variables being equal.*

Thus, for the purpose of dedicated formation and upgrade of such strategic resource of the modern economy as the intellectual capital it is reasonable to use the developed methods and approaches to the evaluation of intellectual capital in terms of value and assessing the relationship of its quantitative and qualitative impact on the key performances of the enterprise.

Keywords: *intellectual capital, investments, development*

INTRODUCTION

Under present-day conditions the attention to understanding the essence of the intellectual capital tends to increase. The role of the human factor is constantly growing.

Great attention to the definition and study of the essence of the category of “intellectual capital” is paid by the scientists at the present stage of development of the market economy.

Among them, we note the works by the following authors as T. Stewart, L. Edvinsson, A. Brooking, G. Becker, R. Roslender.

The present study was conducted to determine the influence of the extent of investment in the intellectual capital of the company on its market capitalization growth. This issue has a special significance in ensuring the conditions to increase enterprise value. At present, the mechanism of predicting the market capitalization of the business per se with consideration for the intellectual capital of the organization is not represented explicitly.

In the course of the study we used the method of factor analysis, econometric modeling, correlation and regression analysis. The development of model of influence is supported by the actual data of large industrial establishments.

The results obtained allow to solve a number of practical issues: to determine the optimal level of investing in the intellectual capital in order to ensure the growth of the market capitalization of the business entity; to predict the growth of the enterprise value more accurately; to create the system framework for managing the rising value of enterprises. The latter provision is a “growth point” in this range of problems and opens the ways of development of economic mechanisms of innovation - economy of business and the country in general.

METHODS

The first attempts to differentiate and define the essence of intellectual capital (IC) were taken more than half a century ago, but a unified approach of interpretation of the notion of “Intellectual capital” has not been formed so far. The vast majority of treatments is based on the fact that the intellectual business capital is primarily knowledge, abilities, intelligence of the personnel, allowing to generate profit (Leotiyev B. B., 2006; Stuart T. A., 2007. p. 368; Bontis N., 1999; Bontis N., 1998; Edvinsson, L., 2000, p. 12; Caddy, I., 2000, p. 129; Sveiby K.E., 2004; Brooking A., 2001., p. 288). The value of IC is determined not so much by its presence as the efficiency of its management. The intellectual business capital is a capital contained in the company's capacity to extract economic benefits from the creation, use and management of enterprise intangible resources, being in human, organizational and market potential. IC is contained in a dissymmetric interrelated elements representing a unified system of intellectual nature (Ustinova L. N., 2013, p.60; Ustinova L. N., 2012, p. 41).

The three-component structure of IC proposed by the authors consists of traditional elements: human capital, organizational capital and market capital which are itemized by differentiating into the substructures. The human capital of the enterprise (HC) which consists mainly of the capital contained in knowledge, abilities, intelligence of the employees are differentiated with respect to production and innovation knowledge based on the characteristics of human capital development, in particular, its cyclical nature, as well as practicability of the separation of the part of the capital that is used in current production, and the one that can bring the company to an innovative level thanks to the abilities of individuals to generate new revolutionary ideas.

Organizational capital (OC) is also differentiated into two components: intellectual property and structural capital. The need and practicability of this separation is determined by specificity and heterogeneity of organizational capital. The processes as the activities and the intellectual property right are of different nature of constituents and content. The category of intellectual property contains intellectual property owned by the company on the legal basis.

Within the scope of the structural capital there are all the technological, production and management processes, the system of human resource management, etc.

The capital contained in the company's capacity to establish long-term stable ties with the external environment is preferred to be designated with the term market capital (MC). The system of interactions with the market environment is not confined itself to relationships with the enterprise customers and includes much more communication, aimed at the creation and realization of the product. The effective purposeful impact on the external environment can provide the growth of the market capital and improve the company's financial soundness.

It is obvious that IC exercises a significant influence on key performances of enterprise, but to what extent and what the investments to achieve the level of the efficiency of their use should be, what element of IC has a greater influence on the enterprise performance are not known for many managers. The need to study the quantitative impact of IC elements on the change in the market value of the enterprise determined the feasibility of constructing an econometric model based on the factor analysis. To be able to solve this problem the following hypothesis is put forward:

H1: There is a statistical correlation between the elements of intellectual capital and market capitalization;

H2: increasing investments in E_i – the element of IC will entail the increase of the market capitalization Cap on β_i by 1%;

To solve this problem, use an equation of the regression analysis:

$$Cap_i = \beta_0 + \beta_1 HC + \beta_2 OC + \beta_3 MC + \beta_4 TA \quad (1)$$

Where HC – human capital;

OC – organizational capital;

MC – market capital;

TA – balance-sheet asset value.

For absolute expression of the elements of IC, it is advisable to offer equivalents – the indicators for each element. Based on the analysis of special literature we propose to use the following indicators

Table 1
THE INDICATORS OF INTELLECTUAL CAPITAL

The elements if IC	The indicator
Human capital	$HC = \Sigma I_{HC} (I_{mov}, I_{ed}, I_{med},)$
Market capital	$MC = \Sigma Pool_{con}$
Organizational capital	$OC = \Sigma I_{OC} (I_{science}, I_{nma}, I_{manag})$

Where, $HC = \Sigma I_{HC} (I_{mov}, I_{ed}, I_{med},)$ – совокупность инвестиций в человеческий капитал;
 $OC = \Sigma I_{OC} (I_{science}, I_{nma}, I_{manag})$ – total investments into research and engineering developments, intangible assets;

$MC = \Sigma Pool_{con}$ – share of the sectoral market of the enterprise.

Using the proposed indicators of the elements of intellectual capital, the equation (1) will be transformed in the following way:

$$Cap_i = \beta_0 + \beta_1 \Sigma_1^4 = \Sigma I_{HC} (I_{mov}, I_{ed}, I_{med},) + \beta_2 \Sigma_1^3 \Sigma Pool_{con} + \beta_3 \Sigma_1^n \Sigma Pool_{con} + \beta_4 TA + \varepsilon \quad (2)$$

Where $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4$ – the parameters of the regression equation characterizing the change of the result with the change of corresponding factor per unit with invariable value of other factors fixed at the mean level; ε – random term, explaining the influence of unaccounted factors of the equation, Cap_i – market capitalization.

Definition of the regression model (2) allows to reflect the specific weight of each element E_i to arguing indication Cap_i , which is conducive to revelation of the most significant and priority elements.

Suppose that with the specific weight of the element E_i , the parameters of the regression equation $\beta_0, \beta_1, \beta_2, \beta_3$ are static, then the most positive value of the specific weight β_i indicates the largest investment E_i – the element in Cap_i – the argument.

RESULTS

As an approbation of the proposed approach of the assessment of augmentation of market capitalisation as a result of investing into the elements of IC we use the data of the three enterprises of petrochemical sector PT, with time sampling - 14 years.

Thus, from the three enterprises of petrochemical sector we have obtained the following results (3)-(5):

PC “Nizhnekamskneftekhim”:

$$Cap_{NKNH} = 15,15461 + 1,16411682HC + 0,38194804OC - 0,4015267RC - 0,5552551TA \quad (3)$$

PC “Nizhnekamskshina”:

$$Cap_{NKS} = -3,9408 + 0,022804 HC - 0,32825156 OC + 0,6361913RC + 1,7364302TA \quad (4)$$

PC “KazanOrgsintez”:

$$Cap_{KO} = 17,5608 - 0,229202HC + 0,160328OC - 0,1831921RC + 0,54062552TA \quad (5)$$

Human capital (1,16) and organizational capital (0,38) play the leading role in the formation of the positive dynamics of change of the market capitalization indicator in the PC “Nizhnekamskneftekhim” under other conditions being equal. This company has a high level of intellectual resources in human capital, which has the highest rate of return. The company pursues an effective policy in the field of management and use of human capital. The market value of the enterprise by 96,83% is due to the value of three elements of the IC.

The PC “Nizhnekamskshina” is characterized by a high degree of dependence on intellectual capital, since the coefficient of dependence on the other factors has turned out the smallest. The market value of the enterprise by 79,04% is due to the value of three elements of the IC.

The priority lines of development for the enterprise “KazanoOrgsintez” have turned out the following: organizational capital (0, 16) and tangible assets (0, 54). The result for the enterprises of the industry is rationalized: material resources are valuable in the context of feasibility of providing the production process, in which an important element in the successful development is the element of the IC as the organizational capital in the form of technologies, databases, intellectual property and so on. The market value of the enterprise by 94,64% is due to the value of three elements of the intellectual capital.

DISCUSSION

The calculations allowed to prove the advanced hypotheses that the volume gain of investments in the IC element by 1% will entail the increase of market capitalization since it has been found that:

- increment of market capitalization as a result of the increased investment by 1% in the human capital of the PC “Nizhnekamskneftekhim” will be 1,16411682 billion roubles with all other variables being equal;
- increment of market capitalization as a result of the increased investment by 1% in the market capital of PC “Nizhnekamskshina” will be 0,636191339 billion roubles with all other variables being equal;
- increment of market capitalization as a result of the increased investment by 1% into the organizational capital of PC “Kazanorgsintez” will be 0,16032888 billion roubles with all other variables being equal.

The obtained results represent a huge reserve of industrial enterprises in increasing their own market capitalization (Bontis N., 1999; Bontis N., 1998; Edvinsson, L., 2000, p. 12; Caddy, I., 2000, p. 129; Sveiby K.E., 2004). The influence of intellectual capital in this area has a fundamental character. This is emphasized by modern researchers such as L. Edvinsson, J. Ruus, S. Pike, L. Fernstem and others.

The results of the study show the significant moments of increasing the value to the existing large enterprises and the enterprises entering the IPO for the first time. In the study based on the practical material the results of updating the market capitalization of the companies have been illustrated.

The theoretical and practical aspects of the results of the present paper are to determine the direction of further development of economic and management mechanisms in the sphere of management of the market capitalization of the company on a system basis. The practical application of this approach will create the conditions for increasing the investment attractiveness of a separate enterprise and regional and federal economy on the whole.

Thus, for the purpose of forming and building-up such strategic resource of the modern economy as the intellectual capital it is reasonable to use the developed methods and approaches to the assessment of intellectual capital in terms of value and assessing the relationship of its quantitative and qualitative impact on the key indicators of the enterprise.

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IDENTIFICATION OF THE REGIONAL BANKING SYSTEMS SUSTAINABILITY AS A KEY FACTOR IN THE EFFECTIVENESS OF THEIR INTEGRATION

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ABSTRACT

The article covers the problem of increasing the efficiency of integration of the regional banking system. Today, small and medium-sized regional banks cannot provide in full the regional economy with banking products and services. In this connection, there is a long-felt need of integration of regional credit institutions and regional banking systems. At the same time there takes place inefficiency of functioning the consolidated banks associated with the incorrect assessment of the candidates for integration. The methodological basis of the study is the general scientific and specific scientific methods (economic-statistical, computational and constructive). We used economic and statistical techniques: grouping, ranking, probabilistic assessment, analysis of volume terms. In order to solve this problem, we tested the procedure of estimation financial soundness of the rating agency "Expert" on the example of the regional banking systems of the Volga Federal District to detect the regional banking systems to be the most attractive for the integration. By the results of the implementation of this methodological approach we have revealed two trends in the activities of regional banking district systems, namely degradation of functioning and reduction of capitalization. And the most attractive for the integration of the regional banking systems are the systems of the Perm Krai, the Republic of Mari El, the Republic of Mordovia, the Ulyanovsk region, the Chuvash Republic.

Keywords: *regional banking systems, financial sustainability, estimation, integration.*

INTRODUCTION

One of the key factors of the development of the regional economy and, as a consequence, the Russian economy is effectively functioning regional banks and the banking system. The influence of the banking system on the level of economic development of the region can be assessed by the degree of participation of credit organizations in the investment process in the region, the provision of the region's economy with banking products and services, the availability of banking products and services. Regional opportunities are largely determined by the level of banking activity and the concentration of banking capital in the regions, which create preconditions for investments, overcoming the economic crisis and, ultimately, for rise in the standard of living. Regional banks are closer to the real economy, their relationship with the companies have a long-term basis, they take into account the interests of small enterprises in full measure, without which the balanced economic development of regions is impossible. Therefore, the main activities and prospects for further development of the regional banks are directly related to their active involvement in lending to manufacturing, small and medium-sized businesses, financial support of the programs for the economic development of the regions

(Naveh, M.H., Torosyan, T., Jalae, S.A., 2012. p. 1349).

As of today, however, small and medium-sized regional banks cannot ensure the regional economy with banking products and services in full measure. This raises the necessity for a regional bank to be established that fills the needs of the regional economy. One of the variants for establishing such bank is the integration of regional credit organizations and regional banking systems. Integration of banks and banking systems is a development tool that should be used as an effective lever for modernization and recovery of the regional economy. At the same time, the practice shows that in spite of the intensification of integration processes in the banking sector, there is inefficient functioning of the consolidated banks. One of the reasons of inefficiency is incorrect assessment of candidates for integration. In order to solve this problem, we have tested the methodology of estimating the financial soundness of the rating agency "Expert" on the example of the Volga Federal District of the regional banking systems to expose regional banking systems being the most attractive for integration. Based on the results of implementation of this methodological approach, it has been found that the most attractive regional banking systems to be integrated are the systems of Perm Krai, the Republic of Mari El, the Republic of Mordovia, the Ulyanovsk region, the Chuvash Republic.

LITERARY REVIEW

In modern literature, one differentiates a number of author's approaches to the selection of candidates for the integration of the banking business, at the same time, these approaches have a number of limitations for use in practice. The current developments in the search for candidates for the integration of the banking business offer to use as a basis the developed strategy of development. So, at the first stage one should define a set of key strategic objectives of the initiator of merging, that is expected to receive as a result of the integration of business of several credit organizations. It can be diversification of activities, access to new markets, providing its customers with new services, capital growth, which will increase the scope of business, market share and so on. Setting the key objectives will determine which bank is required to achieve them, and further steps towards the selection of a possible partner to a merger, the so-called bank target (Klaas Y.A., 2014, p.49).

I. V. Larionova includes into the process of assessing candidates the following: the analysis of finance indicators of activities and technical specifications, the evaluation of corporate culture of the object and human resource capacity, the analysis of the characteristics of the organizational structure, the assessment of the existing operational and information systems in terms of their convertibility and compatibility (Li J., Rajan R.S., Hattari R., 2016, p. 116). A. I. Sedin proposes five key categories for the analysis of the candidates: finance indicators, compatibility of product series and structure of presence on the market, compatibility of corporate cultures, compatibility of information and management systems, aspects of state regulation (De Haas, R., Van Lelyveld, I., 2014, p. 333). A. I. Sedin and I. V. Larionova pay considerable attention to the detailed analysis of some of the most expected candidates for integration but do not leave room for the development of specific theoretical and methodological approaches to the definition of "short" list of banks. However, considering that at the beginning of 2015 in Russia there were 834 credit organizations and 85 banking systems, the development approaches to the selection of candidates from a large number of banks and systems becomes relevant (The Bank of Russia [Electronic resource], Mode of access 2016).

In order to solve this problem, let us test the evaluation technique of financial soundness

of banks of the rating agency “Expert” on the example of the regional banking system of the Volga Federal District.

OBJECT OF RESEARCH

The Volga Federal District (hereinafter - VFD) comprises 14 subjects of the Russian Federation, including: 6 republics (Bashkortostan, Mari-El, Mordovia, Tatarstan, Udmurtia, Chuvashia), 7 regions (the Kirov, the Nizhny Novgorod, the Orenburg, the Penza, the Samara, the Saratov, the Ulyanovsk), and the Perm Krai (the Perm region and the Komi-Perm Autonomous District entered the region). The territory of the district takes about 6% of the territory of the Russian Federation (more than 1 million square kms), it is the home to more than 20% of the population (more than 30 million people). The share of the district in total Russian gross domestic product exceeds 15%.

The feature of the district is the presence of a significant production capabilities. It centers a quarter of total industrial production of Russia, 85% of the Russian automotive industry, 65% of the aircraft building, 40% of petrochemicals, 30% of the shipbuilding industry, 30% of the production of military-industrial complex. A distinctive feature of the structure of the gross regional product of the Volga Federal District is the high share of manufacturing sectors - 24.5% (in Russia - 19.3%), and mining operations- 13.7% (in Russia - 10.5%).

In assessing the aggregate investment potential of the subjects Russian Federation, among the leaders are 5 regions of the district (the Republic of Bashkortostan, the Republic of Tatarstan, Perm, the Regions of Nizhny Novgorod and Samara), demonstrating high performance of production, finance, innovation, natural resource and consumer investment factors of evaluation.

The traditional specialty of the district is mechanical engineering. The enterprises that are located in the regions make the most valuable contribution among the federal districts to the added cost produced in the sector (more than 33% of Russia's total). In the Volga region there are produced more than 73% of automobiles (in commercial vehicles, this figure exceeds 90%), it is more than 85% of buses, more than 80% of automobile engines.

On the territory of the Volga Federal District there function 92 credit organizations as of January 1, 2015. Distribution of credit organizations by the subjects of the district is presented in Table 1.

Table 1
DISTRIBUTION OF CREDIT ORGANIZATIONS BY THE SUBJECTS OF THE DISTRICT (THE BANK OF RUSSIA [ELECTRONIC RESOURCE], MODE OF ACCESS 2016) IN TERMS

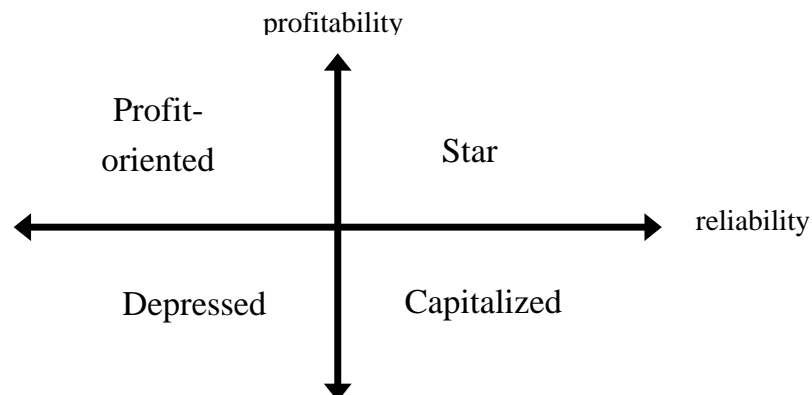
The Name of the subject	January 1, 2015	April 1, 2015	July 1, 2015	October 1, 2015
The Kirov region	3	3	3	3
The Nizhny Novgorod region	10	10	10	10
The Orenburg region	7	7	7	7
The Penza region	1	1	1	1
The Perm Krai	4	4	4	4
The Republic of Bashkortostan	7	7	7	6
The Republic of Mari El	2	2	2	2
The Republic of Mordovia	4	3	3	3
The Republic of Tatarstan	22	22	22	22
The Samara region	15	15	15	15
The Saratov region	9	9	9	9
The Republic of Udmurtiya	2	2	2	2

The Ulyanovsk region	2	2	2	2
The Republic of Chuvashia	4	4	4	3

METHODOLOGY

1. We use the method of rating agency “Expert” to diagnose the stability of the regional banking system of the Volga Federal District. The approach used in the preparation of the rating by the rating agency “Expert” is somewhat different from the other methods used in Russia. This methodology is an attempt to build a composite comparative rating. The methodology consists of two basic parts. The first (static) part implies the comparison of the banks in the coordinate system “profitability-reliability”. Profit performance is calculated as the ratio of balance sheet profit to net assets. The ratio of owned capital and borrowed funds is used as an index of reliability (Tarkhanova, 2003). The results of two-criterion analysis of the current state of the banks are put on a plane with the axis of abscisses, that is corresponding to the index of reliability, and the coordinate axis corresponding to profitability, as a result of the coordinate space is divided into four segments (Gómez, 2015) The location of the banks in the coordinate system “profitability-reliability” is presented in Figure 1 (Lavrushin and Mamonova, 2011; Brauers, W.K.M., Ginevičius, R., Podvieszko, 2014. pp. 349-367)

Figure 1
THE LOCATION OF THE BANKS IN THE COORDINATE SYSTEM “PROFITABILITY-RELIABILITY”



The second part consists in analyzing the dynamics of changes of the parameters of profitability and reliability in time.

RESULTS

We analyze the banking systems of the subjects of the Volga Federal District in accordance with the methodology of the rating agency “Expert” as of 4 reporting dates (January 1, 2015, April 1, 2015, July 1, 2015 and October 1, 2015). The results of calculation of the profitability and reliability are shown in Table 2. The location of regional banking systems of the Volga Federal District in the coordinate system “profitability-reliability” is represented in Figures 2-5.

Table 2
THE RESULTS OF CALCULATION OF PROFITABILITY AND RELIABILITY OF THE REGIONAL BANKING SYSTEMS (THE BANK OF RUSSIA [ELECTRONIC RESOURCE], MODE OF ACCESS 2016)

Subjects	Profitability				Reliability			
	01.01.2015	01.04.2015	01.07.2015	01.10.2015	01.01.2015	01.04.2015	01.07.2015	01.10.2015
The Kirov region	2,462	0,096	-0,153	-0,296	20,426	21,478	21,089	20,731
The Nizhny Novgorod region	2,199	1,040	1,255	-0,886	21,331	22,464	20,867	17,811
The Orenburg region	1,174	0,144	0,141	0,063	26,422	26,219	24,731	24,187
The Penza region	1,151	0,102	0,002	0,027	17,150	18,112	14,602	15,802
The Perm Krai	0,202	0,330	0,344	0,181	16,663	17,831	18,831	18,451
The Republic of Bashkortostan	0,913	0,090	0,347	-10,514	12,684	12,600	12,006	-6,659
The Republic of Mari El	1,265	0,415	0,770	0,854	18,561	18,176	19,283	19,681
The Republic of Mordovia	0,003	0,642	1,224	0,864	16,820	15,486	16,288	15,894
The Republic of Tatarstan	0,515	0,018	-0,246	-0,551	21,406	20,989	20,380	21,589
The Samara region	0,380	-0,136	-0,184	-0,710	24,570	26,114	25,572	22,378
The Saratov region	1,099	-0,013	-0,592	-2,595	13,108	13,140	12,838	7,171
The Republic of Udmurtiya	0,472	0,173	0,113	0,102	14,554	15,835	16,280	16,342
The Ulyanovsk region	0,582	0,265	0,196	0,386	27,707	27,810	26,153	24,369
The Republic of Chuvashia	0,582	0,071	0,152	0,220	17,932	18,102	17,708	16,306

Figure 2
THE RESULTS OF DIAGNOSTICS OF REGIONAL BANKING SYSTEMS STABILITY AS OF
JANUARY 1, 2015 (THE BANK OF RUSSIA [ELECTRONIC RESOURCE], MODE OF ACCESS 2016)

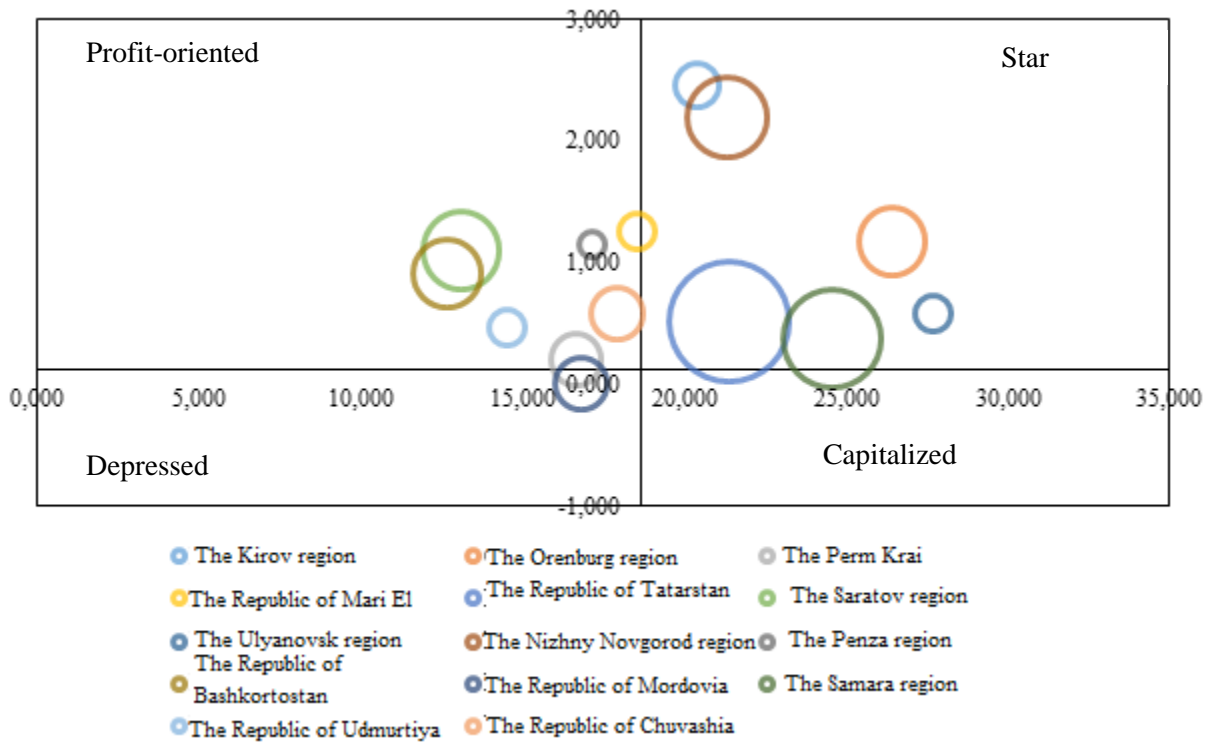


Figure 3
THE RESULTS OF DIAGNOSTICS OF REGIONAL BANKING SYSTEMS STABILITY AS OF APRIL 1, 2015 (THE BANK OF RUSSIA [ELECTRONIC RESOURCE], MODE OF ACCESS 2016)

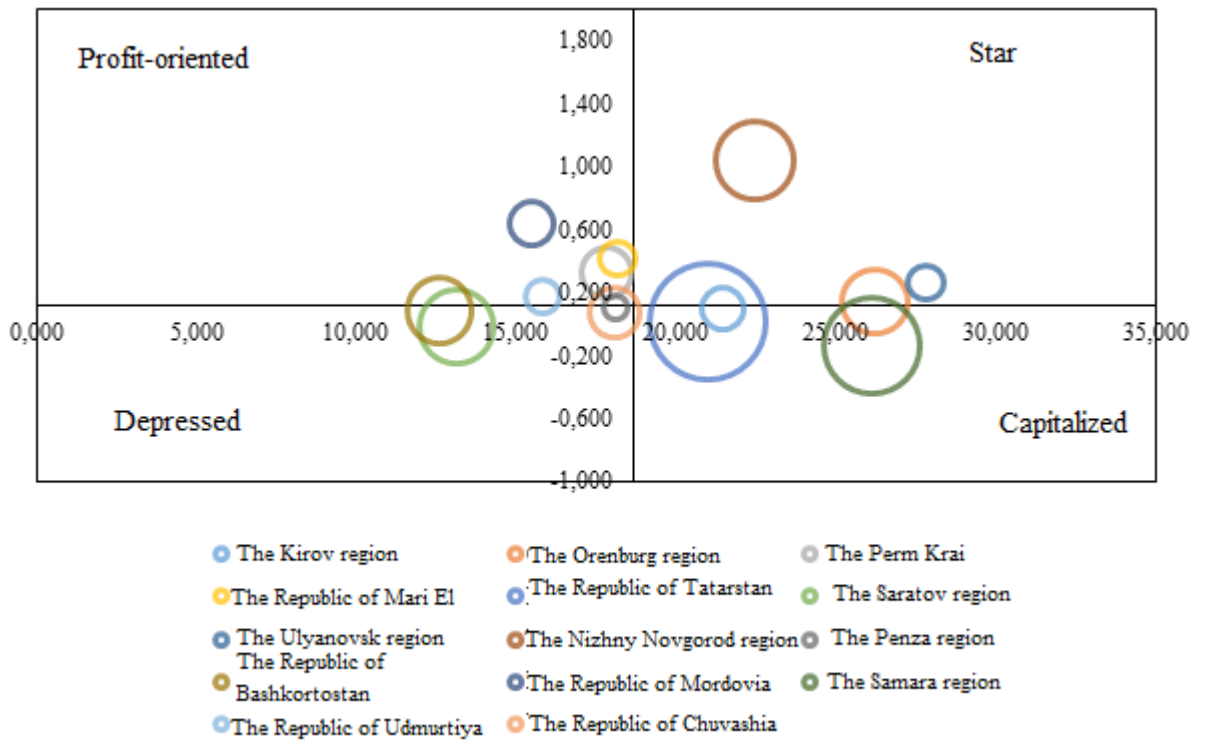


Figure 4
THE RESULTS OF DIAGNOSTICS OF REGIONAL BANKING SYSTEMS STABILITY AS OF JULY 1, 2015 (THE BANK OF RUSSIA [ELECTRONIC RESOURCE], MODE OF ACCESS 2016)

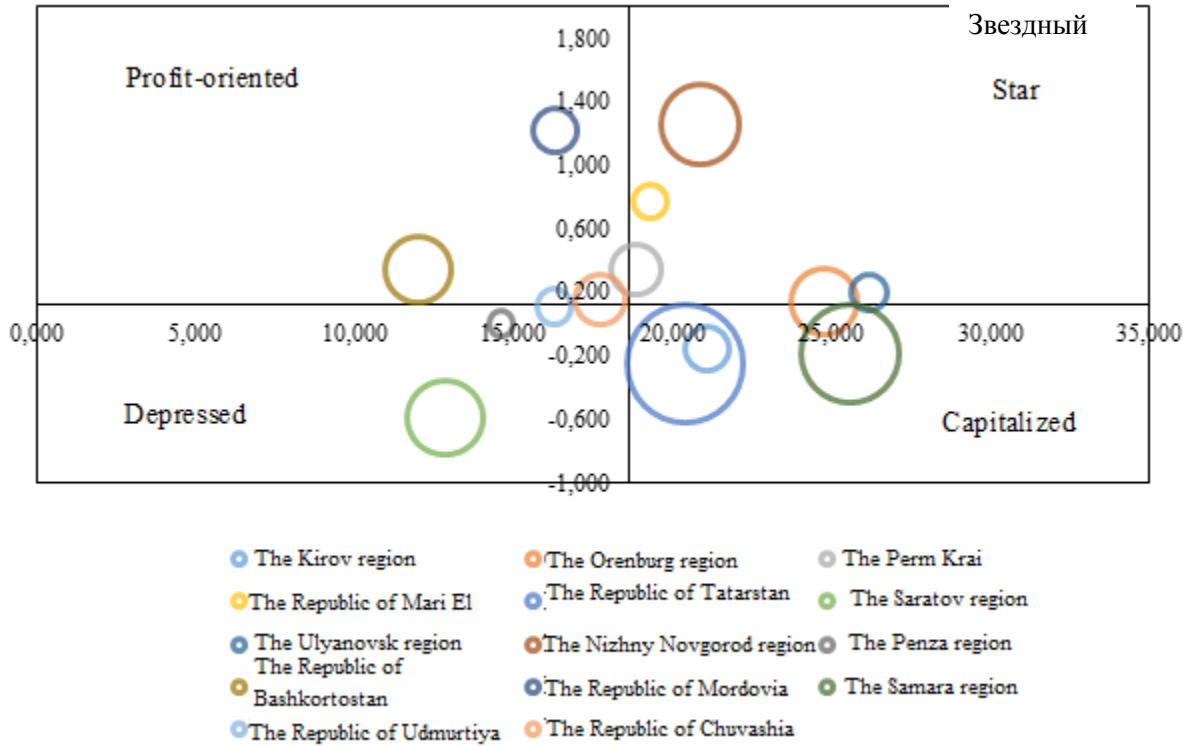
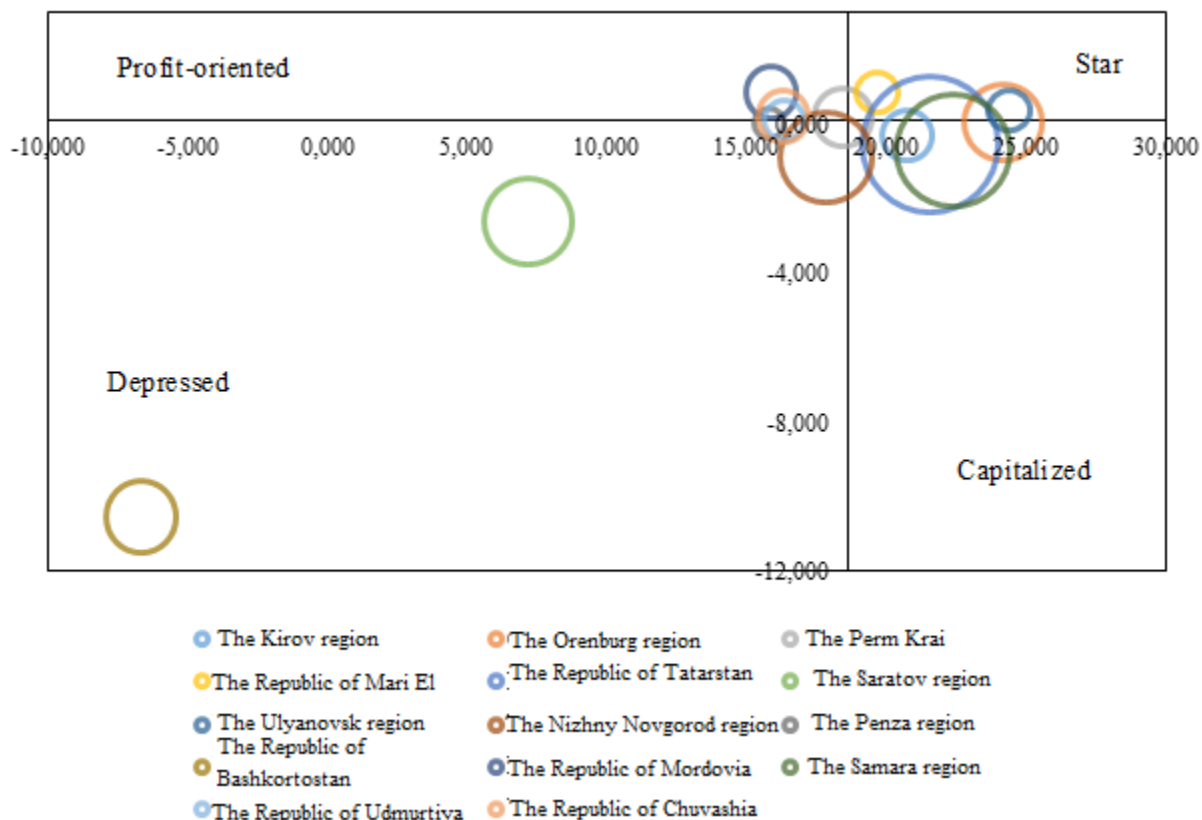


Figure 5
THE RESULTS OF DIAGNOSTICS OF REGIONAL BANKING SYSTEMS STABILITY AS OF OCTOBER 1, 2015 (THE BANK OF RUSSIA [ELECTRONIC RESOURCE], MODE OF ACCESS 2016)



As one can see from Figures 2-5, there is a marked negative tendency in regional banking systems in terms of the sustainability of their functioning, so as of January 1, 2015 in the banking sector of the Volga Federal District there dominates “star” regional banking system the profitability and reliability of which are above average (share of the “star” systems as of January 1, 2015 - 43%) and “profit-oriented” banking systems having highly profitable use of concerning large amounts of raised finance (the share of “profit-oriented” systems as of January 1, 2015 - 50%), then as of October 1, 2015 the situation is diametrically opposite: 36% of the banking sector of the Volga federal District are the “depressed” banking system, reliability of which is below average, and at the same time there is low profitability of the use of significant amounts of obtained funds and 29% of “capitalized” regional banking systems, characterized by high capital adequacy at a low profitability of the resources.

The presence of 36% of “depressed” regional banking systems in the banking sector of the Volga Federal District does not allow to draw a conclusion about its sustainability. One of the main factors that was the reason for the dominance of the “depressed” banking systems is the low profitability, and in some cases unprofitableness of active operations conducted by banks, which varies for the “depressed” systems from -10.5% to 0.1% as of October 1, 2015, whereas for the “star” and “profit-oriented” banking systems the level of profitability reaches 0.85% and











0.86%, respectively. Such significant differences in profitability are connected with the structure of both scattered and obtained funds.





Not less significant is an indicator of reliability of the bank, which determines the degree of coverage of the obtained funds by owned capital. The value of this indicator is over the range of -6.66% to 17.81% as of October 1, 2015 for the “depressed” banking systems, which is due to their material undercapitalization, given the fact that the profit is one of the most reliable sources of capital rise, and the “depressed” banking systems are characterized by low profitability, the current state of these systems may be exacerbated in the medium-dated perspective. Concerning “star”, “profit-oriented” and “capitalized” systems, for them the value of reliability index reaches 24,37%, 18,45% and 24,19%, respectively. Thus, we can differentiate two trends in the activity of the regional banking systems of the VFD: loss of functioning and reduction of capitalization.

SUMMARY

To diagnose the tendencies of sustainable or unsustainable development in each of the regional banking system of the VFD and to define attractive systems in terms of integration, we will aggregate the results reflected in figures 2-5 and make table 3.

Table 3
AGGREGATION OF THE RESULTS OF THE DIAGNOSTICS OF THE REGIONAL BANKING SYSTEMS

The name of the subject	01.01.2015	01.04.2015	01.07.2015	01.10.2015	Dynamics
The Kirov region	Star	Capitalized	Capitalized	Capitalized	
The Nizhny Novgorod region	Star	Star	Star	Depressed	
The Orenburg region	Star	Star	Star	Capitalized	
The Penza region	Profit-oriented	Depressed	Depressed	Depressed	
The Perm Krai	Profit-oriented	Profit-oriented	Star	Profit-oriented	
The Republic of Bashkortostan	Profit-oriented	Depressed	Profit-oriented	Depressed	
The Republic of Mari El	Profit-oriented	Profit-oriented	Star	Star	
The Republic of Mordovia	Depressed	Profit-oriented	Profit-oriented	Profit-oriented	
The Republic of Tatarstan	Star	Capitalized	Capitalized	Capitalized	
The Samara region	Star	Capitalized	Capitalized	Capitalized	

The Saratov region	Profit-oriented	Depressed	Depressed	Depressed	
The Republic of Udmurtiya	Profit-oriented	Profit-oriented	Depressed	Depressed	
The Ulyanovsk region	Star	Star	Star	Star	
The Republic of Chuvashia	Profit-oriented	Depressed	Profit-oriented	Profit-oriented	

Proceeding from the data in Table 3, it can be concluded that of the 14 regional banking systems of the district, negative dynamics is characteristic for 9 (or 64%), while 5 of 9 moved into the category of “depressed”, which in a certain way reveals the need for integration of the regional banking systems to improve the efficiency, financial soundness and meets the requirements of the region's economy (Klaas, J. and Vagizova, V., 2014. pp. 157-163).

The most attractive for the integration of the regional banking system in accordance with the implementation of the methodology for assessing the financial sustainability of the rating agency “Expert” for the determination of candidates for integration are the systems of the Perm Krai, the Republic of Mari El, Mordovia, the Ulyanovsk region, the Chuvash Republic. A characteristic feature of these systems is a small number of regional banks within the system.

CONCLUSION

Under present day conditions small and medium-sized regional banks cannot provide the regional economy with banking services in full measure. In this regard, there is a long-standing need to integrate regional credit organizations and regional banking systems. At the same time, the consolidated banks to effectively function, the methods for correct assessment of candidates for integration are necessary. In order to solve this problem, we have tested the methodology of estimation of the financial stability of the rating agency “Expert” on the example of the regional banking systems of the Volga Federal District. By the results of the implementation of this methodological approach, two trends in regional banking systems of the VFD have been revealed, namely loss in functioning and capitalization reduction. The systems of the Perm Krai, the Republic of Mari El, Mordovia, the Ulyanovsk region, the Chuvash Republic have been recognized the most attractive for the integration of the regional banking system.

ACKNOWLEDGEMENT

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THE INNOVATIVE DEVELOPMENT OF THE INDUSTRIAL ECONOMY OF RUSSIA

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ABSTRACT

Building an efficient management system by innovative development of the industrial economy is a priority for many countries. At that the importance of innovative processes for improving the stability of dynamics and the balance of proportions of the reproduction process in the economy increases. The paper contains an analysis of the key indicators of innovative development of the industrial economy of the key areas in which the essential part of Russian industrial assets is centered. The analysis is based on the data of the Russian Statistics Service and includes the indicators of the following sectors: production, economy and innovations. The author proposes to use the indicators of the strategic positioning of Russian companies in assessing innovative development, to take account of the programs of cooperation in the sphere of innovations. The potential and prospects of innovative development will largely be determined by the resource potential and the level of development of human capital in Russian companies.

Keywords: *innovation, industry, industrial economy, production, technologies, innovative development, region, strategy, human capital, resources.*

INTRODUCTION

Survey of literature on the subject revealed a number of problems to be solved. How to ensure the competitiveness of the industrial economy and its technological leadership? How to strategically determine the right model of the innovative self-development? Innovative development of the industrial economy is considered by the author as the development of the dynamic system with variable parameters, the rate of change of the parameters (technological, technical, economic) increases significantly with each passing year. In this regard, the process of control and management of the development of such system is complicated. Thus, the innovative development is characterized by the presence of certain laws and regularities that can be described with the help of economic and mathematical tools. The innovation of economic systems depends primarily on the innovation susceptibility of specific business entities that form the business environment, the system of interrelated economic, technical and technological, commercial relations in the country. And this, in turn, is largely determined by the choice of the development of strategies of enterprises, among which, in our opinion, one can differentiate two main types: “short-term accumulation of the capital, profit maximization and withdrawal from business” and “the strategy of long-term presence”. It should be noted that in terms of the innovative development of the enterprises the data of strategy are not mutually exclusive.

Introduction of the innovative development in the model, along with the previously used factors of production new factors, among which the technology contributes to the understanding

the economic growth as a process carried out under the influence of endogenous technological changes (Mensch G., Continho C., Kaasch K., 1981, p. 28; Freeman C., 1987).

The models establishing dependence of the rates of economic growth on innovation activities have a high value in terms of determining the prospects of the scientific - technical development. So, the most important tool of public policy is the direct subsidization of research and developments, as well as subsidization of accumulations for human capital, that is, education and science.

In this respect, we aim to elicit the main problems and perspectives of innovative development of the industrial economy (Sabel Charles F., Zeitlin Jonathan, 2002; B.Santo, 2004, p. 5; Yerokhina Ye. A., 2001, p.181). For this purpose the analysis of innovative development of the regions with high proportion of industrial assets in the economy has been conducted.

METHODOLOGY

In this study, the innovative development of the industrial economy involves the following:

- the economic subsystems geographically isolated in the spatial aspect should have similar total potentials, i.e., the gap between the absolute values of the system indicators of “strong” and “weak” innovative industry profiles should be negligible. This makes it possible to obtain a certain synergistic effect from their intrasystem interaction being sufficient to go to a qualitatively new and higher level of innovative development;

- each territorial - economic subsystem of the economy should perform its functions within a single innovation policy, the list of which is dependent on the specific structure of the innovative demand and resource indicators of innovation activity of the concrete territory (Varakin L.Ye., 2002, p.296; Strekalov O. B. Innovative, 1997, p.148).

To achieve the aim of the research, we have proposed the system of indicators for assessing the innovative development of the industrial economy which are presented in Table 1.

Table 1
THE SYSTEM OF INDICATORS FOR ASSESSMENT OF THE INNOVATIVE DEVELOPMENT OF THE ENTERPRISES OF INDUSTRIAL COMPLEX

The element of the system of indicative management of innovative development	Focus of assessment	Basic indicators
Diagnostics of innovative development of the complex of industrial enterprises (state)	Production	Index of industrial production, %
		Index of rise in value of production capital funds
		Workforce productivity, thousand roubles./person
		Share of industrial complex in formation of added value, %
		Degree of depreciation of capital funds, %
		Share of industrial complex in the structure of new fixed assets, %

		Weighted index of fully depreciated basic funds in industry, in % from total value
		Quantity of innovative goods, works, services, million roubles
		Industrial output, million roubles
	Innovations	Share of innovative production in total of shipped product, %
		Share of organizations организаций, practicing technological innovations on industrial production
		quantity of applications for acquisition of patents
		quantity of issued patents
		quantity of advanced manufacturing technology to be produced, units
		quantity of advanced manufacturing technology to be applied, units
		total cost of technological innovations, million roubles
	Economy	Return on total assets in processing industry, %
		Credit indebtedness of organizations, without the subjects of SME, million roubles
		share of loss-makers in industry (in percentage from total of organizations)
		balanced financial result in industry, million roubles
Spacial distribution and strategic positioning of industrial complex	Strategic positioning	“Innovation activity Results of innovation activity”; “Quantity of advanced manufacturing technology used Index of physical volume of production”, “Expenses involved in technological innovations Quantity of advanced manufacturing technology produced”, “Volume of innovative production Expenditure per rouble of commercial product”
	Programs of cooperation in innovation sector	Number of the programs of cooperation; number of co-projects; amount of financing; expected results
	International expansion	Number of business entities presented on worldwide market; capitalization of enterprises of industrial complex; raise of international financial assets into implementation of innovation projects
Use and extension of innovation	Human resources of innovative development	Number of personnel, engaged into research and development, persons
		number of doctors and masters of sciences
		number of organizations turning out research students
	Raw materials potential	Internal cost for research and development, million roubles
		Specific material requirement for innovation activity (cost for technological innovations / number of issued advanced manufacturing technologies)
		Investments into fixed capital, million roubles

The main point of the chosen method is that the average multidimensional is calculated for the industrial sector of the economy:

$$Y_{jk} = (\sum X_{ij} / X_{iaverage}) / N_i \quad (1)$$

Where Y_{jk} – the value of the average multidimensional for bloc K of j -th industrial sector of the regional economy ($J = 1, 2, 3, \dots, m$);

X_{ij} – the value of i -th index in the j -th industrial sector of the regional economy in the bloc,

$X_{iaverage}$ – the average value of i -th index in the j -th industrial sector of the regional economy in the bloc,

N_i – the number of indicators in each bloc.

By realizing the multidimensional approach to assessing the level of innovative development of the industrial complex, it seems possible to link together the different facets of the reduced to a common base of values of various parameters in the dynamics of the industry, minimizing the probability of receiving an erroneous assessment as the number of the considered indicators increases.

It should be noted that the indicators such as the degree of depreciation of the key assets, accounts payable of the organizations without the subjects of the SMEs, specific weight of unprofitable organizations in industry, as well as the material capacity of innovation activity (the cost of technological innovation / quantity of advanced production technologies) were taken into account in calculating an integral value of the indicators for each group as (the 1-index value). This is due to the fact that these indicators get feedback with a resulting indicator which reflects the level of innovative development of the industrial complex (Milner B. Z., 1980, p.376; Novikov D. A., 2004, p. 68; Yaremwnko Yu. V., 1997, p. 214). The threshold limit values of the indicators are proposed to define as the average values for the group of subjects of the Russian Federation, in which there is the most developed industry.

The integrated indicator of the level of innovative development of the industrial economy is determined by adding multi-dimensional averages. Accordingly, the higher the value of the integral index, the higher the level of innovative development of the industrial economy is (International Innovation Index Country Ranking, accessed June 2016; Regional Innovation Scoreboard 2012, accessed June 2016; Report of the ETP Expert Group, October 2009).

3.1 Analyses and Results

Multifactor system of assessment of innovative development of the industrial economy has been carried out on the example of 14 subjects of the Russian Federation, who account for more than half of Russia's total industrial production. The highest level of innovation development of the industrial economy is observed in the regions of Russia such as Moscow, St. Petersburg, the Moscow region, it is there where the highest resource potential, including human resources of innovative development of industry, is concentrated. Ensuring the innovation development of the industrial economy is possible at the expense of the intensification of innovation activity of the territorial-economic sub-systems of the Russian industry (Lozhnikova A. V., Sazonov A. E., Ogorodova L. M., 2012. p. 113; The Global Competitiveness Report 2012-2013, accessed may 2016). There are the reserves for this purpose, as follows from the results of rating territorial and economic sub-systems of the Russian industry those are dominated through all strategic areas which have an average rating, as reflected in Table 2.

Table 2
THE RESULTS OF ASSESSMENT OF THE INNOVATIVE DEVELOPMENT OF THE TERRITORIES OF THE RUSSIAN REGIONS

Name of the subject of the RF	Diagnostics of innovative development of the enterprises of industrial complex (state)			Use and extension of innovation		Integral estimation of indicators
	Production	Innovations	Economy	Human resources of innovative development	Raw material potential	
The Moscow Region	6,93	9,57	0,44	4,87	4,28	26,10
Moscow	8,63	23,59	-2,78	21,03	8,74	59,22
Saint Petersburg	7,87	10,92	1,72	6,36	3,61	30,48
The Republic of Bashkortostan	5,57	4,23	2,19	0,85	0,17	13,00
The Republic of Tatarstan	8,42	7,14	2,23	1,19	-0,09	18,89
The Perm Krai	6,50	4,65	3,18	0,55	1,01	15,89
The Nizhny Novgorod Region	6,12	8,06	2,53	1,85	2,09	20,65
The Samara Region	6,69	7,23	2,36	0,92	1,38	18,57
The Sverdlovsk Region	6,04	6,84	1,45	1,64	2,15	18,12
The Tyumen Region	10,49	3,47	7,13	0,67	1,47	23,23
The Chelyabinsk Region	5,75	5,15	0,89	0,77	1,15	13,72
The Krasnoyarsk Krai	6,67	2,96	3,78	0,56	1,58	15,55
The Kemerovo Region	5,96	1,56	1,72	0,27	1,46	10,97
The Omsk Region	6,34	2,63	1,16	0,47	0,23	10,84

It is important to note that only 8 subjects of the Russian Federation of 14 with the developed industrial complex has higher indicators of innovation activity in comparison with average Russian values, as represented in Table 3.

Table 3
INTENSITY AND EFFECTIVENESS OF INNOVATION ACTIVITY IN THE REGIONAL INDUSTRIAL SYSTEMS OF THE RUSSIAN FEDERATION

Name of the subject of the Russian Federation	Share of organizations practicing technological innovations in manufacturing output, %			Share in number of issued patents, %		Share in number of the advanced manufacturing technologies produced, %		Share in total number of the advanced manufacturing technologies used, %		Share in amount of expenses for technological innovations, %	
	2010	2011	2012	2005	2011	2005	2011	2005	2011	2005	2011
The Russian Federation	7,9	8,9	9,1	100%	100%	100%	100%	100%	100%	100%	100%
The Moscow Region	6,1	5,8	7,3	2%	3%	5%	11%	9%	8%	5%	2%
Moscow	11,6	16,9	17,7	6%	9%	16%	15%	8%	9%	8%	23%
Saint Petersburg	10,9	16,1	16,6	3%	3%	11%	17%	1%	3%	6%	5%
The Republic of Bashkortostan	10	12,6	12,6	0%	1%	1%	1%	4%	3%	1%	2%
The Republic of Tatarstan	12,9	16,4	16,9	1%	1%	1%	1%	1%	3%	7%	6%
The Perm Krai	19,3	12,7	12,9	1%	1%	1%	2%	3%	2%	3%	2%
The Nizhny Novgorod Region	11,4	13,6	13,6	1%	1%	9%	4%	13%	7%	3%	4%
The Samara Region	10,8	8,5	5,9	1%	1%	5%	2%	3%	4%	5%	2%
The Sverdlovsk Region	12,4	10,9	11,3	1%	1%	5%	8%	5%	5%	10%	4%
The Tyumen Region	7,8	8,5	6,7	0%	0%	5%	1%	3%	3%	1%	5%
The Chelyabinsk Region	8,4	9,5	9,8	1%	1%	2%	4%	2%	3%	9%	5%
The Krasnoyarsk Krai	7,9	8,7	8,3	0%	0%	2%	3%	1%	1%	1%	3%
The Kemerovo Region	5,3	5,6	5,8	0%	0%	1%	1%	0%	1%	3%	0%
The Omsk Region	6,1	6,3	7,2	0%	1%	1%	1%	2%	1%	0%	3%

Thus, the results of innovation activity in industry remain rather low, which may worsen the strategic positions of the regions, the economy of which is essentially dependent on the industrial sector. Two cities of the federal importance Moscow and Saint Petersburg, as well as the Republic of Tatarstan are the leaders according to the level of innovation activity of business entities in industry (The Global Innovation Index 2012, accessed may 2016; European

Innovation Scoreboard (EIS) 2009, accessed may 2016; European Technology Platforms-2020, 2012). The development of the objects of innovative infrastructure, institutes of innovation and investment development are conducive to it to a considerable degree.

CONCLUSION

The current Russian economy turned out to be in crisis situation. In this connection many companies have to revise the investment plans of development, the projects of introduction of innovations and expansion of production. Organizational and economic factors of financial and investment activities of the business entities, that is, the presence of industry disproportion in the structure and scope of investing, maintenance of adverse condition of basic funds, which has not improved in practice in recent years and bounds the production of competitive products.

Solving the set problems requires a special approach to the management of innovation development of the manufactured enterprises, implying along with the account taken for the special features of the structure formed by the national innovation system, as well as increasing the scope of innovation activities in economy. But it becomes possible only in case of stimulation of innovative demand in economy, including through the mechanisms of realization of the strategies and large-scale infrastructure investment projects.

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PERFORMANCE ANALYSIS OF THE REGION'S MEDICAL INSTITUTIONS

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ABSTRACT

In the process of the national healthcare system modernization the problem of Russian medical institutions performance becomes urgent. Today, the state of the healthcare system in the Russian Federation and its individual regions, such that in some important indicators Russia lags behind many foreign countries. Thus, in the short term the main goal of development and modernization of the national health care model is improving the efficiency, optimization and upgrading the existing system of healthcare. One of the most important aspects of achieving this global objective is the analysis of efficiency medical institutions activity of the Russian Federation. Thus, the purpose of this article is to analyze the efficiency of the medical institutions activity on the Republic of Tatarstan example. This paper deals with the analysis of the state of the regional healthcare system model, statistical data on the healthcare system situation in the country and evaluates the medical institutions activity of the Republic of Tatarstan. The final part of the paper sums up the performance analysis results and formulates the perspectives of development in the analysis of region's medical institutions consumer flows in a competitive market research.

Keywords: *Healthcare Economics, performance analysis of medical institutions activity, economic statistics.*

INTRODUCTION

Today, in the process of transition to a market economy and the commercialization of health care system, the scope of health care services becomes increasingly important in the economy, creating numerous jobs and thereby making a significant contribution to the gross domestic product.

Clinical outpatient care is of prior importance in health care as its most popular and accessible form. As of January 1, 2013, the Republic of Tatarstan had 87 health care institutions that provide primary health care (hereinafter - HCI PHC) (legal entities), including structural divisions: 1,790 medical and obstetrical stations (hereinafter - MOS), 87 ambulance stations (hereinafter - AS), 18 district hospitals (hereinafter - DH), and 53 outpatient clinics (hereinafter - OC). In 2012 in the Republic of Tatarstan, the number of visits to HCI PHC was 77,363 per shift, the rate was 204.6 per 10,000 citizens (in RF in 2010- 228.7). The lowest rates were recorded in Arsky (73.3), Laishevsky (77.6), Tyulyachinsky (105.8), Kukmorsky (110.4), Aksubaevsky (114.3), Agryzsky (120.0), and Muslyumovsky (123, 2) districts. High rates in Yelabuzhsky (287.7), Aktanyshsky (284.2), Aznakaevsky (256.9), and Leninogorsky (229.7) districts. The number of outpatient visits was 32,331,424 (in 2011 - 33,340,169). Thus, the number of doctor's appointments per capita of the republic decreased to 8.5 (in 2011- 8.8).

The main tasks facing the outpatient clinics include:

- collecting and analyzing the information on the health status of the population served (morbidity, disability, mortality);
- carrying out comprehensive prevention activities and works on promotion of healthy lifestyles;
- early identification of patients;
- carrying out dispensary activities among healthy and sick population;
- providing qualified and specialized medical aid; and
- developing the resource-saving and inpatient-substituting technologies.

The amount of work of other medical organizations, as well as many indicators characterizing the activity of the health care system as a whole depend on how well and to what extent the above tasks are solved.

The most important modern characteristics of outpatient care, along with its mass character and accessibility, are its versatility and economical efficiency. According to the definition of quality health care, which was suggested by the World Health Organization (WHO), “the quality care is that aid, which provides the best results on the basis of current knowledge and technology at minimum required expenditures for such aid”. This definition formulates the key aspects of efficiency, substantiation and cost-effectiveness of modern medical care. Up to 80% of those having sought medical help begin and end their treatment in medical institutions. At the same time, the costs for the provision of outpatient care (subject to its large scale) are several times lower than the costs for the provision of inpatient care. Therefore, the development of outpatient care in the system of medical provision to the population of Russian regions has always been and still remains a major public health priority.

This stipulates the main objective of this study - the analysis of patient flows from the perspective of the performance of the outpatient clinics of the Republic of Tatarstan (RT).

REGIONAL MODEL OF RUSSIAN HEALTH CARE SYSTEM

The services provided in the health care system are directly related to human life and health. In this regard, the health care system constituted originally a sphere most severely regulated by the state. Until 1991, in the USSR, the health care system was governed solely by the state, and funded from public revenues, within the framework of state plans of social and economic development. Virtually all health care workers were at service of the state, which paid wages and ensured the supply of medical institutions. The Ministry of Health under the strict control of the party leadership issued binding regulations in respect of medical facilities and personnel (Tragekas E., Lessof S., Access mode2016).

After the collapse of the USSR, the decentralization of power was accompanied by the decentralization of the health care system. Decentralization led to a weakening of administrative mechanisms that implemented the state policy in the health care system, which caused a number of negative consequences, in particular, fragmentation of health services, the elimination of inter-regional centers (branch offices), reduced accessibility of highly specialized medical care for the rural population. Under these circumstances, the conversion and optimization of the activities of health care institutions became relative and were aimed at ensuring accessibility of health services, more sustainable use of available resources, the development of resource-saving technologies in municipal health care system, etc.

The regional health care model is based on the region's economy, the need for the formation of economic and social infrastructure, a part of which is the health care (Vialkov A.I., 2001, p.336). However, the domestic health care system dates back to the county medicine. All principles (district-based distribution, general availability, free of charge for all taxpayers of county duties, medical examination) have been developed yet in the XIX century. County doctors were first to develop and introduce the individual case records recognized later as the most advanced form of the disease data collection in the outpatient conditions.

The county health care system had served as the basis for the formation of our current two-level system of health care (or Semashko model, as they call it abroad) two small structures integrated with each other: outpatient phase (polyclinic, ambulance) and inpatient phase.

For decades, the Soviet public health model used to serve as the model for many developed countries. By the 70th of the last century, the features typical of the state health care model were approved by the Nordic countries (Ireland, Norway, Sweden). And now, the state health care system exists in a number of both industrialized and developing countries (Italy, Greece, Denmark, Algeria, Angola, Ethiopia, etc.) (Styrborn K. et al., 1993; Abel-Smith B., 1995; Semenov V.Iu. et al., 1997; Kucherenko V.Z. et al., 2000).

Nevertheless, already by the end of the last century, along with the growth of requirements for the health services, the development of new costly medical technologies, the domestic health care model started dragging seriously behind the US model and the European model in many terms, such as mortality (1.75 times higher than in the US), longevity (1.2 times lower than in France, Germany, Greece). Moreover, Russia has got an unflattering name of the "Champion of mortality at working age", because this index in Russia is 547.6 per 100 thousand people, whereas in European countries this ratio is 2 times lower and amounts to 259.3 per 100 thousand people.

Thus, for the near future, the objective of development of the domestic model lies in the improvement of the efficiency and modernization of the existing health care system (Malkovets M.V., Zelezinskaya G.A., Plakhotya L.P., 1996; Holden, R.J., Brown, R.L., Scanlon, M.C., Rivera, A.J., Karsh, B.T., 2015, P. 131; Negandhi, P., Negandhi, H., Sharma, K., Wild, S., Zodpey, S., 2015).

ANALYSIS OF THE EFFECTIVENESS OF THE SYSTEM OF THE TREATMENT AND PREVENTIVE INSTITUTIONS IN THE REGION

In accordance with the set objective of the study, the research bases were the treatment and preventive health care institutions, which have the divisions performing the inter-district and regional functions. Among them are State Autonomous Health Care Institution "Interregional Clinical and Diagnostic Center" in Kazan, State Autonomous Health Care Institution of the Republic of Tatarstan "Emergency Hospital" in Naberezhnye Chelny, Almetyevsk Central Hospital in Almetyevsk, and State Autonomous Health Care Institution "Aznakaevsky Central District Hospital".

Choosing these bases was determined by the need to include in the study the different types of health care facilities providing care to the population at different stages, and the availability of reliable statistical basis for the material collection.

The treatment and preventive institutions selected as research bases are typical of the Republic of Tatarstan in modern conditions (subject to the formed medical zoning). A particular attention in the implementation of this part of the study was given to the analysis of flows of

patients in regional hospitals State autonomous health care institution "Interregional Clinical and Diagnostic Center".

This paper has been devoted to the results of the study of this treatment and preventive institution (Report of the Head of Almetyevsk municipal district and city of Almetyevsk for 2015 and of tasks for 2016, Access mode 2016; Berry, M.D, 2014, P. 1; Fan V.Y., Savedoff W.D., 2014, P. 112; Raftery J, 2014, P. 367; Inworn N., 2015, P. 175).

This study began in 2015 and continues to this day. It is planned further to collect data, including surveys, on the distribution of patients in the above-mentioned medical institutions of the republic of Tatarstan.

The autonomous public health care institution "Interregional clinical and diagnostic center" for 382 beds provides therapeutic and surgical care. More than half of surgical interventions are high-tech surgeries on the heart, brain and blood vessels. During the time that has passed since the establishment of the first diagnostic departments of **IRCDC in Kazan** (1999), the Center gained a reputation in the region as one of the best medical institutions in the field of medical imaging (Kalinina T.V., Plakhotya L.P., Shchhaveleva M.V., 2003, p. 36; Ralph R., 2015, P. 44; O'Brien T., 2015, P. 34; Goozner M., 2015, P. 24).

Staffing includes about 1500 employees. Today, IRCDC has 16 doctors of science, 58 candidates of sciences and about 200 doctors, including 11 honored physicians of the Republic of Tatarstan, more than 100 of them - with higher and I categories, and more than 300 nurses employed.

As of the end of 2015, the total number of consumers who had used the services of State Autonomous Health Care Institution "Interregional Clinical and Diagnostic Center" was 90,232 people, including 58,538 outpatient-polyclinic visits.

State Autonomous Health Care Institution of the Republic of Tatarstan "Emergency Hospital" provides 24-hour emergency medical aid to residents of the city of Naberezhnye Chelny and the North-East region (Agrzysky, Aktanyshsky, Yelabuzhsky, Zainsky, Muslyumovsky, Mamadyshsky, Mendeleevsky, Menzelinsky, Nizhnekamsky, Sarmanovsky, Tukaevsky districts). The serviced population is 1.2 million people. The size of the 24-hour inpatient facility is 600 beds.

Today, State Autonomous Health Care Institution of the Republic of Tatarstan "Emergency Hospital" has 240 doctors, junior and medium-level medical personnel - 257 and 627 people, respectively.

As of the end of 2015, the total number of consumers who had used the services of State Autonomous Health Care Institution of the Republic of Tatarstan "Emergency Hospital" was 23,000 people, including 11,000 outpatient-polyclinic visits.

The size of Almetyevsk Central District Hospital is 411 beds, 370 of them are for 24-hour stay, and 750 visits per shift. The following therapeutic departments operate in the hospital: two therapeutic, one surgical, and one intensive care departments, departments of neurology, ophthalmology, urology.

These departments annually conduct about 2.5 thousand operations on the organs of vision, digestion, peripheral blood vessels, and urinary system. Therapeutic and diagnostic departments of the hospital are headed by highly qualified specialists. As of the end of 2015, nearly 13,000 people applied to Almetyevsk Central District Hospital, more than 9,000 of which were outpatient-polyclinic visits.

State Autonomous Health Care Institution "Aznakaevsky Central District Hospital" is a multi-disciplinary institution with the size of 333 beds, which include:

- 24-hour inpatient department for 211 beds;
- day inpatient department with outpatient-polyclinic service for 95 beds;
- day inpatient department at the hospital for 27 beds;

Qualified medical care in the area is provided by 125 doctors, and 607 medium-level medical personnel. The health care system of Aznakaevsky district includes 9 honored doctors of the Republic of Tatarstan and 15 doctors honored as "Health Care Expert".

As of the end of 2015, nearly 13,000 people applied to Aznakaevsky Central District Hospital. Performance analysis of health facilities is carried out based on the results of the annual reports on the basis of the state statistical forms. Reports of medical (therapeutic and prophylactic) institutions provide an opportunity to assess the volume of activity of medical institutions, the quality of medical care, the operating efficiency and the performance of certain standards (Bobrovsky I.N., 2006, p. 46; Kolosnitsyna M.G., Sheiman I.M., Shishkin S.V., 2009, p. 479; Walker S., 2015, P.57).

Table 1
OUTPATIENT CLINICS PERFORMANCE

Criteria	Method of calculation
Actual annual size of the outpatient institutions	$\frac{\text{Annual number of visits to the outpatient clinic}}{\text{The number of working days per year} \times \text{shift factor}}$
Capital intensity	$\frac{\text{Cost of fixed assets}}{\text{Annual number of treated patients}}$
Capital productivity	$\frac{\text{Annual number of treated patients}}{\text{Cost of fixed assets}}$

$$\text{Actual annual size of the outpatient institutions for IRCDC} = \frac{58,538}{247 * 1.04} \approx 230$$

$$\text{Capital intensity} = \frac{2,792,967}{90,232} \approx 30.95$$

$$\text{Capital productivity} = \frac{90,232}{2,792,967} \approx 0.03$$

CONCLUSION

This study reflects only a small part of the indicators available for measurement of the performance of health care facilities. Along with performance indicators, the outpatient clinic performance is evaluated with the indicators used to assess the parameters of public health: demographic indices, morbidity, and disability (Sheiman I.M., 1998, p. 336).

In conclusion, we would like to note that it is planned to pay special attention to the following questions:

- to give a general assessment of the outpatient clinic (satisfactory, unsatisfactory);
- to build a model of the patient's decision-making behavior when choosing a health care facility;
- to note the most typical difficulties in the operating process of an outpatient clinics, and make a point of priority issues; and
- to make recommendations for improvement of the quality, and optimization of therapeutic and diagnostic process and preventive activity of the outpatient clinics.

Methodological and organizational recommendations developed in the course of this study can be implemented in the regions of the Russian Federation in order to improve the performance of health care system on the basis of patients flow management.

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SMALL AND MEDIUM-SIZED BUSINESS AS A FACTOR OF DEVELOPMENT OF AGROINDUSTRIAL COMPLEX IN A REGION

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ABSTRACT

In the paper the problem has been explored on functioning of small and medium-sized agro-businesses in Russia. The role and importance of small business in the Russian regions and administrative areas have been studied. The factors which influenced the increase of the role of small business in the agro-industrial complex in some regions of Russia, and the decline in others have been revealed. The main problems hampering small business to realize the expected potential of its development are determined. Basic factors contributing to solve the problems in formation and development of entrepreneurial business in agro-industrial complex have been revealed. One of the main factors ensuring the solution to the problem of formation and development of entrepreneurial business in agro-industrial complex is agro-industrial integration. The necessity of creating in municipal entities of institutional integration forms of consolidation of small and medium-sized enterprises was noted. The basis for the joint efforts of small and medium enterprises that provides improved survivability, protection of rights, consolidation of resources and formation of a vector for sustainable innovation and investment development can become a "Municipal innovation and integration business center". Similar consolidating structures should be created at regional and federal levels. Formation of such a multi-level institutional integration model upon its system innovation and investment focus would make major adjustments in existing approaches to the pricing for goods and services produced by business entities, since it provides an opportunity to lower barriers created by the enterprises-monopolists, and bring to the fore the problem of resource saving and improve the quality of goods and services.

Keywords: *Agricultural business, small business, region, effectiveness of small business, regional economy, agroindustrial complex.*

INTRODUCTION

Currently, in the economic literature there has developed an understanding of the fact that activity of mechanisms on regulation and support of small business, including (and especially) in agroindustrial complex should be intensified particularly at the regional level that increases the urgency of the problem in terms of the regional economy. Unfortunately, the regional aspect of the complex of measures on small business development is poorly developed in the documents of the Ministry of Economic Development of the Russian Federation which is responsible for this segment of the economy. Interregional differentiation of small business development is very significant, and the dynamics of small business development is not the same in different regions of the Russian Federation. Orientation to the national average indicators in the development of

small businesses can significantly distort the real picture, and, therefore, the forecast parameters which have been approved at the governmental level.

It is an actual problem of studying the role and importance of small business in the Russian Federation entities and administrative areas, establishing the factors which influence on the increase of the role of small business in some entities and decrease in others, determining the effect of the share of small business in the production of agricultural products in a given region. This is all the more important that the Russian regions are quite diverse both in natural conditions, and on the specifics of interaction with the regional authorities.

MATERIALS AND METHODS

Despite the considerable attention of the federal and regional authorities to the problems of effective development of small and medium-sized businesses, their solution is slow and inconsistent. It is sufficient to note that the share of small and medium-sized businesses in the GDP of developed countries is 50% and not more than 20% in the Russian Federation. In our opinion, extremely low rates of development of Russian business are connected with the peculiarities of its development, a federal structure of the state, and weakness of the legal framework.

A priority factor in increasing the socio-economic efficiency of agro-industry in modern conditions is integration (Kusakina O.N., Skiperskaya E.V., 2011). It is connected with the necessity of interaction between industries and types of agricultural and industrial production. Agricultural enterprises come into integration relations seeking to mitigate the risks caused by the specifics of agricultural production, dependence on climatic conditions, and spontaneity of agricultural products market. Processing and other agribusiness companies are also trying to ensure a stable income on the basis of a reliable source of raw materials or markets for sales of products or services.

Analysis of a large number of scientific publications indicates a lack of theoretical basis for processes of formation and sustainable development of various forms of business in the Russian municipal entities, regions, and Russia as a whole. In modern conditions, the solution of this problem is possible with a clear interaction of three components: institutions - integration - innovations. Moreover, it should be implemented in close conjunction with the municipal entities, as the institutional integration and innovation and investment processes should be targeted to specific state administrative-territorial entities. This intrinsically involves development of adequate mechanisms for inter-level interaction between businesses entities provided their integration and institutional modernization inclusive of substantiation of their functioning and development features.

Using a bottom-up approach to the development of entrepreneurial business starting with municipal entities and ending with the country as a whole, is fully justified. It is in the municipal entities where business structures are initially established and develop. Therefore, the institutional integrative and innovation and investment processes should occur in their frameworks. But in reality, they are slow, contradictory, and often realized in a stall condition (Krutik A.B., Gorenburgov M.D., 2014).

RESULTS AND DISCUSSION

In contrast to the industrialized countries where the revival of small and medium-sized production was a natural historical process, in Russia small business has emerged to a certain extent "under a command" as a means of reforming the socialist economy. Moreover, the national economy in Russia is still characterized by a high level of monopolization and weak development of small business. Upon that, traditionally in the domestic economic literature functioning of small business is considered in terms of its economic advantages that bespeaks the feasibility of state incentives and support for the sector.

If to consider a small business in terms of its inherent qualities being immanent to its nature, the number of researchers (Irodova E.E., Sheyanova N.V., 2012; E.I. Ivanov, 2011) select the following:

- Activities of small businesses are implemented with a focus on the simplest form of organization, internal resources, limited opportunities of savings and maximum close relations with the market, with its immediate surrounding by the local market;

- Internal organizational forms of activity are characterized by self-hiring, self-employment, self-sufficiency, self-management, self repayment and, as a consequence, the material self-realization, external (economic, intermediary, innovative) forms are implemented as oriented to a neighbouring regional market;

- Systemic risks at the macro level are exacerbated by the limited opportunities to diversify a business, its in a sense a niche character, the lack of opportunities to take advantage of market research, limited access to relevant insider information, distrust and loss of use of borrowed and raised funds,

- At the micro level, conducting own business limits its competence levels that is exacerbated by the lack of opportunities to attract extraneous professionals, and lack of legal culture in terms of legal compliance,

- Specific competitive advantages, and if they are, could be implemented in a limited way with a focus on passive adaptation to local conditions and local regional markets.

The social aspect is undeniable and quite explored in the works considering the regional aspects of small and medium-sized businesses (Russia Agribusiness Report, 2014). A number of authors (Kovyrshin A., 2015; S. Fletcher., 2014) in the period 2000 - 2005 have studied in details the situation with the social factors of small and medium-sized businesses from the following perspectives: provision of employment of population, provision of a certain level of wages in the sphere of economic activity, as well as provision by small business to the population of the whole complex of goods and services availability of which has a significant impact on solution of social problems (<http://tatarstan2030.ru/content96>, date of access 20.03.2016).

Private subsidiary farming was first legalized as a form of auxiliary noncommercial activity; ownership to a land plot had changed, and the latter may now be privately owned. At the same time, remaining subsistence, or semi-subsistence and non-profit, a private subsidiary farming has the ability to be transformed into other forms of economic activity, particularly in the farm (peasant) enterprise. The right of a land plot extension by a variety of sources was provided, including the sale, lease of land, and field allotment.

This led to that during the period from 1990 to 2009, there was an active growth of the number of farm (peasant) enterprises in 60 times (mostly from 1990 to 1995) with reducing the number of agricultural organizations by 27.5%, and almost the same number of private farms. The land plot area of farm (peasant) enterprises grew in 97.4 times, private subsidiary farming -

in 3.5 times, and land plot area of agricultural organizations was reduced by 44% (Bashmachnikov V.F., V.V. Kazarezov, 2010). During the period from 2000 to 2009 the share of products produced by peasant farms and farmers has increased (by grain) from 8.4% to 20.9% with a decrease in the share of large agricultural companies from 90.8% to 78.2%.

Upon that, the development of small businesses in the agro-industrial complex has a number of distinctive features, which include the following:

- Active and powerful member of agricultural production is the nature; agricultural production is characterized by the use of land, as well as plants and animals as the principal means of production.

- The main means of production are subject to biological laws which are weakly susceptible to subjective factors of will and work organization.

- Seasonal production and use of labor due to the mismatch of the production time required for production and the working period which is shorter in duration.

- A significant spatial dispersion of production, great volume and perishable nature of the finished product that makes an entrepreneur, to some extent, a hostage to procurement and logistics system.

- Strong dependence on the market of industrial means of production and their prices.

- Features of the division of labor requiring an optimal combination of branches which comprise agricultural production (mode of access: www.nisse.ru/business, 20.03.2016).

In summary, we can conclude that small and medium businesses in the agro-industrial complex in the period of reforms in the national economy (1990 -2010 years) has stayed afloat, has institutionalized as an independent part of the national economic complex, although it did not show the expected of it performance by volume and growth rate. Since the 2008 - 2010 years the agro-industrial complex has clearly manifested process of growth and formation of agricultural holdings: large farms organized by large, including non-state, investors. At the same time differences with the situation in the foreign countries also appeared. So, an American farming (although they are often conventionally referred to as "family farms") is classified as a farm starting from revenues in \$ 1,000; they are divided into large (revenues of more than US \$ 250 thousand) and small (less than US \$ 250 thousand) (Chernyakov, B.A., 2009). Upon that, 80% of products produced and sold are accounted for only 160 thousand large farms what accounts for a little over 8% of their total number. In the period of beginning the faster growth of large agricultural holdings (2008 - 2020) 125 thousand large farms (6% of the total number of farms) have produced 75% of the total production. In Russia, according to the rating of the largest farms ("Fermer-300") for that period (2006-2007), only a few dozen farms (55) fall under the American criteria of "large farms" by their revenue. Upon that, large farms in the United States produced more than 60% of grain and leguminous crops, 80% fruit and cotton, 90% of vegetables, potatoes and greenhouse products. Even higher are their successes in animal husbandry: they accounted for 72% of the production of beef cattle, 80% dairy, 92% of pig, 95% of poultry products; they have grown almost 10 billion broilers. The Russian agricultural production indicators are also structured, but at the same time the share of 100 major manufacturers account for 81.7% of revenues of large and medium agricultural enterprises of the country from the sale of poultry, 66.5% of sales of eggs, 63% of vegetables grown in the open, more than half of pig meat, 50.6% of potatoes, 32.6% of sugar beet, 20.9% of sunflower. Even for grain, milk and beef, their share is 10,3-14,5% of revenues. If we consider that in the largest agricultural organizations (rated by Agro-300) share of farm (peasant) enterprises amounts to 2%, CJSCs - 33%, OJSCs - 24%, agricultural production cooperatives - 11%, state unitary enterprises - 6%, limited companies -

24%, it should be acknowledged that the niche which is occupied by the largest private farm enterprises in the United States, in Russia is occupied by agricultural holdings (Sirazetdinov I.S., 2010). At the same time, agricultural holdings as subjects of economic relations are the levels of most all-Russian scale, while the smaller farms are oriented to the market of the region and the municipal entities, that is, they are subjects of the regional policy.

In drawing up an analogy with the system of scientific and educational clusters emerging at the level of regions of Russia, it should be recognized that the formation of innovative infrastructure development as applied to small businesses in the agro-industrial complex must be also formed and built at the regional level, with the general support of the federal government.

The revealing of the set forth characteristics and problems of development of small and medium-sized businesses enables to provide a systematic approach to overcome them. First of all, this is related to improvement of legislative bases of the development of entrepreneurial business in the agro-industrial complex of Russia. We talk about formation of a multi-level vertical management of these processes (municipal entities, subordinate entities of the Federation, the country as a whole), development and justification of the codified principles, forms and methods of inter-level interaction. It should be noted that developed countries have systems for implementation of R & D results, mainly through advisory services which act as a link between science and industry. In the United States, UK, and other countries specialists-consultants transform complex scientific developments into simple recommendations (Vasiliev K.A., 2013). Scientific support provides an opportunity to validate the most promising directions of development of enterprises in the municipal entities. The basis for the joint efforts of small and medium enterprises providing their improved survivability, protection of rights, consolidation of resources and formation of a vector for sustainable innovative and investment development may become a "Municipal innovative and integration business center" (Keeton K., 2013). Similar consolidating structures should be established at the regional and federal levels. Formation of such a multi-level institutional integration model upon its system innovative and investment orientation makes major adjustments in existing approaches to pricing for goods and services produced by business entities, since it provides an opportunity to lower barriers created by companies-monopolists, and bring to the fore the task of resource-saving and improving the quality of goods and services. Formation of public-private partnership in implementation of major priority investment projects also becomes real.

CONCLUSIONS

Summarizing the above stated and taking into account the peculiarities of state support for small and medium-sized businesses in agribusiness industry, we can summarize and identify the main problems hampering small businesses to realize its expected development potential that have been already revealed and which decision is possible only through mutually agreed actions at the federal and regional levels:

1. Upon formation of a sufficient legal basis for development of individual and family farming and agricultural consumer cooperatives, it is not available enough law enforcement practice, legal conditions of the state support of small agribusiness is not properly detailed and not brought to the routine application.
2. Farmers, owners of private subsidiary farms and rural entrepreneurs experience an acute shortage of financial and credit resources.

3. There is no an efficient system of product distribution, material and technical supplies and maintenance services for farm (peasant) enterprises, private subsidiary farms, and other small farms.

4. The rural population experiences considerable difficulties in obtaining market information, advisory services of legal, economic and technological nature, in professional development what is also the main area of activity of regional authorities.

2. There is no mechanism for regular interaction between the state and municipal authorities on the one hand, and the unions, associations of peasant (farmer) enterprises and private subsidiary farms, and rural entrepreneurs, on the other hand.

The proposed concept of a municipal innovative-integration business center can be seen as a necessary element of bringing, firstly, an information on the priority areas and the innovative development of the industry in order to more rational use of its resource potential.

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FINANCIAL STATEMENTS AS AN INFORMATION BASE FOR THE ANALYSIS AND MANAGEMENT DECISIONS

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ABSTRACT

The processes and events taking place in an organization, and the results of financial and economic activity are represented by a variety of information which in turn in the aggregate forms an information base for analysis. The leading place among the information needed for the analysis is taken by accounting data and financial reports of the company to which, in turn, increased requirements are applied at the present stage of improvement accounts and records. However, the data of financial statements of Russian companies for a number of years, as a rule, are not comparable due to the frequent changes in accounting policy caused by changes in legislation, registration forms, as well as failing to take inflation into account. The main reasons for the low demand for accounting data for managerial purposes are that in most cases they were incomplete, and also financial statements were low reliable. We have selected two groups of respondents for their study the first of them consists of the heads of Russian companies reporting under RAS (Russian Accounting Standards), and the second of CEOs of the companies that prepare financial statements both under RAS and IFRS. Based on the survey, we found that the companies preparing the statements both in accordance with RAS and IFRS, have more accurate figures of financial statements than the companies that use RAS. We have found that financial statements data are more in demand to external users than the internal ones, and the reason for this is the lack for external users of other sources of information, while internal users use all possible sources of additional information about the property and financial condition of an enterprise.

Keywords: *information database, RAS, IFRS, respondents, financial statements, reliability, transparency.*

INTRODUCTION

With the development of market relations information support for management decisions becomes increasingly important. Processes and events being under way in organizations, results of financial and economic activity are disclosed by a variety of information which in turn collectively forming an information base for analysis. The lack of necessary information, and the use of unreliable or irrelevant data are the causes of serious mistakes in management decisions. It is believed that the main purpose of the use of information, above all, should be to reduce uncertainty in decision-making. Economic analysis and reliable decision-making is only possible if there is the most complete information about the economic activity of an economic entity. Thus, an analysis contains technical, technological, and other information, and is not limited to economic data. This is due to the fact that in carrying out complex economic research, an information base of the analysis should be developed with a view to its use within not a single

problem, and a complex of analytical problems. This information may be obtained from various sources the main of which include: (Ushakova T.V., Mukhametzyanov R.Z., 2015):

- a) economic legislation in the country;
- b) the charter of the organization that reflects the types of its activities;
- c) norms and standards used by the organization;
- d) accounting data of the organization;
- d) financial and statistical reporting of the organization;
- e) control checks and special audits data;
- g) information from data bases of organizations and various non-system information.

Thus, we can say that it is necessary to use all possible sources of information for economic analysis and management decision-making.

The key place among the information needed for the analysis is taken by accounting data and financial statements of a company as they contain the most important and reliable information about the activities of an economic entity. This information is grouped in various forms of reporting and bookkeeping records on the basis of the information classification principles (Izmestyeva O.A., 2009).

Company's books provide a summary information which summarizes and presents business results in generalized terms.

In the Russian Federation the order of presentation of financial statements, their volume and content are regulated by the Federal Law №402 - FZ dated 06.12.2011 "On Accounting" and the Accounting Regulations 4/99 "Accounting reporting of an organization" (Federal law №402-FZ "About accounting" dated 06.12.2011).

Accounting and reporting information is used as the basis for monitoring the implementation of plans and forecasts, as well as the efficient use of material, financial, labor, and other resources which share accounts for more than 70% of management information.

A special place is also taken by information from managers, and the professionals of an organization that are directly involved in production and economic activity of the economic entity. At the present stage of improving the business management, increased requirements are presented to the accounting information. It must be of high quality and be effective, it must meet the requirements of internal and external users of information. In addition, it is desirable that the financial statements would contain as little as possible indicators, but to satisfy the maximum number of users at different levels of management. Accounting information must be necessary and appropriate, and be formed with the least expenditure of labor and time. Obviously, it is necessary to use different methods for collecting, processing and accounting information to meet all the above requirements (Kulikova L. I., Grigoryeva L. L., Gubaidullina A. R., 2014).

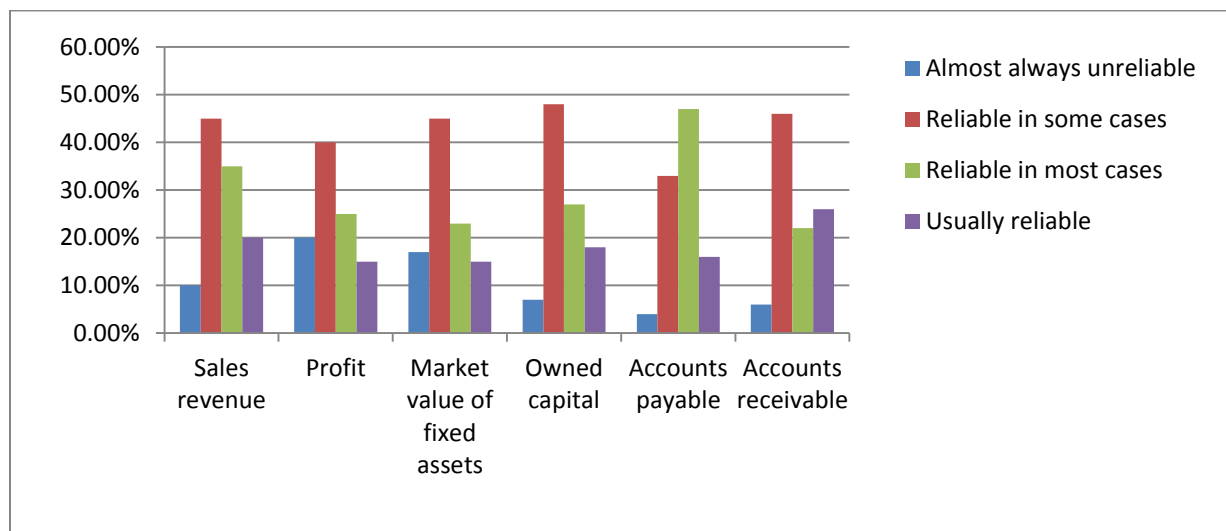
METHODS

According to the statistics, the accounting data of the Russian companies for a number of years, as a rule, are not comparable due to the frequent changes in accounting policy caused by the changes in legislation, in registration forms, as well as the inability to take inflation into account. Reporting of these companies, in many cases, remains non-transparent, does not allow one to interpret results obtained on the basis of its analysis. Currently, in Russia collection of public financial statements is difficult due to the lack of real progress, common misstatements in reporting and fear of their detection upon its analysis, lack of interest of companies to provide information in connection with the lack of need (Aletkin P.A., 2014).

The majority of respondents indicated incompleteness and low reliability of financial statements in the capacity of the main reason for low demand in accounting figures for the purpose of management. Most often this component is demonstrated in the financial statements of companies prepared in accordance with the Russian Accounting Rules. There is such a feature when companies that report in accordance with Russian regulations often do not fully reflect the accounting information in its reporting, trying to achieve certain goals. An example of this can be an artificial lowering of company's profits in order to avoid high taxes. As for the companies which prepare the reporting both according to Russian, and to international financial reporting standards (IFRS), the situation is reversed. On the contrary, companies' chief executives are interested in an artificial increase in the rates of profit, thereby pursuing the goal of improving the well-being of their owner by increasing the value of shares which in turn increases based on improvement of efficiency of their activity for the reporting period or pursuing the goal on attracting new investors (Kulikova L.I., Gafieva G.M., 2014).

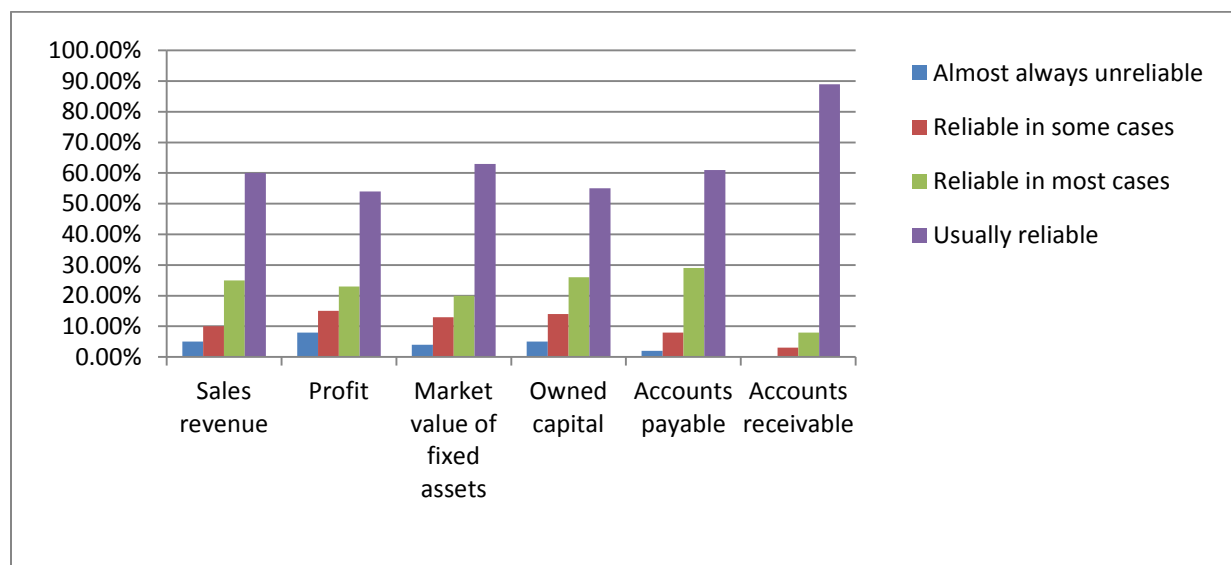
Carrying out a survey of top managers of Russian companies on two above-stated categories, we have come to certain results. Anonymous replies to the questionnaire made it possible to find out what financial statements are in question. Under the terms of the survey, when answering the question "In your opinion, how well companies reflect the following indicators in their financial statements? - It was necessary to assess on a 4-point scale the degree of reliability of the individual indicators from the financial statements. (Antonov S.V., 2007)

Figure 1
THE RESULTS OF THE RESPONSES OF COMMERCIAL ORGANIZATIONS HEADS FROM THE GROUP №1 ON THE SURVEY QUESTIONS, % OF RESPONDENTS



About 25% of surveyed chief executives of the companies reporting under the Russian Accounting Standards (Group №1) have considered the line "Revenue" in reporting as reliable in most cases. The argument they replied was that the entire revenue goes through the account or cash. About 20% of respondents said that the figure, as a rule, is reliable, whence about 45% considered it valid only in individual cases. The indicated reason for unreliability was that organizations apply the principle of splitting revenues to several related companies in order to optimize taxation. And only about 10% of the respondents felt that in most cases the indicator "revenue" recorded in the financial statements, is misleading.

Figure 2
THE RESULTS OF THE RESPONSES ON THE SURVEY QUESTIONS OF THE HEADS OF
COMMERCIAL ORGANIZATIONS FROM THE GROUP №2, % OF RESPONDENTS



As for the firms that publish statements both according to RAS, and IAS (group №2), the situation looks different. About 25% of respondents believe the indicator of "revenue" to be reliable in most cases. More than 60% of respondents say that this figure is usually reliable. Only 10% believe that this figure is valid only in individual cases and only 5% said that the indicator of "revenue" is misleading. (Antonov S.V., 2007)

Profit indicator is considered most reliable by over a third of respondents in the first group, while 40% consider it valid only in individual cases, and the fifth part consider it more often misleading. Many of the respondents indicated that companies take steps to optimize profit, and often do that towards underdeclaration of it. Much of the respondents noted that measures used for underdeclaration of profit have certain limits because stable losses or low profits with revenue growth may inevitably arouse a suspicion of tax authorities. The desire to distort the value of this indicator in the direction of overstatement is typical for companies which consider reporting as the main source of information for foreign investors (Figure 2).

Typically, the analysis of such covert reports on the stage of negotiations and the signing of some contracts, analysts can incorrectly assess the financial position of an organization and effectiveness of its operations that could lead to wrong decisions. Problems with the reliability of profit indicators make it difficult to analyze profitability and other relative indicators of effectiveness of a company (Kulikova L.I., Goshunova A.V., 2014).

The results of evaluation of reliability and completeness of financial statements with respect to the market value of fixed assets have shown that about 20% of respondents believe this figure misleading. More than 40% believe this figure reliable in some cases, and over 20% of respondents reliable in most cases, and about 20% always reliable. This distrust of this important parameter may be explained by a representation in a balance sheet of the residual value of fixed assets what is not always in line with market estimates. According to respondents, this is due to the low value of this indicator for financial analysis purposes. According to respondents, unreliability of this indicator may be explained in a certain sense by the lack of the market where it would be possible to assess the real value of the objects. If to consider the results of the second

group of respondents, it can be noted that more than 60% of respondents believe the figure reliable, 20% consider reliable in most cases, and only about 4% believe this figure misleading. The higher reliability of this indicator is related to representation in the balance sheet of facilities in accordance with IFRS requirements where the fair value of facilities play a big role.

With regard to own funds, about 35% of the respondents noted that their figures in the financial statements are almost always reliable. Less than 20% said that these figures are reliable in most cases, and about a quarter - in individual cases. More than 20% of respondents noted that the data on the amount of own funds are unreliable in most cases because they do not give any idea about the actual amount of invested own funds and surplus funds available to the company. In practice, indicators of the authorized and additional capital often do not mean real investment in fixed or revolving funds. For example, a car may be used as a contribution, and really it is not used in the production (Kulikova L.I., Garyntsev A.G., Gafieva G.M., 2015). As respondents note, today financial statements format does not represent even for internal users how many own funds were actually invested in the business due to that it is difficult to assess their actual impact. Analysts receive incorrect assessment of solvency of the business partners as a result of incompleteness and unreliability of the data displayed in the balance sheet.

Survey of the second group of respondents showed that only about 5% of respondents believe the own funds index unreliable when more than 55% rely on its validity.

As to assessment of reliability of the information concerning the debts of an enterprise, almost 17% of respondents believe that it is almost always reliable, and nearly half believe that it is reliable in most cases. According to respondents, the main drawbacks of the information regarding the enterprise debt indicator are related to the fact that reporting does not allocate "arrears", but it is the figure which has particular importance in the assessment of financial stability and independence of the business partners. Survey results carry the inference that more important sources of information for management purposes are the "instruments of payment", payment schedules, and other similar issues that make it possible to avoid temporary problems with insolvency, as compared with the calculation of indicators on the basis of accounting data characterizing solvency, liquidity, and financial stability. According to the survey of the second group, it may be noted in relation to the reliability of the accounts payable that more than 60% believe this indicator is usually reliable when only 2% believe this figure misleading.

As to the indicator of debt to the company, assessments of reliability of information in the financial statements are even more conservative. Nearly half of respondents believe that this information is almost always or often reliable. About one-third believe that information about the receivables are valid only in certain cases. Less than 20% negatively evaluate the objectivity of the indicator. According to respondents, the main observation is also related to the lack of information on arrears, and dependence of calculations on the specific debtors.

The survey of respondents in the second group has showed that about 90% of respondents consider the indicator "receivables" as reliable when any one respondent has not spoken of unreliability of this indicator. It tells about that the companies forming the statements both in accordance with RAS and IFRS, the indicator of accounts receivable is less likely to contain false information.

RESULTS

Thus, analysis of the responses to the survey questions confirms our previous conclusion that the financial statements data are more in demand to external users than internal. The reason is the lack of other sources of information in external users, while internal users use all possible sources of additional information about the property and financial condition of the company.

To clarify the causes and frequency of demand for reporting by external organizations in management decision-making, we have studied the answers to the question: "Do you use the reported financials of other organizations to assess their financial condition in making decisions?"

According to results of the survey, about one-third of the respondents, in principle, do not use statements of external organizations as a source of information. Only one of ten top managers regularly use it as a source of complete and reliable information.

The main reason for lack of demand for the information represented in the financial statements is that the fulfillment of the legal requirements to reporting does not guarantee representation in it of the real picture of the financial status. An analysis of third-party reporting would be claimed even more than analysis of the own organization reporting, but not for the reasons of more confidence to it, and because of absence of other more reliable sources of information. (Kulikova L.I., Nesterov V.N., Vakhotina D.A., Yakhin I.I., 2015)

The need to use information about financial status for management decision-making is recognized by all the respondents, however, the majority of enterprises in the conditions of unreliability and incompleteness of the financial statements mainly uses other information from the accounting system.

In general, based on the analysis results for the survey of two groups of respondents it can be noted that financial statements figures of the companies that form their reporting in accordance both with RAS and IFRS are more reliable than of companies that use only RAS. This tells us that reporting in accordance with international financial reporting standards would make reporting more transparent and trustworthy.

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EFFICIENCY ASSESSMENT OF OUTSOURCING TRANSACTIONS

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ABSTRACT

Business development in modern conditions requires an enterprise to greater efforts in the direction of reducing costs to preserve and increase its competitive advantages. One of the ways to reduce costs is the outsourcing of non-core activities.

Outsourcing involves transition to outside organizations of certain business processes that are not core to a company. Typically, the following functions are most often outsourced: accounting, legal support, IT services, transport services, marketing, etc.

Currently, one of the main problems of outsourcing development is the fact that there is no clearly developed methodology for assessing the effectiveness of outsourcing and precision instruments to determine the effectiveness of outsourcing transactions.

Lack of quality assessment procedures of all the effects of outsourcing can lead to inefficient solutions in this area.

Therefore, in this paper there have been considered methods of determining the effectiveness of outsourcing, the basic tools used to evaluate the effectiveness of outsourcing transactions (economic and graphical methods).

The study has revealed the advantages and disadvantages of existing methods of decision-making about outsourcing, and offers recommendations for successful implementation of outsourcing.

Keywords: outsourcing, efficiency, risks, assessment of efficiency, recommendations.

INTRODUCTION

The purpose of the work is to study techniques (stages) for decision-making on outsourcing, as well as the tools (methods) for assessment of efficiency of outsourcing.

Russian outsourcing services market grows, and the economic crisis is the impetus for its development. The theory of outsourcing and practice of its application in enterprises need their further development.

At the time of completion of the study the main stages of transition to outsourcing, as well as the tools (methods) applicable to assess the feasibility of outsourcing were discussed and studied.

In the study, new issues were emerged that requires a more detailed and in-depth consideration: an analysis of the actual condition of a company, risk analysis and assessment (examination of quantitative risks assessment for cooperation between an outsourcer and a customer), consideration of instruments of control for outsourcing.

METHODS

Outsourcing is a commonplace practice for both manufacturers and service providers, largely because of increased supply chain competitiveness of the global environment (J.N. Kenyon, M.J. Meixell, P.H. Westfall., 2016).

Researchers have indicated that reducing cost is the primary impetus of outsourcing (Julie Yu-Chih Liu, Asri Rizki Yulian, 2016).

Besides the cost savings, outsourcing has some other advantages, including decreasing the time to market and increasing the quality of work (Xiaowei Zhu, 2016).

The main condition for a positive effect of outsourcing is its reasonable and competent implementation within existing business processes in an enterprise (Anikin B.A., Rudaya I.L., 2009).

Transition to outsourcing is expedient if it leads to an increase in the functionally good organization of the system and consequently to increase the efficiency of the whole activity of a company (Moiseeva N.K., Malyutina O.N., Moskvina I.A., 2012).

Outsourcing decision can allow firms not only to reduce expected costs, but also to enhance their portfolio of capabilities as well as the potential to create value (Kebing Chena, Tiaojun Xiao, 2015).

An important decision faced by any organization is which activities it will engage in itself and which it will outsource (Christina Marsh Dalton, Patrick L. Warren, 2016).

The decision making process on transition of some functions to outsourcing usually consists of several stages.

In the scientific literature there are many different models of transition to outsourcing.

In our opinion, the technique of transition to outsourcing should include the following stages.

1) Analysis of the actual condition of the company and formation of the outsourcing goals.

The main purpose of transition to outsourcing is to be more efficient. In addition to achieving the main goal of transition to outsourcing, the use of outsourcing should lead the organization to better compliance with market demands what is reflected by the complex of objectives. Achieving the goals shows that outsourcing can bring a positive effect (Anikin B.A., Rudaya I.L., 2009).

Analysis of the actual condition of the company may include: identification of existing business processes, analysis of financial and economic activity of the company, and the need for changes in the company.

2) Definition of business processes to transition to outsourcing.

When deciding on services which could be candidates for outsourcing it is necessary to define a set of criteria that should be taken into account. It is possible to define among the criteria a group of "cut-off criteria", i.e. criteria that have the greatest weight in the decision, such as information security criteria, business continuity criterion, etc. (Access mode: http://bpm.ucoz.ru/publ/autsorsing/analiz_ehffektivnosti_autsorsinga/20-1-0-54, 20.03.2016).

3) Analysis and assessment of risks.

There could be identified the following outsourcing risks: risks related to providing no services, risks related to insufficient quality of outsourcing, risks related to information leakage, risks associated with dissolution of contractual relationships, risks of underestimating the cost of outsourcing, and other risks.

Outsourcing risk management should be carried out for the entire period of preparation and implementation of an outsourcing solution. Risk analysis affects the successful adoption of the decision to outsource.

4) Search and selection of outsourcers

Outsourcers should be selected considering the prices offered for the services, and letters of recommendation.

At this stage a corresponding package of documents is also developed what allows the legal, economic and ethical issues to take into account that arise between the parties to the agreement.

5) The analysis of outsourcing use efficiency

At the moment, there are various indicators, techniques, and approaches to assess the effectiveness of outsourcing services. When accepting the decision to outsource some functions it is necessary to analyze financial and organization expenses. The task of outsourcing efficiency analysis requires an individual solution for each company.

The basic criteria for assessment of transition to outsourcing and their features are used for complex characteristics of the organization.

The need for change is assessed using the *function actualization factor (Ff.a.)*.

$$Ff.a. = F_n / F_{tot} \quad (1)$$

where F_n - nominal function (business process);

F_{tot} - total number of real functions (business processes).

The organization competence criterion may be represented by a *function implementation factor* or *functions concentration factor (Fi.f.)*.

$$Fi.f. = F_{core} / F_{tot} \quad (2)$$

where F_{core} - number of core functions (corresponding to competencies)

The *functional breadth factor (Ff.br.)* can be used as a criterion for the opportunities of the organization.

$$Ff.br. = F_p / F_{tot} \quad (3)$$

where F_p - number of potential functions

Assessment of readiness of the organization to transformations can be given by a *functions compatibility factor (Ff.c.)*.

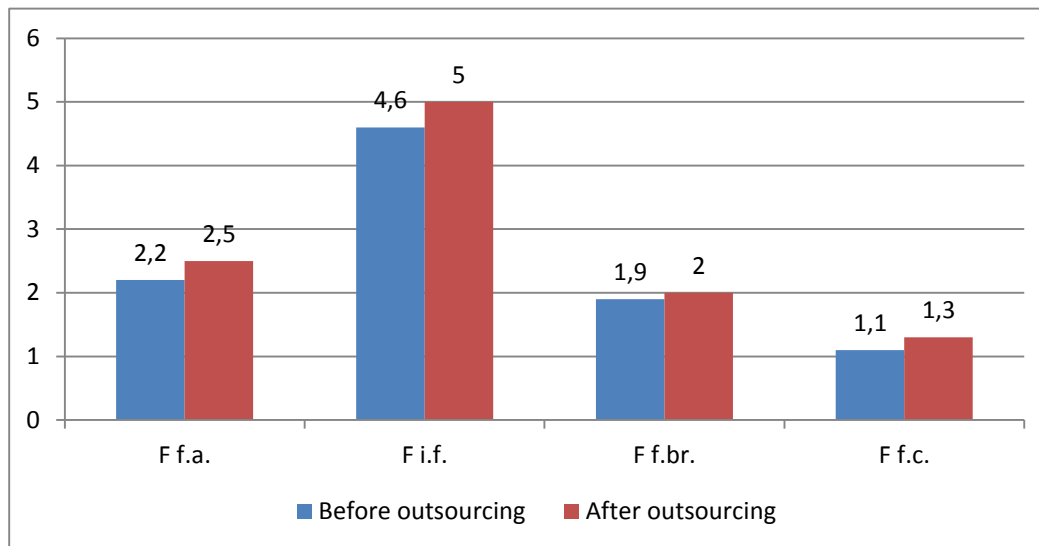
$$Ff.c. = 1 - F_c / F_{tot} \quad (4)$$

where F_c - number of coordination functions

Transition to outsourcing is expedient if it leads to an improvement in the functionally good organization of the system and consequently to increase in the efficiency of the whole activity (Moiseeva N.K., Malyutina O.N., Moskvina I.A., 2012).

Partial indicators of functionally good organization are calculated and compared before outsourcing and after outsourcing. Changes in functionally good organization are represented in the diagram (Figure 1):

Figure 1
CHANGES IN THE FUNCTIONALLY GOOD ORGANIZATION AFTER THE USE OF OUTSOURCING.



6) Implementation of outsourcing

Development and signing an outsourcing contract. Transition of a company to the new format of work.

7) Development and adoption of a control mechanism

Control is inherently part of the outsourcing processes. Outsourcing control function allows the required data to get on effectiveness of the use of this technology in the enterprise.

Classification of techniques (tools) on calculating the efficiency of outsourcing transactions.

Existing techniques of decision-making on application and effectiveness of outsourcing can be divided into two groups:

- 1) Economical (theoretical)
- 2) Graphical.

1) The group of economical techniques is based on calculation of costs upon in-house execution of functions and their comparison to the expenses upon outsourcing (Table 1) (Igatiev A.V., 2012).

Table 1
ECONOMICAL TECHNIQUES FOR ASSESSMENT OF APPROPRIATENESS OF OUTSOURCING:

Technique	Essence of the technique	Author of the technique
Quantification of material costs Cost estimation with breakdown to processes	Cost estimation for production on their own compared to the purchase Method of calculation with breakdown to processes	B.A. Anikin, I.L. Rudaya
Quantitative estimation of costs and expenses	Comparison of own costs and the expenses for outsourcing	S. M. Kazantseva
Quantitative estimation of labor costs	Comparison of the costs for an own employee and an external performer for a one-time work	S. Zatsepa

1) For example, the costs should be considered in the cost calculation with breakdown to processes that may be reduced in the course of outsourcing: staff costs, costs for production facilities, inventory holding costs, capital goods expenditure, management costs. Next, it is necessary to compare the costs for purchasing the results of execution of these functions from an outsourcer and the costs for own production.

If the ratio

(The costs of own production / purchase costs) > 1 (5),

In this case, the purchasing of outsourcing services is preferable.

If the ratio

(The costs of own production / purchase costs) < 1 (6),

In this case, the implementation of a business process on its own is preferred, since its transition to an external organization will not bring benefits in the form of cost reduction. (Petrova I.V., 2014)

2) For the comparison of own costs and the costs of outsourcing a list of cost and expenditure items is provided that should be included in one group or another.

Own costs: production and salary, raw materials and logistics, working capital, lost profits (transaction costs for outsourcing).

Outsourcing costs: expected price change, non-recurring costs of outsourcing, incremental operating costs for outsourcing (Kazantseva S.M., 2003).

3) It is proposed to compare the costs for an own employee and an external performer for a one-time work by the formula:

$$D = \frac{X \cdot (Z + K)}{T} - A \quad (7),$$

Where

X - prospective employee labor costs (in hours);

Z - value of the monthly salary;

K - value of indirect costs per employee per month (social package, provision of a workplace, etc...)

T - number of working hours per month (typically, 176);

A - cost of services of an outsourcing company.

D is a difference, and if it is positive, it will be more profitable to use the services of an outsourcing company than do the job by forces of a full-time professional. (Zatsepa S., 2006)

A variety of techniques is due to different approaches to assessment and the diversity of outsourcing types for each of which an individual calculation (Anikin B.A., Rudaya I.L., 2009) may be offered.

2) The second group of tools to assess the effectiveness of outsourcing: charts, matrices, algorithms.

A) As an example, let's consider the algorithm proposed by the company PriceWarehouseCoopers.

The analysis is carried out on two factors: competition and the strategic importance of an asset. Variants of combination of these factors in a matrix provide four alternate solutions. Outsourcing is only necessary when the following factors are combined: the competitive importance is high - the strategic importance is low.

The algorithm is easy to implement and helps to make a decision on the need for outsourcing.

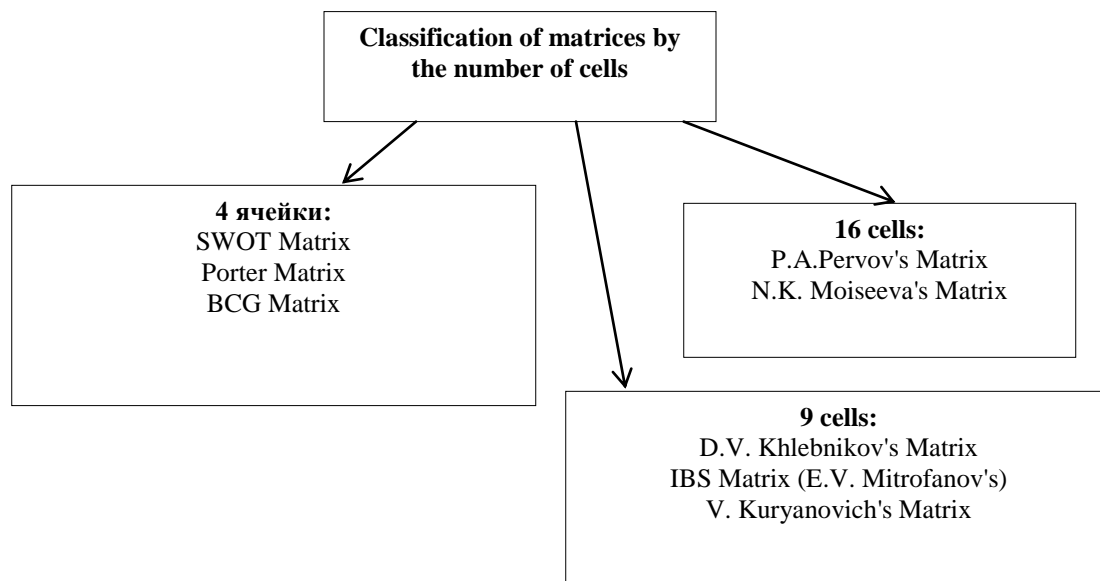
B) The method of matrix analysis of processes on feasibility of transition to outsourcing is quite often used at the stage of strategic analysis and planning.

The matrices can be classified by the number of cells studied.

The more cells are included in a matrix, the more complex and more informative it is. In this case, matrices may be divided into three groups.

The first group includes matrices consisting of four cells. The second group includes matrices consisting of nine cells, and the third - sixteen cells (Figure 2).

Figure 2
CLASSIFICATION OF MATRICES BY THE NUMBER OF CELLS



Using only the matrix methods is not sufficient, since the matrices allow us to study the strategic planning from particular points of view, and do not show the full picture, but in conjunction with other methods, the matrix approach makes it possible to clearly see patterns in the processes taking place in the enterprise, and to draw correct conclusions.

SWOT matrix and Porter's matrix are applicable at the stage of strategic analysis and planning during transition of an organization to outsourcing

SWOT matrix is used to analyze the strengths and weaknesses of the company, its opportunities and threats, for the analysis of the company's status.

Porter's Matrix (five competitive forces) is used for the analysis of strategic business perspectives, the analysis of an industry and competition in it.

BCG matrix, D.V. Khlebnikov's matrix, V. Kuryanovich's matrix, IBS matrix, P.A. Pervov's matrix, N.K. Moiseeva matrix, and others can be used, for example, to analyze growth rates and a market share, as well as to determine the "excess businesses".

Let's consider in the capacity of an example of a matrix method *the methodology for transition to outsourcing by D.V.Hlebnikov*.

D. Khlebnikov's outsourcing matrix is a two-factor analysis tool. The analysis is carried out for two main factors: the strategic importance and the quality of competence in comparison with competitors and the market in general what is measured at three levels.

Various indicators should be inserted in corresponding matrix fields, and options of the administrative decisions are developed as a result of this action.

Matrix methods play a very important role in the strategic analysis, planning, so they are often used.

B) Also, graphics can be used as a tool for assessment of efficiency. So, the *McKinsey outsourcing model* may be represented as an example.

The McKinsey model reflects two criteria: Y-axis represents the profitability of non-core assets (net costs and a contribution to organization's profit are estimated) and X axis represents involvement in the process chain on creation of a value to customer (the degree of involvement is estimated by experts). Dots on the field designate business units or units ready to outsourcing.

Graphic McKinsey model is convenient to use when deciding whether outsourcing is necessary (Mukhina I.S., 2008).

Thus, using such tools for assessing effectiveness of outsourcing as algorithms, matrices, graphs, it is necessary to bear in mind that these techniques do not provide specific stages, recommendations, and steps for their application, so for their use in practice there should be a high degree of professionalism and availability of special skills or attraction of third-party experts and consultants.

RESULTS

The study has systematized the main stages of transition to outsourcing and tools (methods) for assessment of outsourcing effectiveness.

Thus, it is impossible to outline the distinct advantages of own production and the benefits of third-party services without accurate information. First, a third-party organization must provide a clear description of the business process, to evaluate the influencing factors. In addition, the choice of a form for organization of interaction with a partner and a specific outsourcer is based not only on the data on possible costs, but also on other criteria. The final objectives of the analysis upon development of an outsourcing project is to optimize a business process, to minimize the time and costs, to determine the degree of powers and responsibility of each party.

CONCLUSION

Thus, the main condition for a positive effect of outsourcing is its reasonable and competent implementation within existing business processes in an enterprise. Transition of functions to outsourcing is a complex process that requires elaboration of each stage. There is no clearly developed techniques for determining the effectiveness of outsourcing. In our opinion, the algorithm proposed above is easy to use and efficient to assess the effect of outsourcing.

From the material discussed above there may be noted the main advantages and disadvantages of each group of tools (techniques) for evaluation of outsourcing effectiveness (Table 2).

Table 2
COMPARATIVE ANALYSIS OF EXISTING TECHNIQUES

Technique	Benefits	Disadvantages	Recommendations
1. Economic (theoretical, numerical) techniques	<ul style="list-style-type: none"> - Getting specific data which allow an objective comparison of the various options. Indicators allow comparison of the costs before and after implementation of outsourcing. 	<ul style="list-style-type: none"> - Increased attention to the cost component. - Do not take into account the strategic aspects, qualitative and subjective factors, and other parameters considered in matrices and algorithms. - Do not take into account importance of work / competence / business processes. 	To overcome the imperfections of these approaches it is necessary to include strategic aspect to the economic group.
2. Graphic techniques	<ul style="list-style-type: none"> - Visibility. - Availability of both economic and non-economic components. - Availability of versatile evaluation criteria. 	<ul style="list-style-type: none"> - Do not allow taking into account the specifics of the industry, to get clear results (numbers), and give a definite answer to the question of the feasibility of outsourcing in a particular situation. 	Graphic group should be complemented by computational methods.

In our view, using the economic technique of decision-making is convenient for the method proposed by B.A. Anikin on cost evaluation with breakdown to processes.

Matrix methods are a useful tool when carrying out a preliminary assessment of feasibility of transition to the outsourcing of various business components.

CONCLUSION

Thus, outsourcing makes it possible to regroup organizational, material, human and financial resources for development of new fields of activity. Preliminary feasibility study of an outsourcing project involves assessment of the production cost of products or services on their own compared to the cost of purchase.

The proposed method for assessment of outsourcing effectiveness allows a participant to determine in advance the risks and benefits that accompany the outsourcing. This allows contractors to make the right decision without significant investment and irreversible changes on whether outsourcing is expedient.

It should be noted that the proposed method may be recommended for organizations regardless of their ownership and spheres of activity.

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METHODS OF OPTIMIZATION OF ECONOMIC SYSTEMS AS A MECHANISM FOR THE EFFECTIVENESS OF TRAINING IT PROFESSIONALS IN HIGH SCHOOL

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ABSTRACT

The article deals with in-depth and comprehensive study of the techniques of economic systems optimization, identification of the theoretical foundations, trends, pedagogical conditions and means of forming the subject competence of students of information directions of bachelors degree program. A model of an individual trajectory of the natural sciences and professional training on the example of an in-depth development of economic systems optimization methods was proposed and the mechanism of its implementation was considered. As the result of the taken study the authors have proposed and justified the application of a set of professionally-designed tasks of training for IT professionals in the field of economics, methods of optimization of economic systems as a mechanism for the effectiveness of training IT professionals, methods of mathematical modeling, in order to improve teaching methods, implementation of more effective mechanisms for training of IT professionals in the learning process are discussed.

Methods of optimization of economic systems are important components of the training of future analysts and IT professionals. The use of traditional teaching methods in modern society is no longer enough to train IT professionals in the field of economy. There is a necessity to improve teaching methods, to introduce more effective ones into the educational process, managing the process of assimilation of knowledge, forming ability and skills, which are aimed at developing of a sustained conscious positive attitude towards their profession of future IT specialist, independent decision-making with problematic tasks, related to the exercise of professional functions.

Keywords: *economic systems, optimization methods, duality theory, professionally-designed tasks, personal trajectory, subject competence.*

INTRODUCTION

Over the years, it textbooks, manuals and monographs of national and foreign authors have been developed and published, revealing the contents of a number of economic systems optimization techniques, as one of the important components of training of future analysts and IT professionals. However, to maintain a high level of education in the conditions of applying only traditional teaching methods with modern circumstances of saturated flow of information becomes increasingly difficult. Teachers in Higher School are required to regularly look for new methods and forms of educational activities to improve teaching methods, to introduce more

effective ones into the educational process, managing the process of assimilation of knowledge, forming skills and habits (Khutorskoy A.V., 2007).

Education of Bachelor in the field of Applied Informatics, Business Informatics, Applied Mathematics and Computer Science must be based on fundamental concepts, methods and ways of implementation of certain algorithms of mathematical processing in a particular subject training on information flows (incoming, outgoing and in-subject ones), which are the most dynamic part of the learning process that unite the components of the preparation model into a coherent whole and ensure communication with the external environment. At the same time we should not forget about the integration components while teaching cycle of mathematical disciplines of professional cycle due to showing parallels of linkages not only between these sciences, but also, where possible, with the real processes and phenomena occurring in the world, including in the framework of the future professional activity of students (Eremin I.I., Karpova N.V., 2014).

METHODS

We will consider individual trajectory of natural science and professional training on the example of the in-depth development of economic systems optimization methods. Technique of realization of such a trajectory is based on the principles of educational activity, adaptability, problematicity, flexibility, constructive interaction, imitational simulation (Eremina I.I., Safargaleev E.R., Sawicki S.K., V.A. Komelina, 2015). This arrangement of presentation of material will allow the student to prepare for the procedures of the intermediate control within the divisions: construction of mathematical models of linear programming problems, graphical solution of problems with two variables, duality theory, models and methods of integer programming, methods for solving the transport problem, elements of game theory in the tasks of economic situations modeling classical methods of optimization and so on.

During implementation of the technique we used educational material that not only encompasses the object of knowledge, it also does this deeply and comprehensively. Thus the presentation of theoretical material is accompanied with a large number of analyzed in detail examples of solving problems, which facilitates the absorption of theorems proofs and the algorithms work (I.I. Eremina, Gareeva G.A., Fayzullina A.G., 2014).

RESULTS

Analyzing the use of the complex of tasks by stages of professional training of the future IT specialist and experience of the use of the proposed development of the economic system optimization techniques, we noticed that the pedagogical purposes of formation at students skill to see the problem on their own and direct their mental and research activities to the resolution of this problem is most effectively implemented when interest to use mathematical apparatus in their educational activity we project onto the future professional activity and motivate students with solution of problem tasks and assignments that have practice-oriented and professional direction and have creative character (Gareeva G.A. Grigorieva D.R., D.M., 2015).

Variability of the presented tasks allows to control development of the main sections of the disciplines of subject preparation, to assess the level of knowledge of the theoretical foundations of linear programming, practical skills of using these technologies in their professional activities.

The problem, contained in the object of knowledge, is considered from the standpoint of the active component: methods of the cognitive activity and technological algorithms and instruments of implementation (Novikov A.M., 2009).

For example, when considering the dual linear programming problem special techniques to resolve problem situations are used - to see and to formulate the problem of the origin and use of dual problems, to find contradictions in the use of the classical simplex method in the duality theory, to consider different perspectives on the same problem, to use the methods of scientific knowledge (to hypothesize, to conduct synthesis and analysis, to classify the concepts and results of knowledge, to generalize information, to carry out reflection of one's actions). As an example, let us consider a substantial component of the problem situation in the study of the theory of duality - the supply of theoretical material, theorems and proofs in an accessible form thoroughly and comprehensively (Grigorieva D.R., Fayzullina A.G., Basyrov R.R. Sharipov R.S., 2015). To do this, the following issues are considered:

- types of dual tasks,
- economic interpretation of the original and the dual problem,
- rules for drawing up the dual problem,
- lemmas and theorems with proofs.

For the study of this section of linear programming it is necessary to consider the lemmas and theorems with proofs (Halus, O. M., 2007).

Lemma (basic inequality of duality theory)

For any feasible solutions $x = (x_1, \dots, x_n)$ of the original problem

$$\left\{ \begin{array}{l} F = \sum_{j=1}^n c_j x_j \rightarrow \max \\ \sum_{j=1}^n a_{ij} x_j \leq b_i, i = \overline{1, m} \\ x_j \geq 0, j = \overline{1, n} \end{array} \right.$$

And $y = (y_1, \dots, y_m)$ of dual problem

$$\left\{ \begin{array}{l} Z = \sum_{i=1}^m b_i y_i \rightarrow \min \\ \sum_{i=1}^m a_{ij} y_i \geq c_j, j = \overline{1, n} \\ y_i \geq 0, i = \overline{1, m} \end{array} \right.$$

Inequality holds true:

$$F(x) \leq Z(y)$$

Proof:

$$\begin{aligned}
 F(x) &= \sum_{j=1}^n c_j \cdot x_j \leq \sum_{j=1}^n \left(\sum_{i=1}^m a_{ij} y_i \right) x_j = \\
 &= \sum_{i=1}^m y_i \left(\sum_{j=1}^n a_{ij} x_j \right) \leq \sum_{i=1}^m y_i b_i = Z(y)
 \end{aligned}$$

As a criterion of optimality of Kantorovich the theorem with proof is suggested.

If for feasible solutions x^* and y^* is executed $F(x^*) = Z(y^*)$, then x^* is optimal for the original problem, y^* - optimal for the dual problem.

Evidence:

For any admissible x and y^* valid $F(x) \leq Z(y^*)$. By condition $F(x^*) = Z(y^*)$.

Therefore, for any valid $F(x^*) = Z(y^*)$: i.e. x^* - is optimal for the original problem.

Similarly for y^* .

For the full development and use in economic problems in the context of the proposed method economic sense of Kantorovich optimality criterion is shown:

The plan of production x and resources evaluation y is optimal when the price of the entire production output equals the total valuation of resources.

Technological tools and technological methods, used by the teacher, are selected on the basis of the didactic principles of expediency, scientificity, systemacity, consciousness, cognitive activity, effectiveness and accessibility for students. These are the tools that simplify the process of learning. Mathematical apparatus is one of such effective technological tools in the development of economic systems optimization methods (Hutton, D. M., 2009).

For example, the next step is to introduce the students of economic and technical colleges with the basic theorems of duality. We will show the use of mathematical apparatus as a technological tool of problem solving tasks.

The first (primary) duality theorem

Theorem. If one of the mutually dual problems has an optimal solution, then the other has an optimal solution as well, while $F_{\max} = Z_{\min}$. If one of the mutually dual tasks objective function is not restricted (F - top, Z - bottom), the conditions of the other task are contradictory.

Evidence:

Let us prove the first assertion. In the original and dual problems we introduce additional variables so as to obtain the canonical problem and in the original problem instead of the maximum of the function F , we will solve the identical problem of finding the minimum of the function $(-F)$:

$$\begin{cases}
 -F = -\sum_{j=1}^n c_j \cdot x_j \rightarrow \min \\
 \sum_{j=1}^n a_{ij} \cdot x_j + x_{n+i} = b_i, i = \overline{1, m} \\
 x_j \geq 0, j = \overline{1, n+m}
 \end{cases}$$

$$\left\{ \begin{array}{l} Z = \sum_{i=1}^m b_i \cdot y_i \rightarrow \min \\ \sum_{i=1}^m (-a_{ij}) y_i + y_{m+j} = c_j, j = \overline{1, n} \\ y_i \geq 0, i = \overline{1, n+m} \end{array} \right.$$

We set up the correspondence between the variables of the original problem and the dual problem.

Table 1
THE CORRESPONDENCE BETWEEN THE VARIABLES OF THE ORIGINAL AND THE DUAL PROBLEM

Original problem	
Initial	additional
x_1, \dots, x_n	x_{n+1}, \dots, x_{n+m}
↕	↕
y_{m+1}, \dots, y_{m+n}	y_1, \dots, y_m
additional	initial
Dual task	

We set up the first simplex tables for the original and dual problems (1) and (2). Let the element a_{rs} - be permissive, i.e., instead of the base variable x_{n+r} we set x_s . Because x_s matches y_{m+s} and x_{n+r} matches y_r , then in the dual problem instead of the basic variable y_{m+s} we enter y_r . According to the rule of the rectangle the elements of the simplex table in the original problem are changed according to the formula:

$$a'_{ij} = \frac{a_{ij} \cdot a_{rs} - a_{rj} \cdot a_{is}}{a_{rs}}$$

On the assumption of (2) in the dual problem the elements of simplex table are changed according to the formula:

$$(-a'_{ij}) = \frac{(-a_{ij})(-a_{rs}) - (-a_{rj})(-a_{is})}{-a_{rs}} = -\frac{a_{ij} \cdot a_{rs} - a_{rj} \cdot a_{is}}{a_{rs}}$$

For the column B and last row of the simplex table we have similar formulas. If the original problem has an optimal solution, then after a finite number of steps a simplex table will

be created, the last row of which all elements Δ_j (except, perhaps, for Δ_0) are non-positive, and in the column B all the elements will be non-negative (except maybe for the value of the objective function Δ_0). By the virtue of compliance of factors in mutually dual problems in the simplex table of the dual task that corresponds to the optimum simplex table of the original problem in the column B non-negative elements will be located, and the last line will contain non-positive elements (because the lines of simplex table of the original problem coincide with the columns of the simplex table of the dual problem, taken with the opposite sign).

Consequently, the maximum of function F coincides with the minimum of function Z .

The proof of the second part of the theorem.

Let the function F is unbounded above ($-F$ –below). Then in a simplex table in a column, corresponding to the free variable, all the elements (except maybe the last one) are non-positive. In the corresponding line of simplex table of the dual problem a free element will be negative, the other line items will be non-negative. This cannot be, therefore, there is a contradictory of conditions of the dual problem.

During the proof of the duality theorems it is necessary to study the criterion of incompatibility of the original restrictions:

If in some problem some limitation has the right side of <0 , and in the left side all the coefficients are non-negative, then the conditions of the task are incompatible, i.e. task does not have an acceptable solution.

Evidence:

- x – always non-negative. If a non-negative x is multiplied by a non-negative coefficient, a non-negative number appears, which cannot be \leq of a negative number, i.e. conditions are incompatible.

In the continuation of the study of the theorem the economic sense is considered.

Similarly, students receive theoretical material on the second and third duality theorem and their economic interpretation.

This linear programming problem also involves the study of the following aspects: the intervals of stability of dual estimates, the rate of substitution of resources, the inverse matrix method and the dual problem (Guskey, T.R., 2002).

DISCUSSION

In the course of the applied methodology and examination of knowledge of the subject from the perspective of the activity component in order to achieve the proper level of readiness of the future IT specialist for professional work, it is necessary that the learning process was profession-oriented, aimed at developing with future IT specialist a sustained conscious positive attitude towards their profession, independent decision-making in problem tasks related to the implementation of professional functions. In addition, the increase in the level of problemacy of professionally-oriented tasks entails an increase in the need for in-depth development of methods of optimization of economic systems with a parallel increase in the level of activity and independence of students in solving them. Therefore, on the basis of the received theoretical knowledge the student is ready to move on to mastering solved practical solutions of problems, which in turn facilitates the understanding of the theorems and proofs of the algorithms. At the end of the study of the duality theme to consolidate theoretical knowledge and practical skills independent performance of individual tasks is suggested.

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INTEGRATION OF COMPREHENSIVE AND INNOVATIVE APPROACH IN TEACHING STUDENTS-SPORTSMEN

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ABSTRACT

This article deals with the author's vision of teaching students-athletes the discipline "Natural-science foundations of physical culture and sports: Physics" (hereinafter, physics) based on the integration of module, personal-activity, competence, historical, concentrated, problematic approaches. The modular approach involves division of educational material into thematic units (modules), and the result of their study is assessed according to the score-rating system of students' knowledge evaluation. Self-educational skills of work with information resources generated with the students during the study of computer science, allow them to independently develop other disciplines using distance education resources and technologies in a virtual educational environment of higher school of physical education. As a result, each student-athlete receives equal educational opportunities. Personal-activity approach defines student-athlete as a subject of activity. Each student-athlete realizes his individual educational trajectory, which includes a variety of activities: educational and cognitive, social and communicative, training and competitive. The principles of competence approach allow us to determine the meaning and content of education, sense of organization of educational process, assessment of the educational results of student-athletes. Using the historical approach is reflected in the structure of the presentation of the material being studied, where sufficient attention is paid to the evolution not only of the studied laws of physics, but also to sporting achievements. Problematic approach in our study allows us to pose the problematic tasks: to explain the sports phenomena from the point of view of the laws of physics. Integration of the above mentioned approaches have determined the structure of the material partition in the blocks: "historical block", "Block of knowledge actualization", "Theoretical block", etc. Such an unusual approach to the study of discipline will contribute to a better understanding of natural science picture of the world, the formation of the ability of students-athletes to use and transform the laws of natural sciences disciplines in the field of sports and physical culture.

Keywords: *complex training, modular approach, personal-activity approach, competence approach, concentrated approach.*

INTRODUCTION

In the practice of teaching activities methods of complex use of modern learning approaches are becoming increasingly popular (Rubtsov, V.A., Gabdrakhmanov N.K., Mustafin, M.R., Arzhantseva, N.V., 2015; Rubtzov, V.A., Gabdrakhmanov N.K., Mustafin, M.R.,

Pratchenko, O.V., 2015). They combine modular, personal-activity, problematic, competence, historical and concentrated approaches. Each of them deserves special attention and is of equal importance in the preparation of educational process.

RESEARCH METHODS

Analysis of literature sources on the subject in question, practical experience and observation.

METHODS

According to the *modular approach* learning information should be provided in blocks (modules), the result of the study of which is estimated by the rating system of assessment. Communication between the trainee and learning one happens through modules and private individual communication, while the student works independently as much as possible, learning self-organization and self-planning (Goldschmid, B., 1972; Russel, J.D., 1974; Tomilin K.A., 2006; Yutsyavichene P.A., 1990). Let us consider the interpretation of the main provisions of the modular approach to teach discipline "Physics" in FGBOU VO «Volga Region State Academy of Physical Culture, Sports and Tourism" (hereinafter Academy) to students-athletes.

All course material is divided into blocks (modules), while the partition is not only in the complexity of the studied material (initial, basic and advanced levels), but also in thematic blocks, "Problem setting", "Historical block", "Block of actualization of knowledge" "Theoretical block", "Self-control block", "Expansion and deepening of knowledge block", "Independent work block", "Literature". All learning material is distributed in two training modules and posted on the remote learning platform *Moodle*, which is one of the main tools of the virtual educational environment of higher school (Policies, Pedagogy and Professional Development, 2000). Assessment of learning results takes place according to the "Regulations on the score-rating assessment of students' knowledge", introduced in the Academy. The scores obtained by students, are recorded in an electronic log 1C.

Students-athletes are forced, in connection with the preparation and participation in competitions, to be geographically separated from the teacher and the school most of the time. Therefore, self-organization, self-education plays an important role for them to be able to simultaneously carry out various activities: training and competitive, educational and cognitive, social and communicative, all of which is an individual educational trajectory of a student-athlete. This is facilitated by self-education skills to work with information resources generated by them during the study of discipline "Computer science", and later used by them in the study of other disciplines, such as physics. These skills allow at any convenient time student-athletes, anywhere to learn the discipline to give methodological assistance of the teacher, the technical support of IT staff, administrative management. Thus, thanks to the capabilities of Moodle environment and self abilities and skills to work with information resources formed by the students, it is possible to chat communication between all the actors of the educational process in high school physical education.

On the basis of *personal-activity approach* a person is treated as the subject of activity, which in itself, being formed in the activities and to communicate with others, determines the nature of the activity and communication. It is necessary to take into account the interests of students, each of them - personality, creative personality. Education – is an interaction,

communication (problem) tasks solution (Bondarevskaya, E.V., 2000; Leontiev A.N., 1983; Yakimanskaya, I.S., 2000).

Indeed, the identity of each student-athlete is unique, not similar to others, and we can only conditionally divide them into groups, depending on the form of their education, training intensity of competitive activity, psychological, physiological, age and other characteristics. So according to the intensity of the training-competitive activities athletes-students are taught either full-time or full-time with an individual plan of study or by correspondence. The virtual educational environment of higher school is focused on the development and self-development of students-athletes, providing them with equal educational opportunities - access to quality education. Thus, each student-athlete is able to realize themselves in learning and cognitive activity according to their abilities, interests, aptitudes, training and competitive activity intensity and form of education.

The virtual learning environment allows you to simulate a variety of educational situations that require individual, personal approach and solution of problematic tasks contribute to the development of students' thinking, the formation of their ability to transform the laws of natural sciences in the field of physical culture and sports.

At the core of *problematic learning* are the ideas of the American psychologist, philosopher and educator John Dewey, who laid the learning foundation not the curriculum, but the games and work. Scheme of problematic learning involves a sequence of specific procedures: setting educational and problematic task, the creation of the problem situation, understanding and solution of the problem, which resulted in the learners master the generalized methods of acquiring new knowledge and in the future the ability to apply them to solve specific systems of problems (Choshanov, M.A., 1996; Makhmutov M.I., 1977).

Each topic is studied with formulation of the problem: a vivid example from the world of sports is taken, it creates a problem situation, which is proposed to be solved by the students on the basis of previous knowledge of school physics course or own sports experience. With some problematic challenges the students cope on their own, but most problematic situations require new theoretical knowledge, which they receive in the study of the "theoretical block."

According to research in the field of *competence approach*: competency is a requirement of the educational training of students, and competence is a mature personal quality (or a number of qualities) and minimal experience in relation to the activities in this area (Zimnyaya I.A., 2003; Serikov, V.V., 2003; Khutorskoy A.V., 2003). Based on the experience of researchers in the field of this approach, as well as on our own observations, we denote its main provisions from the perspective of educational process in higher school of physical education, in general, and in the student-athlete's training of the discipline "Physics", in particular.

Educational process in higher school of physical training is aimed at the formation of the general and professional competences. The virtual educational environment of higher school allows you to create the following main *core competencies* of a student-athlete:

- *Educational and cognitive*: skills of planning, organization and implementation of teaching and learning process in accordance with the training-competitive activities;
- *Informational*: Self-educational skills to work with information resources;
- *Communicational*: skills of active communicative interaction with all subjects of the educational process in higher school physical education.

Based on the principles of competence-based approach:

- Sense of *education* is to develop in a athlete-student some abilities to make independent decisions in different areas of his activities (teaching and learning, training and competition, social and communicative) through the use of the previous social, including their own experience;

- Content of education is expressed in didactically adapted to the student-athlete social experience of solving learning and cognitive, ideological, social and other problems;

- Sense of *organization of educational process* is to create optimal conditions for teaching and cognitive, training and competition, social and communicative activities of student-athlete;

- *Evaluation of educational outcomes* is the level of training of the student-athlete, achieved at a certain stage of education, and others.

The use of the *historical approach* determines the method of studying the nature and content of natural and social objects where the focus is on the formation, development and dynamics of the objects under study.

This approach allows us to consider the studied laws of physics in terms of their evolution. Gremzel argued that the teaching of physics is most effective if it is in its main features in the path of historical development of science. But we cannot agree with K. Hahn, who argued that it is impossible to present to students the historical course of the question, if they do not know a modern look to it (Tomilin K.A., 2006).

The use of this approach has identified the presence of the "historical block" material in the structure of the study which reflects not only the key dates associated with the discovery of that or this law, but also certain sporting achievements. There is a parallel in the study of the laws of physics and their transformation in the explanation of certain sporting events. At the same time the most striking examples from the world of sports are selected.

Concentrated approach involves the study of a big amount of educational information without increasing the training time due to the greater its systematization (summarizing, structuring). Concentrated training is directed to an in-depth study of subjects by combining the material (lessons) in thematic blocks. It is necessary to take into account the dynamics of the trainees' performance (G.I. Ibragimov, 2011).

According to FGOS VO for the students-athletes of direction 49.03.01 "Physical culture" 6 hours of lectures and 18 hours of practical training are allocated for the study of the subject "Physics". Such a small number of classroom hours does not always allow students to master their respective competencies, especially for those student-athletes who are often absent from classes in connection with training and competitions. Concentrated approach has allowed us to organize and summarize a large amount of information, breaking material to the respective blocks. Study of the subject is possible both full-time and distance. Thus, all students-athletes, regardless of the form of training, have access to training materials.

Integration of the approaches discussed above allows to achieve the unity and integrity of the learning process on basis of the relationship to individual specific elements.

RESULTS AND DISCUSSION

Let us consider on the example of one of the classes the use of the integration of the abovementioned approaches in teaching students-athletes "Physics" discipline.

After the title of the topic a brief quotation of an athlete is given that has a direct bearing on this phenomenon; or an excerpt from the folk wisdom, saying that reflect the meaning of the law of the studied physical phenomena, etc.

LESSON № VIBRATIONAL MOTION. RESONANCE. POLE VAULT

"All connections between phenomena are established exclusively by all sorts of simple and complex resonances – coordinated vibrations of physical systems"
N. Tesla

Initial level of material study includes the following blocks: "Problem setting", "Historical block", "Actualizing block (remember)", "Theoretical block (theoretical minimum)."

The block "Problem setting" describes the phenomena observed in everyday life and in sport, the task is set to explain these phenomena in terms of the laws of physics. For example, in everyday life we often observe fluctuations: swaying branches, needles of a sewing machine, a guitar string, etc. Under certain conditions phenomenon of resonance happens: water splashing from buckets, the glass rattling in a window, etc. Hands and feet of human can, too, oscillate (running, walking, swimming, various gymnastic exercises, etc.), and therefore to the mechanics of their movement works on the same formula as the simple mechanical pendulums. The resonance phenomenon is widely used in sports because it helps improve athletic performance with optimum energy load of the athlete. It is proposed to define the condition under which an athlete manages to achieve better results with minimal energy consumption.

The "Historical block" shows historical stages of the study of vibrations: the key dates of discovery and their authors (G. Galileo, Huygens H. Thomson W., Popov A.S. Rabi I. P.N. Lebedev, L.I. Mandelstam, N.D. Papaleksi, N.M. Krylov, N.N. Bogolyubov, A.A. Andronov et al.). "Block of actualization of knowledge (remember)" comes next in which students "recall" higher school physics. They need to insert the missing words in the definitions (oscillatory motions, harmonic vibrations, free and forced oscillations, self-oscillation, and others.) according to the drawing to determine the type of the pendulum (Physical, Mathematical), to determine the basic characteristics of the oscillations (time, frequency, amplitude).

The "Theoretical block (theoretical minimum)" gives the units of measurement of physical quantities (coordinates, angular displacement, angular velocity, angular acceleration, period, frequency, mass, force, energy) and the basic concepts: the resonance (resonance condition), the period of oscillations of a mathematical pendulum, Hooke's law.

Then the *Basic level* of the material study begins, which includes the following blocks: "Block of knowledge application" and "Self-control block."

In the "Block application of knowledge" it is suggested to draw a parallel between the physical phenomenon and a phenomenon in the sport: the oscillatory motion of a mathematical pendulum and athlete's waving hands with ski poles. It is proposed to answer the question whether the weight / length of sticks (arms length) influences on the frequency / period of the vibrational motions? We consider the resonance condition in which the skier manages to minimize energy costs. We show an example, where an athlete approaching the frequency of steps while walking or running (or strokes while swimming or rowing) to his own frequency of vibrations of the legs or arms (resonance), manages to minimize energy consumption. In the

most cost-effective combination of frequency and length of steps or strokes man demonstrates a significant increase in performance.

Then we consider other examples of oscillatory movements in sports: trampoline, springboard jumping. Attention of students is drawn to the process of recovery of the deformed shape of the body (trampoline, springboard). When jumping on the trampoline (in the water) they use an elastic trampoline, which, when straightened, gives the body of an athlete some extra speed and it jumps higher. This process is explained with the help of Hooke's law and the law of conservation of energy.

After learning theoretical material there is "Self-control block", which contains the test questions on the studied material: basic definitions, formulas, units of measurement of physical quantities. Successful passage of the control test will indicate the passage of the base level of the studied subject.

Now you can go to the next *Increased level* consisting of "Block of broadening and deepening", "Independent work Block"

In the "Block of broadening and deepening" the students get acquainted with additional information, solve qualitative and quantitative high-level tasks. So, it is suggested on the subject to review the biomechanics of pole vault, which is based on the mechanical system of two pendulums: which vary in length and mutually influence each other: the first pole and the pendulum form a jumper; the second pendulum is formed by rotation of jumper body around pole capture places, shoulder girdle. Attention is drawn to the fact that angular movement of the pole to some extent depends upon on the length of both the first and second pendulums. It is concluded that to improve the jump with vault result it is required to shorten the chord of the pole; the greatest distance of the common center of gravity of the jumper at the moment of rotation around the pole grasp place; shortening of the radius of gyration around the pole grasp places. As an addition it is proposed to solve the quantitative problem on resonance condition.

Next is the "*Block of independent work*", which consists of two parts. The first part includes *questions and tasks for independent work*, and the second part - *Tasks for generalization and systematization* of various examples of the studied laws in the world of sports. For example, students are requested to complete the table in which it is necessary to give examples of manifestations of resonance in various sports, designate for each sport the resonance condition and how it affects athletic performance. In the following table students systematize the knowledge of the application of Hooke's law in sports.

The final block of "*Literature*" offers students a list of basic and additional literature for independent reading and expanding their outlook.

CONCLUSIONS

The examined by us non-standard form of studying the material contributes to a better understanding of natural science picture of the world, the formation of the ability to apply and transform the laws of natural sciences in the field of sports and physical culture of the students-athletes. Students-athletes, studying the laws of physics on specific sports examples, independently set themselves challenges and solve them; they deepen and broaden their horizons, systematize the acquired knowledge.

SUMMARY

The layered structuredness of material study (initial, basic and advanced) not only makes it easier to assess the degree of assimilation of discipline by the teacher, but it also helps students determine for themselves the results and prospects of their training. The integration of these approaches can be used for teaching student-athletes not only the direction "Physical Education" but also "Adaptive Physical Culture", the various forms of education; both in the classroom and remotely, through home study of course "Physics".

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RELATIONSHIP PROCESSES INTERCOMPANY INTEGRATION AND ECONOMIC MODERNIZATION

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ABSTRACT

Today, a sustainable development of the national economy depends on the ability to continually generate innovations which are cardinally different from previous products and services. The result is a system of cooperation between industry, science, and society where innovations become the basis for the development of industry and society.

Purpose of the paper is to estimate the relationship between the integration processes with the process of economic modernization. Methods for comprehensive study of the processes of integration relations between small and big businesses in terms of economic modernization were used as a tool. We used an evolutionary approach to the study of phenomena and dialectical systemic approaches, methods of setting and test hypotheses.

As a result of the study we have identified that economic modernization creates prerequisites for integration of small and big businesses. In conditions of innovative development of economy big and small businesses utilize those areas in which they have competitive advantages developing an integration and cooperation relations between them. In turn, the integration of small and big businesses has an impact on formation of internal and external economic factors for enterprises activity on which their innovative efforts depends.

Individual conclusions formulated can be used by public authorities to develop measures directed to promote the innovative relations.

Keywords: *intercompany integration; big and small businesses; innovations; information technologies; economic modernization.*

INTRODUCTION

In modern conditions, economic modernization based on the development and production assimilation of new products and technologies is the main source of sustainable economic growth. It causes the growth of output and value added, employment, investments volume, foreign trade turnover, saving production costs, and improvement of production efficiency (Sofya Avdonina, S.I. Grudina, Alla Igorevna Podgornaya, 2015).

In modern conditions, impact of modernization of economic activity on efficiency of economic actors has fundamental economic and sociological prerequisites among which are the following: globalization, growing influence of technological progress, improving living standards what in turn leads to a constant increase in demand for new products and services.

Currently, an important factor in stimulation of spreading innovation and information technologies and products is the network effect. In the economic literature, the term "network

effect" is used to describe a trend upon which some value (price) of a product or service being a part of a network increases markedly as more and more members are added to the network.

Under the influence of the above conditions, the growth of domestic expenditures for research and development works is observed in industrialized countries that ultimately leads to a significant increase in innovative activity of economic subjects (Table 1).

Table 1
GROSS DOMESTIC EXPENDITURES ON RESEARCH AND DEVELOPMENT (MILLIONS OF US DOLLARS)

Country	2005	2007	2008	2009	2010	2011	2012
Russia	18115.0	26543.7	30060.9	34628.2	33062.4	35183.1	37851.3
Germany	64299	72242	76797	83133.7	87831.8	96971.5	102,238.4
Finland	5601	6496	7098	7543.0	7653.9	7897.7	7530.2
Netherlands	10236	11794	11828	12416.7	12823.6	14597.9	15661.2
Japan	128695	147939	149213	137,016.8	140,656.9	148389.2	151,727.9
USA	323047	373185	398194	406000.0	409599.0	429143.0	453544.0

Source: Russia and countries of the world, 2014 Gross domestic expenditures on research and development (www.gks.ru, 2014).

To date, the only way of ensuring economic growth is providing the ability to create a radically new products and services on your own.

Such Russian scientists as Bagautdinova N.G., Galiev G.T., Safiullin A.M., Odintsov Y.L., Ulesov D.V., et al. were engaged in the study of the factors of Russian enterprises innovative development (Bagautdinova N.G., Galieva G.T., PakhmutovYa.O., Pratchenko O.V., 2014; Safiullina, A.M., Odintsova, J.L., Zhilina, N.N., Shamsutdinova, M.R., 2014; Ulesov D.V., Murtazina G., Safiullin L.N. and Saipullaev U.A., 2013). Compilation and analysis of the results of these studies helped to create the basis for further study of methods for increasing innovation activity of Russian enterprises. Recognition of the importance of the problem of intercompany integration in the development and commercialization of innovations for the sustainable development of the national economy dictates the need for an in-depth analysis of the factors for intensification of this process. The purpose of this paper is to study the interaction between the processes on integration of small and big businesses with the process of economic modernization, as well as identifying factors of innovation activity of enterprises as a result of establishment of the integrated structures.

METHODS

We have used as a tool the methods for comprehensive study of processes of integration relations between small and big businesses in conditions of economic modernization. Upon that, we have used an evolutionary approach to the study of phenomena, and dialectical systemic approaches, methods of setting and testing hypotheses.

RESULTS

Integration relations between small and big businesses and modernization of the economy are in a dialectical relationship which is manifested in the fact that, on the one hand, their integration has a positive effect on the development of the economy modernization, and on

the other hand, the processes of economic modernization create preconditions for development of intercompany integration.

On the one hand, the processes of integration of small and big businesses contribute to the emergence of economic modernization factors: demand for innovative products; offer of innovative resources; restriction of excessive competition; availability of state support of innovation activity; formation of internal resources for innovation activity; increased flexibility and mobility of intercompany interactions. On the other hand, the processes of economic modernization create preconditions for development of integration relations between small and big businesses: an increase of R & D expenditures; reduction of product life cycle; differentiation of demand; complication of the enterprise management process. The revealed relationship takes into account the impact of integration relations to the innovation process in contrast to existing approaches to the study of integration processes in the present conditions identifying prerequisites for development of this process (Barinov V.A., Zhmurov D.A., 2007; Zhigunov A.P., 2007).

Integration of big, small and medium enterprises contribute to lowering weaknesses and strengthening advantages in the conditions of innovative type of economic growth (Verbano, Chiara; Crema, Maria, 2016). Upon that, a big business has several advantages:

First, profits accumulated by big companies due to the monopoly position in the market and economy of production scale allow for creation of big-scale high-risk investments in innovative projects (Schumpeter, J., 2007).

Second, a big company can carry out multi-purpose research and choose from a number of complete innovations the most successful and well-timed to entry into market.

Third, it is such a corporation that receives the benefits in the decisive and the most capital-intensive stage: in mastering innovations and preparation of mass production.

At the same time, in conditions of an economy based on innovations, expansion of big business experiences a restrictive influence of factors such as reduction of a product life cycle; individualization of demand; complication of big enterprise management process due to increased uncertainty in modern markets (Zhigunov A.P., 2007).

In modern conditions a small business has the following advantages: ability to master the production of small-scale, unique products corresponding to fragmented demand; ability to quickly set up production of new products; a big degree of freedom in decision making.

However, activities of small and medium-sized enterprises is limited to small financial savings, focused specialization of workers, low level of diversification, small market share. I.e., small and medium enterprises are in an objectively worse economic conditions than big firms. Small and medium-sized enterprises find it considerably difficult to attract skilled workforce as usually do not offer remuneration at the level of big companies; and also experience lack of investments. It is possible to identify also such difficulties for small and medium enterprises as the incomplete use of production capacities, difficulties with timely receipt of quality raw materials due to low capacities of firms; lack of financial resources for implementation of effective marketing policy. As a result of these reasons, the relative costs of small and medium-sized businesses often exceed the relative costs of a big company. Besides, small businesses are very unstable against fluctuations in economic conditions.

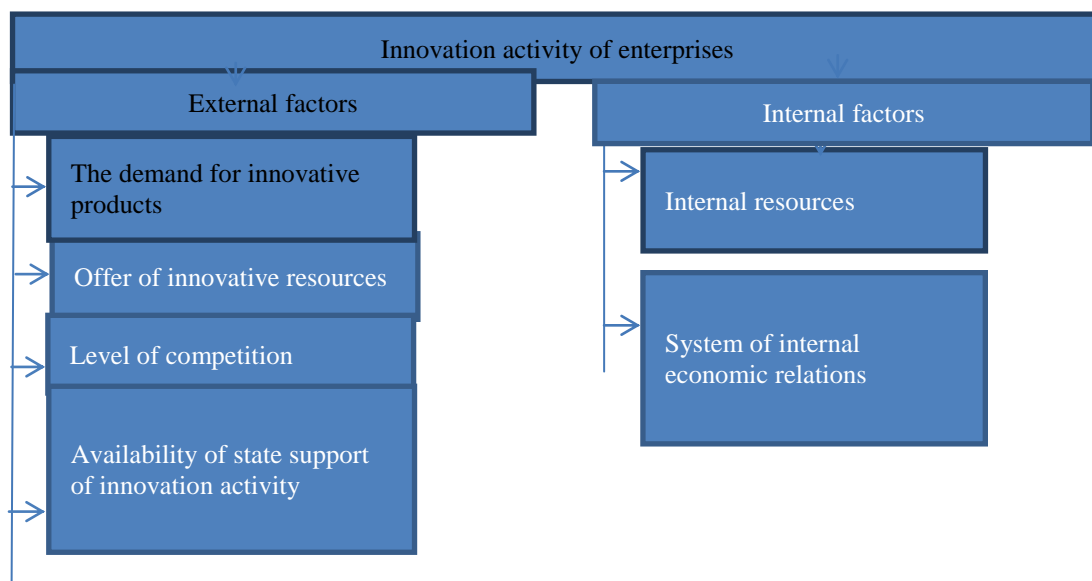
In order for small and medium enterprises could perform their social and economic tasks, it is necessary to improve their viability and sustainability. This in turn could be possible only as a result of the complex targeted measures to support small businesses, among which cooperation programs with major companies are particularly important.

Thus, at the moment, when the economy growth at a micro and macro level is largely determined by development and introduction of innovations, big and small businesses master those areas in which they have competitive advantages, and also develop integration and cooperation relations.

Big companies are impossible to replace at the realization of big-scale and capital-intensive innovation projects during mastering new products in mass production. Small and medium-sized companies have a major advantage over the big ones at organization of pilot production of new products, in developing small-scale production. Integration of big, small and medium enterprises allows for neutralization of their weaknesses and increase their benefits. (Alexey Lamanov, 2004)

In turn, integration of small and big businesses has an impact on formation of internal and external economic factors of enterprises activity on which their innovative efforts depend. Enterprises have a limited impact on external factors of innovation activity. Internal factors of a company are under the full control of its owners and management. Internal and external factors of innovation activity are shown in Fig. 1.

Figure 1
EXTERNAL AND INTERNAL FACTORS OF INNOVATION ACTIVITY OF ENTERPRISES



The external factors of innovation activity emerging within the framework of intercompany integration relations may include: the demand for innovative products; offer of innovative resources; a certain level of competition; availability of state support of innovation activity.

Intercompany integration contributes to the demand for innovative products for two reasons. Firstly, interaction of enterprises within an integrated structure permanently leads to that innovative projects better suit their needs.

Secondly, integration of small and big businesses enables using the potential of big enterprises for organization of big-scale marketing campaigns to generate consumer demand for innovative products what increases innovation activity of the enterprises included in the integrated entity.

Offer of industrial resources required for innovation also has an impact on the processes of economic modernization of enterprises. Intercompany integration significantly expands the possibilities to attract a financial capital, as a result of its implementation financial flows have become more stable and predictable, and risks of innovative projects are reduced. In addition, integration of small and big businesses in the sphere of innovation can create better working conditions and helps to attract highly qualified specialists in small innovative businesses.

Intercompany integration leads to restricting competition thereby maintaining the potential for innovation activity. Development of flexible association relationships where cooperation is combined with competition within the integrated group, allows for avoidance of reducing incentives of innovative activity and a slowdown in the of innovations mastering rates.

As a result of the fact that intercompany integration helps to reduce risks and payback periods of innovative projects, opportunities for participation in various government programs on their funding extend.

Intercompany integration has also a positive effect on internal factors of innovative activity, its internal resources and the system of internal economic relations. By combining the financial, intellectual and industrial resources the necessary capacity for innovation is developed, and investment risks are shared. In addition, by building flexible industrial processes configurable in accordance with the environment requirements, it is possible to provide internal mobility of the economic system allowing for quick identification of changing in needs and organization of accelerated supply of new products on markets.

CONCLUSIONS

It was revealed that the integration relations between small and big businesses and modernization of the economy are in a dialectical interrelationship manifested in the fact that, on the one hand, their integration has a positive effect on progress in modernization of the economy, and on the other hand, the processes of economic modernization create prerequisites for development of intercompany integration.

CONCLUSION

Thus, the economy of industrialized countries is increasingly focused on innovations and creates a system of relations between science, industry and society where innovations are the basis for development of industry and society. One of the main tasks of economic actors is a constant creation of new products essentially different from previous products and services.

Under these circumstances, big and small businesses master those areas where they has competitive advantages developing an integration and cooperation relations between themselves. In turn, integration of small and big businesses has an impact on formation of internal and external economic factors for activity of enterprises on which their innovative efforts depends.

Separate conclusions formulated may be used by public authorities to develop measures to enhance the innovative relations.

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METHODOLOGICAL APPROACHES TO THE CONSTRUCTION OF AN ECONOMETRIC MODEL OF HIDDEN PROFITS AT THE MICRO LEVEL

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ABSTRACT

Application of econometric analysis methods to such relatively underexplored field of scientific knowledge as the shadow economy which is characterized by a higher degree of difficulty in getting its assessments forces in some cases to refuse to comply with mechanical use of econometric tools and formulate a number of assumptions without which the problem can not be solved. In order for the method worked well, it should be found a rational relationship between the source data, the prerequisites of the methods used, and the provisions of econometric theory. In addition, it is necessary to have a clear understanding of the socio-economic cause-effect relationships between phenomena. As practice shows, availability of information only is insufficient to obtain reliable estimates of the shadow economy and the calculations associated with their prediction. There is currently no legally established recommendations on methods of formation predictive estimates of the shadow economy. This leads to the need to find effective forecasting models and techniques as a tool for management of the shadow economy. Simulation of legally unregistered processes on the basis of correlation-regression analysis allows with a high degree of reliability to evaluate the relationship between hidden profits and the dominant factors, to rank them in order of importance, and to determine the contribution of each factor to the development of shadow economic activities at the micro level.

Keywords: *regression models, discriminant models, probabilistic forecast, multivariate analysis, shadow economy, hidden incomes.*

INTRODUCTION

Compliance with econometric principles allows the problem of improved model selection and search of their new types to approach. Among them, the most important are the principles of the system orientation and accounting for the probability characteristics of the studied parameters (Grigoreva E.A., and Fesina E.L., 2014). The system orientation principle provides selection of the most important relationships between explanatory and dependent variables what is especially important in conditions of the utmost brevity of information about unobservable phenomena in the economy and requires the involvement of experts (Vetoshkina E. Yu., Tukhvatullin R.Sh., 2015). Accounting for the probability parameters of the shadow economy and their control is one of the most problematic principles of econometric calculations, since it is connected with tracking the processes which are unregistered by legal statistics (V.V.Fedoseev, 1999). Criteria and principles of econometric calculations allow approaching to

the problem of choosing a model with a clear understanding of the possibilities for obtaining estimates of the shadow economy with a high degree of reliability.

FORMULATION OF THE PROBLEM

When implementing a regression model of hidden profits at the micro level the following tasks have been set:

1. Determine the criteria and principles of building econometric models.
2. Build a hidden profits model using different forms of dependencies.
3. Evaluate parameters of a hidden profit model, and the adequacy level of the obtained relationships.
4. Conduct a comparative analysis of hidden profit models, and to identify the most adequate one.

Regression equations were estimated with the use of various forms of dependencies. In order to identify the behavior of a hidden profit depending on the dominant factor (legal profit) a hypothesis has recently been put forward on existence of a polynomial dependence. Upon a non-linear form of dependence polynomials of different orders were used to produce local approximations of empirical data to the theoretical ones. To this end, the empirical data were studied in a small neighborhood of the point of greatest interest. Comparative analysis of several types of dependencies has allowed the most preferred function of approximation of empirical data to the theoretical ones to choose.

PURPOSE OF THE STUDY

The main criterion for econometric calculations is associated with the goal setting which allows an adequate model of hidden profits to choose. The second most important criterion involves determining the predictive estimates of hidden profit that can be ranked according to their degree of importance for use in the practice of calculations. Estimates of hidden profits derived from the use of multiple models are required to select among them the most appropriate ones, and the magnitude of the spread between them gives an indication of how reliably they describe the phenomenon under investigation.

When building an econometric model of hidden profits it is necessary to take into account two main types of model functioning: imitation and normative (Ferster E., 1982). Regarding aggregate models, they are particularly useful in the development of long-term predictions of a hidden profit and allow obtaining relatively accurate results. With their aggregation, an error averaging occurs, the model becomes more stable with respect to errors of measurement of initial values what is especially important when dealing with poorly studied dependencies in terms of doing shadow economic activities at the micro level (Haavelmo T., 1994).

MATERIALS AND METHODS

For the analysis of the shadow economy and identification of trends in its development at the micro level, we used data of current legal reporting of large enterprises, expert assessments, data of unformalized in-depth interviews with senior managers, as well as results of researches of domestic and foreign authors on the problem under study.

Complexity of economic processes determines the diversity of models used for the econometric analysis. This significantly complicates the process of finding the most adequate formula of dependence. In the case of a pair regression, selection of models is usually carried out by a type of location of the observed points on the correlation field. However, there are situations when a location of points only approximately corresponds to several functions of which it is necessary to choose the best. For example, curvilinear relations may be approximated by polynomial, exponential, logarithmic and power functions.

To select a right type of econometric model, it is necessary to choose the criteria which allow a reasonable conclusion to make (Grigoreva E.A. , 2015). An important criterion for construction of a workable regression model and its comparison with other possible models is based on several properties of the model.

First, the model should be as simple as possible. This property is determined by the fact that the model does not reflect the ideal relationship between the variables, and it is only a simplification. Therefore, of the two models reflecting approximately the same relationship, preference is given to a model that contains a smaller number of explanatory variables.

Second, defined factors should be calculated uniquely for any set of statistics data.

Third, the regression equation is better the most part of the variation of the dependent variable it can explain.

Fourth, any regression equation can not be regarded as qualitative, if it does not match the known theoretical assumptions. The model must necessarily be based on a theoretical foundation, otherwise the results obtained from the regression equation may not be satisfactory.

Fifth, the model can be recognized as qualitative, if the predictions obtained based on it are confirmed in practice (Fesina E.L., Savdur S.N. , 2014; Kadochnikova E.I., Polovkina E.A., Grigoreva E.A., Badrieva L.D., 2015).

One of the basic assumptions of the quality model building is good specification of the regression equation. This means that it is objectively as a whole reflects the relationship between the variables included in the model. A wrong choice of a functional form or a set of explanatory variables leads to specification errors. This usually occurs due to surface knowledge about the investigated processes, not deeply enough elaborated theory or errors due to gathering and processing statistics when constructing the empirical regression equation (Vetoshkina E. Yu., Tikhvatullin R.Sh., 2014).

It is necessary to warn against the idealization of the result because even a high-quality model is a fitting the model specification to the existing data set (Kadochnikova E.I., 2013). Therefore, it is really about when researchers with different sets of data build different models for prediction of dependent variable values. Sometimes the models good from the standpoint of diagnostic test have very low prognostic qualities.

Until now, the question is controversial on building simple and complex models: either to start to build a simple model and then complicate it, or start with the most complex model and then simplify it on the basis of the studies (Azimov Yu. I., Savdur S.N, and Fesina E.L., 2014). Building the model is individual in each situation, and is based on serious knowledge of economic theory and statistical analysis. However, despite all the shortcomings of models, decision-making based on them leads in each situation to much more accurate results than when making decisions only on the basis of intuition and economic theory. (Vorontsova, V.L., Fesina, E.L., Makhmutova, D.I., 2015)

The behavior and the value of any economic indicator depend on an infinite number of factors which is impossible to take into account in full. Isolation and accounting in a model only

a limited number of real dominant factors is a major prerequisite for qualitative analysis, forecasting and management of a situation. (Fesina E.L., 2011) Even more difficult is the task of analyzing the little-known and unstable relationships. It is impossible to build, test and improve economical models without an analysis of variables occurring in them. Tools of this analysis are statistical methods and econometrics, in particular, correlation and regression analysis.

Any economic policy is to regulate economic variables (Fesina E.L., 2012). It should be based on knowledge of how these variables are related to other variables. It is possible to specify two options for consideration of the relationships between two variables. In the first case, two variables are considered equivalent in the sense that they are divided into independent and dependent variables. Upon that, the main question is about existence and strength of the relationship between them. When studying a linear relationship strength between these variables, scholars refer to the correlation analysis, the main indicator of which is the correlation coefficient.

When building models of a shadow economy, an endogenous variable being the shadow economy is an unknown parameter which should be determined (Fesina E.L., 2011).

To determine the influence of exogenous variables on the behavior of the endogenous variable, it is necessary to construct an analytic function that characterizes the dependence of an endogenous variable on the dominant factor which may be identified on the basis of calculating the closeness of the relationship between the indicators.

When processing data on the computer, choosing the type of correlation dependence is usually carried out experimentally by comparing the relationship closeness indicator value calculated for different models. In the case of non-linear dependence between the two indicators the correlation coefficient is used to measure closeness of the relationship. The calculations were performed in Mathcad package which provide wide possibilities for statistical and regression analysis (Druzhinina O., Masina O., Vorontsova V., 2016; Zainullina L.N., Vorontsova V.L., 2015). Mathcad package contains many built-in computing functions that are used for special calculations (V. L.Vorontsova and T. Yu.Gorskaya, 2015; Anis F. Galimyanov, Valeriya L. Vorontsova and Tatiana Yu. Gorskaya, 2015).

The correlation coefficients were determined to identify a dominant factor affecting the productive indicator (hidden profit). The calculation results showed that the closest relationship was found between the legal profit and hidden profit. The correlation coefficient between them was 0.7515. The next largest correlation coefficient was found between the hidden profit and legally incurred charges (Z_0) that has amounted to 0.5360.

Using Mathcad package we have built the linear regression equation (1) and the graph (Fig. 1) defining the relationship between a hidden profit and an legal profit.

$$V_c = aV_o + b \quad (1)$$

where V_s - endogenous variable (hidden profit) $a=0,015$. $b=30,08$.

Figure 1
DEPENDENCE OF A HIDDEN PROFITS ON AN LEGAL PROFIT
(APPROXIMATION BY LINEAR REGRESSION)

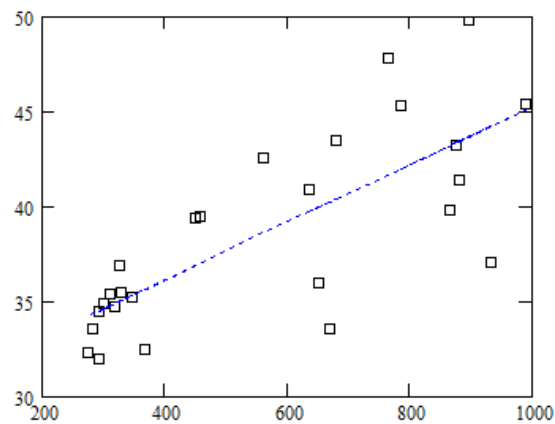
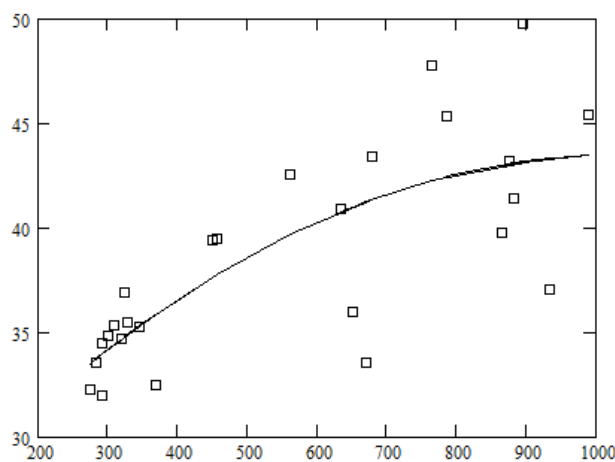


Figure 1 shows that the linear trend is not quite adequate model to describe the trends of a hidden profit behavior.

In the case of a set of variables among which there is expected a polynomial dependence of a higher order than the first, and the need for a more accurate approximation of their values to the theoretical ones, it is possible to use several methods (Vorontsova V. L., Gorskaya T. Yu., 2015; Vorontsova V. L., Gorskaya T. Yu., 2015). Using the polynomial regression equation of the third order the graph was plotted to determine the relationship between hidden profit and legal profit (Fig.2).

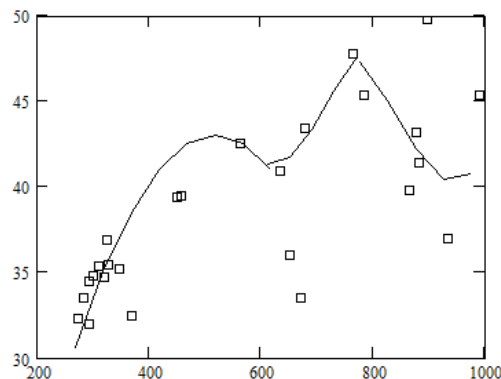
Figure 2
DEPENDENCE OF A HIDDEN PROFIT ON AN LEGAL PROFIT (APPROXIMATION BY 2ND ORDER
POLYNOMIAL REGRESSION)



If one polynomial gives no good results, as in our case, we can conclude that the empirical data are not linked together by a single polynomial dependence. We have carried out analysis of data obtained from the regression equations of the 1st and 2nd order to identify the type of functional dependence. As a result, it was concluded that in this case piecewise regression consists of a

linear combination of three different sections. The first section is a quadratic function in the interval of changing the legal profit from 250 to 610 (conditional units), and the second section is a function of the form $-3.175 * \text{Cos}(3x)$ in the interval of changing the legal profit from 610 to 780 (conditional units), the third section is a function of the form $3.175 * \text{Cos}(3x)$ in the interval of changing the legal income from 780 to 1000 (conditional units). Dependence of hidden profits on the legal profits for generalized piecewise regression is shown in Fig.3.

Figure 3
DEPENDENCE OF HIDDEN PROFIT ON LEGAL PROFIT (APPROXIMATION OF GENERALIZED PIECEWISE REGRESSION)



CONCLUSIONS

Comparison of the empirical data with the data obtained by the generalized piecewise regression led to the following conclusions:

1. For 1990-1997 the relationship between the legal and the hidden profits is described by trigonometric function $\text{Cos}(3x)$ taken with a certain coefficient (Fig.3).
2. After the default, from 1998 to 2002, the relationship between the legal and the hidden profits is described by trigonometric function $-\text{Cos}(3x)$, that is, taken with the opposite sign, and the coefficient in front of the function is the same as in paragraph 1 (Fig. 3).
3. From 2002 to 2015, the relationship between the legal and the hidden profits is described by a quadratic function of x^2 (Figure 3).

On the basis of the analysis conducted we can say that the empirical data are not linked together by a uniform polynomial dependence and can be modeled as a linear combination of three different functions with certain coefficients.

RESUME

Development of econometric models at the micro level is a complex and multi-stage process based on the study and measurement of quantitative relationships between key economic indicators. As a rule, these relationships are described by an individual equation or system each of which describes the behavior of a particular indicator. A hidden profit model along with formalized elements also contains non-formalized. Simulation of legally unregistered processes on the basis of correlation and regression analysis made it possible to evaluate with a high degree

of reliability the relationship between hidden profits with the dominant factors, to rank them in order of importance, and to determine the contribution of each to development of shadow economic activities at the micro level. Econometric calculations carried out with the use of regression analysis made it possible to expand the idea on the scale of the shadow economic activities by business entities.

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ORGANIZATION OF MANAGEMENT OF USSR INDUSTRY: BRANCH AND TERRITORIAL MODELS

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ABSTRACT

Market reforms conducted in Russia within last two decades showed their inadequacy, did not solve a range of important social-economic tasks set for society. At present time economic of Russia suffers difficulties in determination of further direction of its development. These facts stipulate a need not only in blind copying of reform practice of successful, economically developed states, but in analysis of historical experience of domestic transformations, detection of their positive aspects and their application in modern economic. In presented work we have analyzed the theoretical material on issues of structural organization of Soviet Union industry, detected major principles of building of this mechanism, on basis of combination of branch and territorial cross-sections in management.

The leading methods in research of this problem are historical-retrospective, system-structural analysis and synthesis of corresponding literature on issues of functioning of Soviet economic that allowed to detect contradiction between existing researches that disclose the negative side of economic management system and absence of objective researches of this problem. Peculiarities of industry management system of USSR on basis of functioning of branch and territorial models that compose it are disclosed in this article. Materials of research can be used in activity of bodies of state and regional management, and also as materials that are deepening basic concepts of Soviet system of management.

Keywords: *Soviet Union, Russia, system of management, branch model, territorial model.*

INTRODUCTION

Within passed century industry was the leading branch of Soviet Union economic. Development of all other branches of economic, social-cultural and administrative-political construction depended on its condition. Manufacturing industry was presented by aggregation of diverse interconnected branches, including a vast quantity of organizations and enterprises. And in order to provide effective functioning of all this mechanism was needed a highly effective management system. Optimal combination of sub-divisions and their control at all levels of management, establishment of scientifically grounded co-subordination and interrelations between elements of organizational structure could not only allow to fulfill tasks set for branches of economic successfully, but also in general promoted increase of effectiveness of operation of all national economic complex of the country.

METHODOLOGICAL FRAMEWORK

The specificity of problem stipulates application of many methods of historical and natural-scientific research: analysis and synthesis, deduction, historical-retrospective, system-

structural. In general, methodological basis of research is represented by complex approach in studying of process of functioning of system of management and functioning of USSR industry that includes such principles as objectivity and historicism.

RESULTS

3.1 Peculiarities and structure of Soviet economic

Governance of industrial production in USSR within whole period of its existence was performed by a large number of diverse management bodies. Here were related central planning bodies and local planning commissions, central bodies of economic governance of industry in scale of the country and union republics, governance of councils of national economic and territory-economic complexes, branch ministries, branch production associations. A final link of this row was an industrial enterprise. Therefore was formed interconnected and interdependent structure of management elements.

Diverse factors that were impacting the formation of organizational structure of management could be conditionally divided into the following groups:

- social-economic factors: ownership of means of production, specific tasks of social-economic development of country at particular stages of its development and others;
- production-technical factors: level of mechanization of manufacturing and management;
- organizational-economic factors: specialization and cooperation, type of manufacturing, manufacturing structure, degree of management functions centralization etc.;
- territorial factors: placement of manufacturing on territory of country, amount and nature of external connections, peculiarities of nature-climatic conditions etc.;
- social-political factors: national-state structure and administrative division of the country, peculiarities of historic development of regions, meaning of given manufacturing in strengthening of foreign economic connections etc.;
- management factors: peculiarities of development of management mechanism that require creation of corresponding bodies, social-psychological relations in collective etc. (V.I. Senchenko, E.V. Mazalov, 1985)

At construction of presented management model, a particular impact on structure of management apparatus was made by condition of material-technical equipment of production.

Structure of management bodies could be classified on basis of diverse signs: body types (state, social, party), state structure of Soviet Union (bodies of Union, union and autonomous republics), administrative-territorial division (bodies of territories, regions, cities, districts etc.), scale of activity (central and local bodies), nature of competence, method of creation and others. Here the major levels of management were: state-level, inter-branch, territorial, branch, associations, enterprises. Every one of stated levels had its peculiarities in construction of management bodies at different periods of time, in different conditions of conduction of organizational transformations.

Within stated types were usually distinguished corresponding sub-types of organizational structures dependent of their specialization, nature and scope of rights and liabilities that were reflected in different composition of management bodies and their internal organization. So, the state-level system of management was divided into union, republican and

local. Inter-branch bodies were distinguished, first of all, dependently of functions conducted (G.I. Zinchenko, D.A. Pravdin, A.A. Sinyagov, 1977).

In our opinion, in scientific plan would be interesting to study differences of existing system of management by branch and territorial nature of construction (meanwhile existed a party control too, but in this research we consciously would not consider it, as it is not related to direct management of manufacturing industry).

3.2 Branch Model of Economic Management

The basis of industrial management was formed by branch management model. The branch consisted of aggregation of interlinked and mutually dependent enterprises specialized in manufacturing of some product or conduction of certain type of works and socially needed functions. This branch cross-section allowed to perform the unified scientific, technical, organizational, personnel and other politics which promoted increasing of labor effectiveness.

The main place was reserved for state bodies. among which were distinguished bodies of state that were performing function of manufacturing management and bodies of state management (executive-administrative bodies). State bodies, to which were related Supreme Councils, Presidium and their permanent commissions, Councils of people's deputies and their commissions, were just partially involved in management of manufacturing. Management activity of representative bodies was expressed mainly in development and establishment of general provisions determining the development of national economic and management system in general (acceptance of laws. approval of plans, creation of management bodies etc.) (D.M. Kruk, 1985; G.H. Popov, Y.I. Krasnopoyas, 1984).

The unified state management of national economic was conducted by Council of Ministers of Soviet Union. Its major task was the detection of the most important need of national economic, establishment of resources needed for their satisfaction, determination of direction of development of all national economic and its separate branches. Council of Ministers coordinated work of all bodies of economic management, its prescriptions were mandatory for execution by all elements (links) of economic.

Regarding the form of subordination, bodies of branch management were represented by three groups of ministries (in early period - by people's commissariats): union, union-republican and republican subordination. Particular form of subordination depended on several elements time, place and intention of the branch in social division of labor, and also by total number of enterprises and amount of production released.

An important link in "ministry enterprise" structure were intermediate links, in forms of head departments, production associations (combines), trusts etc., that were coordinating the activity of separate enterprises. Number of management levels shows the structure from the point of view of its complicity. Presence of links on one or another management level depends on scope of works on conduction of respective functions.

As further practice shown, a large number of intermediary links of management were often a reason of interference for normal functioning of a branch. Often a management of primary link of management (enterprise) was performed by ministry via four to five, and sometimes even six intermediary stages (ministry head department republican ministry territorial association or department combine trust enterprise). In result, terms of administrative documents processing were increasing, operative control worsened, bureaucracy was getting stronger, all this lead to decrease of general rates, Besides, this approach did not allow to

completely detect and take into account the territorial community of diverse enterprises that had regional peculiarities. Besides, use of branch management principles only, in limits of national economic or separate region, led to disproportion, had an adverse impact on ecology etc.

3.3 Territorial Model of Economic Management

In result of first years of Soviet power was started formation of territorial economic management bodies too. An important objective of territorial planning was complex economical and social development of economic of separate administrative-territorial units and territorial-economic formations in order to satisfy interests of the most effective development of all economic complex of the country.

Under territorial management is understood the activity of local bodies of economic management on provision of complex economical and social development of the given territory, and first of all, of particular administrative-territorial units (V.I. Senchenko, E.V. Mazalov, 1985). The necessity of territorial industrial management bodies was stipulated by several tasks:

- provision of production increase in region;
- organization of rational territorial labor distribution expressed in systematic positioning and use of labor, material and natural resources on territory of country.
- provision of effective inter-branch and inter-territorial management on territory;
- improvement of interaction of branch and territorial management in region;
- coordination of activity of all enterprises and organizations positioned in region;
- creation of conditions for successful functioning of industrial facilities, development of industrial and residential infrastructure on corresponding territory;
- taking into account of local (national) peculiarities, specifics, historical traditions formed in manufacturing of given region (G.H. Popov, Y.I. Krasnopoyas, 1984).

Territorial aspect of management of economic complex of country allowed to regulate territorial division of labor in scale of the country, improve positioning of manufacturing forces by different regions, establish optimal territorial proportions of economic and form scientifically grounded specification and complex development of all regions effectively (Shamov A.A. Territorial, 1984). Implementation of this approach in system of industrial management had an advantageous meaning due to vast territorial; length of USSR.

As time went, the role of territorial management bodies was gradually increasing. This was explained by formation of strong manufacturing potential of separate regions that required intensification of economic connections between diverse enterprises, territorial complexes of separate territorial-administrative units.

DISCUSSIONS

Several leading scientists were involved in studying of issues of Soviet economic management organization; among them an undoubtedly important contribution in analysis of development and functioning of Soviet economic were made by such scientists as P. Gregory (Gregory P., 2008), J. K. Galbraith (Galbraith J. K., 1999), V.V. Leontiev (Leontiev, V.V., 2009), F. Hayek (Hayek, F.A., 1990), who had been estimating processes which were going on in Soviet economic from critical positions. While reasoning about effectiveness of two systems (socialistic and capitalistic), foreign authors could not stay away of both rates of Soviet industry growth and factors impacting them (Bergson A., 1964; A.Bergson, S.Kuznets. Cambridge, 1963;

Turgeon L., 1963). At this some researchers were estimating reasons of high economic growth rates at some stages of soviet economic development quite correctly, connecting them with the growth of separate industrial branches only. Such ideas can be traced, in particular, in work of R. Greenslade, J. Hardt, D. Gallicomb and V. Tremle (Pt.I. Washington, 1966). In general, due to amplification of confrontation between USSR and western countries, the polemics on management issues occurred in scientific medium more and more often. Particularly, namely in this periods appear concepts of "centrally-managed economic"(Eucken W., 1963), "command economic" (or "mandatory" economic) (Thalheim K., 1962). While reasoning about management system of USSR, scientists often identified economic management with political impact (Bd.I. Berlin, 1961; Havina S.A., 1968), promoted the idea of super-centralization eliminating economic self-reliance of enterprises. In their opinion, the state acted as the only one center of decision making in this system (Barre R., 1961).

Among Soviet scientists the largest contribution in studying of these questions was made by such researchers as V.Z. Drobizhev (Drobizhev V.Z., 1966), V.A. Tsikulin (Tsykulin V.A., 1966), A.M. Rubin (Rubin A.M., 1969). Contemporary historiography also gives a special place to issues of USSR economic functioning. Published monographs and dissertations are dedicated to description of meaning of branch and local management bodies (Akulich I.L., 1990; Polunin V.V., 2007), role of state in organization of management and organizational transformations in rigion industry or separate branches (Efremov A.A., 1999; Tatarskiy E.L., 1999).

CONCLUSION

Experience of functioning of Soviet command economicsa showed that interaction of branch and territorial forms of management was not always coordinated and effective (Gapsalamov, A.R., 2015; Gapsalamov, A.R., 2013; Gapsalamov, A.R., 2013). In a range of cases the branch management bodies, under one or another, pretext ignored interests of territorial-administrative units and, vice versa, on level of territorial management bodies occurred parochial tendencies that became one of interferences of all-state development. In spite of this the branch and territorial management in socialist economic system were interlinked very close, their combination became reasonably required. Both models were reflecting peculiarities of labor division and cooperation. As the experience of reforms showed, their effectiveness was dependent on organic combination of branch and territorial forms of management and rational limits of their existence to a large extent.

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STATISTICAL APPROACHES TO ASSESSMENT OF INFLUENCE OF REGIONAL CONJUNCTURAL AND INSTITUTIONAL CAPACITY ON DEVELOPMENT OF PRODUCTIVE FORCES

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ABSTRACT

Management of the regional systems' business development has been and is one of the main controversial issues in the economic theory. The system of factors that characterize the regions' competitiveness and attractiveness in terms of location and development of the productive forces determines and at the same time forms the regional economic development. These may include, first of all, a demographic potential and trends stipulating it, infrastructural capacity of the territory, energy potential, socio-cultural parameters of regional development, etc. In this regard, study of the issues revealing the features of influence of a combination of factors on the processes of efficiency related to management of the business development of the regional productive forces is comprehensive. Its study should not be restricted to purely quantitative characteristics of the production growth measurement.

This article developed a uniquely designed evaluation method for the integral index of the regional socio-economic attractiveness and its impact on the prospects and trends in the development of regional productive forces in regions of the Russian Federations. During the conducted calculations it has been determined that the regions with the highest development level of institutional capital form the most stable and dynamic basis for economic growth.

Keywords: *productive forces, economic development, regional socio-economic conditions, regional conjunctural and institutional capacity, regional forecasting.*

INTRODUCTION

When developing a system of evaluation of the productive forces' business development, there is a need to consider the structural drivers that determine a type of the technological system. It is obvious that a system of evaluation, which characterizes the efficiency of developing certain productive forces inherent in the more recent technological systems, should include indicators of the regional innovation development as a key factor ensuring sustainable economic development. Primarily, this is due to the fact that the demand for innovations is a key factor in the development of productive forces.

However, after their evolutionary development the majority of productive forces (industrial complexes), is relatively squeezed out of the economic space by modern

macrogenerations, but it does not die. In this connection, it would be wrong at the present stage of development to exclude any "industrial" factors from the system of evaluation of the productive forces' business development.

Therefore, there is a problem of identification of these factors, their quantitative estimation in time and simulation mechanisms. Implementation of this stage of work is reflected in the numerous scientific and practice-oriented works of domestic and foreign scientists. However, the main disadvantage of the existing methodologies for estimating the regional socio-economic conditions is their versatility, which does not suggest any solution of highly specialized issues. Moreover, in most cases no weighting coefficients of the factors involved in the models are used. And those models, which take into account this factor, apply purely expert estimations, which largely create a subjective background.

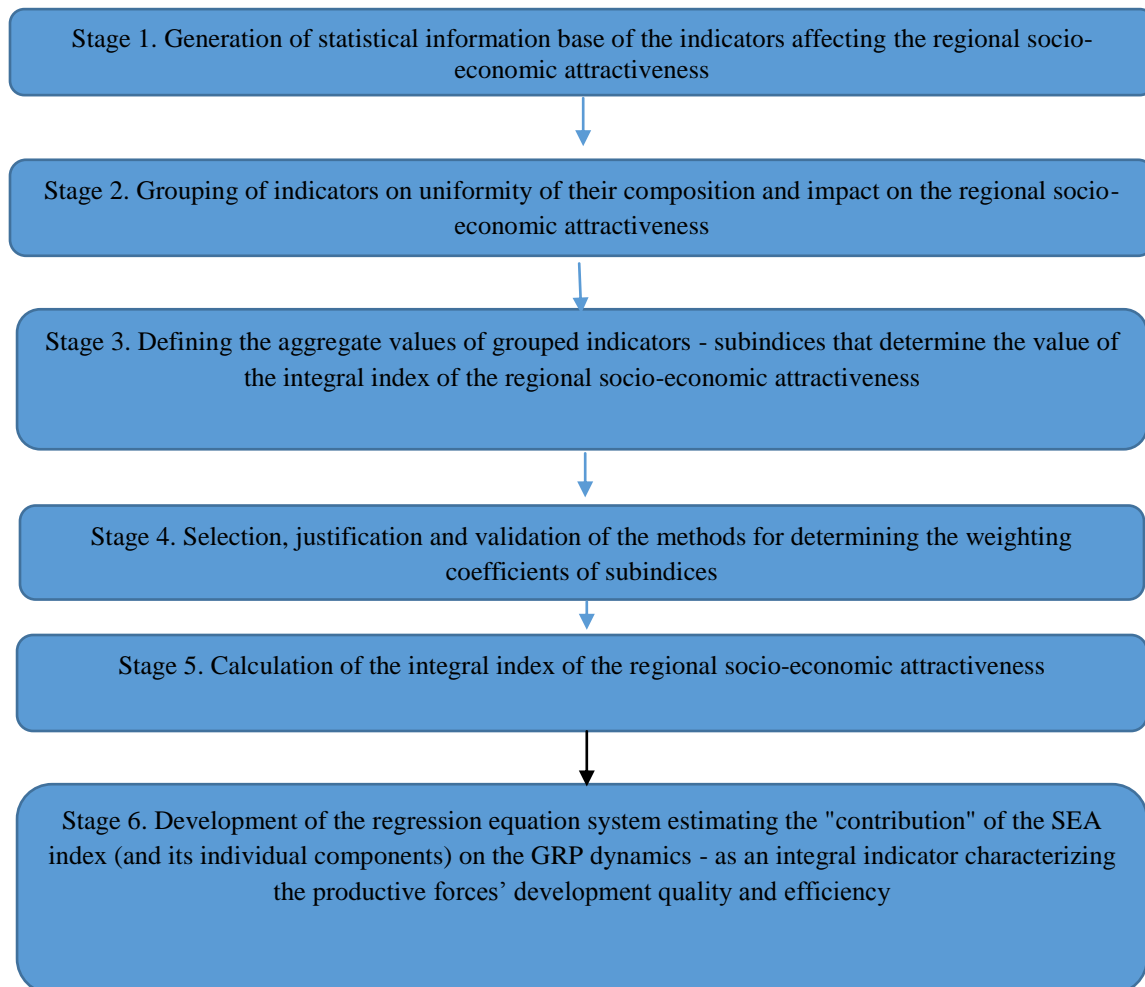
METHODS

Based on the above considerations and theoretical and methodological justification in relation to estimation of the socio-economic attractiveness of the regional productive forces' placement, a conceptual algorithm to determine the integral index of the regional socio-economic attractiveness is shown below (Figure 1) in the context of the issue studied in the work (SEA index). In determining and justifying the choice of a combination of factors, we proceeded from the assumptions, which have been previously put forward as to a systematic approach that would, in assessing the prospects for the development of regional productive forces, take into account not only the parameters of the economic capacity, but also the social and institutional one.

belonging to the group of socially oriented ones is caused by the fact that from the point of view of long-term expectations, they largely determine the vector of social certainty or, vice versa, social uncertainty, and, accordingly, the prospects for sustained development of elements of the production system as a whole, which ultimately predetermines the prospects and speed of technological shifts. At the same time, the productive forces' innovation and modernization development is difficult to justify excluding the existing corrections in the institutional development. As rightly mentioned in the monograph "Institutions for development of the regional economic systems" edited by Yu.V. Matveev and G.V. Semenov (Matveev Y.V., Semenov G.V., 2013), the institutional factors largely determine the formation of the so-called "mental models". Such models serve as the "core" of the cognitive networks, reality perception and interpretation models; that is eventually reflected on a particular type of the organizational culture dominant in the territory (including on the national model of management, business management models, reproducible business entities, economic culture and, finally, development of productive forces).

Based on the presented considerations and assumptions, a set of factors influencing the SEA index by areas of exposure. It should be noted here that the submitted set of factors involved in the simulation of the regional socio-economic attractiveness in terms of the productive forces' location and development in the territory of a region is not the reference one. Although the approaches used during its formation were based on the concepts and views from different scientific fields in the regional economy (neoclassical models, cumulative growth theories, poles theories, modern national school of the regional economic organization and development) (Russian Federation Government Resolution N 1142 dated 03.11.2012).

Figure 1
LOGICAL SIMULATION STRUCTURE OF THE INTEGRAL INDEX OF REGIONAL SOCIO-ECONOMIC ATTRACTIVENESS (SEA INDEX)



involves determining the aggregate values of grouped indicators - subindices that determine the value of the integral index of the regional socio-economic attractiveness (Safiullin M.R., Elshin L.A., Prygunova M.I., Galyavov A.A., 2013).

In our study, the composition of subindices is defined by the above logic of choice and inclusion in the model of the factors, which rely on a different conjunctural and institutional basis, but have a decisive influence on formation of the regional socio-economic attractiveness from the perspective of the productive forces' location and development (Safiullin M.R., Elshin L.A., Shakirova A.I., 2012).

Thus, according to the results of the considerations and justifications, three main groups of the factors have been identified; they have an impact on generation of a dynamic series revealing some features of development of the regional socio-economic attractiveness (Safiullin M.R., Elshin L.A., Prygunova M.I., 2015).

The first group included the factors that characterize the changes in the territory's economic capacity and formed a subindex of economic (resource and infrastructure) development (I1)(Abalkin L., Kondratyev N., Yakovets Yu, Makasheva N., 2002).

The second group of factors formed the so-called social capacity subindex (I2).

The third group of factors is focused on definition of a composite quality index of the regional system's institutional development, and it comprises a set of relevant indicators, which may include the indicators evaluating the level of the scientific and educational development (I3)(Viktorov P.P., 2003).

The fourth stage of the considered SEA index definition model includes selection, justification and validation of the methods for determining the weighting coefficients of subindices (Yu.V. Matveev and G.V. Semenova, 20150).

Upon receipt of the generalized statistical indicators, there is always a need for selecting an appropriate method for determining the weighting coefficients (Kij). Several basic approaches exist that relate to solving the problem of correct weighing of the indicators - components of the composite index. So, a significant part of the studies in this area suggests ranking of the components in order of importance as determined by the expert judgments obtained in the training samples. However, it should be considered that this approach is associated with a number of potential problems, which are, in the first place, connected with the principles of selection of expert communities (units), methods for assessing reliability of the obtained estimates, etc (Dubovitskiy S.V., 2005).

Values of the weighting coefficients can also be determined by solving the problem of mathematical programming, which involves maximizing of a linear convolution criterion provided that the sum of weighting coefficients is equal to one (Marchetti Cesare , 1982).

The weighting coefficients can also be selected based on the correlation and factor analysis allowing to assess the close relationship between a specific indicator, which is a mandatory element of the final index, and an industrial production index selected as the reference one. This methodological approach is considered to be sufficiently simple and reliable.

The most methodologically "advanced" method for determining the weighting coefficients is a taxonomic method. It is based on determining a distance between the points of the multidimensional space, which dimension is defined by quantity of the factors involved in the model. Distances between the factors are determined by the formula:

$$a_{rs} = \frac{1}{m} \sum_{i=1}^m |b_{ir} - b_{is}|, \quad r, s = \overline{1, n} \quad (2)$$

where a_{rs} is a distance between the factors r and s .

The final form of the factor distance matrix will be the following:

$$\begin{bmatrix} 0 & a_{12} & \dots & a_{1n} \\ a_{21} & 0 & & a_{2n} \\ \dots & & 0 & \dots \\ a_{n1} & \dots & & 0 \end{bmatrix}. \quad (3)$$

After determining the distance matrix values, the so-called critical distance that characterizes the maximum distance between two factors is calculated:

$$a_{crit} = \max_r \min_s a_{rs} \quad (4)$$

a_{krum}	a_{crit}
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Further, a sum of all distances that do not exceed the critical distance is found for each feature:

$$p_j = \sum_{s=1}^m a_{js}, \quad \text{для } a_{js} \leq a_{crit} \quad (5)$$

Then the weighting coefficients are calculated by the formula:

$$w_j = \frac{p_j}{\sum_j p_j} \quad (6)$$

Finally, the fifth, final simulation stage involves definition of integral values of the SEA indices based on summation of weighted values of the calculated subindices.

In the formula form, the SEA index calculation is as follows:

$$I_i = W_1 * I1 + W_2 * I2 + W_3 * I3, \quad (7)$$

where:

I_i is a SEA value;

i is a period value (year in our case);

$I1$ is a value of subindex of economic development in the i -th year;

$I2$ is a value of subindex of social development in the i -th year;

$I3$ is a value of subindex of institutional development in the i -th year.

$W1, W2, W3$ are weighting coefficients of corresponding subindices.

RESULTS

The designed integral index for assessing the regional socio-economic attractiveness makes it possible to rank rather correctly the regions in terms of attraction and productive forces' placement and development prospects. At the same time, this ranking is formed based on assessment of various parameters that determine the regional socio-economic development (Glazyev S.Yu., Kharitonov V.V., 2009).

The calculation results for the Volga Federal District regions for the period 2005 - 2014 are shown in Table 1.

Table 1
VALUES OF THE INTEGRAL INDEX (IN DESCENDING ORDER) OF THE THE VOLGA FEDERAL DISTRICT REGIONS' SOCIO-ECONOMIC ATTRACTIVENESS (SEA INDEX)

Territory	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Republic of Tatarstan	46.3	48.0	54.6	57.7	57.7	58.5	59.0	61.7	62.9	63.9
Samara region	43.9	59.3	62.5	63.9	60.6	57.9	61.1	61.4	62.0	60.5
Nizhniy Novgorod Region	41.7	45.4	46.9	50.3	50.9	50.7	52.3	53.7	55.8	57.5

Perm Krai	36.6	49.6	52.4	54.9	54.4	55.8	53.5	54.7	56.6	56.7
Republic of Bashkortostan	41.9	41.5	46.6	47.6	47.6	48.6	46.2	47.1	48.4	50.5
Saratov Region	39.6	40.6	41.8	42.9	44.9	45.5	44.7	44.4	45.4	45.1
Kirov Region	29.0	37.7	39.2	40.5	40.6	38.1	41.3	40.8	41.3	41.9
Republic of Mordovia	31.4	32.9	34.0	35.8	37.0	36.6	36.7	36.8	37.1	37.4
Chuvash Republic	32.7	31.7	35.7	36.6	36.2	37.3	37.4	37.2	37.4	37.4
Penza Region	30.6	30.0	33.0	34.4	36.0	38.0	36.2	37.5	37.0	37.1
Orenburg Region	26.2	28.4	31.0	32.8	32.9	32.3	32.3	31.8	33.2	33.5
Udmurt Republic	28.1	30.3	32.1	31.9	33.2	32.2	32.3	32.2	32.8	32.7
Ulyanovsk Region	22.6	23.3	25.7	28.9	28.8	28.4	28.5	29.2	29.7	29.8
Mari El Republic	19.3	21.5	19.9	19.1	20.6	23.5	22.5	23.0	23.6	24.1

Dynamics of values of the analyzed socio-economic indicators for the period 2005-2014 explicitly indicates that two enlarged groups of regions homogeneous by their degree of socio-economic attractiveness have been formed in the Volga Federal District. The first group included the regions, which values of the integral composite index of socio-economic attractiveness (SEA index) are higher than 50 points. These are the Republic of Tatarstan, Samara Region, Nizhniy Novgorod Region, Perm Region and the Republic of Bashkortostan. This group of regions is characterized by an increased level of the factor values generating a high level of competitiveness and enhanced dynamics of socio-economic attractiveness for the productive forces' development.

The second group of regions included: Saratov Region, Orenburg Region, Penza Region, Chuvash Republic, Ulyanovsk region, Udmurt Republic, Republic of Mordovia, Kirov Oblast and Mari El Republic. The regions included in the group under consideration require an intensification of public policies aimed at improving their level of indices of the socio-economic attractiveness. The current positions of economic, social and institutional capacities of the considered set of regions do not allow to develop with the intensity required for formation of any competitive technological shifts based on development of the productive forces corresponding to the sixth technological system.

The general logic of studying the indices of the regional socio-economic attractiveness relies on the idea that definition of the prospects and expediency of the productive forces' development in the respective territorial entities depends on a combination of factors (economic, social and institutional), which, in turn, form the resulting values of the SEA regional indices. Therefore, understanding and scientific and technical justification for the trends in the regional socio-economic attractiveness contribute to construction of their forecasting development models; (Petrosyan A.P., 2002) that ultimately defines the main strategic areas of the productive forces' development in accordance with the identified factors of competitiveness and their development capacity in the foreseeable future.

There is no doubt, however, that the assumption and hypothesis require some empirical justification verifying them.

The methods of economic-mathematical simulation allowing to identify the relationship between the endogenous variable (GRP growth rates) and exogenous variable reflecting the dynamics of the SEA integral index are selected as the main approaches to facilitate this stage of

work. Inclusion in the model of the gross regional product growth rate is based on the fact that this indicator largely indicates the quality and efficiency of the productive forces' development and compliance with the progressive technological systems. If trends in the GRP growth index slow down it means that the available technologically associated regional production resources cease to generate high economic effect, and the marginal national income starts to decline. On the contrary, the long-term GRP growth dynamics may indicate an optimum level of the productive forces' structural compliance with the needs emerging in the economy.

An iteration analysis of the SEA index impact on the GRP dynamics will be detailed below through the example of the Republic of Tatarstan.

Tables 2, 3 show the results of the regression analysis of the SEA index impact on the GRP dynamics of the Tatarstan for the period from 2005 to 2014. The pseudo-variable method that allows to determine the impact of high-quality features and events on the explanatory variable - GRP index - became the main tool to optimize the regression model. In this case, pseudo variable is dichotomous; it takes on two values, respectively: $f = 1$, if the remaining predicted values take on a positive value, and $f = 0$, if they take on a negative one.

Table 2
REGRESSION STATISTICS OF THE MODEL

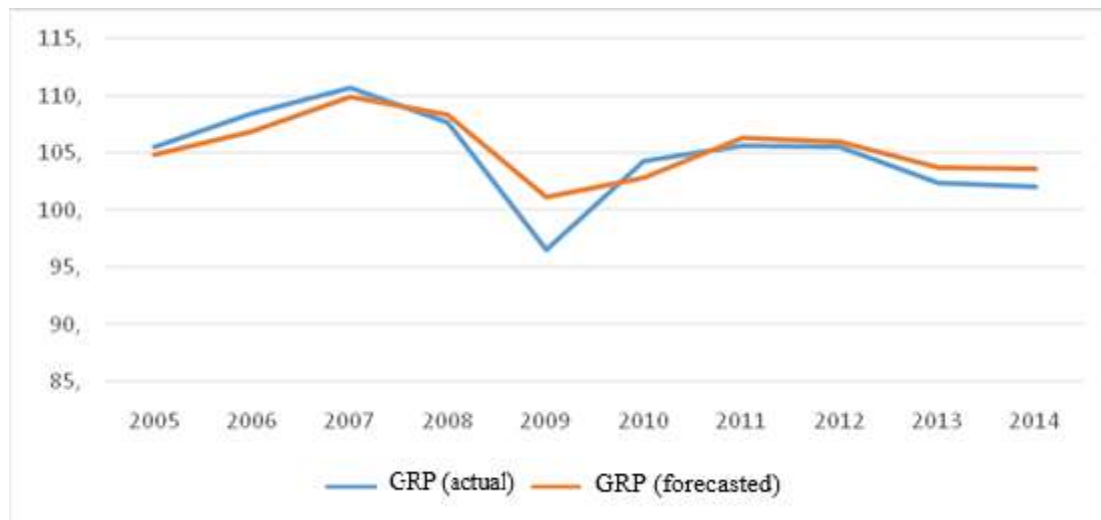
Multiple R	0.921373
R square	0.903093
Normalized R square	0.953251
Standard error	0.216215
Enumeration	10

Table 3
VALUES OF COEFFICIENTS AND THEIR STATISTICAL SIGNIFICANCE

	Coefficients	Standard error	P-value
Y-intersection	73.254658	0.156449569	1.81134E-08
f1	0.321202	0.110721997	5.20203E-09
Composite index	0.3984125	0.17177273	7.39002E-10

The almost complete coincidence of the GRP growth rates predicted by the model and their actual level (Figure 3) illustrates the accuracy and reliability of the obtained results.

Figure 3
RESULTS OF RELATION BETWEEN THE NORMALIZED GRP VALUES FORECASTED BY THE MODEL AND THEIR ACTUAL LEVEL



DISCUSSION

The econometric simulation results allowed to verify the hypotheses and assumptions put forward above. With the SEA index growth by one point, the GRP growth rate increases by 0.4 percentage points. Thus, this confirms a significant level of flexibility between two considered indicators. That is, the SEA index changes are forming a significant reaction in generation of the economic processes expressed in an appropriate volatility of the created final product. Considering that the Republic of Tatarstan is a region with a high level of institutional capital, it can be assumed that the current economic development vector relying on consumption of the resource base is not able to ensure the dynamic trends in the final product created in the economy. Transformation of development institutions is needed; it should be primarily based on active implementation of the mechanisms that stimulate the smart economy relying on introduction and development of innovative productive forces.

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ESTIMATION OF INNOVATIVE-INVESTMENT DEVELOPMENT OF THE COUNTRIES OF THE BRICS GROUP

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ABSTRACT

The study evaluated several indexes of the BRICS countries for the study of innovative-investment development (IID) of these countries. The base for building of aggregated IID was identified. The study used empirical and statistical methods of research. The analysis found that among the BRICS, Russia and China occupy a leading position in the rankings of IID, however, the developing economies of these countries are in many ways inferior to the world leaders, such as Switzerland, the Netherlands, France, USA.

It was established, that Gross National Income (GNI) has a strong correlation with the following indicators: Doing Business, The Global Innovation Index, The Global Competitiveness Index, The World Competitiveness Yearbook, The Bloomberg Innovation Index, Index of Economic Freedom. This is due to the fact that successful innovation leads to a kind of vicious circle: after a certain critical level of investment attracts investment, talent attracts talents and innovation begets innovation. Based on the correlation analysis of the studied indicators, sub-indices were selected on the basis of which the aggregate index of investment innovation (AIII) was constructed and which is able to assess the capabilities of IID of any country.

In further research it is planned the construction of the rating AIII with determining the position of the BRICS countries in the international arena and the application of this methodology to define IID of regions of the Russian Federation.

Key Words: *innovative development, investment development, BRICS, correlation analysis.*

INTRODUCTION

In modern conditions of economic development of the country depends on scientific and innovative potential, determined by the level of logistical, labor, information, communication and financial resources. In this perspective innovative and investment development (IID) of the country largely depends on its ability to create and implement new technologies, attracting new sources of investment.

The essence of investment and innovative policy of the state is to ensure public and social mechanisms of innovation-reproductive development on the basis of the use of the competitive advantages of the country and, as a rule, by increasing investment and innovation potential. The main prerequisite for the development of innovation is the need of the enterprises under the unified state management of innovative and investment development of the country. Only in the case when two components become parts of a combined and effective national policies is the

improvement of investment and innovative potential development optimization of the country in General and in the context of its institutions.

Change in the quality of IID is devoted to extensive methodological and statistical literature (Doing Business; The Global Innovation Index; The Global Competitiveness Index; The IMD World Competitiveness Yearbook; The Bloomberg Innovation Index; Foreign Direct Investment; Index of Economic Freedom, date of access 20.04.2016). Currently, a number of calculated integral indices characterizing the conditions of development of economy and society as a whole, evaluates the legal environment, the quality of regulation and the development of business and private initiatives, the ability of society and its institutions to make effective use of existing and creation of new knowledge, the broad support of IID.

"The concept of long-term socio-economic development of the Russian Federation for the period till 2020" (KDR-2020), approved by the decree of the RF Government dated November 17, 2008 No. 1662-p, defines the ways and means of ensuring sustainable improvement of the welfare of citizens, national security is possible only taking into account the dynamic development of economy, strengthening Russia's position in the world community.

Today one of the largest economic unions in the world is the Association of five emerging economies: Brazil, Russia, India, China and South Africa (South Africa). BRICS is 26% of the earth's surface, 27% of world GDP and 42% of the world population. It is a rapidly growing economy, which see the solution to existing socio-economic problems in an accelerated transition to an innovative path of development.

Russia has huge growth potential (human resources, raw materials) that cannot be fully implemented because of the lack of understanding by business of the need for modernization on the innovative basis and the low efficiency of the government's innovation policy, resulting in investment continued to be concentrated in the commodity sector and the energy sector.

In accordance with the above, the aim of the study is to identify the key indices for the evaluation of innovation and investment development of the countries and conducting comparative analysis of indicators of the BRICS countries. The novelty of the research lies in the construction of the aggregate index of IID on the basis of the analyzed, through which leveled the scatter of calculated indices.

METHODS

Of all available indices compiled by rating agencies and international organizations, authors of the selected system of indicators (composite international indices) reflecting IID in the country (table 1). Methods of selection and correlation analysis of the international indices are presented in (Kirshin I.A., 2014; Kirshin I.A., Mironova M.D., Pachkova O.V., 2015; Kirshin I.A., Pachkova O.V., 2015).

RESULTS

Table 1
INTERNATIONAL INTEGRATED (COMPOSITE) INDEX

Index title	Index marking	Organization providing information
Doing Business	DB	The World Bank Group
The Global Innovation Index	GII	The business school for the world INSEAD
The Global Competitiveness Index	GCI	World Economic Forum
The World Competitiveness Yearbook	WCY	Institute of Management Development, IMD
The Bloomberg Innovation Index	BII	Bloomberg L.P.
Foreign Direct Investment	FDI	The World Bank Group, World Economic Forum
Index of Economic Freedom	IEF	Cato Institute

Table 2 shows the index values, the ranking of countries, the number of sub-indices included in the composite, and the number of countries for which this study was conducted.

Table 2
COMPOSITE INDICES FOR THE BRICS COUNTRIES IN 2015

Countries	Composite indices						
	DB/rank	GII/ rank	GCI/ rank	WCY/ rank	BII/ rank	FDI/ rank	IEF/ rank
Brazil	116	34,95/70	4,08/75	47,390/56	47	-	6,34/118
Russia	51	39,32/48	4,44/45	58,510/45	14	70653/4	6,69/99
India	130	31,74/81	4,31/55	59,485/44	-	28153/15	6,43/114
China	84	47,47/29	4,89/28	76,987/22	22	347848/1	6,44/111
South Africa	73	37,45/60	4,39/49	52,702/53	49	8118/33	6,74/96
Leader	1/ Singapore	68,3/ Switzerland	5,76/ Switzerland	100,000/ USA	1/ South Korea	347 848/ China	8,97/ Hong Kong
Outsider	189/ Eritrea	14,95/ Sudan	2,84/ Guinea	34,261/ Venezuela	50/ Morocco	-8179/ Switzerland	3,23/ Venezuela
The number of sub-indices	10	2	12	20	6	1	5
The number of under-indices		80	113	333			40
Number of countries	189	143	141	61	50	196	178

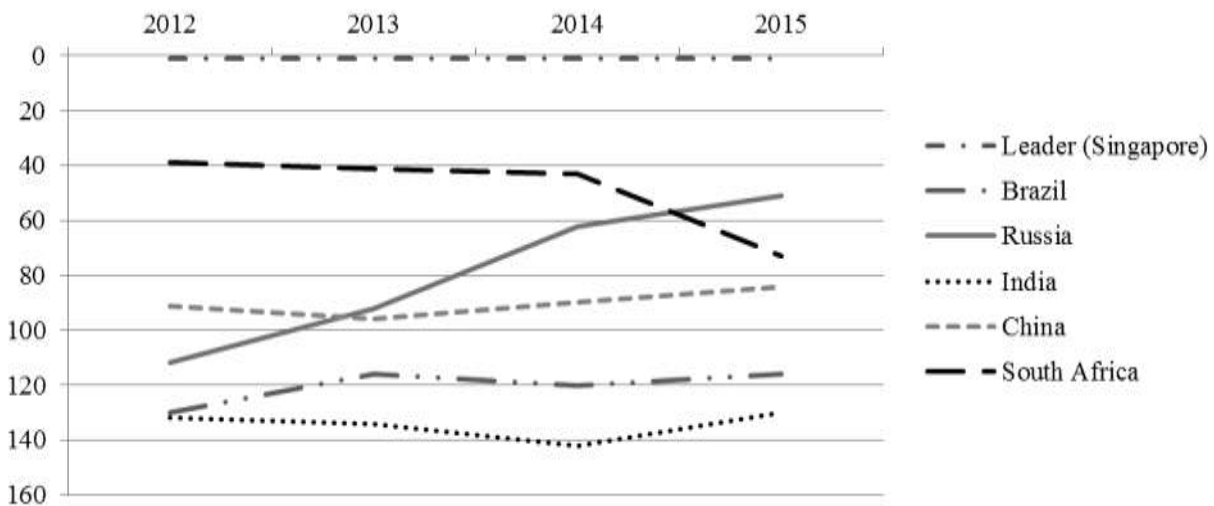
* compiled by the authors (Doing Business; The Global Innovation Index; The Global Competitiveness Index; The IMD World Competitiveness Yearbook; The Bloomberg Innovation Index; Foreign Direct Investment; Index of Economic Freedom, date of access 20.04.2016).

DISCUSSION

According to the table 2 we can draw the following conclusions:

1. According to the doing business index – DB, Russia is ahead of the BRICS countries, but lags far behind top countries such as Singapore, New Zealand, Denmark, South Korea, Hong Kong. In CIS countries the leaders are Russia, Belarus and Kazakhstan and they have the best dynamics of the index DB for 2012-2015, South Africa since 2012 has a negative trend, shifted over this period from 39 to 73. In general, other BRICS countries have a positive trend, but are far from the leading countries.

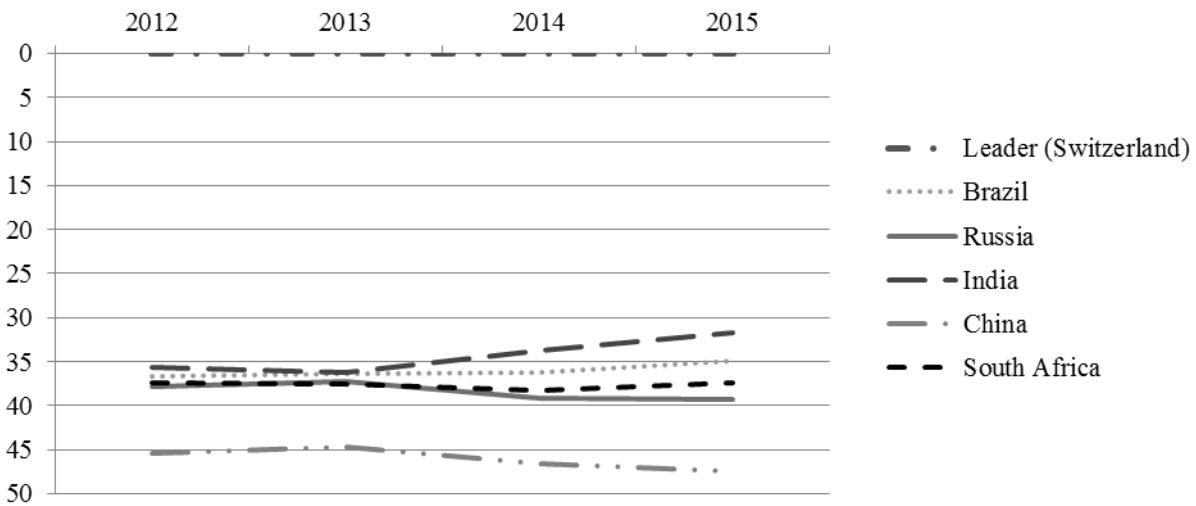
Figure1
DYNAMICS OF DOING BUSINESS INDEX (DB) OF THE BRICS COUNTRIES



2. According to the global innovation index GII, Russian Federation takes the 48th place, showing a positive trend. Strengths of the Russian Federation related to the quality of human capital, the state of the business, the development of knowledge and technology. Hinder innovation imperfect institutions, low results of creative activity and development of the internal market. Among the BRICS countries, Russia ranks second after China (29th place). The rating of China is comparable with the situation of many countries with a high level of income.

World leaders in innovation remained virtually unchanged for five years. Switzerland is in the lead, followed by the UK, Sweden, Finland, the Netherlands and the USA. The country with the best indicators of the level of innovation demonstrated surprising stability. Thus, the 25 leading countries in the rating in the course of recent years, are changing their places, but none of them leaves the group leaders. According to experts of the center of humanitarian technologies, this is due to the fact that successful innovation leads to innovation, attract investment, and vice versa.

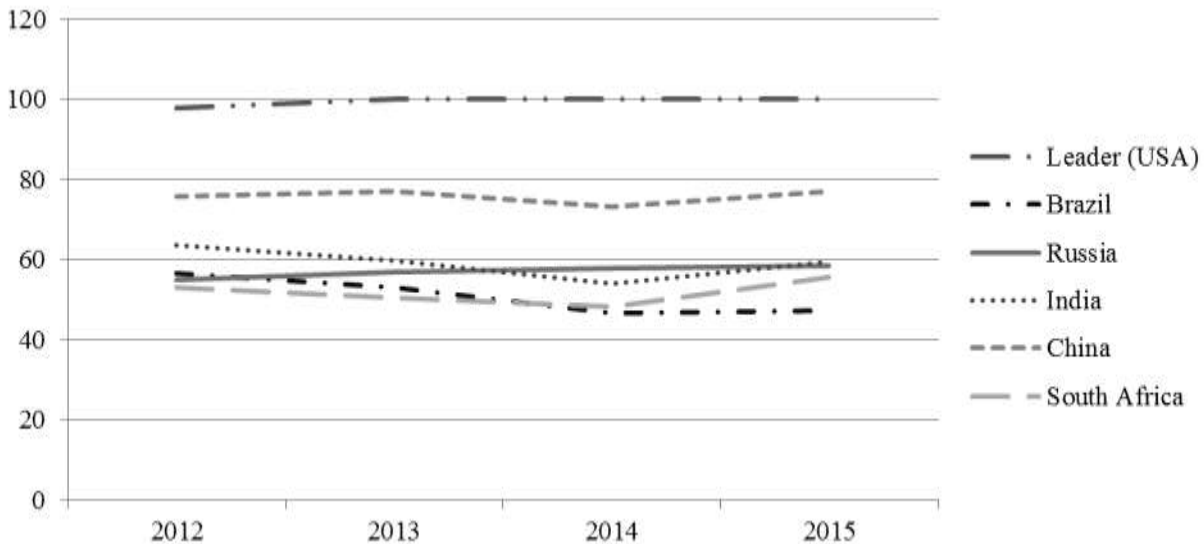
Figure 2
DYNAMICS OF THE INNOVATION INDEX OF THE BRICS COUNTRIES



3. According to the global competitiveness index – GCI, Russia in 2015 has risen in ranking from 53 to 45 seats, while Russia's position has improved largely due to macroeconomic factors, in particular through the revision of the IMF estimates of the purchasing power parity of currencies. To the flaws of the Russian Federation that influenced the rating include the low efficiency of state institutions, lack of innovative capacity, weak financial market and lack of investor confidence in the financial system. Among BRICS countries, China (28) continues to lead the way, Brazil (75 place) this year has moved down in ranking, while India has strengthened its position.

4. According to the competitiveness index WCY, the Russian Federation has risen on 45-e a place thanks to high indicators of the size of the market (6th place), but there are a number of qualitative indicators, for which improvement is not observed inflation (123rd position) and the level of competition (106th). On the top of the rankings throughout the specified period is Switzerland, Singapore, USA, Germany. The dynamics of the BRICS countries have been mixed. China has kept the 28-th place, Brazil has dropped to 75th position, India has moved up to 55th step. From the CIS countries above all are Azerbaijan (40th place) and Kazakhstan (42nd place).

Figure 3
DYNAMICS OF THE COMPETITIVENESS INDEX OF THE BRICS COUNTRIES



5. According to the Bloomberg Index BII, in obstacle ranking for 2015 Russia ranked 14th place among 50 countries, with positive dynamics is observed by education level (2nd place), the growth of innovative companies (15th place) and in the number of registered patents (6th place). The most pessimistic situation with IID, development of new production facilities and personnel. China, Brazil respects inferior to RF. The leaders of the rating are South Korea, Japan and Germany as the most highly effective economies of the world.

6. According to the index of foreign direct investment – FDI, Russia is in 4th place among the ten world leaders that for the past three years, led by China. India on 15th, South Africa on 33rd, which is understandable isolation of the economy and the specifics of doing business in these countries. For 12 years the volume of investments from these five countries has grown to 145 billion USD and is about 10% of the global flood. In 2000, they accounted for a total of about \$7 billion and 1% of the world total. The BRICS countries are looking for new markets for their products. Investors from developed countries amid the ongoing crisis are reluctant to invest their funds in most European countries. At the end of 2015 the volume of investments from developed countries fell by \$274 billion, and the main decrease was for Belgium, USA and the Netherlands.

7. According to the index of economic freedom countries in the world IEF, Russia takes 99th place out of 178 seats, and is among countries with moderately free economy. With the four points above is located South Africa, the other BRICS countries, there are negative trends in the development of a free economy. Leaders of the ranking are Hong Kong, Singapore, New Zealand and Switzerland countries with an open economy, with great potential for development, with open access to private investment.

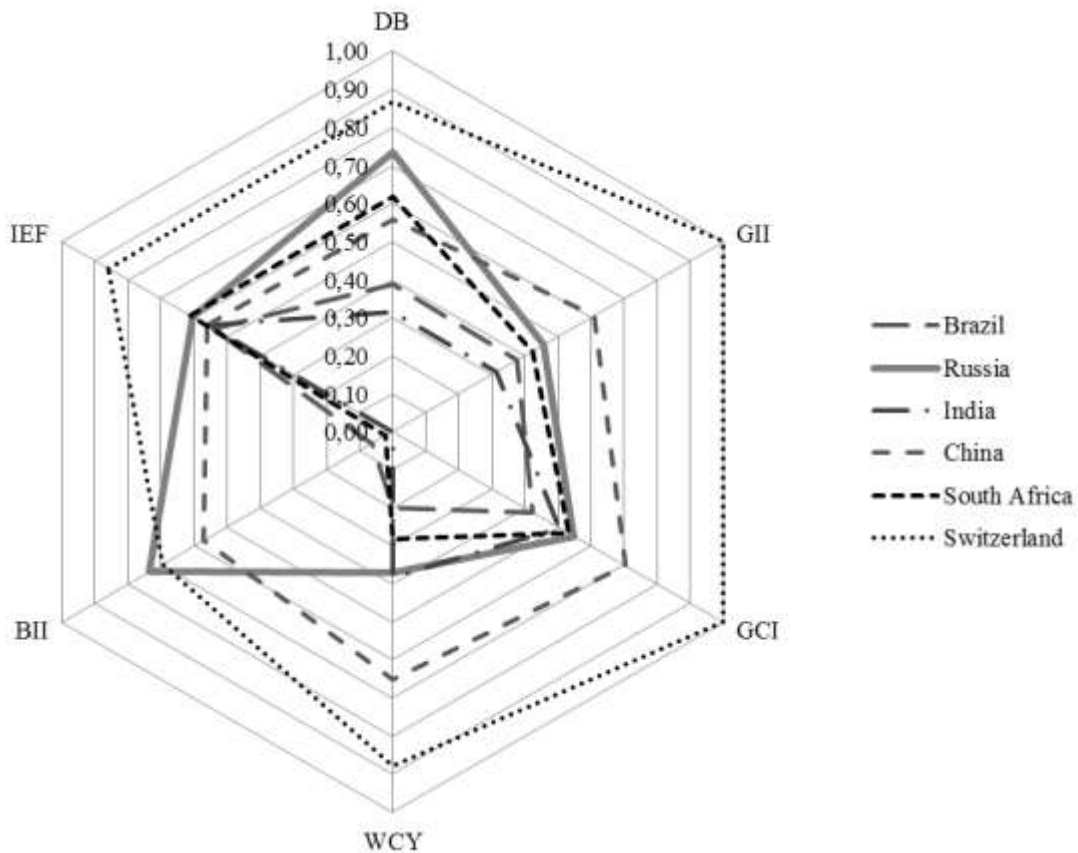
Consequently, the gap between Russia and leading countries is largely associated with insufficient development of institutions, infrastructure, although the level of knowledge remains

high. The BRICS countries extremely rich in natural resources. However, the structure of reserves and resourcing are various. All these States are characterized by quite substantial accumulated socio-economic potential which, based on the analysis of the selected indexes and do not reflect the IID. To the development prospects of the BRICS group include:

- resource capabilities and internal socio-economic and political situation;
- general trends of market development of each country;
- degree of interest of the participants in the multilateral development, including IID.

The radar chart (Fig.4) shows the position of the BRICS and the leader of the "ratings" in 2015

Figure 4
INTERNATIONAL COMPOSITE INDEXES OF THE BRICS COUNTRIES IN 2015



It clearly shows the strengths and weaknesses of countries-participants of the BRICS relative to Switzerland, which occupies a leading position on most indicators. For comparative analysis by the normalization of heterogeneous data:

$$X_{new} = \frac{(X_{actual} - X_{minimum})}{(X_{maximum} - X_{minimum})} \tag{1}$$

indices are normalized to a value in the range of [0,0-1,0]. Fig.4 shows that the leading countries in IID in the BRICS are Russia and China.

This analysis suggests that China has sustained growth in all selected indicators, Russia, on the contrary, in terms of BII and DB is at the level of the leader, and the level of competitiveness of the economy and level of innovation significantly lags behind. As for Brazil, India and South Africa, from the diagram it is clearly seen that the level of development of innovative-investment mechanisms in those countries are small, due to the fact that the economies are at the beginning of the transition to the production of innovation.

To elucidate the relationship between IID and economic growth in the countries of the world pairwise correlations between indices were calculated: GNI above listed and composite indices, values are given in table 6.

Table 6
VALUES OF PAIRS OF CORRELATION INDICES FOR 2015

Indices	GNI	DB	GII	GCI	WCY	BII	FDI	IEF
GNI	1	0,498	0,823	0,776	-0,602	0,602	-0,6507	0,528
DB	0,498	1	0,65	0,64	0,637	0,508	0,0297	0,785
GII	0,823	0,65	1	0,892	0,834	0,4537	0,0042	0,654
GCI	0,776	0,64	0,892	1	0,932	0,736	0,0088	0,688
WCY	-0,602	0,637	0,834	0,932	1	0,614	0,0533	0,712
BII	0,602	0,508	0,4537	0,736	0,614	1	-0,0759	0,411
FDI	-0,6507	0,0297	0,004	0,0088	0,0533	-0,0759	1	0,0436
IEF	0,528	0,785	0,654	0,688	0,712	0,411	0,0436	1

The indices of correlation are in the range [0,498 - 0,932], which speaks about the stable relations between these measures revealed that the rate of FDI is weakly correlated (or not correlated at all) with the selected indicators. The highest correlation for this index is observed with an index of GNI. Thus revealed a consistent inverse relationship between GNI and FDI suggests that foreign direct investment contributes to a reduction in gross national income, this suggests that foreign investment should stimulate the flow of domestic investment in order to contribute to economic growth. Therefore, it is necessary to organize the work with FDI to ensure the maximization of positive effects brought by them, with a reliable control of emerging risks (Knowledge for Development, date of access 20.04.2016).

The highest correlation between the studied parameters was observed between the GCI and WCY, which demonstrates the homogeneity of the sub-indices the rankings. There is a high correlation of these indexes with GII, which confirms the judgment that "the higher the competition, the higher the level of innovative development". High correlation between DB and IEF, shows the higher the level of the open economy, the more efficient the business is growing. High correlation between the studied indicators showed:

- high representation of the composite indexes (as investigated from 50 to 190 countries);
- at the present time only states with the highest income (stable relationship of indicators with GNI) are ready to the development of innovative-investment economy;

- leaders in IID are the countries with the developed infrastructure and institutions, on the basis of which the concept of competitiveness of the economy is built.

In the framework of correlation between the indices, indirect indices of IID, a method of constructing an aggregate index of IID was developed. In selecting indicators for the formula of the aggregate index, each index must meet two conditions:

1. To have a high correlation with the studied parameters;
2. To provide the maximum possible sample from a population (the more the studied countries in the ranking, the more accurate the result).

On this basis, selected indices are presented in table 7.

Table 7
THE WEIGHTS IN THE AGGREGATE INDEX OF IID

Index	The number of countries in the ranking	Share in the aggregate index of IID
DB	189	0,3
GII	143	0,2
GCI	141	0,2
IEF	178	0,3
	$\Sigma=651$	$\Sigma=1$

Thus, the aggregated index (AIII) is calculated according to the formula:

$$AIII_i = DB_i * 0,3 + GII_i * 0,2 + GCI_i * 0,2 + IEF_i * 0,3 \quad (2)$$

The proposed index allows to judge about the IID of the country as a whole, taking into account a number of factors related to ease of doing business, competitiveness, level of freedom of economy and development of innovation (Kirshin I.A., 2014). Building rating under the proposed index is planned in the course of further research on IID of countries in the international arena, including the BRICS countries.

CONCLUSION

Thus, in the study assess the situation of the BRICS countries in IID comparative analysis of the selected indices was carried out, the correlation between the selected indicators was determined for all the countries participating in the rankings, the methodology of calculation of aggregate IID index was developed. The result of this study is the conclusion that in developed countries there is a close correlation between IID and economic growth. At the same time, in developing (BRICS) countries, the impact of IID is small, and the analysis allows us to formulate a hypothesis, that perhaps IID start to ensure the growth of GDP per capita only reaching a certain threshold in its development. However, the result of the study supports the findings of the study (Kirshin I.A., Mironova M.D., Pachkova O.V., 2015) that the deployment and use of IID begins to affect economic growth only after a period of adaptation.

Over the past few years in the world economy there were many events that enabled the BRICS countries to take one of important places as producers of goods and services and suppliers of capital. BRICS have gone through multiple transformation of the economic structure

in recent years. They are now in the process of carrying out innovations, aimed, as a rule, to attract new foreign investment, increasing the interest of its citizens in domestic investment and ensuring economic stability, which in turn will provide the quality level of innovative-investment development.

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THEORETICAL AND METHODOLOGICAL APPROACHES TO THE STUDY OF THE EUROPEAN INTEGRATION PROCESSES: RUSSIAN AND FOREIGN EXPERIENCE

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ABSTRACT

The urgency of the problem under investigation is caused by the fact that after the end of the Cold War, many domestic and inter-state relations are restructured. This restructuring goes, first of all, on the way of integration processes, also faces and generates contradictions of different nature that can be clearly seen on the example of the European Union's development. The paper is aimed at studying the scientific discussions between various Russian scientific centers and their leading experts on such issues as institutional policy, economy, common foreign and security policy, law and justice in the European Union. The leading approach to the study of this problem is the comparative analysis and document analysis method. The paper presents the most important trends in European integration in the light of the theoretical and methodological views of modern Russian political science in the field of studying fundamental problems of European integration. The main results are in-depth study of the issues of European integration in the light of theoretical and methodological approaches of the Russian science and its leading representatives. The activities of these research centers contributes to formation of a constructive dialogue between the Russian Federation and the European Union. Paper content may be useful in studying the experience of integration into the EU that will allow better understanding the processes and phenomena occurring in the post-Soviet space, offer valuable theories on simulation of organization of social, political and economic life.

keywords: *European integration, European Union, the theory of integration processes, European institutionalization, political science, international relations, international conflicts, European security, European law.*

INTRODUCTION

The European ideas to prevent new armed conflicts were firstly expressed as far back as during the Second World War. The first practical step was to create a European Coal and Steel Community (ECSC) intended to coordinate and stimulate economic development in Belgium, Germany, Luxembourg, the Netherlands, and France. In 1957, after the Treaty of Rome, ECSC was transformed into the European Economic Community or Common Market. Maastricht Treaty in 1992 marked the beginning of the integration process of a qualitatively new level which are not limited by the scope of solution of economic problems. The Maastricht Treaty gave detailed evidence of the fundamental characteristics of modern integration processes known under the name of the three pillars (1.Consolidated Treaties, 2003, p. 67). The first of them gives the economic and financial dimension of EU policy, and has the ultimate goal of forming an

economic and monetary union. The second gives the foreign and defense impetus to integrated European efforts. Third offers universalization of actions in the field of justice and home affairs. As noted by an influential member of the European Commission, Fraser Cameron: "Enlargement is a political imperative for the Union that could contribute to peace, security, stability, and progress of Europe" (Cameron, F. T, 1997, p. 251).

Since the beginning of the 1990s, in the EU there was an active process of formation of EU Member States joint political activities mechanisms. At the end of the 1990s, the EU success in the field of economic integration has laid a solid foundation for cooperation in internal affairs and justice spheres. However, this does not exclude availability of sharp contradictions between the member states. In some cases, these differences are a major incentive for more active cooperation. The book of Oxford Professor Chris Bickerton argues that throughout the history of European integration there was proceeded an ongoing process on surrender of the national states of Europe from their sovereign rights and their subsequent delegation to the supranational level (Bickerton, Ch. J., 2013, p. 25).

The genesis of modern integration processes in the EU has led to the emergence of an independent direction in a science devoted to theoretical and methodological understanding of new qualities of this international organization (Saurugger, S., 2013, p.304). European issues in Russia are sufficiently developed and independent direction of scientific research. The research centers studying in greater or lesser extent Europe's problems that have become the most known in Russia and abroad, are the Institute of Europe, MGIMO, Moscow State University, and a number of departments of regional universities. Theoretical understanding of the principles, content and contradictions of the integration processes make it possible not only to use an integrative experience of the EU in the Russian space but also make a real contribution to the constructive cooperation between Russia and the European Union in various fields.

METHODS

This paper presents a comparative analysis of the achievements of Russian science in the field of European integration studies. Particular attention was paid to the analysis of scientific thought in recognized research centers. Among these Russian centers there should be noted Institute of Europe of the Russian Academy of Sciences (IE RAS) conducting interdisciplinary research of economic, political, military and political, social, informational and other problems in Europe. An important place in the analytical work of IE RAS is taken by a prognostic direction as it seeks to bring the ongoing fundamental research to the level of practical conclusions and recommendations. The first Jean Monnet Chair at the Institute of Europe was established in 2001 by the European Commission to study the problems of European integration. Association for European Studies (AES) is the interregional public organization created in 1992 that brings together the efforts of the metropolitan and regional centers for the study of problems of Europe in Russia including on issues of European integration, economics, politics, ecology, culture, education, etc. Russian Institute for Strategic Studies (RISS) studies a common European security issues. The Institute carries out research of events and trends in the European countries that affect the national security of Russia; carries out analysis and forecasting of crisis situations in some European countries.

RESULTS

Speaking about the concrete achievements of the Russian scientific thought, a special mention should go to several research groups studying the European integration processes on a high theoretical level.

The first group consists of works devoted to general theoretical aspects of European integration. A.D. Bogaturov and M.M. Lebedeva set their goal to theorise the experience of European integration, they consider issues and processes common to all EU not going into detail on the contribution of any individual country.

Thus, Professor of MGIMO A.D. Bogaturov indicates the regulating role of the European Union in terms of development of liberal democracy axiological principles and the rules of conduct of states, and notes an existing "request for a theoretical basis for necessity and inevitability of a "step over" through the "complex of a state sovereignty" in the interests of development of a common subjectivity within the framework of the European Union. (Bogaturov A.D., 2004, p. 74).

MGIMO Professor M.M. Lebedeva identifies three root principles of the concept and practice of the EU integrative construction: integration is not a goal, but a means; integration requires gradualism; integration needs adequate mechanisms. However, according to Lebedeva, the integration process, "firstly, is not necessarily going in the forward direction: it can be "braked" at some point or another; secondly, economic integration does not necessarily lead to the political one" (Lebedeva M.M., 2003, p. 125).

The failure of political integration in the European Union is one of the most important issues in the post-bipolar system of international relations. Such concepts as the "Eurocrisis" or "Europessimism" are familiar to ordinary Europeans. The study of an American political scientist B. Stefanova clearly shows the pernicious haste of transferring the economic integration process in the political direction. At the beginning of XXI century, European Community was not enough prepared for to become a single political body (Stefanova, B.M., 2014, p. 271).

It is necessary to place to the second group the studies of fundamental problems of the integration processes history in Europe, with a focus on the legal and economic characteristics of integration.

In her monography, "European space of freedom, security and justice", O.Yu. Potemkina analyzes the legal evolution of the EU from Maastricht via Amsterdam to the Treaty of Nice, provides a good overview of the development of the "three pillars" of the EU. O. Potemkina draws attention to the fact that the commitment of the opponents of "deepening" the integration and the forced consent of the other Member States guided by the federalist concept of integration, to meet the supporters of national sovereignty led to legitimization of the principles of subsidiarity, proportionality and delegation of authority. The principle of subsidiarity means that decisions within the European Union should be taken at the lowest possible level, as close as possible to an ordinary citizen. The principle of authority delegation discloses the source of the competence of the Community which acts within its authority and objectives put to them, and defined by the Treaty. The principle of proportionality means that any action of the Community should not go beyond what is necessary to achieve the objectives of the Treaty (Potemkina O.Yu., 2002, p. 6).

In the work "European law" published under the editorship of MGIMO Professor L.M. Entina formation of the EU legal system is comprehensively studied as a key element in ensuring the stability of the European Union (Publishing house NORMA, 2000, p.720). However, as the

author notes, the institutional diversity of the "three pillars" makes the functioning of the European Union extremely difficult as a whole from the legal point of view. Deep internal contradictions of the European integration process are not occasional, because it was a kind of a compromise of different views on integration and the path of its further development. Two opposite principles actually faced in it: the principle of supranational integrative construction and the principle of intergovernmental cooperation of sovereign states, that is, there was a collision between the supporters of "expansion" and supporters of "deepening" of integration.

The fact that even in the XXI century, these two principles in European law has not managed to harmonize, is recognized also by the leading European politicians and lawyers. In particular, it is said in details about the conflict nature of the European Union legal system in the study of a prominent British jurist Trevor Hartley (Hartley, T., 2014. 576 p. 99).

In the end, O.V. Butorina's study analyses the history of economic integration. The author pays a particular attention to the essential characteristics of convergence (Butorina O.V., 2001, p. 20). The author comes to a conclusion about the universal nature of the convergence criteria, as well as builds a schedule of optimal pace of EMU construction. However, adverse events occurring today in the European economy, do not confirm the universality of the convergence criteria. Modern European economists also recognize that many of the causes of the current crisis in the Eurozone should be sought in the imperfection of the fundamental principles of convergence within the framework of the EMU (Tuori, K., Tuori Kl., 2014, p. 33).

The works devoted to the theory of European security (including the Russian dimension), as well as the problems of formation of a common foreign policy could be included in the third group.

Problems associated with the history of the development of European military and political integration since the creation of the Western Union and before the formation of the CFSP have been investigated in the works by V.G. Baranovsky. He, in particular, has comprehended on the theoretical level a continued institutional duality of integration in the sphere of security and defense. In this direction, "European partners were spread across two political poles". On the "Eurocentric" pole a leadership role traditionally belonged to France and Germany which argued for formation of an "European identity" and the practical building of a political union in the EU, including the defense "dimension". On "Atlantic" pole there is the UK which supports "special relationships" with the United States and wishes preservation and strengthening of NATO as the foundation of Western security system (Baranovsky V.G., 1988, p. 97).

Questions of development of an independent foreign policy, European Union security and defense policy were considered by a Russian scientist V.V. Zhurkin. In his works he proves by specific facts the inevitability of evolution from the CFSP common position through the common CESDP strategy to the common ESDP policy. The focus of the author is "St. Malo phenomenon" as a turning point for the beginning of "the forced construction" of the European security and defense system. "Its essence is the need for the European Council decision on inclusion of a common defense policy within the framework of the CFSP, granting the EU with a capacity of independent action in this area, including transnational mechanisms for decision-making on the use of the armed forces in times of crisis, the strengthening of these powers in accordance with the new risks and on the basis of development of adequate European military industry and technology" (Zhurkin V.V., 2001, p. 53).

Undoubtedly, the problem of the EU's dependence on NATO in the military and political sphere is one of the most painful problems of the XXI century. It is clear that the EU will not be

able to play the role of a key player on the world stage as long as its military potential rests under the shadow of NATO and this situation exists under growing international security challenges. Harmfulness of such a state of affairs in Europe, for example in the course of the Iraq war, is clearly stated in the book of Stephanie Hoffman (Hofmann, S.C., 2015, p. 210).

A significant number of Russian studies is devoted to identification of the role and place of Russia in formation of the European security system, as well as relations between Russia and the EU as a whole.

The paper by Yu.A. Borko analyzes the content and significance of the Agreement on partnership and cooperation, and states the fact that "The EU today is a center of gravity for almost all European countries willing to join it as soon as possible. It is their desire to create additional opportunities for the EU to influence the internal and external behavior of states" (Borko Yu.A., 2001, p. 79). Studies of these and some other professionals allow a broader look at the European security system and to understand the place that the Russian Federation takes in it. The study of Yu.P. Davydova makes the conclusion that long-term target settings of Russian foreign policy ultimately boil down to the fact that ultimately to become an integral part of an integrated "Greater Europe". "Interaction (joint efforts, union) of Europe and Russia, is natural and necessary to both of them, - he writes - because only this can create for the future in the international scene a source of influence. This would mean, first of all, the ability to have some (in their own interests, in the common interest) impact on the partners; secondly, to participate in the decision-making process within the area of responsibility of the Union; thirdly, the need (for the first and second) in one form or another to enter its organizational (integrational) structures, become an organic part of them" (Davydov Yu.P., 2002, p.4).

The nature of the current state of affairs in Russian-EU relations hardly gives a cause for such an optimism. On the contrary, the majority of European authors, especially from the former socialist countries, by all means try to prove the uselessness and even the inability of the EU's participation in integration schemes with Russia (Wolchik S.L., Curry J.L., 2014, p.566).

CONCLUSION

Thus, the Russian science exhibits close attention to the theoretical understanding of the problems of European integration. On the one hand, it points to the inadequacy of comprehensive scientific development of this issue in the national research practice. On the other hand, it is a reflection of the objective political processes in Europe.

Having present a picture of a modern scientific methods of knowledge and research concepts in the study of European integration, the theoretical and methodological works of the Russian scientists are useful for a more complete understanding of the process of European integration.

RESUME

In general, works of Russian scientists present a deep analysis of the current economic activity of the European Union in different market segments, as well as analyze the history of European economic integration. One can not ignore the fact that there is a steady expansion of the ranks of its members, and now also due to the former Soviet republics and former partners in the socialist block. As a result, the EU has become a leading global economic and political center. The above theoretical studies demonstrate the importance of establishing a constructive dialogue between the Russian Federation and the European Union.

The implementation of this task is not realistic without a thorough clarification of the principles and content of the integration regulation at the theoretical level. Analysis of integration experience in the EU allows better understanding the processes and events occurring in the post-Soviet area, offers valuable theories for modeling an organization of social, political and economic life.

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THE RATIO OF HUMAN AND INTELLECTUAL CAPITAL IN INNOVATIVE ECONOMY

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ABSTRACT

Within last several decades the scientists had paid especial attention on intellectual capital (IC) problem, determination of its structure, components, calculation methods (Stewart, 1997; Thurow, 1997; Pulic, 1998 and others). According to opinion of many scientists, for creation of a new innovative economic the increase of intellectual capital is necessary. So, it could be useful for developing countries. Because sufficient investments into a human capital, social infrastructure are able to allow the creation of effective internal market. Using analysis of existing scientific articles and also theoretic abstraction in this article, we are stating a brief overview of existing methods of intellectual capital estimation, its structure. Also we paid special attention to application of intellectual capital estimation in innovative economic as the main driver of economic growth. The continuous process of accounting and control of mental capital would allow to invest resources in the most effective manner. We proposed the IC classification which allows to understand its structure in a better manner, and also to develop universal methods of its quantitative calculation consequently. We hope that this article will contribute into understanding of intellectual capital significance as the major factor of production in economic, same as people's needs are satisfied after the target-setting process which is undoubtedly a mind's prerogative.

Keywords: *intellectual capital, human capital, innovative economic, value added intellectual capital (VAIC), innovations.*

INTRODUCTION

In conditions of globalization process, increase of information-communication technologies' role, holding of key positions in production by high-qualified specialists, the intellectual capital begins to play the leading role indetermination of organizations' competitive ability. One of confirmations of this conclusion is the tendency of market value exceeding the balance value of leading global companies, which, in turn, is the evidence of increase of role of those value factors that are not taken into account in annual statements (Koba N. V., 2012). Researchers in this sphere call such value factors that were not taken into account the intellectual capital of organization. So, the indirect proof of this is the fact that approximately 75% of market value of companies in America is created by invisible assets (Kaplan, R.S. and D.P. Norton., 2004).

One of the problems of organization's intellectual capital is the complicity of its account and estimation of value, including uncertainty of goals that occurs at conduction of these estimations. The essence of intellectual capital causes a significant impact on method of its

calculation, which should be taken into account. Thomas Stewart, one of the founders of intellectual capital studies, was determining the essence of intellectual capital in the following way: "...intellectual capital is the accumulated useful knowledge", "intellectual material that is formed, reserved for the company and is used for production of more valuable property. The mind becomes the property when under the impact of a freely acting force of the brain is created something useful, having a certain form: data list, data base, process description etc." (Stewart T., 1991). We can speak about the intangible nature of intellectual capital.

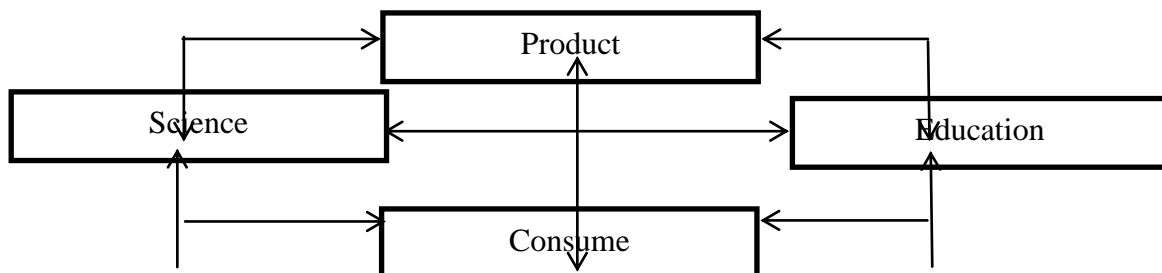
METHODS

Methodology of the research is presented by methods of graphic analysis, synthesis, connection of historical and logical, normative and positive analysis and also by methods of expert estimations.

RESULTS

Determination of method of intellectual capital estimation requires analysis of not only presently existing methods, but also the analysis of innovation process, and also of intellectual capital's structure. Initially, innovation process was presented as a chain "science – education – production – market", where interaction is performed in frames of infrastructure created by the state. Later P. Auger proposed a different linear chain: "fundamental researches – applied researches – development – production" (Auger P., 1968). However, the innovation activity presents a non-linear connection of state and social institutes, business communities and educational institutions, that in general compose the long-term development strategy. According to V.A. Skvortsova and A.O. Skvortsov, the innovation process is conducted not by linear scheme but is stipulated by multinomial causality, counter impact of determinants and reverse connection of its elements (Skvortsova V.A., Scvortsov A.O., 2012). Therefore we will consider the complex of direct and reverse connections inside of self-developing system of the innovation process (see Fig. 1).

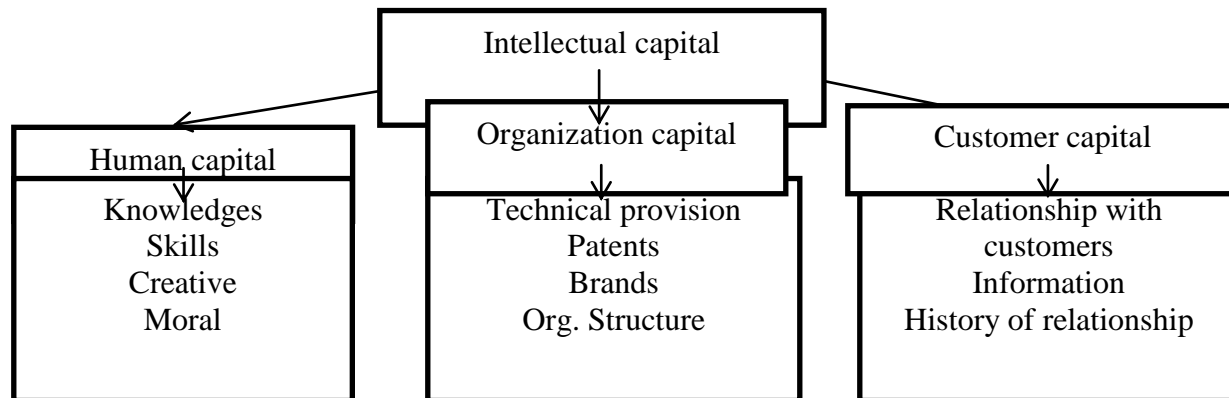
Figure 1
INTERACTION OF INNOVATION PROCESS' ELEMENTS



One of the widespread structures of intellectual capital in scientific literature is the structure presented by Sweden model Skandia (Edvinsson and Malone, Skandia Value Scheme,

1997). According to it, we can present the intellectual capital as aggregation of human, organizational and consumer capitals (see Fig. 2).

Figure 2
STRUCTURE OF INTELLECTUAL CAPITAL



Domestic and foreign experience shows that the major source of intellectual capital is the human capital representing the aggregation of knowledge, abilities, skills and experience, competences, motivations, creative, entrepreneurial abilities and also of moral values of attitude to work. Also, L. Edvinsson considers the intellectual capital as aggregation of human capital (competence and abilities of personnel that are not a property of enterprise) and structural capital (technologies, software, management systems). And, in its turn, the structural capital can be presented in form of customer and organizational capital (Edvinsson, L. and Malone, M.S., 1997).

Professional knowledge, skills and abilities of personnel serve as the source of enterprise's added value. This process is described both in classic political economics and in theory of a human capital. However, in this case occurs mixing of intellectual capital with common knowledge, i.e. with human capital, which according to ideas of V.N. Belkin, O.A. Antonov, N.A. Belkin is considered improper. They think that "new knowledge is the basis of intellectual capital... New knowledge is monopolized and capable to yield a monopoly profit when applied in production of goods and services. It can also yield a profit by cost of sale of new knowledge embodied in patents, licenses etc. New knowledge is not monopolized for ever. It is spreading in branches not only via sale of patents and licenses, but also via industrial espionage, moving of new knowledge's authors to other companies, illegal copying of of new technique's samples, technologies, organization of production, labor, management. Eventually it became a common knowledge, increasing the general effectiveness of branch's and country's economic". (Belkin V.N., Belkina N. A., Antonova O. A., 2012).

There are multiple diverse methods of intellectual capital estimation, among which D. Skirme determined four approaches to measuring of intellectual capital in organization (Kazakova N.V., 2003): estimation of knowledge as assets, potentially salable on market (Asset); estimation of benefits from implementation of knowledge management program (Benefits);

calculation of knowledge management effectiveness on basis of annual comparison (Baseline); estimation of indexes reflecting current activity (Action).

We can present the following classification of intellectual capital estimation methods:

1. methods of direct estimation of intellectual capital – estimation of value of invisible assets as aggregation of separate components that in turn could be estimated directly or via aggregation of indexes;
2. methods of market capitalization – estimation of intellectual capital is conducted using indexes of company's market value;
3. methods of assets profitability – estimation of net asset value of invisible assets;
4. methods of system of indexes – estimation is performed by separate components of intellectual capital on basis of conception of balanced indexes system (Bontis N., 2000; Jurczak J., 2008).

We will consider the table conducted by Koba N.B., in which twenty methods with information on their advantages and drawbacks are described (Koba N. V., 2012).

Table 1
METHODS WITH INFORMATION ON THEIR ADVANTAGES AND DRAWBACKS

Methods	Method's essence	Advantages and drawbacks
1. Methods of direct estimation of intellectual capital		
Technology Broker	Estimation of organization's IC value is based on results of analysis of organization's answers for 20 questions that include four major components of IC: market, infrastructural, intellectual and human assets. In method's basis lies the suggestion the market values if the result of total amount of visible actives and IC.	It gives organizations the opportunity to determine the IC value. The main drawback of this methods is the difficulty of transfer from qualitative results of questioning to actual IC value.
Citation-Weighted Patents	Estimation of "technological factor" via patents developed by organization. IC is measured on basis of R&D impact on series of indexes describing patents of organization (quantity of patents, share of expenses for R&D in calculation on one dollar of sales etc.)	It connects successfulness and market value of organization with effective application of its patents. Not suitable for companies that do not have any patents.
Inclusive Valuation Methodology	Use of hierarchy of united weighted indexes with further calculation of relative and not absolute value.	Does not calculate the absolute value of IC.
The Value Explorer	Calculation and division of value into five types pf invisible assets: assets and deposits; skills and implicit knowledge; collective values and standards; technologies and explicit knowledge; major and management processes.	Takes into account all forms of knowledge in organization.
Intellectual Asset Valuation	Methodology of estimation of intellectual property value.	Does not take into account other IC constituents.
2. Methods of market capitalization:		
Market-to-book Value	IC value is calculated as difference between market value of the company and its balance value.	Does not take into account of non-market factors in formation of company's value.
Tobin's Q	Estimation of IC on basis of calculation of proportion between market value of company and value of all its assets replacing. Change of this coefficient shows the effectiveness or ineffectiveness of IC use.	Does not take into account of non-market factors in formation of company's value.
Investor Assigned	Market value of company is divided ro physical capital and summarized with realized IC, IC erosion and stable	Does not take into account of non-market factors in formation of

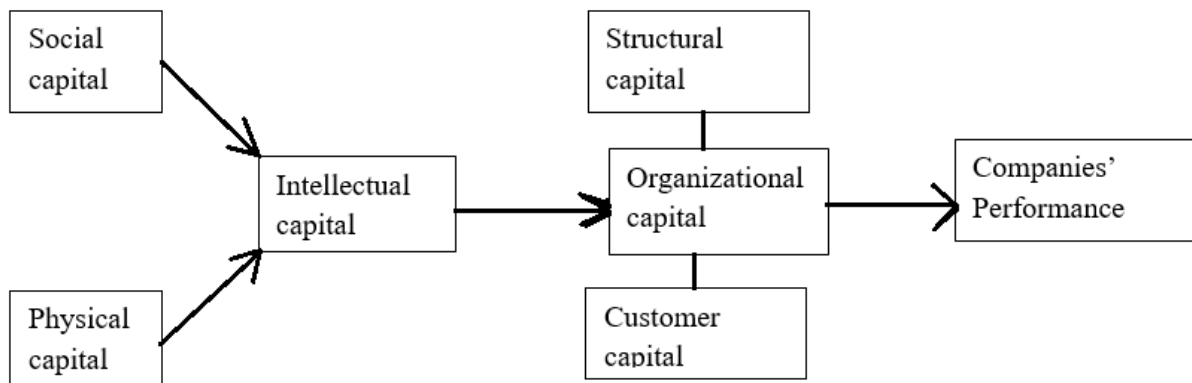
Market Value	competitive advantage.	company's value.
3. Methods of return on assets		
Value Added Intellectual Coefficient	Measures the degree and effectiveness of value creation by intellectual capital and financial capital on basis of interaction of three constituents: financial, human and structural capitals.	Contribution of each components into IC component is visible. Capital of relations is not included into IC structure.
Economic Value Added (EVA)	Calculated by regulation of company's profit and its expenses for invisible assets. Changes in EVA determine effectiveness or ineffectiveness of IC.	Does not require presence of any specific IC indexes. Not suitable for measurement of quantitative amount of IC value.
Human Capital Valuation	Allows to include estimation of human capitals into traditional account system. At this the initial value is calculated.	Other IC constituents are not estimated.
Calculated Intangible Value	Excess return on material assets is calculated, then this number is used as basis for determination of invisible assets profit share.	Not suitable for measurement of quantitative amount of IC value.
Knowledge Capital Earnings	Income on IC is estimated as a part exceeding standardized income and anticipated income related to balance assets.	Not suitable for measurement of quantitative amount of IC value.
4. Methods of indexes' system:		
The Skandia Navigator	Estimation of IC is conducted by calculation of indexes of the following directions: finances, customers, processes, renewal and development, human resources. At this united money indexes show the money value of IC, and percent show the IC effectiveness coefficient. Product of aggregated money and percent indexes determines the IC value.	Does not trace IC dynamics.
IC-Index	At IC estimation the indexes of previous periods are taken into account: Allows to compare changes in IC with changes of company's market value.	Takes into account the drawbacks of Scandia Navigator.
Value Chain Scoreboard	Matrix of non-financial indexes consisting of three categories according to development cycle: discovery, studying, implementation and commercialization.	It is difficult to connect calculated indexes with financial indexes.
Balanced Scorecard	Measures effectiveness of the company by the following aspects: financial, customer, training and internal processes.	It is difficult to connect calculated indexes with financial indexes.

As was mentioned above, in contemporary developed economic a careful attention is paid to problem of intellectual capital, because this is one of the major factors of intense economic growth. Namely investments into specific assets, which are a human capital, allow to achieve the increase of intellectual capital in most effective and optimal manner. But due to abstractness and immateriality of object researched by us, we are not able to unambiguously distinguish the method of its calculation, most suitable for us (Ming-Chin Chen, Shu-Ju Cheng, Yuhcang Hwang., 2015). Among the represented methods we prefer the VAIC model developed by Pulic A., because here, in our opinion, is presented the valid calculation method and also classification, except some inaccuracies. The given model has several drawbacks, that do not allow to use it as unified method for calculation of intellectual capital. So, we agree with a range of scientists that the given model is inapplicable if the company has no public stock offerings and in absence of special reporting system (Hong Pew Tan, David Plowman, Phil Hancock., 2014).

We can propose a complemented structure of intellectual structure. In our view, the intellect is not a storage of knowledge, skills and experience itself. It is just a mere ability to

apply them, i.e., it can be presented in form of certain coefficient of human effectiveness. This allows to interpret negative deviations, when intellectual capital causes objective costs to everybody, including its bearer, and is not his goal. Structural, organizational and customer capitals are exogeneous determinants, because the carrier of mind is a man, and these categories present the external impact on a man, and, therefore, on results of his actions. The edge separating human capital, in the most general meaning, into social capital (aggregation of skills, experience, knowledge gained by a man in course of socialization) and physical capital (we understand it as aggregation of abilities, physical peculiarities of each individual that give him a comparative advantages in performance of certain operations in comparison with other people) is important. We can present the following structure of intellectual capital (figure 3).

Figure 3
STRUCTURE OF INTELLECTUAL CAPITAL



From our point of view, one can consider the economic as innovative if continuous effective investments in intellectual capital of each individual, starting from school period are going on in it. Applying a certain method of general selection, society would be able to determine the most "investment appealing" people. Such jointed policy of state and business would allow to involve into economic a larger quantity of intellectual capital, which, in turn, could be a new spurt in scientific -technical progress and a driver of economic growth.

CONCLUSIONS

Intellectual capital is an important basis of economic activity.

There are multiple approaches to determination and calculation of its ambiguous nature; The structure proposed by us would help to complement and generalize the influence of capitals on company's productivity. Without taking into account the connections between elements, we perceive the development of quantitative calculation of intellectual capital with overcoming of existing drawbacks of VAIC model is possible.

SUMMARY

Intellectual capital is the most important constituent of economic relations. Its ambiguous nature does not allow to distinguish the unified method of its calculation and exact determination. We attempted to present the most complete list of existing approaches to determination of qualitative and quantitative nature of intellectual capital. Also we considered the most perspective methods of intellectual capital analysis that are the most perspective for innovation economic. We proposed a scheme of intellectual capital structure, where it is represented as endogeneous determinant of human activity effectiveness, The concept of IC is very important for innovative economic, because only on its basis could be viewed a further economic progress of all society, besides the social and scientific-technical progress.

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INCENTIVES AND FACTORS AFFECTING THE IMPROVEMENT OF THE HUMAN CAPITAL QUALITY IN THE INNOVATIVE ECONOMY

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ABSTRACT

Development of innovative economy, accelerating of technological change require new forms and methods for solving of economic and social problems, among which the development of the system of motives and incentives for improvement of the quality of human capital occupies the important place. However, motivation of employees, only the financial reward, does not achieve the strategic objectives of output the economy to a qualitatively new level. Necessary and other, non-financial incentives of productive labor motivate people to improve their physical and intellectual capital.

The development of advanced forms and methods of motivating employees should be based on a system of tangible and intangible incentives to work and self-realization. Stimulation as a way to control the quality of human capital involves consideration of the interests and needs of the individual and of the staff, the degree of their satisfaction, because the needs are a critical factor in the behavior of social systems.

The author makes an attempt to systematize the needs and incentives that affect improving the human capital, the possibility of their application in the innovation economy and analyzed the prospects of their development on innovative - active enterprises in the production and service sectors of the Republic of Tatarstan.

Keywords: *human capital, non-financial incentives, innovation, labor productivity, innovation-active enterprises, innovative economy.*

INTRODUCTION

The organization of management by motivating employees to improve their quality is an urgent problem at the present stage, since its successful solution will largely determine the health of the organization at the micro level, the dynamics of innovative development and economic growth of the state as a whole.

Incentives as external influence of objective conditions on human activity, motivate him to improve the quality in that if they interfere with his needs. In general, the needs of the person, as a participant in the production process can be classified into economic, biological and socio-psychological. Satisfaction occurs through the formation of the appropriate conditions that encourage people to self-improvement and better performance (Igonina L., Sobolev, E., 2012).

Economic needs expressed the need for employee direct material benefits by wage and other monetary incentives, as well as indirect benefits through the opportunity to have free time.

A worker's desire to save money in the process of producing its own energy, to be sure of personal security, to have a comfortable working space forms a group of biological needs. The creation by the employer of appropriate conditions through technical upgrading of production, providing modern means of labor encourages employees to raise their knowledge level, desire to

be innovative technologies. These factors can be attributed to the non-financial incentives improve the quality of human capital.

The following non-financial incentives arise from the socio-psychological human needs. This can be attributed to the desire of the employee to participate in the innovation process, self-expression, self-education, achievement of high results.

METHODS

The research methodology presents the methods of graphical analysis, synthesis, communication of the historical and logical, normative and positive analysis, as well as methods of expert estimations.

RESULTS

We propose a system of requirements and incentives to increase human capital in the innovation economy (figure 1). This model is based on the needs of the person as a participant in the production process.

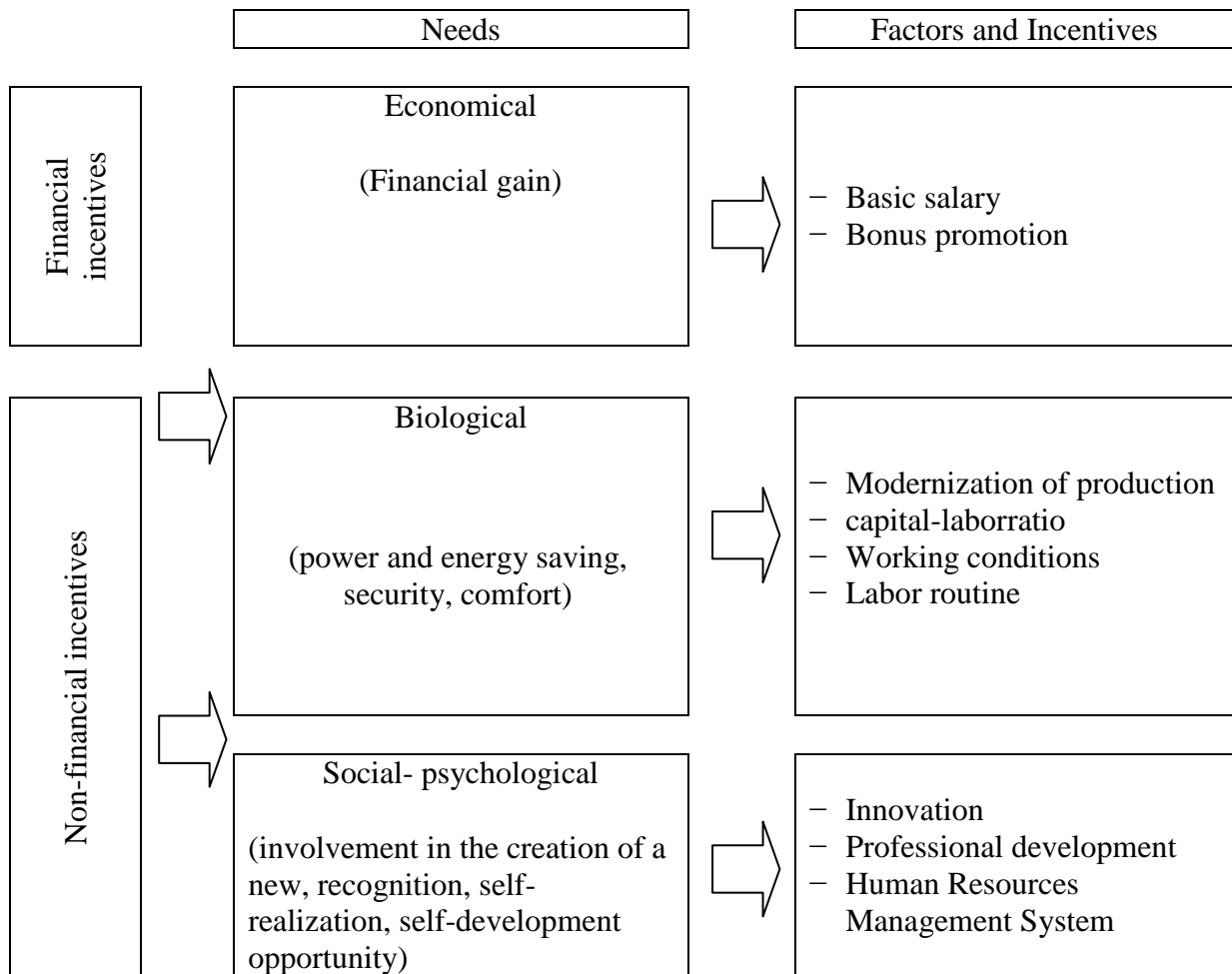
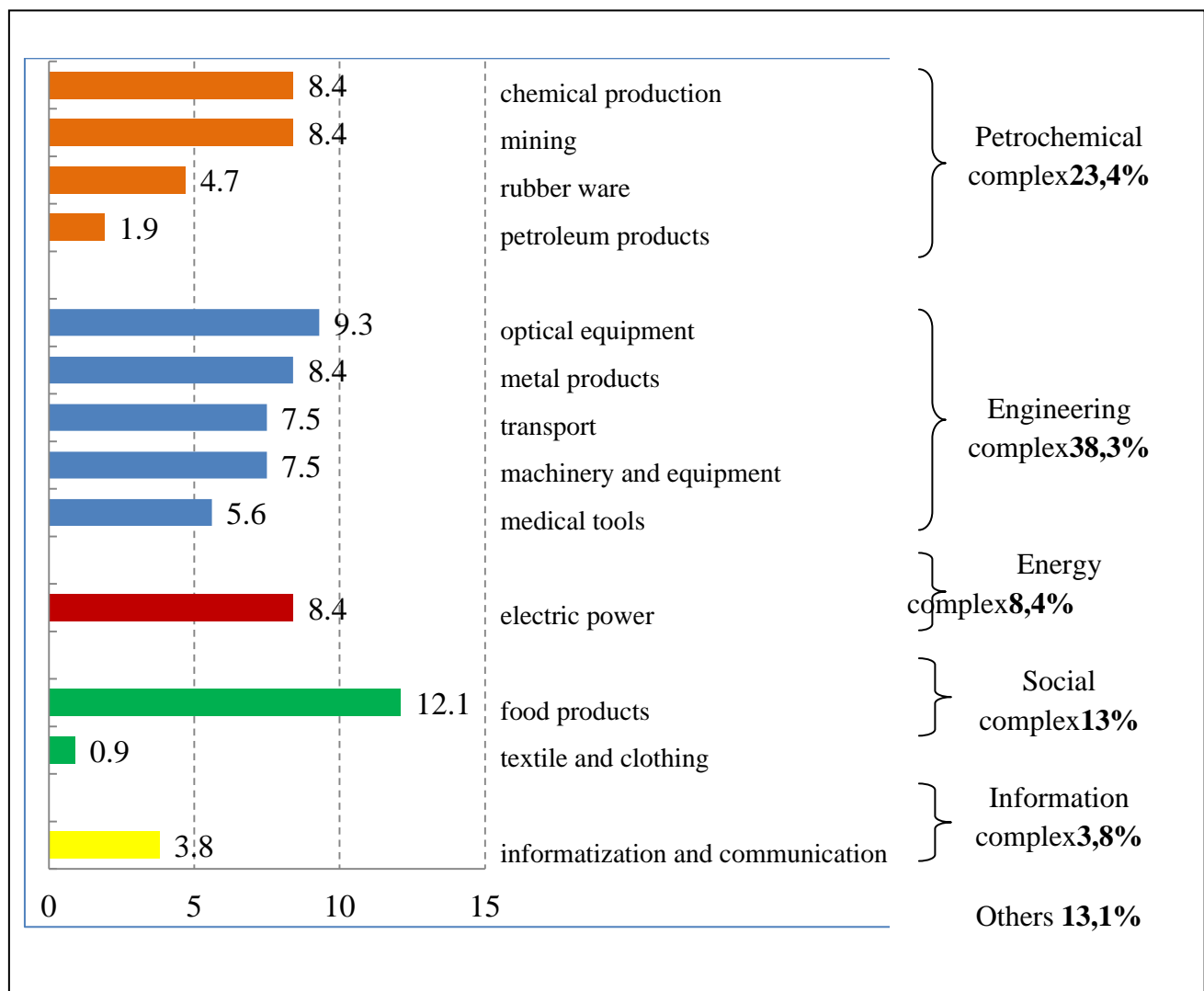


Figure 1
SYSTEM OF REQUIREMENTS AND INCENTIVES FOR IMPROVING HUMAN CAPITAL IN INNOVATIVE ECONOMY

Modernization and innovative development of economy are two interrelated sides of one fundamental process by which the state can optimize the accumulation, updating, distribution and use of tangible and intangible assets to increase capacities for sustainable development. Let us analyze in figure 2 the innovative activity of the Republic of Tatarstan, which involves enterprises of many types of activities: 75% of them enterprises of the real sector of the economy, 25% organization of the service sector (Access mode :<http://tatstat.gks.ru/>, 15.03.2016).

Figure 2
STRUCTURE OF THE ORGANIZATIONS IMPLEMENTED TECHNOLOGICAL INNOVATION IN ECONOMIC COMPLEX AND THE TYPES OF PRODUCTION OF THE REPUBLIC OF TATARSTAN, AS A PERCENTAGE OF THE TOTAL NUMBER OF INNOVATIVE ENTERPRISES



The most stable in the innovative activities of the Republic of Tatarstan are industrial production, where the main part of the innovation - active enterprises, accounting for about 70% of total numbers from year to year remains. The remaining 30% of the organizations showing innovation activity not more than 1-2 years. For the service sector is characterized mainly "one-time" innovation aimed at improving marketing and business processes.

The general picture of innovative processes in the Republic identifies industrial complexes, which account for about 90% of all the innovative organizations. The main innovative activity (62%) is concentrated in two major industrial sectors: mechanical engineering and petrochemistry.

In table 1 we can see that the lack of development of organizational and marketing innovations in the aggregate level of innovative activity slightly exceeds the level of technological innovation activity (*Access mode* : <http://tatstat.gks.ru/>, 15.03.2016).

Table 1
THE AVERAGE LEVEL OF INNOVATION ACTIVITY OF ORGANIZATIONS OF THE REPUBLIC OF TATARSTAN ON TYPES OF INNOVATION

Type of innovation	Organizations	Industrial enterprises from them
Technological innovation	12,5	14,8
Marketing innovation	3,5	4,2
Organizational innovation	4,9	5,4

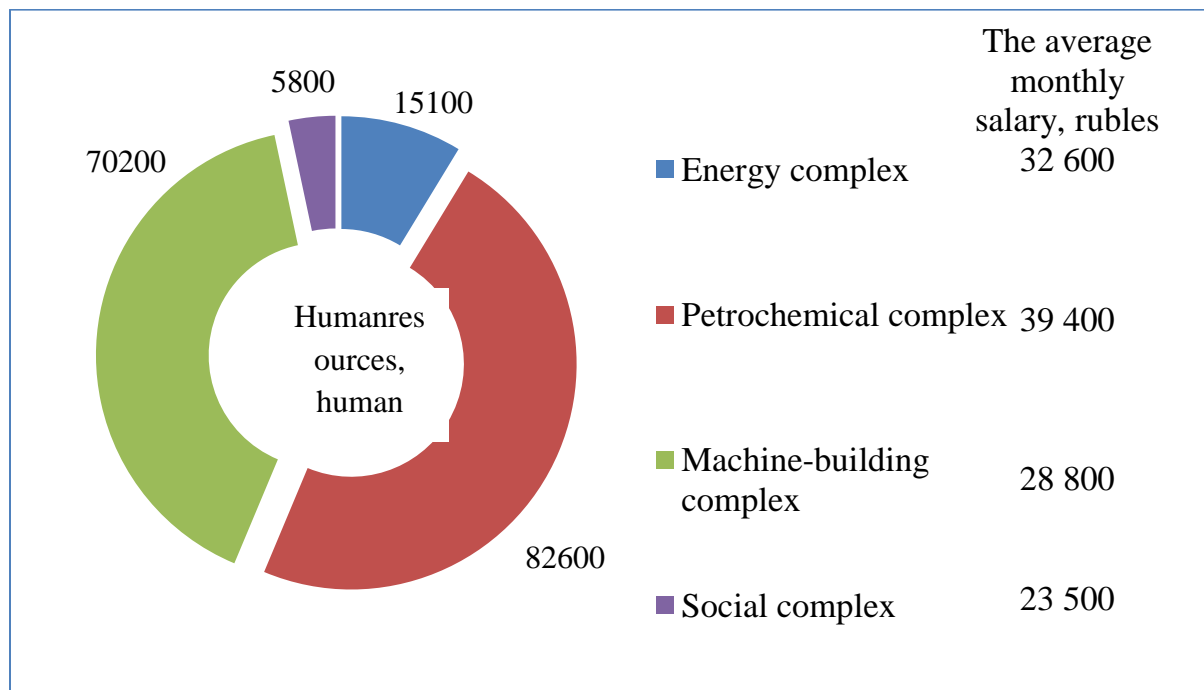
Organizational innovations are expressed in the intensive introduction of modern methods of corporate governance, which is the most important factor for improving the productivity and competitiveness of production. Today the level of innovative activity in this area is extremely low. Changes in the system of organization and management in 2014, carried out only 4.9% of the total number of organizations of the Republic.

25.7% of people, or every fourth person engaged in large and medium business of Tatarstan (*Access mode* : <http://tatstat.gks.ru/>, 15.03.2016) work at innovation - active enterprises of the Republic. Over 80% of workers in this category are employed in the enterprises of petrochemical and machine-building complexes. On average, one innovation - active organization accounts for 1.5 thousand people, non-innovative – 255. Skills are characterized by the presence of higher vocational education, higher in innovative organizations. Specialists with higher professional education account for 26.1 per cent, compared with 23.5 per cent in non-innovative organizations. Private rate of returns to education is an integral part of the development of innovative enterprises and one of the main factors of increasing the level of human capital in the Republic of Tatarstan. As noted by G. Psacharopoulos and H. Patrinos, private rate of returns to education is generally higher than the social rate of return if the latter is determined on the basis of estimates of private benefits and total (private and public) costs (De la Fuente A., 2002). Similar opinion can be traced in the works of R. Hall, C. Jones and F. Caselli (Caselli F., 2005).

The labor market is the main source of accumulation of capital and wealth in the country, and thus an incentive to interest investors and the entire innovation development (Zubakov V.M.,

Mustafin A.N., 2015). Material stimulation of employees of organizations to improve the quality of their activities due to the average level of wages and other incentive payments. Undoubtedly, this is one of the most important incentives encourage people toward self-improvement, professional development, intensification of labor. At the enterprises of the main innovation complexes of Tatarstan, the average wage in 2015 amounted to 34 500 rubles. This is almost 1.5 times higher than the average for Tatarstan economy (Access mode :<http://tatstat.gks.ru/>, 15.03.2016). In figure 3 we can consider the structure of employment and wages in the innovation active enterprises in the Republic of Tatarstan on economic complexes.

Figure 3
THE STRUCTURE OF EMPLOYMENT AND WAGES IN THE INNOVATION ACTIVE ENTERPRISES
IN THE REPUBLIC OF TATARSTAN ON ECONOMIC COMPLEXES, PERCENT



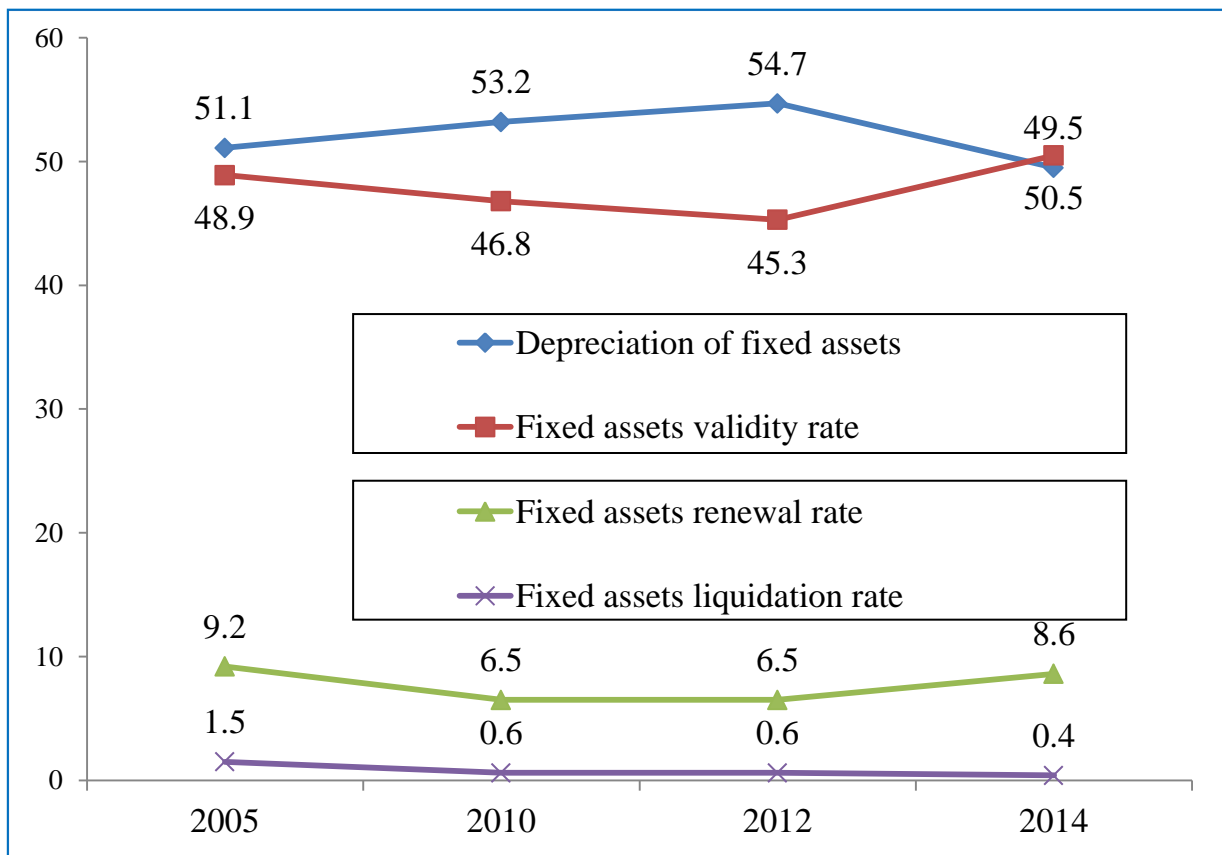
The proportion of newly hired and terminated employees at innovative companies is about 17% of the total number of employees of the organizations while in the whole sectors of economy of the Republic of movement of workers at 34%. This suggests stability of personnel, prosperous corporate environment for highly productive human activities.

About 35% or one third of the innovative organization has research and design units. For non-innovative the companies in this index does not exceed 8%. Thus, the level of education of members of the big differences between innovative and non-innovative organizations is not observed: 26% and 23%, respectively.

Human capital is a factor of increasing economic efficiency, growth and frequency of national wealth (Becker, Gary S., 1964). The important incentive to improve the quality of human capital, based on biological needs of a person are comfortable and safe conditions of work that can be achieved by equipping the production with modern equipment, automation of production cycles.

Characteristics of the production process are determined by the used equipment, objects of labor, technology, system maintenance jobs. Basic economic characteristics and trends of the process of modernization of fixed assets at the enterprises of the Republic of Tatarstan can be seen in figure 4 (Access mode : <http://tatstat.gks.ru/>, 15.03.2016).

Figure 4
BASIC ECONOMIC CHARACTERISTICS AND TRENDS OF THE PROCESS OF MODERNIZATION OF FIXED ASSETS AT THE ENTERPRISES OF THE REPUBLIC OF TATARSTAN, PERCENT

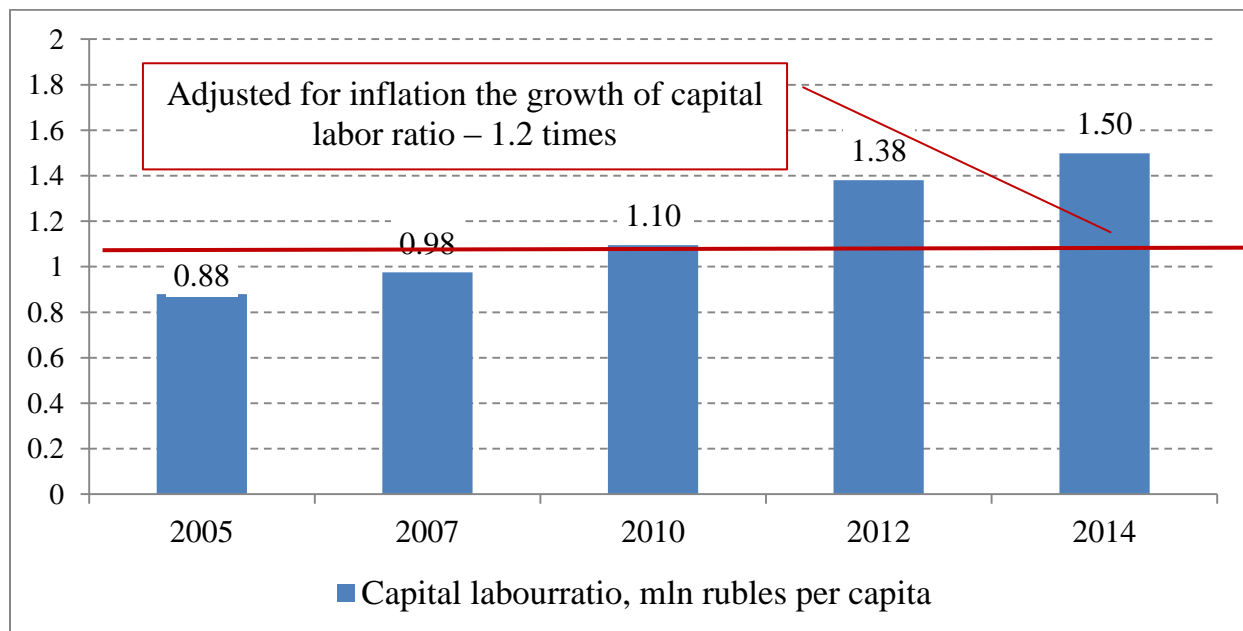


To date, the degree of wear of basic production assets of enterprises of the Republic of Tatarstan amounted to 49.5%, and the ratio of shelf life, respectively, of 50.5%. Moreover, in the whole of the petrochemical and machine-building complexes, where a high proportion of innovative enterprises, deterioration of buildings and equipment at the level of 50%. For 2005-2014 years, the level of depreciation of fixed assets of enterprises of Tatarstan ranged from 49% to 55% with multidirectional dynamics.

In order to minimize the negative impacts of obsolescence of equipment on the productivity of enterprises, it is necessary to seek financial resources and to carry out the reconstruction of existing facilities. It could be as updating parts of machines and equipment and modernization of obsolete equipment.

The growth of capital labor ratios one of the most important factors increasing labor productivity. Figure 5 shows the capital labor ratio at the industrial enterprises of the Republic of Tatarstan (Access mode : <http://tatstat.gks.ru/>, 15.04.2016).

Figure 5
THE RATE OF CAPITAL LABOR RATIO AT MANUFACTURING ENTERPRISES OF THE REPUBLIC OF TATARSTAN

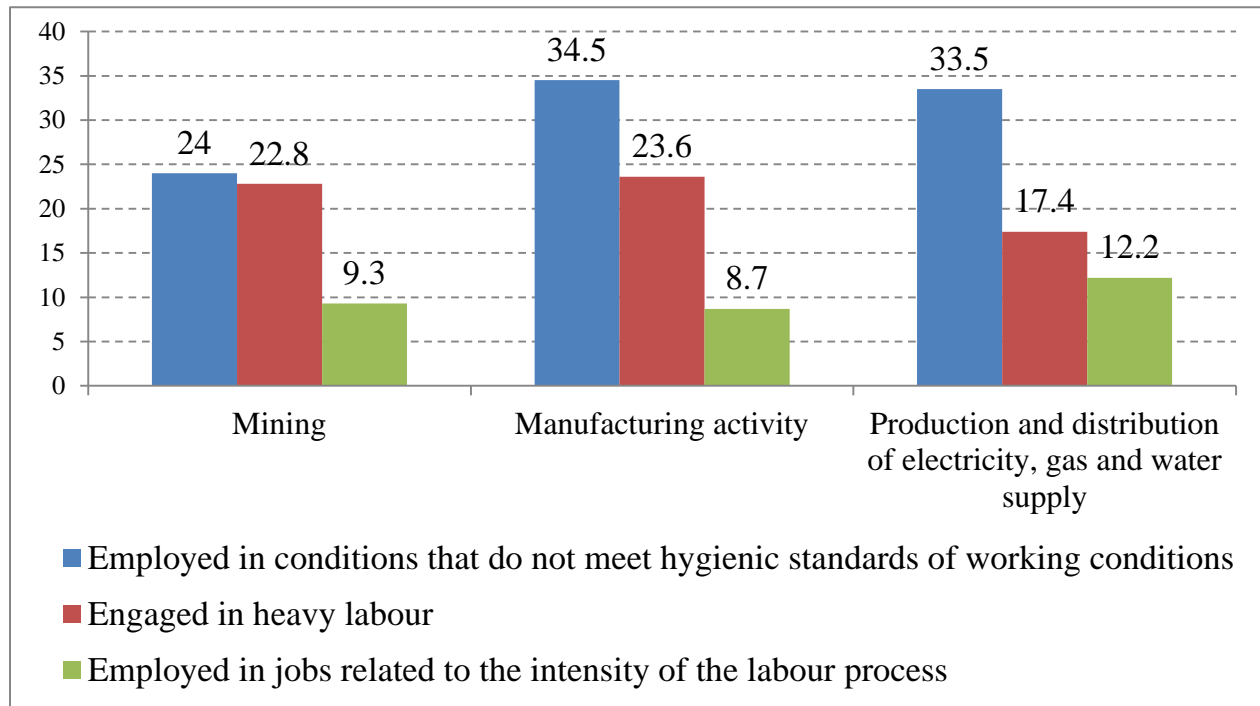


Since 2004, the rate of capital labor ratio industrial enterprises of the Republic of Tatarstan increased in current prices by 1.7 times. In the post-crisis period of 2011-2012, the economic growth has been based, largely, on resource rents, rather than on technological development and was accompanied by a sharp increase in needs in human resources (Gotsulyak I. F., Ignatjeva O. A., 2015). However, this significant increase is caused largely by the influence of inflationary processes. The deflation data, i.e. bringing the cost of fixed assets in prices of the base year shows only a slight increase of provision of employees of enterprises fixed assets for the period 1.2%.

Ultimately, we can draw conclusions about the change in the rate of capital labor ratio is only possible in combination with the parameters of productivity. If the growth rate of labor productivity lagged behind the growth rate of capital labor ratio, it indicates a misallocation of resources. The reason may be irrational, the number of non-production personnel, and unwarranted growth of the passive part of fixed assets (Bereznoi A., 2014).

The following factor that allows to stimulate workers to more high-quality and intense work, an interest in the production process, are comfortable and safety. Each employee at every stage and phase of the production process, it is important to be confident in the safety, absence of harmful factors on health. If this is not completed fully, there is a tense situation in the workplace results in negative consequences have a direct impact on the intensity of labor, its quality, and, accordingly, to dissuade workers (R. S. Grinberg, P. V. Savchenko., 2014). In figure 6, consider the proportion of number of employees and industry of the Republic of Tatarstan employed in harmful or dangerous working conditions, in percentage of the total number of employees (Access mode : <http://tatstat.gks.ru/>, 15.03.2016).

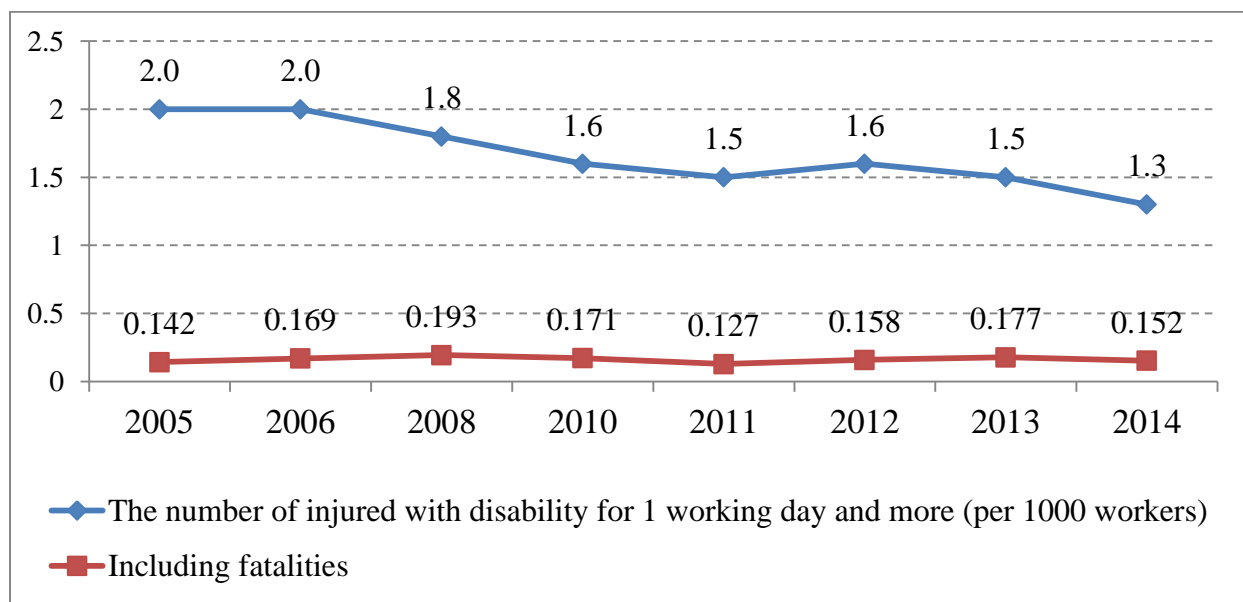
Figure 6
THE SHARE OF FACTORY WORKERS OF THE REPUBLIC OF TATARSTAN EMPLOYED IN HARMFUL OR DANGEROUS WORKING CONDITIONS, IN PERCENTAGE OF THE TOTAL NUMBER OF EMPLOYEES



At the industrial enterprises of the Republic of Tatarstan a significant proportion of employees work in harmful or dangerous working conditions. In manufacturing and electricity, every third worker (respectively 34.5% and 33.5%) or busy conditions that do not meet hygienic standards. Hard work is recorded, on average, 20% of employees of industrial enterprises, high intensity of labor process – 10%. On innovative enterprises, while the presence of modern equipment and process automation conditions of work are substantially different, the risk of injury is much lower.

Poor organization of the production process, poor performance of services in labor protection, lack of personal protective equipment are the cause of accidents. To a high level of injury results in savings of guidance on providing safe working conditions. Figure 7 let us consider the dynamics of occupational traumatism in the Republic of Tatarstan (Access mode :<http://tatstat.gks.ru/>, 15.03.2016).

Figure 7
DYNAMICS OF OCCUPATIONAL INJURIES IN THE REPUBLIC OF TATARSTAN, CASES PER 1000 EMPLOYEES



In Tatarstan there is a tendency to reduce the number of accidents and number of persons who became invalids due to injuries and occupational diseases. So, over the last decade, the number of victims with disability for one day or more has decreased 1.5 times. However, the number of cases of operational injuries with a deadly outcome has increased over the same period by 7%.

Experience of the world's largest companies shows that top leaders considers the labor protection one of the top priorities. From dozens of performance management of safe work and the health of their workers, they are tied for second place, immediately after the training and competence of staff.

SUMMARY

In the process of motivation of improving the quality of human capital is important for both financial and non-financial incentives. Man is controlled by his active needs, and the variety allows you to use entrepreneurs in various directions of stimulus of improvement of quality of human capital: from the creation of conditions to meet the lower biological needs, to creation of comfortable social and psychological environment. The highest need for self-expression and growth as human beings in the innovation economy are unlimited, and therefore incentives have a wide range for creativity.

CONCLUSION

The transition from raw economy to the innovative path of development requires substantial investment to modernize the economy. Innovation has become the core competitiveness of enterprises, increase efficiency, improve the quality of products and services (Akhmetshina E.R., Mustafin A.N., 2015). However, because of budgetary constraints the

problem is more financial support and development of innovative projects, as well as mechanisms for investment in innovation and hangings of the quality of human capital (Morozov A. V., Mustafin A. N., 2014). Scientifically proved that the right priorities, namely maintaining leadership innovation organization policy in terms of timely technical re-equipment, optimization of production environment, observance of safety conditions have no less stimulating to the man than financial incentives.

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IMPACT OF REGIONAL ECONOMIC DEVELOPMENT ON MIGRATION PROCESSES

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ABSTRACT

Factors influencing intensification of a migration process should be defined as the potential opportunities of migration, and the actual conditions of implementation of a migration process. Conditions of implementation of a migration process require to determine the intensity of the migration process for formation of priorities within the framework of migration, as well as the quantitative and qualitative dimensions of migration. The factors influencing a migration may be divided into direct (inequality level, poverty level, the value of individual's real income, and the value of his/her real wages), and indirect which include the effectiveness of a national or regional economy (when considering the migration processes within one country). Direct factors permit a comparison of the parameters in the countries interrelated with a migration process. Changes in these parameters that are adjusted to the expectations of migrants and to the existing information asymmetry upon formation of the optimal solution for the migration enable virtually (on the basis of the information collected) to evaluate the importance of each of these parameters during formation of a decision to migrate. Indirect factors which determine the basic conditions of an intensification of the migration process is form the potential opportunities of migration. It is necessary to include in the number of indirect factors not only parameters of a national economy as a whole, but also the parameters of the development of certain regions or areas which form a migration attractiveness of these regions. In this case the migration attractiveness should be defined both by the overall macroeconomic parameters of the region development, and by a socio-psychological climate, and social development priorities.

Keywords: *economy, efficiency, competition , inequality, capitalism, poverty, social policy, society.*

INTRODUCTION

Migration processes and their intensity is determined by a number of parameters which are the characteristics of a national economic system as a whole. Considering the processes of migration it is necessary to account for the characteristics of inequality, poverty, and formation of the level of wages in the corresponding territory. Furthermore, opportunities of regions themselves within the frameworks of effective development, and existing benefits of the territory are sufficient to enhance the migration flow.

When analyzing the migration processes, it is necessary to focus also on the features of the labor market in different countries. These features, and as a consequence, differences in wages and real incomes have become one of the basic reasons for intensification of the migration process. When considering the labor market it is necessary to take into account that the wages is not only a parameter that reflects the characteristics of labor supply and labor demand, but also one of the most important parameters which determine the significant characteristics of an

individual. Wages actually reflects the status, job prestige value, and social characteristics of an individual. When analyzing wages it is possible also to identify the availability of a relationship between wages and the rate of individual success (his/her career and professional status).

Based on the foregoing, it can be argued that the organization is not entirely free in determining an employee's wages. For example, if an organization seeks to attract employees without professional skills, in this case the involvement by increasing wages will cause a violation of the social bonds between the professional status of a worker and remuneration, and, in turn, will have an impact on wages of more skilled workers (Askhatova et al., 2013).

THEORY

The efficiency of workers is a direct function of the wages. Raising wages is necessary for several reasons:

- By virtue of the fact that an organization incurs certain expenses on the best training of an employee to work at his/her workplace,
- By virtue of the fact that the best product on the market (and the best specialist, respectively) is always in high demand,
- Due to the fact that it is necessary to solve the problems of asymmetric information in the labor market where an employee is always more aware of his/her abilities than his/her employer.

All these reasons stimulate the increase in wages in a market economy, but, as a consequence, employers have to increase in proportion the wages in the entire structure of the qualification hierarchy of the organization. Such a method of attracting labor force in the economy with insufficient labor supply has high economic costs, so the organization can choose to hire foreign workers able to work for lower wages.

Thus it can be argued that the problems of formation of an effective wage is also one of the causes contributing to changes in the intensity of the migration process. Since wages in developed countries appears frequently not only as a source of income, as well as a source of formation of the social status, the problems of motivation in organizations within the frameworks of attraction of labor forces (including foreign one) are formed already at the basic level of the labor market.

In turn, low-skilled workers actually need wages as the only source of income without any need for formation and development of their social status.

We can assume the following main causes of migration in this case:

- 1) the difference between wages and unemployment in countries,
- 2) individual characteristics of the human capital what increase the chance of finding a job and increase the value of income received.

In this case, we'll assume that the total value of the migration is the sum of all individual migrations and the fact that the decision to migrate is influenced by quantities characterizing the labor market (Bagautdinova et al., 2013).

Problems of activation of migration processes in modern economy are interrelated also with the problems of poverty and inequality in the economic systems of various states (poverty and inequality problems are manifested in practice as part of changes including wages). Considering the possible social equality concept it is necessary to determine the criteria of relation between a contribution to the development of society on the part of an individual and the value of social benefits that this individual receives from society. Undoubtedly, the society

should ensure to a certain extent equality of individuals in a number of sectors of the economy. However, at the same time society has to create (and this is the main condition for the development) an opportunity to increase a personal wealth. Upon that, a market mechanism should necessarily take into account also such an opportunity to enhance well-being as migration of an individual (including potentially within definition of the goals and directions of the migration process). Thus, within consideration of the evolutionary development of the capitalist system and the functioning of a market economy there is a need to assess the possibilities of the instruments used within the framework of regulation of qualitative and quantitative dimensions of migration (Corry, 1996).

Analyzing the processes of inequality, poverty, changes in wages and migration in the Russian economy it should be noted that the relations between the state and the market are now in the process of a long and complex transformation (this is an objective process which is currently intensified by a general crisis state).

Currently traditional, classical measures of control by the state of the current revenue generation system are used:

1. Regulation within the framework of implementation of fiscal policy (including within the framework of the appropriate social policy and income redistribution).

2. Direct regulation by the state of the pricing system and the market regulation system (depending on the goals set).

RESULTS

Considering the intensity of the official migration flows in Russia (in comparison with a number of macro-economic parameters), let's pay attention to Table 1.

Table 1
CHANGES IN GDP (IN 2008 PRICES), UNEMPLOYMENT LEVEL AND MIGRATION GROWTH IN THE RUSSIAN ECONOMY

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
GDP (in 2008 prices, billion rub.)	26062 .5	27312 .3	29304 .9	31407 .8	33410 .5	36134 .6	39218 .7	41276 .8	38048 .6	39762 .2	41457 .8	42869 .6	43444 .4
The rate of change of GDP in %	5	4.8	7.3	2.	6.4	2.	8.5	5.2.	-7.8	4.5	4.3	3.4	1.3
The unemployment level in % ¹	9	7.9	2.	7.8	7.1	7.1	6	6.2.	8.3	7.3	6.5	5.5	5.5
The rate of change in the unemployment	-15	-12	3.8	-4.9	-9	0	-16	3.3	33.9	-12	-11	-15	0

1 The data for 2003-2011 are recalculated with respect to the results of the population census of 2010 (according to the sample survey of population on employment problems).

ent level, in%													
Net migration	81781	87149	43884	41275	10743 2	13231 9	23994 3	24210 6	24744 9	15807 8	31976 1	29493 0	29585 9
Rate of change in net migration, in %	-66.2	6.6	-49.6	-5.9	160.3	23.1	81.3	0.9	2.2.	-36.1	102.3	-7.8	0.3

On the basis of the statistics, it may be noted the relationship between the increasing migration flow and changes in the level of unemployment in Russia, except for the period of the global crisis (2008-2009). It should also be noted that the intensity of migration is affected by the economic situation in the countries traditionally supplying migrants to the Russian Federation, and the economic situation in Russia.

When using the regression-correlation analysis, a model which determines the dependence of the GDP rate of change for the Russian economy on the growth of export earnings (X1), unemployment level (X2), and investments in fixed assets (X3).

$$y = 1,04 \frac{x_1^{0,18} \cdot x_3^{0,15}}{x_2^{0,33}} \varepsilon$$

It is the parameters which, on the one hand, define GDP changes, and, on the other hand, the changes in the volume of unemployment are strongly correlated with the magnitude of the real income of the population.

This model covers the time period up to 2012, i.e. up to Russia's WTO accession. The analysis in the model demonstrated the absence of autocorrelation in the residuals. The regression coefficient has little relevance with the growth rate of export earnings. At the same time the removal of this option from the model is biased, since a particular criterion assessment testifies to the great influence of the growth rate parameter on the rate of change in GDP. Tightness of the total effect of all parameters on the rate of change in GDP may be estimated as high (68% of the variation rate of GDP change is due to a change in these parameters).

Considering the territorial development of different regions of Russia in terms of efficiency, it may be noted that this option might be attributed to indirect parameters which are both an incentive to enhance the flow of migration to these regions. In turn, the development of the regions is quite often defined by innovative economic relations (evolutionary development allows maximal use of existing potential and create conditions for transition to new ideas).

It should be noted that regardless of the type of proposed and implemented innovations on this or that territory, innovations, on the one hand, always are a prerequisite providing a possibility for efficient formation of the regional economy, because it is the innovations that defines the main directions to use efforts from the state (namely, the sphere of innovation changes allows obtaining the highest additional opportunities for the future development of the region). On the other hand, a well-established and effective economy of the region should lead also to gain in innovation activity as one of the possible consequences (Dustmann, 2008).

Considering at the moment the migration process, we note that the peculiarity of Russia that the conditions for the formation and intensification of migration flows are still largely

dependent on the development in this or that region of the elements of a market economy and, very significantly, the existing conditions of competition. Also, despite the ongoing globalization, the direct role of the country and a region in recent years has only intensified, and, accordingly, the success or failure of a migrant in the achievement of his/her goals is defined, in addition to the competitive advantages of the individual, also by the general state of affairs in the region and in the national economy. In turn, regions and countries are also developed in a competitive environment. The competitiveness of a region is generally understood as its importance in the economic space of the country and its ability to provide a sufficiently high standard of living and the ability to realize the existing potential in the territory. At the same time, competitive advantages of the region are actually determined by the existing capabilities of seeking a regional rent.

Assessing the overall situation in the area of the existing potential of the migration process in Russia and allocating indirect parameters which affect the intensity of the migration process, it should be noted that the very economic policy of development of regions in Russia is now frequently applied also to the concept of clusters development and cluster approach to regional development. The focus of the concept of clusters in the Russian economy is supporting the creation of institutional structures, as well as the cluster forms of integration of organizations within the territory. Particular attention is paid to the development of innovative clusters (De la Dehesa, 2006).

It is believed that the cluster form of industrial organization is very effective and its development could substantially improve the competitiveness and economic performance of territories not covered by the innovation process in large Russian business groups. Spatial proximity of related firms itself in this case can be considered as a factor that provides for holding an innovation activity, and the source of a variety of additional effects accompanying an operation of a cluster. These effects occur in the course of direct contacts between employees of enterprises included in the cluster, as well as serve as a source of competitive advantage.

CONCLUSIONS

Analysis of conditions and prerequisites for intensification of a migration flow thus involves an analysis of the conditions of formation of effective regional economy and identification the strengths and weaknesses of a given region, as well as those factors which may affect the efficiency of development as a whole (defining the potential attractiveness of the region as a part of the migration process). However, existence of these factors themselves is not a sufficient condition to ensure the success of advancing development of the region.

In our opinion the set of factors that must be considered when assessing the increase of efficiency of the regional economy can be defined as follows.

Human potential. Upon that, under the common factor of human potential we understand the availability and qualification of human resources in a given region (taking into account the migration flow within a given territory).

Economic potential. Under the economic potential we mean the availability of economic resources or factors of production available to the area.

Financial factor. Financial factor includes capital markets, and also the quality and stability of financial institutions (this factor must take into account not only regional characteristics, but also the degree of financial market development in the national economy as a whole).

Innovative factor. We understand innovations as the overall scientific and technical potential of a region (both within the frameworks of integrated business groups present in the region and the potential opportunities within formation and development of innovation clusters in the region).

Infrastructure of the region. We consider an infrastructure through the level of development of energy supply, transport, as well as research and information infrastructure (including educational and research institutions operating within the frameworks of the general national or regional innovation system).

Institute of management. We understand the institute of management of the region as the quality of public services and the degree of intervention of public authorities in economic processes of the region.

Accordingly, each region during formation of regulation mechanisms for a migration process requires a preliminary assessment which of the above factors contribute to the growth of efficiency and competitiveness of the region, and which hinder the development, which factors initially present or absent in this particular region, and what to do to improve the contribution of one or another factor in the overall development of the territory.

Thus, it can be argued that if the parameters of wages, individual incomes, increasing poverty and inequalities directly affect intensification of the migration process, the efficiency factor of the regional economy and the national economy as a whole may be attributed to indirect parameters influencing the migration process.

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ISLAMIC FINANCIAL INSTITUTIONS IN THE EUROPEAN ECONOMY

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ABSTRACT

As result of non-satisfaction by outputs of capitalist and socialist economic systems evolution, at the end of XX century the interest to alternative Islamic economic model gradually grows. In practice, Islamic economic model confirms its vitality in market conditions of economic too. In recent years Islamic financial system showed an active development in non-Moslem countries. At this should be taken into account that Islamic financial model requires retaliatory actions from market institutions. Arguments for high potential of Islamic financial institutes and instruments in countries of Europe are brought forward in article. But at present moment only Great Britain among European countries had made significant efforts on implementation of Islamic banking products, in spite of the face that Islamic banking and financial services were offered to Europe nearly thee decades ago. In many aspects this branch is still in infancy. In article, reasons that, in opinion of authors, represent barriers for promotion of Islamic financial institutes and Islamic financial products in European economic and explain insignificance of observed share of Islamic financial instruments at contemporary European market are characterized.

Keywords: *Islamic economic model. Islamic financial institutes, Islamic business geography, Islamic banks, Islamic financial products.*

INTRODUCTION

In the basis of scientific interest at comparison of European and Moslem economic system often lies the thesis regarding retention of economic development of many Islamic countries and advancing of peculiarities of religious world view as the prime cause of such retention. However, as result of non-satisfaction by outputs of capitalist and socialist economic systems evolution, at the end of XX century the interest to alternative Islamic economic model gradually grows. Especially that traditional European investment practices, often driven by uncontrolled rush to over-profits, were the main cause of contemporary global financial crises.

In practice, Islamic economic model confirms its vitality in market conditions of economic. However, at this should be taken into account taht this model require response actions from market institutes in order to guarantee that personal interest and profit motives would not provoke a start-up of socially destructive forces and would not violate standards of justice and fair play.

In its essence, the Islamic economic model is a peculiar system of economic built on unshakable standards and principles of Moslem law. It begins more than 14 centuries ago (Wafica Ali Ghoul, 2011). Differently from Moslem law that is practiced and regulates relations mostly in Moslem environment, elements and mechanisms of Islamic economic model, by virtue

of its universality, could be applied in practice in any economic system, actually.

Global financial crisis that shook the world in years 2008-2011 and its consequences that still have their echoes, stimulated the global community to search for alternative ways of doing business, formation of alternative financial systems. In recent years Islamic financial system showed an active development in non-Moslem countries, too. Islamic banks, insurance (takaful) companies, specializes funds, Islamic bonds (sukuk) are already an integral part of financial market of a whole range of Western countries.

DISPERSION OF ISLAMIC FINANCIAL INSTITUTES IN EUROPE

There is an opinion that promotion of Islamic financial institutes and instruments in non-Moslem countries is a result of oil crisis of 70s years of XX century, when, on the background of oil price growth, rich countries of Persian Gulf states to extend their influence geography (Sobol I., 2015). So, nearly all Islamic banks created in 70s were partially and even completely financed by oil companies.

The present Islamic business geography covers more than 75 countries, including countries of Europe, CIS, USA, Australia etc., where at present day are functioning more than 300 of Islamic financial institutes (Islamic Finance in Europe, 2013; Philipp Warckerbeck, P., 2006).

Although at present scale of entrance of Islamic financial institutes in European economic the seriousness of Islamic financial system as alternative to traditional system in countries of EC seems to be rather doubtful. For example, in Great Britain the cost of Islamic banks assets is estimated as 19 billion GBP (it is less than 1% of total amount of British banking sector assets). For now in USA are operating 2 Islamic banks (Sobol I., 2015). And in European countries with the largest number of Moslem population, France and Germany, there are still no full-fledged Islamic banks present in Asian countries (Trakic, A., 2012).

In Table 1 are represented data on quantity of Islamic banks by separate countries of EC. It is important to note that in Great Britain, a leader of this list, there is no any special legislation regulating Islamic banks (Al Akhmed M. H., 2015). Here operation of Islamic banking is performed in frames of already existing legal base for traditional banks.

Table 1
NUMBER OF BANKS OFFERING ISLAMIC FINANCIAL SERVICES IN EC COUNTRIES (2013) (UK ISLAMIC FINANCE SECRETARIAT., 2013)

Country	Number of banks
Great Britain	22
France	3
Germany	1
Luxembourg	1
Total	27

There should be underlines that in Moslem countries Islamic financial institutes appear and develop at substantial support and by initiative of government too (Archer, Simon, and Rifaat Abdelkarim., 2007). In non-Moslem countries the development of Islamic financial institutes is connected with a need of Moslems living in a country in financial services complying to Sharia. Especially that a number of Moslems in Europe is approximately 15

million, which exceed a number of Moslems in Persian Gulf countries. Also, lots of Moslems in Europe at times have higher income than those living in Moslem countries of Near East and North Africa.

Real state of affairs is the evidence of the fact that Islamic banks and other Islamic financial institutes are striving to have as more non-Moslems among their customers as possible, in every possible way.

FACTORS OF PROMOTION OF ISLAMIC FINANCIAL INSTITUTES IN EUROPEAN ECONOMIC

As argument for promotion of Islamic financial institutes and instruments in Europe could be acknowledged their resistance to recent crisis that severely touched European financial industry in 2008. There also exists an opinion that the crisis would not happen is Islamic principles of finances were realized in international financial markets (Schoon N., 2010). Although such non-susceptibility can possibly be explained by immaturity of Islamic financial mechanisms too.

Therefore, as arguments for promotion of Islamic financial institutes and instruments in European economic could be acknowledged:

1. Relative resistance of Islamic finances to crises.
2. Existence of a large number of Moslem population in Europe.
3. Ability of market extension by cost of new financial instruments in countries of Europe, creation of new business.
4. Ability of experience and financial knowledge of European financial institutions replenishment.

Stated factors should be an evidence of high potential of Islamic financial institutes and instruments in EC countries. Nevertheless, only Great Britain made significant efforts on implementation of Islamic banking products for now. Other countries demonstrated insignificant indexes of implementation of Islamic mechanisms in practice. And, in spite of the fact that Islamic Banking and financial services were offered to Europe nearly three decades ago, in many aspects the branch is still in start condition.

We will try to detect reasons of weak promotion of Islamic institutes in European economic and insignificance of Islamic financial instruments share in European market.

In frames of this research we think rational to divide all complex of reasons into internal and external. First are connected with peculiarities of Islamic institutes and second with peculiarities of economic and socially-politic environment of European economic system.

Internal reasons.

1. In spite of apparent universality of Islamic institutes they exclude sectors of economic contradictory to standards of Sharia but traditional for European economic from their customers. For example, for Islamic institutes is unacceptable investment of enterprises of brewing and manufacturing of alcohol drinks, pork, media-companies, enterprises of gambling industries, alcohol selling. Bonds with foxed income, options, swaps, same as bonds of airline companies whose business is based on activity forbidden by Sharia are subject of prohibition. Therefore, restrictions in activity of Islamic institutions become competition advantages of traditional European financial institutions,

2. Additional risks. Basing of Islamic financial institutes on Sharia standards puts them to additional risks, uncommon to traditional European baking industry. Their investments are often

concentrated on several selected branches. This practice makes Islamic institutes more vulnerable for cyclic turmoils. Dependence on small number of sectors, absence of possibility of investment diversification, as it is done by traditional financial institutions, significantly increases risks of Islamic institutes.

3. Limitations related to leverage of risk-management The fact is that traditional financial institutes of European economic are better equipped for risk management tasks solution. Beside narrow possibilities of risks diversification, derivative financial instruments are forbidden for Islamic financial institutes. Traditional banks, for example, can hedge themselves from any imposed adverse credit event from contractor side by conveying risk. It should be noted that massive of empiric researches in regard of methods of risk management of Islamic financial institutes is insignificant by comparison to developments on risk management for traditional financial institutes.

4. Absence of guarantees of specific profit for investors due to religious prohibition of interest payment promises. This factor has restraining influence for activity of investments in Islamic instruments due to additional risks laid on co-investors. Trust of interested sides in vitality of Islamic financial instruments decreases.

5. Absence of standardization of Islamic banking products. Significant discordance among Sharia scientists in regard of allowability of separate services already provided by Islamic financial institutes are still observed. Some of them state that forcing for standardization contradicts the essence of Islam, there are also concerns that standardization of Islamic financial instruments will restrain the growth of Islamic finances, slowing down innovations (Warde I., 2000).

Complex of internal reasons should be complemented by external reasons connected to peculiarities of economic and socially-politic traditionally formed environment of European economic system.

1. European financial model is not initially oriented at adherence to Sharia standards, and, from the point of view of Islamic law, for promotion of Islamic financial instruments is absolutely necessary to monitor financial products for catering for Sharia laws. This means that traditional European financial model need an additional forming of corresponding structures, involving a specialist or group of them for checking of financial instrument before making the decision about trade start. This stage of promotion of Islamic financial products is one of the basic, important steps but at the same time makes operation more lengthy and costly by comparison to traditional European financial products.

2. Requirement of fund division in traditional banks willing to trade Islamic financial products. According to Sharia standards, investments in frames of Islamic financial contracts should not mix with non-Islamic investments; due to this a financial institute should guarantee the corresponding funds division. In order to do this the creation of separate accounts for every type of activity is necessary. Therefore, if traditional bank includes Islamic financial product in its activity, it has to create an organizational structure, separated from major bank that also makes operations more expensive and less flexible. Due to this reason, for example, transformation of traditional European bank into Islamic one appears to be extremely complicated.

3. Complications in traditional European financial model also occur in connection to the need of conduction of supervision and control functions in regard of Islamic financial institutes and their products. European supervision bodies are burdened by load of new institution licensing that requires the establishment of control standards, different from traditional for

European financial institutes.

CONCLUSION

In spite of existing complications of entering European markets, the fact should be acknowledged that Islamic financial institutes received a rather wide distribution in the world. The demand for Islamic financial products is growing, a range of Moslem countries has significant financial resources and strives to develop Islamic financial institutes. It is obvious that existing tendencies in Islamic banks development in the world will be preserved because oil-exporting countries continue to receive significant income and companies from developed countries are competing for attraction of foreign capital. This creates preconditions for detailed study of peculiarities of Islamic financial institutes functioning and their entrance into traditional financial markets.

SUMMARY

So, real state of affairs is the evidence of the fact that Islamic banks and other Islamic financial institutes are striving to have as more non-Moslems among their customers as possible, in every possible way.

In practice, Islamic economic model confirms its vitality in market conditions of economic. However, at this should be taken into account that this model require response actions from market institutes in order to guarantee that personal interest and profit motives would not provoke a start-up of socially destructive forces and would not violate standards of justice and fair play.

In general, at present scale of entrance of Islamic financial institutes in European economic the seriousness of Islamic financial system as alternative to traditional system in countries of EC seems to be rather doubtful.

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FORMATION OF COMPETITIVE ADVANTAGES OF BANKING SYSTEMS OF RUSSIA, CHINA AND THE UNITED STATES IN THE CONCEPT OF NATIONAL INTEREST

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ABSTRACT

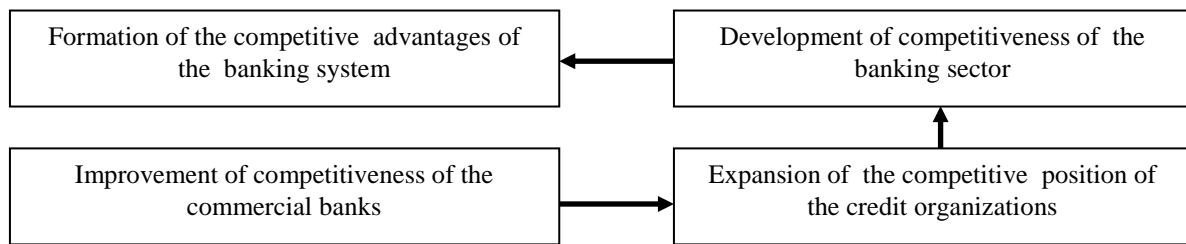
Competitive advantages of the banking sector of a country, forming the complex of features, the banking system characteristics and the banking sector's assets allow it to compete with foreign banks. At the same time any government replying upon the national interests, immediately wants to protect the competitiveness of financial institutions of the country. After formation of the WTO in 1995, none of the countries, which joined the WTO, could not avoid the permit of the foreign branches being present in their territory. Participation in the WTO not only provides opportunities for the banks of the country, but also confronts them with the numerous new challenges. It complicates the process of protecting the banks from foreign competition. Under such circumstances, no doubt, the role of the regulator of the banking system which generates and controls it on the basis of economic development and national interests is increasing. The article undertakes the study of the features of competitive advantages of banking systems in the US, China and Russia. The states have similar aims of development of the banking systems consisting in ensuring the stability in the financial sector, strengthening the cash flow, improving the efficiency of banks, optimal distribution of monetary resources in the economy, etc. The comparison of the emerging market systems in Russia and China, as well as the identification of patterns of transition from the controlled economy to the market system is of great scientific and practical interest. The authors of the article have come to certain conclusions about the prospects for the development of competitive advantages of Russia, the USA and China.

Keywords: *the banking system, national interests, competitive advantages.*

INTRODUCTION

We consider it appropriate to understand the competitive advantages of the banking systems in the framework of this study as a set or a complex of features, characteristics of the banking system and the assets of banking sector, which allows to compete (rival) with foreign banks (the banking sector). It is impossible that uncompetitive credit institutions could form the banking sector with a strong competitive position, which in itself would weaken the competitive advantage of a banking system. This process can be formally presented in the form of a scheme in Figure 1.

Figure 1
THE DECOMPOSITION OF FORMATION OF THE COMPETITIVE ADVANTAGES OF THE BANKING SYSTEM



In order to discuss in some detail the competitive advantages of the banking systems of Russia, China and the United States, it is necessary to reflect in detail the features of development of the banking systems of each state, as well as to analyze the degree of development of the banking sector in relation to each other.

In almost all countries legislation establishes a two-level structure of the banking system, where at the top is the Central Bank of the country, and on the second level - the other banks that meet the requirements of national legislation.

But at the same time the US banking system is significantly different from the structures with analogous functions existing in other developed countries. The main difference of the banking system of the USA is in a large number of banks.

The basis of the banking system of the USA is the Federal Reserve System (FRS), which performs the functions of the central bank of the country (access: <http://www.federalreserve.gov>, 15.04.2016).

When comparing the development of banking systems of the analyzed countries, it is essential to consider the characteristics of each banking system at the present stage according to several criteria:

- the level of concentration of credit institutions;
- development of the credit organizations in dynamics;
- the impact of the banking system on the country's economy;
- government support of the banking sector;
- the presence of foreign banks and / or their representatives in the banking infrastructure.

COMPARING THE DEVELOPMENT OF THE BANKING SYSTEMS OF RUSSIA AND CHINA

Talking about the degree of openness of the banking systems for foreign banks, it should be noted that all the states analyzed in the paper are members of the World Trade Organization (WTO).

It should be noted that Russia has become a party to the WTO more recently - in 2012. Moreover, the Russian banking sector joined the WTO on one of the most privileged terms. Russia in matters of financial sector made minimum concessions, limiting the proportion of foreign capital to 50% (The Association of the Regional Banks: Association News., 2015). This means that the banking sector despite the entry into the WTO has retained its structure.

The government wants to protect the competitiveness of financial institutions after Russia's accession to the WTO. The fact is that the mode of operation of the branches does not

come within the jurisdiction of the Russian Federation: they cannot be fully controlled by Russian regulators, are not under obligation to fulfill the normative regarding remitting the means to the funds of compulsory reservation, to report to the Bank of Russia in two accounting systems - Russian and international, and to monthly present the accounts to the Bank of Russia.

It should be noted that after the formation of the WTO in 1995, none of the countries joined the WTO could not avoid the permit of foreign branches being present in their territory. In particular, in the late 2000s, when China joined the WTO, the state complied with the requirements of the WTO, namely, fully opened the banking market, and foreign banks started to use national regulation without restrictions according to the types of clients, currency transactions and the territory of conducting operations. Foreign and domestic banks' uniform requirements for the size of the authorized capital (1 billion yuan) were being established.

However, China retained the right to regulate the activities of foreign banks and their access to the banking market (Serrado, Javier and Sabadell-Beijing, Banco, 2003). Subsidiary banks are formed fully in accordance with national legislation, they are regulated in the same way as national banks. If a foreign bank intends to run its business in China, without any restrictions, it is obliged to form a subsidiary bank, which, in turn, may open branches.

If a foreign bank penetrates onto the Chinese market only through establishing a filial network, then there remain some constraints on its activities (Chebanenko E.N., 2013):

- firstly, in this case there are restrictions on operations for the branches, they cannot conduct them with the citizens of China. The only exception is the right to attract term deposits from individuals in the amount of not less than 1 million yuan;

- secondly, if the opening of a subsidiary bank requires to have total assets at the end of the year preceding the filing of the application in the amount of at least \$ 10 million, for the branches - 20 billion US dollars;

- thirdly, if the subsidiary bank or joint bank operating in the territory of China establishes a branch, it is essential to deposit funds in an amount of not less than 100 million yuan as the so-called "active stock", in the case of market entry choice only through the filial network, the total amount of means placed by the bank into all branches in China may be more than 60% of the total capital of the bank, at the same time the branch shall receive means in the amount of 200 million yuan. This condition brings branch status to the status of the subsidiary bank.

Such strict requirements for establishing a branch demonstrate the striving of the Chinese government for forming and developing the banking system completely subordinate to the national regulation, while the branches are also subject to the regulatory authorities of the country of origin (García-Herrero Alicia, Santabárbara Daniel, 2010).

The deregulation of foreign investment, together with the rapid growth of the Chinese market has prompted foreign institutions to actively participate in China's banking sector. Currently, all the state banks have a strategic investor, 75% of joint-stock banks and 10% of urban banks. Obviously, national and large banks are priority in terms of foreign investors, while regional and small banks are considered secondarily (Eoyang, C., Lui, J. & Koul, S., Junio, 2010).

One can say with certain confidence that Russia is trying such scenario as well. The process of reforming and consolidating the banking sector by the Bank of Russia has been started since early 2010s. Since the beginning of 2015 the Bank of Russia has withdrawn licenses or liquidated 18 credit institutions, their number is 274 units since 2010 (Information Portal Banki.ru, 2015). The reason of revokes of licenses and liquidation of banks consists in these

banks' being not competitive in the banking market and therefore unstable, which may induce the crisis phenomena in the Russian economy on the chain reaction, given the fact that banks are intermediaries in the flow of capital households, population and the state on the whole. The representatives of the Bank of Russia do not hide the fact that in the next decade, the Russian banking sector should consist only of financially sound credit institutions which will be able to fulfill strict requirements of the Bank of Russia in accordance with the provisions of Basel, and the number of credit institutions is not an important aspect in the development of the Russian banking sector. The proceeding of consolidation of the Russian banking sector follows in such a way that large banks buy up and affiliate to themselves small and medium-sized banks, which are no longer competitive.

SPECIFICS OF DEVELOPMENT OF THE BANKING SYSTEM OF THE USA

Foreign US banking sector is a quite significant and geographically diverse segment of the US financial market on the whole - 20% of the total assets of the banking system of the USA.

The leading position in the US banking sector foreign is occupied by economically developed countries actively participating in the international trade and investments and having a well-developed banking system (Miller Sally, 2015). Western Europe, Canada and Japan are reckoned among such countries. The banks of the Eastern Europe are almost not represented in the USA, there is no any bank of the Russian origin. The banks of Israel, the oil-exporting countries of the Mashreq- Bahrain, the UAE, Saudi Arabia, Qatar are represented in the USA seriously enough.

Despite the geographical proximity and close economic ties, the banks of the Latin America are thinly represented in the USA. The banks of Africa are represented even more poorly in the USA.

The geography of foreign banking institutions in the United States is very uneven: there is a clear bipolarity the areas of the Atlantic and Pacific coasts. The centers of prominent foreign bank activity in the USA are the States of New York, Illinois, California, Florida and Texas. The relatively new US banking center, the origin of which was the removal of geographical restrictions - Charlotte and North Carolina, remains without attention of foreign banks. In the states of the Old and the Deep South of the USA, where there is a marked increase in the level of development of the banking sector, foreign banking institutions are virtually absent.

Regarding the development of the US Federal Reserve System and its requirements for foreign banks, we note that in the US 07.16.2013 the order of the FRS came into force, which gives foreign financial companies the right to receive 24 months to bring their operations into compliance with the requirements of the law on financial reform of Dodd -Frank of trade operations department with swaps from major operations of the US departments (www.hsbcnet.com, date of access 20.04.2016). In accordance with this law, the operation of banks with fund and commodity derivatives should be divided into separate units. The operations with derivatives on interest rates, as well as some of the operations with credit swaps may be conducted by the very banks. The closure of these operations, according to the central bank, might lead to violations and risks of the activities of banks.

In January 2013 JP Morgan Chase & Co., Citigroup Inc., Bank of America and a number of other US banks received a two-year delay in the separation of the operations with the swaps from the main activity. Thereafter, the Institute of International Bankers, representing, the interests of the Credit Suisse Group AG and Deutsche Bank AG in particular, summoned the

FRS to give foreign banks the same opportunity.

In addition, compliance with this law by foreign banks in the United States requires the restructuring of departments of these banks in the USA, avoiding thus the compliance with new, stricter requirements for capital. In particular, in November 2013 the British bank Barclays re-registered its US business in such a way that the stricter requirements for bank capital of the first order (Tier 1) introduced by Dodd-Frank act could not apply to it.

Dodd-Frank act (about the reform of Wall Street and consumer protection) in 2015 will circulate the requirement used previously only for the actual US banks about the first tier capital adequacy at the level of at least 4% and for units of foreign banks operating in the United States. Adjusting capital adequacy in accordance with the new norms would require of the Barclays pouring of additional 12 bln US dollars into its US subsidiary, instead, the bank has chosen to restructure the business.

The department was divided into two independent companies. In particular, the credit card transactions have been assigned to a separate legal entity to be a direct representative of the British bank in the United States becomes the object of regulation by the Federal Deposit Insurance Corporation (FDIC) and is not subject to the requirements of the Dodd-Frank Act. Operations of the investment part of the Barclays Group US are now administered by the Securities and Exchange Commission (SEC) and also not subject to the restrictions imposed by the new law (Financial Stability Report, 2015). Primarily those foreign banks may follow for the Barclays, which have previously joined retail banking activities with businesses, that otherwise would not comply with the requirements of capital.

CONCLUSION

Having described the distinctive competitive features and advantages of the banking systems of the USA, China and Russia, we can formulate their existing features in the form of Table 1.

Table 1
THE FEATURES OF COMPETITIVE ADVANTAGES OF THE BANKING SYSTEMS OF THE USA, CHINA AND RUSSIA

The USA	China	Russia
<ul style="list-style-type: none"> – the banking system is centralized to a lesser extent, that is, Banking system regulation is simplified; – concentration of huge number of foreign financial institutions in the USA; – striving of the FRS of the USA for dividing the operations with derivative financial tools with traditional banks, in order of less dependence of the banks on market sensitiveness. 	<ul style="list-style-type: none"> – the right of regulating by the bank of China the activities of foreign banks after the country's joining the WTO; – foreign institutions take an active part in the banking sector of China . 	<ul style="list-style-type: none"> – restricting the share of foreign capital to 50%, after the country's joining the WTO; – consolidating the banking sector by merging and taking-over; – more propensity of home banks to risk in comparison with foreign banks; – high degree of adaptability to changing economic conditions .

Summarizing, it should be noted that the tightening requirements for credit organizations by the FRS of the USA can reduce the concentration of commercial banks, which in the US are many without overseas players. Perhaps, the FRS of the USA is trying to increase the financial stability and reliability above all national credit institutions via the introduction of this law in

order to develop a favorable competitive environment. Such administrative levers of the US Federal Reserve System will force the foreign banks to invest additional funds into their offices, which will improve the investment climate of the USA, or the major players on the example of the British Barclays will have to reform (restructure) their business, thereby open a certain segment for the national banks.

The competitive advantage of the Chinese banks, despite the presence of foreign banks, is a wide customer base and knowledge of the local market. The interest of foreign investors in entering the capital can be explained by gaining access to an extensive branch network and the ability to conduct retail business in yuan. China's experience has demonstrated how to combine the task of becoming the national banking system with the possibilities of attracting the foreign capital. Unlike other countries (including Russia), having fully opened their economy, China gradually let foreign investors into the banking system. The opening of China's banking sector was from foreign currency operations to operations in the national currency, from the corporate sector to private clients, from the coastal areas inland.

Analyzing the experience of the Russian banking system and arguing about its competitive advantages, we can mention the fact that the Russian economy, including the banking sector, is interesting for foreign investors, but the presence of administrative barriers in the form of a ban on the registration of branches of foreign banks raises certain difficulties for revitalization of the economy and growth of the business activity. Perhaps, the process of consolidation of the banking sector should have been started early in order by joining the WTO, the banking sector of the Russian Federation was not in a reforming stage, but stronger, competitive and able to fund a variety of projects. The disadvantage of the Russian banking system is that the banks have insufficient funds to finance long-term projects of legal persons (including foreign ones in terms of the WTO, which forces to apply to the foreign banks), as well as to credit retail. The point is that one about mortgages which due to high interest rates in the banking sector are simply not available to individuals.

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TRAFFIC JAM INFLUENCE ON THE ECONOMIC LOSSES TO SOCIETY AS EXEMPLIFIED BY THE CITY OF KAZAN

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ABSTRACT

The economic growth and prosperity are one of the main goals of the modern society. But in the conditions of limited resources, the increase in aggregate welfare of each person could eventually lead to significant negative socio-economic phenomena. We consider traffic jams in cities such a problem. The growing number of motor vehicles owned by citizens inevitably leads to an increase in time spent on the road. And this, in its turn, creates excessive costs of the society as a result of irrational resources management and use. Capital investment to modernize the traffic system can not be made equally with the corresponding society needs. Based on the statistical data analysis, in this article we illustrated this problem as exemplified by the city of Kazan, capital of the Republic of Tatarstan, as well as we presented a quantitative calculation of these losses. Similar analysis is possible to use for other cities around the world. Consideration of the road flow and various models explaining its nature allows us to suggest an entirely new solution to the extremely important and complex problem. Implementation of our proposed method to combat the traffic jams could enable to create a highly efficient road network, which transaction costs would be kept to a minimum.

Keywords: *traffic jams; economic irrationality; transaction costs; solution to traffic jam problem; planning, modern city.*

INTRODUCTION

The modern society, which we see around us, is the result of a gradual historical progress. But the deepening cooperation process in the present world, which is aimed at satisfying the people's wants and needs, creating a more comfortable environment, leads to hidden costs due to resource constraints. Sometimes their exact calculation is impeded, and sometimes nearly impossible. At the same time, the hidden nature of these costs can generate excessive losses to the society and serve as the primary cause of many negative socio-economic phenomena. So, search for a solution that could eliminate them in the long term should be an important task.

In general, the net cash flow from the road sector depends on the level of economic development (LakshmananT.R. , 2007). To most expressly illustrate the problem of wasted traffic jam costs, we consider a model of traffic management in major cities. The modern science suggested a variety of models that determine the driver's behavior in order to predict it. Defining the required flow behavior we can manage the traffic in the most efficient way, and in this case our main task will be the maximum reduction of useless waiting time that drivers spend on the

road. As part of our work, we measured the economic losses due to traffic jams as exemplified by the capital of the Republic of Tatarstan, city of Kazan, in addition, we analyzed the existing models that explain the car driver's behavior in order to create such a road traffic system, in which the "wasted time" is reduced to the minimum for everybody.

CALCULATION OF THE ECONOMIC LOSSES OF SOCIETY AS EXEMPLIFIED BY THE CITY OF KAZAN

The movement is life; this statement is not just words, it's the meaning of all our modern life. And traffic jams waste not only our money, but our live. In this case, the question arises, what price do we pay for them?

To answer this question, we shall make calculations as exemplified by the capital of the Republic of Tatarstan, city of Kazan. The general formula of the society costs represents a sum (cost estimation) of negative factors:

C is the total economic loss;

x_1, x_2, \dots, x_n is a quantitative loss of each factor;

Then the formula will be as follows:

$$C = \sum_{i=1}^n x_n$$

First, we shall define the variables that we need. According to the United Nations statistics for 2012, the city's population amounts to 1,169 mln. people (Access mode: <http://data.un.org/Data.aspx?d=POP&f=tableCode%3A240>, access date: 27.04.2016), but we can also provide data of the Territorial body of Federal State Statistics Service in the Republic of Tatarstan (Tatstat), based on which the number of residents is 1,217 mln. people (Access mode: http://tatstat.gks.ru/wps/wcm/connect/rosstat_ts/tatstat/resources/4f3274804c0d84f9ab87abc621b350d8/%D0%9C%D0%9E%D1%87%D0%B8%D1%81%D0%BB2016.pdf, access date: 27.04.2016). According to the State Road Traffic Safety Inspectorate, the quantity of motor vehicles owned by the citizens is about 300,000 motor vehicles as of January 1, 2016, which is more than 25% higher than similar data in 2011 - 260,000 motor vehicles (Access mode: <http://www.gibdd.ru/stat/>, access date: 27.04.2016).

In 2011, the Yandex-Stoppers service of Yandex conducted a study, in which it was found that on average the city's motor vehicles sit in traffic jams for 250,000 hours each working day (https://yandex.ru/company/researches/2011/ya_jams_kzn_2011/ (date of application: 12.04.16). If we suppose an equivalence of this function with the assumption that such determinants as an increase in road length and traffic management scheme have not impacted the crossing capacity significantly, then we will find that in 2015 people spent about 300,000 hours per a working day (number of vehicles has grown by 25% that is proportional to the wasted time of 20%).

People spend their free time in traffic jams. We calculated the minimum possible income of people, which would enable them to use a motor vehicle every day. In our calculations, we assumed that the average working day lasts 8 hours, and the daily route to work is approximately 40 km. We learned that at the current fuel price of RUB 33 per liter (USD 0.5 per liter at the exchange rate as of 21.04.2016) a person should obtain about RUB 130 per hour, which will allow to such a person to have a compact car. In order to compensate for the calculation errors, we will accept the amount of USD 100 as an alternative cost of free time. According to the

average data, a compact car at idle spends about 1 liter of fuel per hour. This assumption is convenient for us, since consumption is higher in reality, and people spend money not only on the car maintenance. If the minimum possible total city's costs for a year result in an extremely large value, the actual losses will be an amount many times more unacceptable for us. Now we can calculate the minimum traffic jam costs of the society during a year:

$$x_1 = 300\,000 \text{ ч.} \times 100 \text{ руб./ч.} = 30\,000\,000 \text{ руб./д.}$$

$$x_2 = 300\,000 \text{ ч.} \times 1 \text{ руб./ч.} \times 33 \text{ руб./л.} = 10\,000\,000 \text{ руб./д.}$$

$$C_1^{day} = \sum_{i=1}^n x_n \approx 40\,000\,000 \text{ руб./д.}$$

$$x_1 = 300,000 \text{ h} \times 100 \text{ RUB/h} = 30,000,000 \text{ RUB/day}$$

$$x_2 = 300,000 \text{ h} \times 100 \text{ RUB/h} = 33 \text{ RUB/l} = 10,000,000 \text{ RUB/day}$$

40 000 000 руб./д.	40,000,000 RUB/day
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Where factors $x_3...x_n$ are other definitely non-determined negative factors.

They can be expressed in the damage that is caused to the environment, health of drivers and people, society resources underutilization and, in general, loss of city's attraction.

Or when expressing in annual terms:

$$C_{year} = \sum_{i=1}^m C_m^{day}$$

Given that under the labor legislation, the number of working days per a year in the Russian Federation is about $m = 260$ days depending on a certain year, then:

$$C_{year} = \sum_{i=1}^{260} (C_1, C_2 \dots C_m) \approx 10\,400\,000\,000 \text{ руб.}$$

10 400 000 000 руб.	RUB 10,400,000,000
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The road traffic development is an important task for society since a favorable and comfortable motor vehicle flow system can improve the living conditions of people, lead to an increase in economic activity, market expansion, reduction of transportation costs and negative effects on the human health (Sakhapov R.L., Nikolaeva R.V., Gabdullin T.R., Makhmutov M.M., 2015).

According to our estimates, the city of Kazan loses about RUB 11 bln. each year. Considering the fact that these costs are optimistic, we can say with reasonable certainty that in reality they exceed the mentioned sum. Because we can not include in our equation such implicit determinants as pollution, health damage, including due to the stress that drivers face, loss of investment attractiveness, etc.

ANALYSIS OF ROAD TRAFFIC FLOW BEHAVIOUR MODELS

The modern system of road traffic is a combination of multiple elements: intersections, roads, traffic lights, signs, etc. Their complex structure helps, in a certain way, create organic conditions for drivers. But as every public benefit, the roads are limited. That is, the right of comfortable driving on them depends on the number of motor vehicles. And the smaller the

number, the better. Therefore, with a view to make arrangements for the road traffic in the most efficient way, many scientists, universities, agencies create models, the application of which would allow to create "favorable conditions" for a large number of motorists. Now there are many models to explain the driver's behavior, namely the driver's route selection mechanism. Understanding the essence of such a complex phenomenon might help plan the models in the best possible way. For example, the model proposed by Yuki Hino and Takashi Nagatani, predicts the driver's behavior in selecting alternative routes at constant awareness of the situation on roads (Yuki Hino, Takashi Nagatani, 2014). Their version overcomes such drawbacks of the existing driver's behaviour modes as spontaneity and traffic route randomness. In their work, Li Yong, Liu Yulan and Zou Kai simulate the road traffic system based on the network coordination game. In this model the traffic jams represent a situation where the local nodal points of the roads can not distribute the motor vehicle flow. In this situation, the authors express the opinion that in order to eliminate the traffic jams some prompt actions on the traffic flow coordination (Li Yong, Liu Yulan, Zou Kai, 2016) are needed.

L.C.W. Suijs (Suijs L.C.W., Wismans L.J.J., Krol L., Berkum, E.C., 2015) proposed other traffic flow management strategy. In his article, the author explores the possibility of using a dynamic speed limit system to prevent the traffic jam formation cause a high-intensity wave of motor vehicle flow. It allows to stabilize the flows in the "peak hours", thereby reducing the local traffic congestion.

In order to improve the road traffic system in the city of Kazan, the major road modernization plans were presented; they were developed and submitted on November 18, 2015. According to the study conducted for preparation of this project, the road traffic in the city of Kazan can dramatically slow down and stop in 2030. We can forecast that in monetary terms the losses will amount to more than RUB 50 bln. In our view, implementation of such programs looks like the "endurance race". And to maintain the favorable economic activity, we need to build faster than the number of vehicles increases. Since with development of the society, the middle class share grows gradually, which will certainly lead to a greater number of motorists. And as mentioned earlier, the slower the road traffic flow speed, the more money the city is losing that could be invested in other projects necessary for the society. As a result, we can say that traffic jams are caused, on one hand, by the limited road space, and, on the other hand, by a growing population, increase in its economic activity, and corresponding growth of the number of motor vehicles owned by citizens.

And such problem will soon spread to many major cities in the world, in particular the cities of rapidly developing countries. Large population and a dominant share of poor population are typical for them. But with the increased wealth, level of the society motorization (number of motor vehicles) grows primarily in such countries. This leads to disastrous consequences for the economy of these countries, collapse of the road traffic systems of the cities, where the existing models of road traffic management can not solve the problem quite effectively (Traffic in megacities, 2016).

SOLUTION OF TRAFFIC JAM PROBLEMS THROUGH SOCIAL PROGRAMMING

After analyzing the existing road traffic flow behaviour models and consequences, to which the traffic jams lead, we can offer a solution to this problem. The modern road system represents a road network comprising some regulating elements. Based on the obtained data, we can state that the common causes of traffic jams include intersection of motor vehicle flows,

vehicles with pedestrians, as well as substantially limited and inadequate road space. The solution we offer is manifested as part of the social programming. The social programming is the society building and modernization concept to overcome the limitations existing historically to create the most comfortable human living conditions or, in the simplest terms, "society of the future". The existing city construction models contain historical limitations. It means that a century ago cities had the same shape, structure of their streets, traffic flow management, which have increased over time as a result of population and economic activity growth. We associate our solution with certain conclusions, which are listed in the book provided by the Regional Office for Europe of the World Health Organization. Hugh Burton and Catherine Tsourou believe that the priorities of the road traffic development should contain: improving air quality, promoting such regular physical exercises as walking and cycling, reducing the number of road traffic accidents, creating a more convenient access to workplace, etc. (Burton H., Tsourou C., 2000). As part of our approach to this solution, we agree with many of the measures proposed by the authors of the book, but apart from that, we believe that the toll roads, parking lots and other similar measures become a significant factor constraining the economic development. Certainly, the traditional scheme of road traffic flow management has considerable limitations on the number of motor vehicles that can use the road space. We can compare the ideal model with the blood circulatory system in the human body.

In view of the foregoing, we can offer a practical solution that will allow to avoid traffic jams in the future, regardless of the city's territorial belonging and level of economic development. So, we propose a one-way road traffic flow. There is no doubt that this solution is radical enough at the moment, but it is necessary. This is because of the fact that only such transformations can serve as really serious drivers of economic development of the society. With this scheme we avoid intersection of flows and eliminate the need for their regulation, which is the main cause of traffic jams. This effect is particularly noticeable with the increasing number of motor vehicles owned by citizens. Another undoubted advantage of the system will be its adequate simplicity in adapting automated guided vehicles. Since elimination of the need for complex maneuvers of such vehicles will help reduce the chance of road traffic accidents involving them. Consolidation of all above and other positive socio-economic manifestations will create the living conditions in the society, in which people will be able to most effectively meet their needs and interests.

SUMMARY

At the end of our work, we would like to summarize once again the above. Traffic jams are extremely negative socio-economic phenomenon, which results in excessive costs to the major cities worldwide. After we had analyzed the road traffic situation in the city of Kazan, Russian Federation, we came to the conclusion in our work that each year the city loses about RUB 11 bln. (at least USD 167 mln., exchange rate as of 21.04.2016 – RUB 66.0364 per USD 1). With the increase in such factors as the residents' well-being, mobilization level of the city, the transaction costs will grow due to more time, which people spend in traffic jams, with other factors being equal. Having considered the existing traffic jam solution models, behavior of the main road agents, we can conclude that to create a road space being free, effective and accessible to all the qualitatively new solutions are needed, and one of them we have proposed in this article. Since the existing methods for solving the problem of traffic jams have limitations, when they are compared in the long run, in general, they are reduced to the extensive growth and

restriction on the use of roads, which is, in our opinion, unacceptable. Our solution could implement such positive aspects as decrease in road traffic accidents, increase in number of motor vehicles, reduction of the cost of their operation, growth of economic activity, investment attractiveness and quality of life.

CONCLUSIONS

1. As to the modern major cities, the traffic jams cause excessive economic losses that can be calculated with a certain accuracy;
2. Analysis of the modern methods for solving the traffic jam problems shows that the existing urban planning contains restrictions that do not allow to create a road space being free, efficient and accessible to all;
3. Complete solution to the problems of traffic jams and resulting economic losses can be offered only after radical understanding of the changed situation in the city and its main problems.

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TO THE QUESTION ABOUT ECONOMIC POLICY IN RUSSIA

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ABSTRACT

This article investigates the reasons for the negative state of the Russian economy. The author analyzes the internal and external factors affecting the domestic economy, as well as actions and measures taken by the federal bodies of executive power in recent years. Key indicators of the Russian economy that underpin the study are the price of oil, the average cost of a litre of petrol in the country, the exchange rate of the ruble against the U.S. dollar, and others.

The author critically evaluates the current monetary policy of the Central Bank of the Russian Federation, the main official purpose is to reduce the level of inflation in the country. Although in fact this policy is aimed at regulating the exchange rate of the Russian ruble against the key foreign currencies (USD and Euro) with the purpose of inadmissibility of incomes reduction of the Russian budget from fall in world oil prices.

As measures for changing the situation it is offered to curb speculation in global financial markets, in particular, the author proposes a corresponding mathematical formula, an inequality, compliance with which will reduce the gap between real asset price in the commodity market and the price specified in the derivative securities. For improvement the economic situation in Russia the author justifies the need for the development of regional stock exchanges in the country, the involvement of households in the financial market of the country, and they have put forward recommendations to change the policy of the Bank of Russia and the Ministry of Finance of the Russian Federation.

Keywords: *economy, economic policy, currency market, stock market, oil market.*

INTRODUCTION

The development of the Russian economy is characterized by the following negative aspects:

- dependence of the federal budget from the export of oil and gas products;
- underdevelopment of the financial market of the country;
- speculative development of the securities market and the foreign exchange market;
- etc.

We suppose that the causes of such phenomena may be ineffective policy of the Government of the Russian Federation, in particular, of the Ministry of Finance and the Central Bank of the Russian Federation. In this article we will review the situation in the Russian economy and will put forward recommendations for its improvement.

The scientific literature showed that the state of the Russian economy under Western sanctions, declining oil prices are explored by different authors, most of which are domestic researchers: Mau Vladimir, Ulyukaev Alexey (Vladimir Mau, Alexey Ulyukaev, 2015), Gurvich Evsey, Kudrin Alexey (Alexey Kudrin, Evsey Gurvich, 2015), and others. There are also

foreign publications in particular, Paul Roderick Gregory (Paul Roderick Gregory, 2015), Samuel Oakford (Samuel Oakford, 2015), and others. Mostly in these publications, or negative situation in the Russian economy is described, either indicates that the economy of Russia, despite the negative external factors is restored. In the available scientific works, almost no one criticizes the inefficient work of the Ministry of Finance of the Russian Federation, Bank of Russia.

METHODS

Observation, analysis, deduction, modeling were used as research methods when writing the article.

RESULTS

Table 1 presents some indicators of the development of the Russian economy in our opinion (www.cbr.ru; www.rg.ru/2016/01/11/neft-site-anons.html; www.interfax.ru/business/350610, date of access 20.05.2016).

Table 1
ECONOMIC INDICATORS IN RUSSIA FOR 2012-2015

	On average for 2015	On average for 2014	On average for 2013	On average for 2012
The cost of the currency basket, RUB.	64,32	44,18	36,63	35,05
The average value of the U.S. dollar, RUB.	61,52	38,60	31,91	31,08
The price of 1 barrel of Urals oil, \$	51,23	97,6	107,88	110,52
The price of 1 liter of Urals oil, \$ (1 barrel = 158,99 liters), \$	0,32	0,61	0,68	0,70
The price of 1 liter of Urals oil, RUB.	19,69	23,55	21,70	21,76
The price of 1 liter of gasoline АИ-92	33,00	32,00	31,00	30,00
The share of excise taxes in the price of gasoline, %	65	65	65	65
The price of 1 liter of gasoline АИ-92 without excise taxes	21,45	20,8	20,15	19,5

In table 1 we can draw the following conclusions:

- for the period from 2012 to 2015 the Russian ruble against the US dollar weakened and the price of a barrel of oil actually decreased in two times;
- if to eliminate the excise taxes from the price of Russian gas, the internal price of gasoline АИ-92 in Russia will actually be closer to the world price of 1 liter of crude Urals oil;
- there is an inverse relation between oil price and US dollar exchange rate, expressed in rubles;

- the price of 1 liter of oil in rubles at the exchange rate for the respective period has changed slightly, at the same time the fluctuations of the dollar are significant.

It is obvious that the world price of oil and the US dollar in rubles do not depend on a situation in the production and economic sphere, but from the situation of commodity and financial exchanges. And a negative factor accompanying the trade in oil and foreign currency assets is speculative, coupled with large-scale use of derivatives (especially futures contracts), that leads to a separation of the real market prices from the prices specified in the derivatives contracts.

In our view, with the implementation of trade with derivative financial instruments should apply the following inequality bounding the speculative growth of prices:

The price of a forward contract \leq The price of the underlying asset + appreciation of the asset during the period (over the risk-free interest rate) + margin of the seller (1)

According to the magazine "The Economist" the Russian ruble is undervalued by about 70%, based on the updated version of the "big Mac index". According to the calculations of experts, for one dollar could provide about 75 RUB (as at the beginning of 2016), and more than three times less - of 23.12 rubles (www.rbc.ru/finances/11/01/2016/56939b969a79475fb2a3136b, date of access 20.05.2016)

We believe that the actions of the Central Bank of Russia on raising the key rate in December 2014 to 17% and on release of the ruble in "free floating" in terms of economic sanctions of Western countries were aimed at compensating the drop down of the Federal budget revenues from falling global oil prices. Increased the key interest rate in late 2014 - early 2015 gave the signal to market participants about significant deterioration of the Russian economy, the weakening of the ruble, which led to massive sales of the ruble and the purchase of foreign currency. Added to this mass panic of the population, who began to buy in stores durable goods, to somehow keep their point of view, the available money. These events led to a sharp weakening of the ruble, and the ruble against the dollar reached 70 rubles per 1 US dollar. Since Russian oil and gas is mainly sold for US dollars (Nadia Sabitova, Chulpan Shavaleyeva, 2015), the weakening of the ruble is almost two times resulted in losses to the Federal budget from the weakening of world prices of oil also doubled.

In 2016, thanks to the decision of the Russian Government excise taxes on gasoline were increased with the purpose of replenishment of the Federal budget deficit of the country, while real incomes fell.

In fact, it turns out that our state adds to the federal deficit at the expense of ordinary citizens.

As you know, the Central Bank of the Russian Federation conducts monetary policy aimed at reducing inflation and bringing it level to 4%. The Bank of Russia jointly with the Russian Government is implementing the capitalization of some commercial banks, using Federal loan bonds. In our view, this policy has a negative impact on the domestic economy slows down its development, because:

- borrowed resources for the majority of subjects remain inaccessible due to high interest rates, underdeveloped financial market of the country;

- funds allocated to banks for recapitalization are likely to be sent by banks not lending to the real sector of the economy, and on speculation in the financial markets. In particular, the examination of the financial statements of the largest commercial banks in Russia in recent years have shown an increase in the share of incomes from operations with securities;

- based on the logic of the Bank of Russia it turns out that with a lower inflation rate (4%) in the country will decrease the key rate will be available borrowed resources, which will lead to a rise in lending, increase in growth of the Russian economy. Because inflation may not arise or its value is not critical, if the allocated funds will be delivered to the intended recipient and is aimed at the development of the economy, the willful holding the key rate at 11% and continuing operations the Bank of Russia on the currency market, the lack of control over the operations of commercial banks with foreign currency lead to the conclusion about the irrationality, not to mention the inefficiency of the Russian economy of such operations.

SUMMARY

In our opinion, the Bank of Russia and the Government of the Russian Federation with the help of the above-described actions will hinder the development of the Russian economy and degrade the position of its subjects as long as the world price of oil will not rise to be comfortable for the Russian budget level. After all, if it is to reduce the key rate to 4-5%, it will lead ultimately to increased demand for the Russian currency, consolidation and reduction of Federal budget revenues.

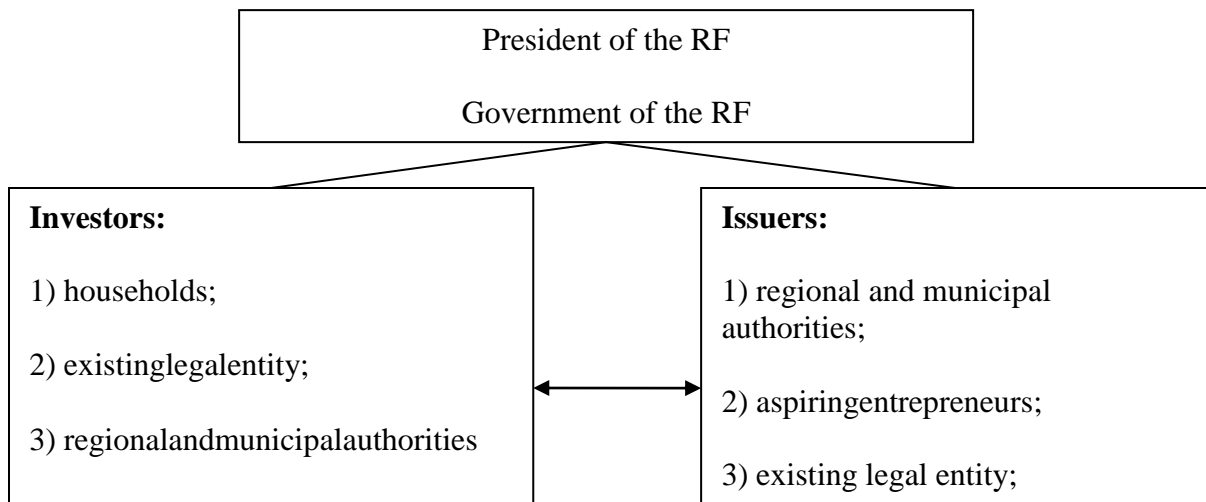
In the current environment it is an obvious need to find and use new instruments to attract financial resources in the state budget.

One option could be the development of regional stock exchanges in the country. In Russia, fully functional, only the Moscow exchange. This means that the main investment activity takes place in Moscow, namely, if some company from the Far East, Siberia and the Krasnodar territory wants to publicly raise financial resources through the issuance and subsequent sale of securities, in most cases it will have to do it through the Moscow exchange.

It is interesting the experience of the Tomsk region, placed the bonds among the population (bonds.tomsk.ru/oblastnie-zaymi.html, date of access 20.05.2016). The yield of such loans is around 12% per annum and is worthy for the population an alternative to Bank deposits, the nominal value of one bond is 1 000 rubles, and then buying bonds available to most households. At the same time the Tomsk region administration uses internal investment resources to Finance budget needs. We believe that the experience of the Tomsk region should be used in all regions of Russia.

Budgetary system of the Russian Federation can be raised from tax revenues newly created and already operating business entities that are in need of investment resources. With this purpose it is necessary to optimize the taxation of subjects of innovation activities (Kundakchyan R.M., Mokichev S.D., 2014) and developing the venture exchange platform, where aspiring and existing entrepreneurs will be able to meet their needs in investment resources. Using the experience of Tomsk region the main investors can be households, and to improve the reliability and trustworthiness of these sites the necessary state support and the creation of specialized hedge funds. Figure 1 displays the innovative mechanism of functioning of stock exchanges.

Figure 1
THE INNOVATIVE MECHANISM OF FUNCTIONING OF STOCK EXCHANGES



The basis for building such sites may be the Internet-portal "gosuslugi.ru", with possible testing at a regional site in the Republic of Tatarstan through the website "uslugi.tatarstan.ru".

CONCLUSION

Notwithstanding the above, it should be noted that Russia is taking measures to develop the economy, but these measures are either unavailable for all interested economic entities, or they affect only a sector of the economy, the fate of households is usually left without proper attention.

For example, Russia is implementing the program of import substitution of products aimed at creation and development of competitive domestic analogues of foreign equipment, of goods to reduce dependence on Western countries in terms of external economic sanctions. In this case, the terms of the loans from the state programme on import substitution are:

- total project budget of 100 million rubles;
- existence of co-financing of the project by the applicant, private investors or Bank loans in the amount of not less than 30% of the project budget;
- loan term - from 5 to 7 years;
- etc.

Obviously, these terms are impossible or difficult for the majority of the enterprises of small and medium-sized businesses, and was developed under the existing large enterprises, including state-owned. But we know that is most adapted to creating innovation and changing external conditions it is the small companies provided adequate funding for their activities.

We believe that the establishment of regional stock markets (Fig.1) (Ramazanov A.V., Grigorian K.A., 2015) will allow not only to use the unused investment resources of citizens, but also enhances the involvement of households in the economy, increase financial literacy, and will ultimately contribute to economic growth (Nizamutdinov I.K., Malaev V.V., 2014).

An effective measure for further strengthening the Russian economy may be the reduction or removal of excise duties on fuel because of low fuel prices will help reduce the cost of goods and services due to lower transport cost. Thus based on the interdependence of markets

(Safiullin L.N.Fatkhev A.M.Grigrorian K.A., 2014), it can be argued that in the subsequent positive effect of lower fuel prices will affect other sectors of the economy.

Our proposed measures to change economic policy in Russia is quite simple to implement, do not require significant cash outlay by the state, and we are confident in their positive effect.

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THE POLITICAL DEMOGRAPHY OF THE EURASIAN ECONOMIC UNION

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ABSTRACT

Currently, in Eurasia a series of integration processes takes place, the most important of which for Russia is the formation of the Eurasian Economic Union. This integration is as an alternative to the European Union in the post-Soviet space. First of all, economic preconditions and purposes of integration within the EAEU are declared.

By means of the analysis of the demographic characteristics of the member states of the EAEU the main characteristics of this unification have been identified.

It has been established that the EAEU includes two groups of countries with significant differences in demographic terms, which pursues a variety of objects in the domestic and foreign policy. In economic terms, the EAEU is a union of unequal states, where economic core and periphery become discernible. In the world's population structure the share of this union is insignificant, and it, in its present form, is unable to impact on the global trends. The development of the EAEU is possible only at the expense of further expansion, but the prospects of expansion are limited by a number of ideological, geopolitical and foreign policy factors. As a result, at this stage it can only be extensive expansion of the EAEU, through the inclusion of a number of less developed countries of Central Asia, which does not enhance the quality of its performance. It seems that the EAEU rather performs the tasks of the Geopolitics than being an economic integration union. The results of the article can be used to predict the integration processes.

Keywords: *Political demography, the Eurasian Economic Union, Russia, the economic integration, geopolitical interests.*

INTRODUCTION

New integration project, known as the Eurasian Economic Union (the EAEU) has been implemented since 2014 in the former post-Soviet Eurasia. The basis for its creation were the institutions of the Eurasian Economic Community (EurAsEC) with the participation of Russia, Kazakhstan and the Republic of Belarus. At present, Armenia and Kyrgyzstan have joined it as well.

Although, on Russia's initiative at the time the various integration associations (CIS, SCO etc.) have been created, but the most important for it is the integration initiative within the framework of the EAEU. The relevance of this association increased after the attempts of the European Union to form associations with a number of post-Soviet states. Therefore, from the beginning the EAEU has positioned itself as an alternative to the EU in the "Eurasian space". At the same time the EAEU is declared, first and foremost, as a form of regional economic integration, intended to promote all-round modernization of the Member States (Access mode: www.eaeunion.org/#about, 20.05.2016).

What is the potential of this association in the world, its prospects and, finally, is it an alternative to other integration projects?

It becomes urgent to consider these aspects from the point of view of political demography, which is based on the study of the demographic characteristics of the population that have a significant impact on the development of the integration association.

METHODS

To evaluate the demographic characteristics, we used statistical data of the UN, the EAEU and the Offices for National Statistics, in particular, the indicators such as Average population, Total fertility rate, Rate of natural increase, Net Migration rate, Age-structure, GDP and GNI per capita, etc.

The basis of the study was the comparative method, which revealed the tendencies of demographic development of the countries and the balance between economic developments, compared the economic and demographic characteristics of the EAEU with other integration associations.

RESULTS

Demographic forecasts suggest a decrease in Russia's geopolitical potential in the first half of the 21st century, because it will be only 1.2% of the world population by 2050 (instead of 2.4% in 2005) (Demeny P., McNicoll G., 2000).

Compensating geopolitical costs of demographic processes is possible through the creating of integration associations, the most important of which is the EAEU. Its advantages can be ascertained through the definition of the most important demographic challenges of Russia, among which are the following:

- *Decrease in country's population;*
- *Fast aging of the population;*
- *A significant decrease in the labor resources;*
- *Depopulation in the regions of Siberia and Far East;*
- *Increase in the proportion of ethnic Muslims in the ethnic and religious structure of the population.*

Is it possible to overcome these challenges by implementing a new integration project, and what is the EAEU in the Political demography's point of view?

Currently, the population of the countries participating in the EAEU is slightly more than 182.3 million people (Table 1).

Table 1
POPULATION OF THE COUNTRIES OF THE EEU*

Country	Population by the middle of 2015 (million people)	Proportion in population of EAEU, in %
Russia	146.3	80.3
Kazakhstan	17.5	9.6
Belarus	9.5	5.2
Kyrgyzstan	6.0	3.3
Armenia	3.0	1.6
Total	182.3	100.0

* Population Reference Bureau. 2015 World Population Data Sheet. – Access mode: www.prb.org

Russia is the undisputed core of association in terms of population size. The second, union kernel but much smaller in size is Kazakhstan.

Table 2
BASIC INDICES OF POPULATION'S REPRODUCTION OF THE COUNTRIES OF THE EAEU

Country	Crude birth rate (per 1000 people)	Crude death rate (per 1000 people)	Rate of natural increase (per 1000 people)	Infant mortality rate (per 1000 live births)	Total fertility rate
Russia	13	13	0	9.3	1.8
Belarus	13	13	0	4.4	1.7
Armenia	14	9	5	9	1.5
Kazakhstan	25	8	17	25	3.0
Kyrgyzstan	27	6	21	24	4.0

* Population Reference Bureau. 2015 World Population Data Sheet. – Access mode: www.prb.org

According to the type of fertility and mortality (Table 2), two groups of countries can be divided into: “European type” (Russia, Belarus, Armenia), characterized by low Rate of natural increase, and “Central Asian type” (Kazakhstan, Kyrgyzstan), characterized by high Rate of natural increase. The countries of “Central Asian type” demonstrate high Rate of infant mortality and Total fertility rate, which are the characteristics for traditional society.

Table 3
AGE-STRUCTURE OF THE COUNTRIES OF THE EAEU

Country	Percentage of population under age 15 years (%)	Percentage of population at the age of 65 and older (%)
Russia	16	13
Belarus	16	14
Armenia	19	11
Kazakhstan	25	7
Kyrgyzstan	32	4

* Population Reference Bureau. 2015 World Population Data Sheet. – Access mode: www.prb.org

In the age structure of population one can trace back the “European type” with a low proportion of population under age 15 years and a significant proportion of the elderly population (Russia, Belarus, Armenia) and “Asian type” with a high proportion of juveniles and a small proportion of the elderly population (Kazakhstan, Kyrgyzstan). The age structure of population sets different vectors of development of social policy: if for the first group of the countries, important are the issues of the functioning of pension and health care systems, for the second group – the issues related, first of all, to youth. High proportions of juveniles (over 25%) in Kazakhstan and Kyrgyzstan are also a potential factor of the socio-political instability (“youth bulge”).

Table 4 demonstrates the population forecast of the countries in the 21st century which fixes two trends: “depopulation trend” (Russia, Belarus and Armenia), and “growing population” (Kazakhstan and Kyrgyzstan).

Table 4
POPULATION FORECASTS OF THE COUNTRIES OF THE EAEU BEFORE 2100

Country	Population Forecasts (million people)			
	2025	2050	2075	2100
Russia	141.2	128.6	119.4	117.4
Kazakhstan	19.4	22.5	24.1	24.7
Belarus	9.2	8.1	7.3	6.9
Kyrgyzstan	6.8	8.3	8.9	9.1
Armenia	3.0	2.7	2.2	1.8

* United Nations Population Division. The 2015 Revision of World Population Prospects. – Access mode: www.esa.un.org/unpd/wpp

An important indicator that characterizes “demographic divide” among the countries of the EAEU is the Median age of the population, which in 2010 was 38.0 in Russia, 38.9 - in Belarus, 31.6 - in Armenia, 28.9 - in Kazakhstan, 23.8 - in Kyrgyzstan (Access mode: www.esa.un.org, 20.05.2016) . Thus, in the EAEU a two-level system of demographic (“intensive aging countries” and “growing countries with a relatively young population”) has developed.

Regarding the ethnic composition of the population it should be noted the following. The population of the Russian Federation is a multiethnic and a number of ethnic groups of the former Soviet Union have significant Diasporas in its territory (see Table 5).

Table 5
THE BIGGEST DIASPORAS IN THE RUSSIAN FEDERATION (ACCORDING TO CENSUS OF THE POPULATION 2010)*

Diasporas	Size, thousand people
Azerbaijanians	603.1
Armenians	1182.4
Belarusians	521.4
Georgians	157.8
Kazakhs	647.7
Kirghiz	103.4
Moldavians	156.4
Tajiks	200.3
Uzbeks	289.9
Ukrainians	1928.0

* Information data of total population census of 2010 – Access mode: http://www.gks.ru/free_doc/new_site/perepis2010/croc/perepis_itogi1612.htm

Diaspora is an important factor in the integration attraction, enhancing economic ties and providing the lobby. Thus, from this point of view, Russia has the greatest attraction of the integration with Ukraine, Armenia, Kazakhstan, Azerbaijan and Belarus, and the three of them

are included in the EAEU. Concerning the Russian-speaking population in the republics of the former Soviet Union, the largest coverage of ethnic Russians are in Kazakhstan, Ukraine, Moldova, Belarus, Kyrgyzstan.

At the same time, migration data fix reduction of migration exchange between Russia and all member countries of the EAEU in 2015, despite the declaration of the elimination of barriers to the movement of the labor force (Table 6). The question arises whether the EAEU helps solve the problem of depopulation and shortage of labor resources in the Russian Federation?

Table 6
THE RESULTS OF MIGRATION EXCHANGE OF THE RUSSIAN FEDERATION WITH THE STATES OF THE FORMER USSR IN 2014-2015

Country	Migration balance in 2015	Migration balance in 2014
Armenia	+20563	+24006
Belarus	+4912	+6757
Kazakhstan	+34817	+40814
Kyrgyzstan	+9993	+15259
Moldova	+17398	+17574
Tajikistan	+11374	+19362
Turkmenistan	+2320	+2603
Uzbekistan	-20433	+37096
Ukraine	+146136	+94370
Georgia	+3311	+4218

* Information data of Russian Statistics. – Access mode: <http://www.gks.ru>

According to the typology of the Eurasian Development Bank (EDB), there are six main types of Regional integration unions (RIU) (Data Base of Regional Integration of the Eurasian Bank of Development, 20.05.2016). The EAEU claims the status of “Active RIU”, the organization really tending to economic integration. The main factor in the formation of the “Active RIU” is the level of economic development of member countries, the average GDP per capita (17,800 US \$) in them duplicates the average GDP of other types of RIU (Data Base of Regional Integration of the Eurasian Bank of Development, 20.05.2016).

Currently, the average GDP of the countries of the EAEU is low and the EAEU cannot be considered as “Active RIU” (Table 7).

Table 7
GDP PER CAPITA OF THE MEMBER COUNTRIES OF THE EEU*

Country	GDP per capita in 2014, (US\$)
Russia	12735,9
Armenia	3873,5
Kazakhstan	12601,7
Kyrgyzstan	1269,1
Belarus	8040,0
GDP per capita in average in the EAEU	6605,7

* The World Bank. – Access mode: data.worldbank.org/indicator/NY.GDP.PCAP.CD

The statistics of IRR also shows the “economic difference” between the member states of the EAEU (Access mode: www.prb.org , 20.05.2016). It reflects the fact of the presence in the structure of the EAEU countries approaching the average for *the developed countries* (Russia, Kazakhstan, Belarus), and the countries not having reached the average for *developing countries* (Armenia, Kyrgyzstan). On the one hand, the difference in GNI per capita between Russia and Kazakhstan, and Kyrgyzstan is 10 times. The result is a “two-level reality” (core and periphery countries).

According to the forecasts for the first half of the 21st century the population size will grow in all integrations, but not in the EAEU, which in 2050 will cover only 1.7% of the world population, instead of the current 2.8%. Therefore, the EAEU will have to think about expanding its membership. The experts call a number of countries as the prospects of union enlargement (Table 8). Among them only Azerbaijan, Turkmenistan and Turkey have a GDP per capita higher than the average for the EAEU, and they are economically equal partners. Iran, Georgia and Ukraine have a GDP per capita equal to only half of the average for the EAEU. Unfortunately, for a number of reasons none of these countries cannot be seriously considered as a potential member of the EAEU so far.

Table 9
GDP OF THE POTENTIAL MEMBER COUNTRIES OF THE EAEU

<i>Country</i>	<i>GDP per capita in 2014, (US\$)</i>
Ukraine	3082,5
Uzbekistan	2036,7
Turkmenistan	9031,5
Moldova	2238,9
Azerbaijan	7884,2
Georgia	3670,0
Iran	5442,9
Turkey	10515,0
Pakistan	1316,6
Tajikistan	1114,0
GDP per capita in average for the EAEU	6605,7

* The World Bank. – Access mode: data.worldbank.org/indicator/NY.GDP.PCAP.CD

The real claimants to join the EAEU for the present are only Uzbekistan and Tajikistan, the GDP figures per capita of which are 3-6 times less than the average for the EAEU.

SUMMARY

In our opinion, the chosen foundation for the formation of the integration project of the EAEU (Russia, Kazakhstan, Belarus) in terms of Political demography should be recognized relatively rational. Accession of Armenia, the demographic characteristics of which are close to Russia and which actively cooperates with it in terms of migration, and considering the substantial Armenian diaspora, should be recognized quite reasonable too. Although this solution actually “blocked” the road to the EAEU for economically more developed Azerbaijan. The

entry of Kyrgyzstan into the EAEU has to be considered as an extension at lower quality (demographic and economic) characteristics of association.

DISCUSSION

In terms of political demography, the population size of the EAEU is insufficient for the present to compete with other integration projects and requires the inclusion of new countries. Therefore, it is difficult to agree with the assessment of the EAEU as a “new center of the power of the global world and one of the leading authors of the scenario of future development” (P.A. Tsygankov, 2015).

The current EAEU is heterogeneous and consists of two groups of countries with absolutely different demographic characteristics, which determines multi-directional vectors of the development. In fact, the EAEU is a two-level system (core and periphery) with a significant “differences” in the economic development and the quality of human capital. Also, the countries of the EAEU and potential candidates for membership in it are different models of economic development (Alan, A., and Banerji, A., 2000). The significance of these differences is intensified against the background of the reduction of interdependence of the Central Asian states (Libman, A., and Vinokurov, E., 2011).

One can agree with the opinion that Russia should not be the only “locomotive” of integration, and its scope should not be confined to the former Soviet Union (The Conflict of Two Integrations, 2015). Unfortunately, all the prospects of expanding the EAEU are connected only with Tajikistan and Uzbekistan, the accession of which will strengthen the demographic and economic heterogeneity of the union. The most promising participants of the EAEU in terms of political demography could be Ukraine, Turkey and Iran. According to the author, without including these countries, the EAEU should be considered as a desire to preserve Russia's geopolitical control than the real union for creating a qualitatively new economic space. Of course, the membership of Turkey, Iran and Pakistan in the EAEU will reduce the Russia's role in the union but will also seriously increase the potential of the union. Moreover, if the EAEU does not demonstrate its effectiveness and transparency in the short term, the interest in it on the part of potential candidates can extinguish. It should be taken into consideration that in the post-Soviet space there have already been alternatives to the EAEU such as SCO or CAREC (Vinokurov E.Y., 2012).

Does the EAEU make for overcoming demographic challenges of Russia? Formation of the EAEU does not solve, unfortunately, any of the challenges that modern Russia faces: the growth of population of the union is not expected; the size of “young” population of the countries of the EAEU is not sufficient to “solve” the problem of “aging”; influx of migrants from the countries of the EAEU does not allow to improve the situation of labor shortages; the problem of depopulation in Siberia and Far East is not affected; on the other hand, the proportion of Muslims will increase. This suggests that the real goals of the formation of the EAEU lie not in the level of economy or demographics, but in the geopolitical level.

What are they? From our point of view, the central purpose of the EAEU is to try to maintain control over the post-Soviet geopolitical space and to prevent the implementation of alternative integration projects. According to the author, one should have other tools to solve these problems. It makes more sense to develop closer integration with Belarus and Kazakhstan in economic and political terms, and to build relations through bilateral agreements with other post-Soviet republics.

Will the EAEU become an alternative to the EU in the post-Soviet space? Many researchers consider the European Union as a main long-term partner of the EAEU to provide modernization and development (The Conflict of Two Integrations, 2015). This is well justified, given the structure of foreign trade of Russia and Kazakhstan. However, the issue is being hampered by the goal of integration association. If the goal is to protect the post-Soviet space from the other players, then the EAEU will be positioned as an alternative. Ukrainian crisis of 2014 has showed that in the foreseeable future the agenda of EAEU does not aim to intensify integration with the EU.

The researchers call one of the obstacles to the expansion and intensification of the Eurasian integration differences of the integrating states politically, because the project involves countries with relatively democratic regimes and openly authoritarian states. The prospects for expansion of the EAEU are also connected with countries having “democracy deficit”. It is known that the implementation of integration associations with the participation of non-democratic states have additional difficulties due to the specific character of their political system (Mansfield, E. D., Milner, H. V., Pevehouse, J. C., 2008; Mansfield, E. D., Milner, H. V., Rosendorff P. B., 2002).

One is to understand that the differences in demographic and economic characteristics of the states of the EAEU define the differences and their integration goals. E. Y. Vinokurov and A. M. Libman correctly point out that the interaction of the Central Asian countries does not mean the search for “the only one patron” (Vinokurov E.Y., 2012). The attempts made by Russia in the 1990s to play the role of the sole mediator in the region failed and led to the decrease of Russia's political influence (Spechler, M. C., and Spechler, D. R., 2010). Therefore, we should not seek to turn this integration project into the “Russia-centered” one.

CONCLUSION

Thus, we have managed to determine that the EAEU is a two-level organization in terms of Political Demography. The prospects of developing the EAEU and increasing its role in the World Economy can only be associated with qualitative enhancement of its composition in the demographic and economic relations. However, further development of the Union is hampered by a number of subjective and objective factors, one can argue that the EAEU largely solves the problem of geopolitics than being a real economic alternative to the EU.

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PROBLEMS AND URBAN INFRASTRUCTURE DEVELOPMENT IN RUSSIA (FOR EXAMPLE, THE CITY OF NABEREZHNYECHELNY)

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ABSTRACT

Over the last few years the number of cars owned by Russian citizens, has dramatically increased, but to levels of Europe and the United States still need to "grow". Some regions in motorization have already caught up with the European countries, and the capital of Russia is not on the leading places for this indicator. At the moment the country is at the level of European countries in the 70-ies of the last century. But there is another important problem of insufficient roadareas and parking lots in the infrastructure of cities of Russia.

In NaberezhnyeChelny. The city's population is 522 thousand people, city area is 17103 ha. Ratio of "metropolis" in NaberezhnyeChelny is 3.9. For comparison, this ratio in Moscow (within MKAD) - 35, Paris – 28, Sydney – 4, Kazan - 5,9. The coefficient of NaberezhnyeChelny in the density of the metropolis is about on par with Sydney, it is better to Kazan. This speaks to the amazing possibilities of NaberezhnyeChelny for the harmonious development (extension) adjoining roads and construction (extension) of the commercial parking lots within walking distance, parks and green spaces. Taking into account the ratio of the reserve for the development of road infrastructure exists.

The observed infrastructural problems of the city of NaberezhnyeChelny: the lack of local parking lots; a huge amount of garbage in the form of leaves in the spring and autumn, mainly from not presentable, dangerous and large trees (poplar, birch); parking on lawns, the result of which is pollution of roads.

We cannot quickly catch up with Europe but we can develop the infrastructure in this direction.

Keywords: *road area, metropolis ratio, infrastructure, vehicles, population.*

INTRODUCTION

Effective vision has some fundamental and distinctive properties. So, it must be not static but evolutionary. The system of values which it reflects, should have both implicit and explicit components. It can never be fully achieved, that is, there are always some areas of tension between what is implemented and what can be achieved. And most importantly, it possesses high energy, clear, consistent, instills energy and inspiration (John Gattorna.USA, 1990).

Russian cities are growing and we need to think about the harmonious development concept that future generations will be grateful. Consider what might be the concept of urban infrastructure development on the example of the city NaberezhnyeChelny, Tatarstan, Russia.

Over the last few years the number of cars owned by Russian citizens, has dramatically increased, but to levels of Europe and the United States still need to "grow". Some regions in

motorization have already caught up with the European countries, and the capital of Russia is not on the leading places for this indicator. At the moment the country is at the level of European countries in the 70-ies of the last century. But there is another important problem of insufficient road areas and parking lots in the infrastructure of cities of Russia.

According to common world standards in the roads area shall be not less than 20% of the city territory (Access mode: <http://anderson-mike.livejournal.com/104572.html>, 25.05.2016). In large cities of developed countries, the percentage of area occupied by roads is usually 20-35%, and in Moscow 6-10%. In NaberezhnyeChelny the roads area is approximately 5-6 %. With a population of 522 thousand people (Publishing center of Tatarstanstat, 2014), the area of the city is 17103 ha, including the area of green space 5191 ha, it is 30,4% of the total area of urban land (Collection“Public utilities of the Republic of Tatarstan”for 2013).

METHODS

In the program of strategic development of Tatarstan till 2030 all comparisons are with the developed countries of Europe and Asia. Benchmarking in this case also involves the developed cities in the world. To be objective, compare the ratio of "metropolis" cities (Access mode: <http://anderson-mike.livejournal.com/104572.html>, 25.05.2016):

Table 1
THE "METROPOLIS" RATIO

City	k	City	k
Moscow (MKAD)	35	Kazan	5,8
Paris	28	Sydney	4
London	18	NaberezhnyeChelny	3,9
Los Angeles	11	Nizhnkamsk	3

This means that in order to ensure, in Moscow the level of car use equal to London, the percentage of road surface area should be increased in 2 times. But then square roads of Moscow should occupy 40% of the city area. It is impossible to do due to the dense development of the city (Access mode: <http://anderson-mike.livejournal.com/104572.html>, 25.05.2016).

In Naberezhnye Chelny. The population members for 2014 is to 522,048 (Publishing center of Tatarstanstat, 2014) people, city area 17103 ha. (Collection“Public utilities of the Republic of Tatarstan”for 2013), k= 3,9.

The derived "metropolis" ratio (Access mode: <http://anderson-mike.livejournal.com/104572.html>, 25.05.2016):

$$k = \sqrt{QP}$$

where:

Q – population of the city, people.

P - population density (population/city area) people / sq. km. (ha)

Based on the ratio, Naberezhnye Chelny on the density of the metropolis is about on par with Sydney, it is better to Kazan. This speaks to the amazing possibilities of Naberezhnye Chelny for the harmonious development (extension) adjoining roads and construction (extension) of the commercial Parking lots within walking distance, parks and green spaces.

As noted the area of green space in Naberezhnye Chelny is 5197 ha.

According to building rules II-60-75 green spaces. Area of public green spaces in residential areas are calculated according to table 2.

According to building rules II-60-75? in the design of urban green spaces should be given area of at least in the design of urban green spaces should be given area of at least: 15 ha for citywide parks, 10 ha for planning areas, 3 ha for gardens of residential areas, 5 ha for squares. Area of general village garden should be not less than 2 ha.

Table 2
THE AREA OF COMMON GREEN SPACES

Green spaces	Area of green spaces, sq. m. per person					
	in the largest, large and big cities		in medium-sized cities		in small cities and towns	
	in the first place	on the settlement date	in the first place	on the settlement date	in the first place	on the settlement date
Citywide or general village	5	10	4	6	7	7
In residential areas	7	11	5	8	-	-

Based on the table of population for the city of NaberezhnyeChelny it is enough 1096,3 hectares of green spaces and parks, squares 50 hectares. According to the norms of 1,200 hectares for green space would suffice, and in the presence of Naberezhnye Chelny 5197 hectares, i.e. more than 4 times.

RESULTS

The reserve exists. If you look at the existing problem of the city at the time observed:

- a) lack of local parking spaces;
- b) a huge amount of garbage in the form of leaves in the spring and autumn, mainly from not presentable, dangerous and large trees (poplar, birch) (Gabdullin L. V., 2015);
- c) the parking of cars on lawns due to the obvious lack of parking lots, the result of which is pollution of roads.

Over the last few years the number of cars that are owned by Russian citizens has increased dramatically, but despite this, to levels of Europe and the US still need to grow. Some regions in motorization have already caught up with the European countries, and the capital of Russia is not on the leading places for this indicator. At the moment the country is at the level of European countries in the 70-ies of the last century.

At the beginning of 2012 on one thousand inhabitants of Russia is 250 cars, which is approximately one car for four people. According to these indicators, the country lags behind the United States three times, and from Europe almost doubled. In Europe per 1000 inhabitants the leading countries account for approximately 480 cars, and in more developed countries the number of cars reaches 600 copies. A leader in the motorization is the United States with a rate of 760 vehicles per thousand people, in second place is Luxembourg (680 auto/1000 inhabitants), and the third settled Malaysia (640 cars/1000 inhabitants). Completing the top five Australia and Malta. It is also interesting that the top ten does not include the leading countries in car

manufacturing, such as Japan and Germany occupy only the eleventh and fifteenth place respectively. It can be noted that Russia is the only leader among the CIS countries, but to European countries is certainly far (Access mode: <http://24warez.ru/main/article/avto/1157426023-na-tysyachu-zhiteley-rossii-prihoditsya-250-legkovyh-vtomobiley.html>, 25.05.2016).

Further we will present the results of the study and the trend of NaberezhnyeChelny.

Table 3
STATISTICS ON THE NUMBER OF CARS IN NABEREZHNYECHELNY (QUERY DATA OF THE STSI OF CITY OF NABEREZHNYECHELNY FOR 2015)

	2010	2011	2012	2013	2014	2015
Lights(natural persons)	99431	108875	118598	128837	135886	144900
Lights (legal entities)	2792	3021	3231	3467	3862	4130
Total	102223	111896	121829	132304	139748	149030

Over the period 2010-2015, respectively, the number of cars steadily grows linearly. Analyze the specific number of cars per 1000 inhabitants of NaberezhnyeChelny.

Table 4
STATISTICS POPULATION AND TOTAL NUMBER OF PASSENGER CARS

	2010	2011	2012	2013	2014	2015
Light vehicles	102223	111896	121829	132304	139748	149030
City population	510301	513200	516637	519025	522048	524444

Table 5
STATISTICS OF PASSENGER CARS PER 1000 PEOPLE

	2010	2011	2012	2013	2014	2015
Specific per 1000 of population	200,3	218,04	235,8	254,9	267,7	283

As can be seen from the tables, while the number of cars per 1000 inhabitants NaberezhnyeChelny behind the cities of Europe, not to mention the US. But the trend is increasing. Forecast figure 2030.

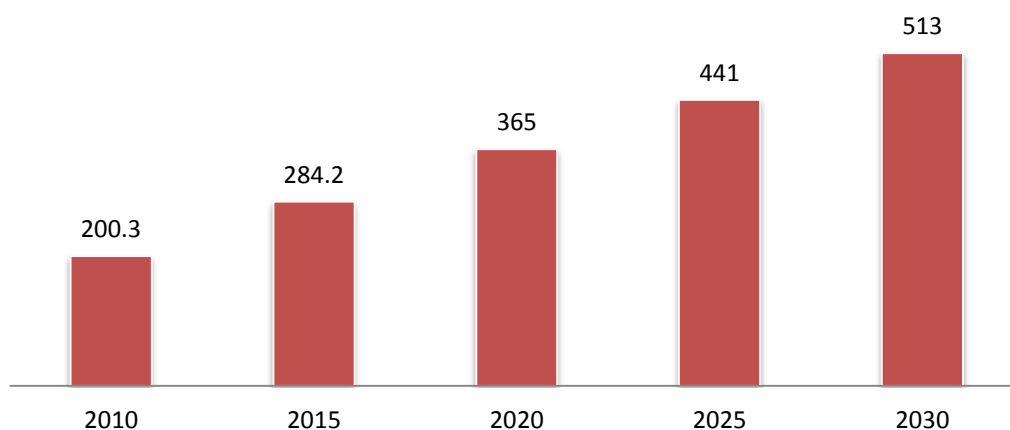
Table 6
THE FORECAST INCREASE IN THE NUMBER OF PEOPLE AND NUMBER OF CARS UNTIL 2030

	2010	2015	2020	2025	2030
Light vehicles	102223	149030	196000	243000	290000
City population	510301	524444	537555	550990	564700

Table 7
FORECAST GROWTH IN THE NUMBER OF PASSENGER CARS PER 1000 PEOPLE

	2010	2015	2020	2025	2030
Specific per 1000 of population	200,3	284,2	365	441	513
City population	510301	524444	537555	550990	564700

Figure 1
FORECAST GROWTH IN THE NUMBER OF PASSENGER CARS PER 1000 PEOPLE. NABEREZHNYE CHELNY



So, to the European cities, the number of passenger cars per 1,000 people, NaberezhnyeChelny will close in 2025, the question of harmonious development of city infrastructure in this trend.

Study on the parking lots.

In NaberezhnyeChelny the parking places business do 172 000 and IP (Access mode: www.2gis.ru, 25.05.2016). The parking is a topical issue them to fill. Based on the official source of administration of NaberezhnyeChelny (Access mode: <http://nabchelny.ru/company/page/30/524>, 25.05.2016) the vacant seats on the parks the city is 12040 16% of the total capacity of parking of passenger cars number of 75680. The number of passenger cars 149030 149030 pieces of cars in the parking lot 75680-12040=63640 cars in the yards and garage societies stored 149030 – 63640 = 85390 cars in the city. According to BTI garages are 43574 units, but the residents of the garages are mostly used as workshops and storage rooms. The visual count and conversations with artists repair showed the occupancy rate of parking garages 35%, therefore, $43574 \cdot 0,35 = 15250$ cars in garages. The rest $85390 - 15250 = 70140$ cars parked in yards and sometimes breaking the rules of parking due to the lack of parking spaces.

SUMMARY

During observation of infrastructure problems in the city of Naberezhnye Chelny in terms of lack of parking spaces and roads area. It will be difficult to provide level of car use in NaberezhnyeChelnyat the level of some cities in developed countries due to higher population density because of apartment buildings, but it is necessary to develop in this direction.

CONCLUSION

The main proposals on development of infrastructure of NaberezhnyeChelny:

1. To build residential complex with the new (increased) by the standards of the squares of the adjacent roads and parking lots;
2. To increase the road area and adjoining parking spaces at the expense of a harmonious combination with the green areas.
3. To wisely choose the types of green spaces.
4. Now it is necessary to think of increase in the sites (areas), expansion of roadways within residential complexes, to think about multi-storey car park, to design and build multi-level interchanges.

We should provide a gradual transition to replacement boxes and open parking lots, occupying too large area and is unacceptable in the aesthetic attitude, in modern multi-storey garages and parking lots.

The main types of garages on the settlement date are multi-storey (4-5 floors) parking garages on 500 seats. In addition, districts are encouraged to place underground and semi-underground garages with a capacity of 50 seats (Access mode: http://maps.tigp.ru/genplan/pages.php?action=edit&id=52_naberejnye_chelny, 25.05.2016).

Outdoor parking is to be placed to the first phase of construction on the site of multi-storey garages. On the settlement date for the implementation of the plan should be the construction of a multistory parking gated along the central avenues of the city, which should have a modern and original appearance to be able to look at the background architecture of the city's avenues. As well as to provide space for parking vehicles in the underground and ground floors when designing and construction of shopping centers and these rooms can be used as parking for customers and as a night parking. Include underground parking (in the design of houses to consider the draft storage space for cars in the basement) in the construction of new residential buildings (Access mode: http://maps.tigp.ru/genplan/pages.php?action=edit&id=52_naberejnye_chelny, 25.05.2016).

In conclusion it can be noted that "all this was not to find errors, and to attempt to find a new "tremors"(Gattorna J., 1998) for development.

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ECONOMIC CRISIS IN RUSSIA: STRUCTURE, CAUSES, MANIFESTATIONS OF THE OVERCOMING PROSPECTS

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ABSTRACT

The paper describes the structure, causes, manifestations, and the prospects of overcoming the economic crisis in Russia. It is proved that the crisis has deep systemic character due to dependence of the Russian economy on raw materials export, the effect of which is complicated by imposed market conditions associated with the effect of economic sanctions. The paper shows the forms of the crisis state of the economy due to the influence of these factors. It is emphasized that the prospects for recovery from the economic crisis are associated primarily with restoration of the destroyed institutional environment, as well as carrying out structural reforms.

Currently, in Russia there is developed a deep economic crisis which includes at least two components: systemic and cyclical. Thus we can say that in Russia one of the worst options for economic development unfolds: traditional systemic problems of our economy are superimposed by a current crisis having a cyclical nature due to low level of the business environment in the country. The most severe manifestations of the crisis are on the side of domestic demand and are related to the sharp rise in inflation, budget instability, and the fall in investment activity. In addition, internal cyclical crisis is associated with a change in the external economic environment, namely the turning point in the trend in oil prices.

keywords: *economic crisis, "pipe-dependent economy", economic sanctions, consumer spendings, institutional environment.*

INTRODUCTION

The purpose of the paper is to give a scientific basis of theoretical and methodological approaches to the analysis of the causes, symptoms and prospects of overcoming the economic crisis.

Achieving this goal determines the formulation and solution of the following main objectives:

- To reveal the structure and causes of the onset of the crisis in the Russian economy;
- Show the manifestations of the economic crisis in Russia;
- Prove conditionality of further socio-economic development of the country by the needs for institutional and structural reforms.

A series of works of Russian and foreign researchers: S.V. Aleksashenko, S.Afontseva, B.Bernanke, S.M.Gurieva, E.T.Gurvich, M. Dmitriev and S.Drobyshevskiy; T.V.Evdokimova, A.V.Zubarev and P.V.Trunin, V.S.Zhukovskiy, J.M.Keynes, P.Krugman, A.L. Kudrin, M.V.Kulikov, S.Leybovits, M.Yu.Malkina, V.A.Mau, D. North, R.M.Nureev, A.V.Ulyukaev, M.

Friedman, E.G.Yasin, et. al. is devoted to study of theoretical and applied aspects of the economic growth problem (including the Russian economy).

METHOD

The solution of scientific problems has been realized with the use of general scientific (systematic approach, analysis and synthesis, the unity of the historical and logical aspects, scientific abstraction, etc.), and special (graphics, statistics, comparative analysis) research methods of economic processes.

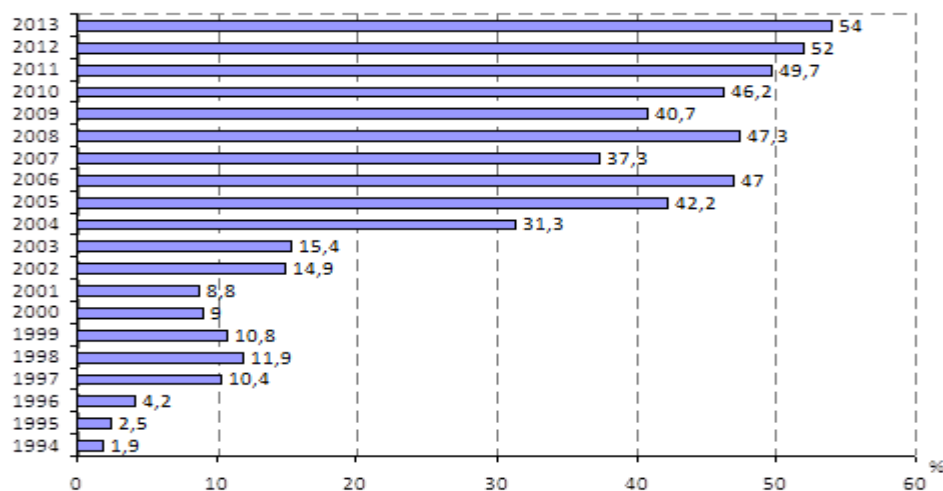
Currently, in Russia there is developed a deep economic crisis which includes at least two components: systemic and cyclical.

Since 2012, almost all the macroeconomic indicators accepted a downward trend. The exception was the agricultural products which production volume having increased in 2011 due to the low base effect as a result of drought in 2010, was so great that on its background already due to the high base effect, this indicator showed a decrease in 2012 compared with 2011. In 2013, this figure - the only one listed in the table - has increased relative to 2012, but its dynamics continued to be volatile.

The economic slowdown which started in the second half of 2012, firstly was caused by the investment pause, but with the development of these processes, the structural problems related to the outrunning growth of costs (especially labor costs), and the lack of technological innovation became clearly marked. The slowdown in GDP and investments growth in 2012 was the first alarm bell having evidenced that raw material economy model has exhausted its source of growth. Thus, we can say about the stagnation beginning in the economy in 2012 - 2013 induced by depletion of sources of growth by the rent-oriented economy due to decline in oil prices (Brent average quotations in 2013 fell by 2.7% compared to 2012). New sources of economic growth also could not arise in conditions of institutional constraints associated with the excessive strengthening of the state intervention in the economy, lack of reforms, and the crisis of confidence in the state, especially on the part of business.

In the second half of 2014, the Russian economy there was clearly evident prospects of entering into recession amid a sharp decline in world oil prices, and at the end of 2014 the economy has entered a new stage of development. The determinants of that another state became the virtual absence of economic growth, inflation, the decline in investment, a sharp decline in imports, changes in consumer sentiments. These processes were formed simultaneously in mid-2014, and then they have been added by new factors limiting economic growth associated with the introduction of economic sanctions against Russia and counter-sanction response that contributed to the growth of the unstable political and macroeconomic environment, a sharp deterioration in business confidence, strengthen the capital flight, rapid devaluation of the national currency, a surge in inflation, and a reduction in income.

Figure 1
THE SHARE OF OIL AND GAS REVENUES IN THE RUSSIAN FEDERAL BUDGET, %



System component of the current major economic crisis began to form for a relatively long time, almost immediately after overcoming the first visible effects of a default in 1998, with the formation in the 2000s of the economic model the essence of which was described as "growth without development". Despite the fact that GDP growth rates remained consistently high until the middle of 2008 and the period of 2006-2007 was and remains a record in terms of investment in fixed assets, we have to note with regret that the sufficiently long period of high world oil prices has not been used to invest in an innovative restructuring of the sectoral structure of the economy.

On the contrary, during that period against the overall de-industrialization of the Russian economy signs of the so-called Dutch disease (Jose Antonio Ocampo, 2005) have clearly showed, that are a paradoxical model of "pipe-dependent economy" which is represented by exports, especially commodities with low level of processing. More than 65% of export earnings was accounted for energy carriers, while the share of oil and gas sector in the GDP is 21% (Dmitriev M., Drobyshevsky S., 2015). Excessive dependence on world oil prices, the growth of the share of oil and gas revenues in the federal budget (Figure 1) indicate the formation of serious structural imbalances, the result of which is the lack of stable long-term factors of economic growth in the Russian economy.

The current crisis of the Russian economy is, first of all, a logical result of previous development trajectory (path dependency). The concept of path dependency (Arthur W. B., 1994; Liebowitz S.J., 2002; North D.C., 1990) extending the dependence of the current state of affairs from the past to the economic institutions, together with the concept of QWERTY-effects (David P.A., 1985; David P.A., 1986) underlines the stability of inefficient institutions and extreme complexity, and sometimes impossibility to change them.

These processes have contributed to formation in the Russian economy of institutional traps which collectively allow us to speak about the destruction of the institutional environment being the basis for private economic activity. It is, above all, the deformation of the foundation of any economic system: the institution of private property rights that can be successful in Russia not as a result of creation of efficient production and competition, and only upon proximity to

authorities or direct affiliation to the notorious power vertical by exploiting its administrative resources.

Inefficient specification and protection of property rights was the consequence of the institutionalization of the new "power-property" system in our country in the early 2000s as a result of the high concentration of rental income on a few export products at the top of the social pyramid, whereby the enrichment of layers close to the authorities occurred. The state as the organizer of expansion of new redistribution of property is interested in the absence of clear rules of the game in the field of property relations; whereupon the action of the "rules of the game" common to all not only enshrined in law but also strictly carried out, is a prerequisite for a successful transformation of the "power-property" system into the private-market one.

Features of the institutional environment imprinted on manifestations of the crisis situation in 2014 - 2015 what differ significantly from the economic turmoils of recent decades.

The current crisis in the Russian economy takes place in terms of keeping the positive rate of development by the world economy in general (in spite of the serious difficulties experienced, especially in the European economy) and the sustained recovery of the global environment.

Suffice it to say about the panic increase by the Central Bank of the Russian Federation of the key interest rate from 10.5% to 17% during the night of 15 December 16, 2014 caused the counterproductive effect. Instead of curbing the intensified inflation after introduction of counter-sanctions we got its further acceleration. The rate of national currency virtually duplicated the dynamics of the world oil prices and contributed to the development of the currency crisis, reflected in the sharp devaluation of the national currency and, consequently, a decline in real household disposable income.

Economic sanctions and their consequences have become a heavy burden for the country: its economy suddenly found itself without the drivers of economic growth such as high oil prices, investments, technologies, and consumer demand. The channels of influence of the sanctions to the Russian economy are:

1) Increase in the cost of debt financing, especially for the long term. Investments in fixed assets for the first six months of 2015 decreased compared to the same period of the last year by 5.4% (and in June 2015 compared to June 2014 - 7.1%);

2) Decline in total factor productivity in view of the restrictions on the transfer of technologies from abroad, impossibility of a technical or technological replacement of imported components and raw materials or their appreciation; weakening the competitive level of domestic producers compared with the foreign ones because of the effect of price advantages as a result of depreciation of the ruble, as well as the reduction of foreign trade cooperation with most developed countries;

3) Restriction of imports to Russia due to these circumstances;

4) Restriction on Russian exports, primarily of raw materials and energy resources associated with a decrease in demand. At the end of 2014, the value of exports decreased by 5.8%, imports - by 9.2%;

5) Rise of economic and political uncertainty generating a "myopia effect (nearsightedness)" of economic entities along with the lack of games for the predetermined long-term rules.

The overall uncertainty creates uncertainty about the future income stream, forcing economic agents to lower consumption in this period in accordance with the permanent income theory (Bernanke B.S., 1984; Friedman M., 1956). A method to minimize the action of the

paradox of thrift that leads to a reduction in aggregate demand and economic slowdown, is seen by P.Krugman in approval by the government of various state programs to revive the economy being in a depression condition (Krugman P. R., 2008).

In the conditions of reducing the total consumption and the low degree of confidence in the Russian institutions, especially in the national currency and banking system, as well as high inflation and exchange rate risks propensity of households to save is realized mainly in the form of purchasing foreign currency in cash. The reduction in demand for real cash balances in rubles implements such components of money demand according to Keynes (Keynes, J.M., 1936) as the transactional demand and the demand for a store of value (precautionary motive).

Transactional component of the demand for money is determined by the volume of transactions carried out proportional to income. Consequently, the component of the demand for money to carry out current purchases is also proportional to an income:

$$M_{dt} = k_t * Y,$$

where M_{dt} - value of transaction demand for money;

k_t - liquidity preference factor for a transactional motive (sensitivity of transaction demand for money to changes in the nominal gross income).

In turn, the increase in demand for foreign currency in real cash balances is due to the action of the precautionary motive. J.M. Keynes believed that the amount of money saved by economic entities on the basis of the precautionary motive is determined by the volume of transactions in the expected future period in terms of value proportional to income. Consequently, the component of the demand for money under the precautionary motive is also proportional to income:

$$M_{dn} = k_n * P * Y,$$

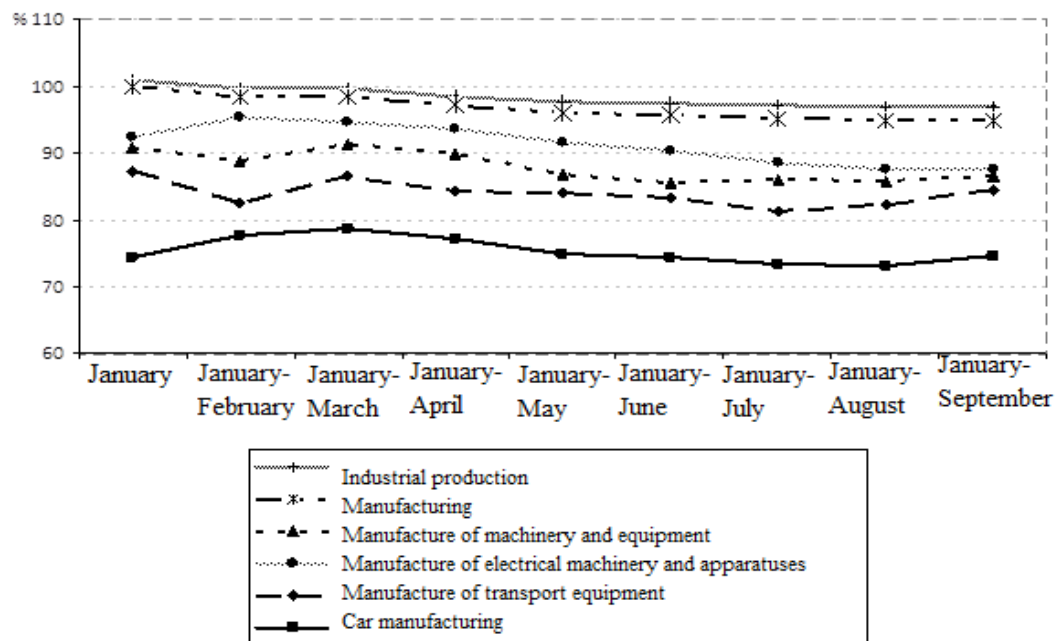
where M_{dn} - the value of demand for money under the precautionary motive;

k_n - the liquidity preference factor for precautionary motive (sensitivity of the demand for money for precautionary motive to change the nominal total income).

Meanwhile, due to the current rise in annual inflation to 16% real incomes of the population has sharply declined. According to Rosstat (Russian Federal State Statistics Service), real wages and retail sales volume by the spring of 2015 decreased by 10%.

By the end of 2014, economic growth in Russia has not exceed 1% accompanied for all of the period with sustained and significant outflow of capital reached US \$ 151.5 billion in 2014. According to the forecast of the regulator, the outflow of capital in 2015 will exceed US \$ 70 billion. Decline in GDP predicted on the basis of 2015 in the amount not more than 4% does not seem to be so disastrous, as was the case in 2009 (7.98%), however, the rate of fall has been relieved by the low base effect, since before the recession, the economy was on the brink of stagnation anyway.

Figure 2
PRODUCTION INDICES FOR THE RUSSIAN FEDERATION IN 2015 (IN % TO THE CORRESPONDING LAST YEAR PERIOD)



The decline in industrial production as a whole for January-September 2015 amounted to 3.2%, and in manufacturing industries - 5.2% (Figure 2). This decline could be even greater if not for the high rate of growth in the defense industry (15-20%) creating an additional demand in the industrial sector. However, the production of arms constituting in the structure of the federal budget in 2016 to 19.5% (for comparison: spending on education - 3.6%, healthcare - 3%) is dead expenses which make no sense in terms of public utility, however, the statistics of the GDP and industrial production did not follow this.

Low oil prices and the lack of borrowing reduce the income from oil and gas sales to the state treasury what contributes to the emergence of the state budget deficit. The Ministry of Finance seeks to limit the deficit in 2015 and 2016 to 3%, although the mere presence of sustainable deficit or surplus in the countries is considered as the norm in the world economy and in some cases may create additional opportunities for economic growth. (Butzen P., Deroose M., Ide S., 2014) However, the problem lies in the fact that in this case there is a vicious circle: the inability to finance the budget deficit leads to a reduction in public spending (primarily on wages and transfers to the population) what, in turn, contributes to lower domestic consumer demand and a decrease in the national income.

RESULT

The drivers of economic growth, and, above all, high oil prices and domestic consumer demand which allowed the Russian economy after the crisis of 2008-2009 until mid-2012 have a very reasonable rate of economic growth per se ceased to play this role. Russian economy demonstrates the inability to get off the oil needle, and economic sanctions and their consequences have a critical effect on the list of available anti-crisis measures.

Under these conditions, Russia is doomed to maintain the status-quo on the world market: in the foreseeable future in the absence of major institutional changes, it will be the supplier of resources and the consumer of finished products, especially in high-tech sectors (and then, upon lifting of sanctions).

CONCLUSION

Departure of the Russian economy on a new trajectory of sustainable development is hampered by a number of constraints: lack of confidence on the part of business to the state's ability to play by the rules set in advance, and therefore low business activity; entering the economy into recession in the conditions of the investment pause; intensified capital flight; dominance of inefficient state-owned and quasi- state-owned companies with the weakening of market and legal institutions.

It is required a laborious, solid piece of work to restore the destroyed institutional environment aimed at implementation of real independence of the judiciary, political competition, freedom of media, as well as implementation of structural reforms with the aim of overcoming the commodity dependence of the Russian economy. Without implementation of these measures, Russia's economy will remain fragile and unstable, even in a case of an increase in oil prices; and the country's population will not provide a decent standard of living which only has to be a top priority in any country.

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INFORMATIONAL BUSINESS ACTIVITY: FEATURES OF PRICING AND TRANSFORMATIONS OF A NETWORK EFFECT

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ABSTRACT

This paper is devoted to an analysis of the information which has become one of the leading economic resources defining the logic of macroeconomic dynamics and competitiveness of the national economy. The features of pricing in the market of information products, and network market transformation mechanism under the influence of digitalization, the problems and the negative consequences of the information economy, the need for a new understanding of the industry dynamics in the network sector, and the network effects which has a positive feedback are presented.

Upon a high level of development of modern information technologies a consumer is able to make a choice between traditional and non-traditional ways of providing information. With the variety of types of information that is predetermined by a wide range of consumers of information products and services representing a consumer and industrial demand, the bulk of a company's information products is consumed today by enterprises, not by individual users. Each producer solves a number of issues in the process of formation of prices for information products and services taking into account solvency of consumers, the market structure of the product and so on often relying on the uniqueness of these products and services (for example, an advantage on the database market in determining the level price, of course, belongs to those are unique). Value of qualitatively different information products (associated with such properties as relevance, usefulness, completeness, timeliness, accessibility, submission form, reliability, and so on) determines extensive use of all available means for achieving flexible prices (negotiated prices, margins for the novelty, markdowns, discounts, price concessions, and others.).

Keyword: *information economy, information product, pricing, payment problem, network market, digitalization, network effects, power sector configuration, time.*

INTRODUCTION

Information economy which represents a certain stage in the development of post-industrial society, makes a qualitative change in the traditional quartet of factors influenced by the transformation of economic activities. Conceptually new patterns in economic events are set by the achievements of information technology what are the basis of the so called network economy, thus the limitations of traditional approaches and the need for new thinking are revealed from the perspective of economic theory (Makarov A., Makarov E., 2015). At the same time, considering the question of the main differences in the control mechanism, it should be assumed that if a production scale effect is crucial for the industrial economy, the network effect which is characterized by such key features as positive feedback, should be of the same value for the new information economy (Rolf Vayber, 2003).

METHODS

When solving the scientific problems, we have used general scientific (scientific abstraction, systematic approach, unity of the historical and logical aspects, analysis and synthesis, etc.), and special (comparative analysis, graphics, statistical) methods for the study of economic processes. Informational business activity and pricing features of information products market. The concept of "informational business activity" which appeared simultaneously with the concepts of "information economy" and "information society" is regarded as the "process of creation of information products and services, the form and content of which constantly change reflecting the state of scientific and applied research, the requirements of the user environment in order to obtain profit" (Bayramukova A.S., 2011).

If in 1958 there were identified thirty industries producing knowledge (the volume of the information sector in the US economy was estimated at 28.6%) (Peschanskaya I., 1996) and there was first raised the issue of the quantification of the information production contribution in national wealth, then today there held on classification of states by the level of their development taking into account saturation by the information of the total product produced: developed (able to produce and sell information-rich products); developing (not producing information-rich products for export, but creating and selling such tangible goods as cars, appliances, aircraft, etc); and undeveloped (not capable of producing either one or the other, and, respectively, which represent the labor and land markets (as a factor of production) for the leading states of the higher categories, and which are customers of their respective products.

Let's carry out analysis of the factors which determine supply and demand in the context of identifying features of pricing in the information market. It is obvious that almost all people have a need for information, but presenters of demand for it are the only solvent individuals and organizations that have anything at risk (assets, money, reputation, life). So, it is the risk (as the threat of losing something) should represent as *the main factor* determining the demand for information, despite the fact that the level of prices and the degree of risk are directly related. Differences in human assessment of a risk that cause the subjective utility and individuality of demand for information, determine the following characteristics of information as a commodity: a) the amount of the demand is not affected by a price, and, on the other hand, demand affects the price; b) the majority of physical products and services differs from information also by the fact that the demand for it is largely determined by such non-price factors as a risk, novelty, reliability and completeness, timeliness, confidentiality, originality (the presence or absence of copies), an acceptable form of presentation. It should be noted that elasticity of demand for information depends not not so much on the price and income, as the degree of risk, i.e. the higher the risk of losing anything, the greater the demand for the relevant information and consequently the lower its elasticity:

$$ED_i = dQ_i / dR, \text{ where}$$

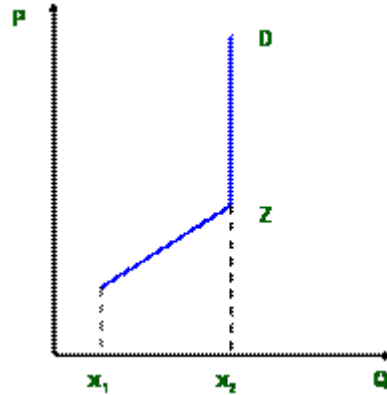
ED_i - elasticity of demand for information,

dQ_i - percentage change in the demand for information,

dR - percentage change in the degree of risk.

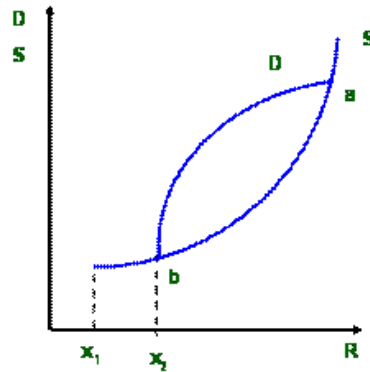
Let's consider the characteristics of supply and demand for information based on the traditional economic model depicting the demand for primary information necessary for a consumer in a certain volume, desired fullness to remove or reduce the uncertainty of the situation in which the consumer may be (or already is). Let designate a minimum amount of information which the consumer needs and for which he/she will to pay as the point X_1 ; the breakpoint of the graph as Z , and the maximum total amount of consumer information as X_2 , respectively (Figure 1).

Figure 1
THE DEMAND FOR PRIMARY INFORMATION



Upon that, the factors which determine the demand for information, and also have an impact on its proposal in so far as a seller is driven by the desire to draw by removing or reducing the anxiety of the consumer.

Figure 2
MARKET INFORMATION



Primary data demand line in Figure 2 is shifted by an amount X_1 as upon an insignificant risk, a consumer is not inclined to spend money on information; the rapid growth in demand is due to the fact that the risk becomes significant. The beginning of the supply line with higher value X_2 is because the driving force of a manufacturer to manufacture products could be only a sufficiently high demand price, and the followed an increase in supply which is initially faster than the demand curve, and then a gentle slope, are related to a limited demand. The intersection of supply and demand curves at the points a and b forming a closed field in the graph represents the equilibrium market data any point of which indicates the balance of interests of information buyers and sellers. Sufficiently wide range of possible prices on this information may be associated with weakness or lack of competition.

Studying the network market phenomenon as an object of economic analysis that began in 70-80s of XX century with sociological works devoted to the consideration of human behavior (authors) in a social network (Freeman L.C., 1979) then switched to the economic aspect of the industry interactions, manifestations of external effects, availability of positive scale effect, access to the market of natural monopoly and control of the television and radio frequencies spectrum (Economides N., 1996). Gradually, as the network effects became increasingly important in the life of every individual, companies and markets activities, a separate area of economic theory has formed, economics of network benefits (Strelets I., 2008) covering several mutually overlapping sectors: - *digital* economy (carried out with the help of digital telecommunications); - *virtual* economy (based on the use of interactive options); - Internet economy (development of somebody own business on the Internet); - E-economy (based on the use of information, knowledge and ICT). It has to do with the benefits of networking, including the well-studied key properties among which researchers highlight complementarity, compatibility and standardization; significant economies of scale; high switching costs (Gehrig Th., Shy O., Stenbacka R., 2011) which create network externalities when each additional user increases the utility of the good for all of the original members, and are accompanied by an investment trap effects (*lock-in-effects*) and dependence on the preceding development ways (path dependency).

CONCLUSION

The blanket distribution and dynamic growth of digitalization radically change the landscape of the network market, thereby demonstrating the limitations of traditional approaches and the need for a new understanding of the dynamics in the network sector (Shy O., 2001). The following can be identified among the new trends of network market configuration (Rozanova N.M., Yushin A.V., 2015):

1. *Digitalization* (to which more or less susceptible all three major television industry platforms - satellite TV, cable TV, and terrestrial TV) has a major impact both on the sphere of production (supply) and consumption (demand) of an information product:

a) Digital technologies (with which, according to experts, in the next decade there will involved more than 80% of new media (Nazarov M.M., 2011)) in the new context are accompanied by an increase in the volume of media consumption and a decrease in costs for launch of new media; growth of the number of players in the market that promotes growth of competition in the market; upon that, increasing the capacity and capabilities of these platforms allows people in remote areas to receive TV services in the same quantity and quality which are available in large cities;

b) Using the main advantage of digital television on any platform (based on interoperability of digital technologies in the telecommunications plan with Internet traffic for TV viewers), ICT users may raise the level of their involvement in the decision-making on what, when, and in which form they can watch in terms of content. As a result, the packet principle of network product formation gradually gives the way to individualisation and personalization of consumption, where a client can purchase a whole set of network products and services, and its individual components (video on demand, online games like on the console, or via TV, a plurality of PC and TV screens) (Bolton R., Saxena-Iyer S., 2009) thereby reducing or even completely canceling the function of television as a means of mass communication broadcasting to the entire population of a country. Development of "smart" TV and cloud platforms for the media industry direction allows overcoming the problem of escalating effect when a consumer having initially any electronic device can inexpensively - both in terms of money, and in terms of time and in terms of training - connect to any desired service.

c) Thanks to the Internet Protocol Television (IPTV) tool, TV becomes the new efficient e-commerce channel having quite a big potential, being subordinate to the exponential growth of the

IPTV digital device (experts predict the increase of the market from \$ 54 million in 2011 to \$ 113 million in 2015).

2. *Borders* of network markets (in contrast to the previous era of fragmented network services) become *blurred*. Digitalization technology in its present format as a high-definition (*HDTV*, high-definition standards) television is inevitably accompanied by *the fragmentation of supply*. *Unpacking* becomes an effective business strategy of IT companies that allows to enter the network, including media market, by many small profitable firms causing a significant diversification of an offer, evolution of the network market from a highly concentrated and monopolized in a highly competitive fragmented framework in which the price competition that promotes permanent service prices fall becomes of increasing importance.

3. Formation of integrated platforms with related technologies of telephony and internet service providers, as well as increased use of services such as *double-play* and triple-play (technologies related to the supply of a television signal by combining the Internet and telephony) lead to the convergence of different media segments and ICT market causing a radical *transformation* of TV related:

a) To an increasing number and variety of media formats providing user a freedom of action, selectivity, flexibility, choice of content from many sources, view it on different platforms (TV, phone, tablet, computer) so that the user can actively take advantage of the interface content ("parts", "shares", "expresses him (her) self") satisfying newly appeared demands with the use of the new media.

b) To a multiscreen environment and cross-platform solutions dramatically *reducing the cost of switching* between network products and network brands which, if not completely eliminate, but reduce the risk of investment and consumer traps (lock-in effect) (Nazarov M.M., 2011).

At the same time, formation of a global information system related to the dynamic transformation of the network market economy today faces a number of challenges and obstacles, as well as the negative consequences:

1. Internet security problem (viruses, holes in security software, hackers and spam) has become an important factor in the market, as digital services are based on access to the Internet (Evidences // RBK.-2015);

2. A particular problem in the sphere of content production and consumption is *piracy* in the conditions of impossibility to ensure with the newly emerging institutions of encryption and simulation protection, and absolute protection of intellectual property). Leading states in terms of pirated software sales are the United States, China, and Russia (see. Table. 1).

Table 1

LIST OF LEADING COUNTRIES IN TERMS OF SOFTWARE PIRACY ([ACCESS: HTTP://GLOBALSTUDY.BSA.ORG/2011/](http://globalstudy.bsa.org/2011/). RETRIEVED ON 15.02.2014)

States	Sales of pirated products (million. US dollars)	Legal sales (million. US dollars.)	Piracy indicator %
USA	9 773	41 664	19
China	8 902	2 659	77
Russia	3 227	1 895	63

3. Modern information technologies has formed the basis for growth of global interdependence of all world economy actors that caused at the end of XX - beginning of XXI century formation of a single global market for factors of production, goods and services, and hence a marked weakening in the ability to control and regulate economic transactions for part of governments of different countries to overcome the negative effects of globalization due to the

significant strengthening of the role of the emerging new non-state actors of the global economy which are beyond the governmental control, transition of a part of functions from a state to TNC, TNB and other cross-national structures with considerable economic power (I.P. Nikolaeva, 2012).

4. Over the past twenty years, the world has formed a whole new global "ruling class" which is not tied firmly to any country or social group, does not have any external obligations, and confront any hostile nationally or culturally (and moreover, geographically) self-identified community as such. Hence, creating global networks and providing them with important powers in the field of public administration, states themselves create the subject of the "external control" neglecting their sovereignty.

CONCLUSIONS

Thus, blurring of distinctions between the network benefits involves changing the role of the regulator: it is possible that public authorities should move away from the control of access to the network markets which now become a single innovative complex with a lot of members of different size, and move on to dynamic competition support policy in this multipartite sector with formation of a new network market configuration. Upon that, a plurality of clearly defined network markets within the frameworks of natural monopole processes is replaced under influence of digitization effects by a single, amorphous in its form, market structure with a large number of different-sized members, with stiffer competition primarily related with prices.

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THE METHOD OF THE ANALYSIS OF EXPORT PORTFOLIO COMMODITIES IN TERMS OF THE MEMBERSHIP OF THE TERRITORY IN INTERNATIONAL ORGANIZATIONS

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ABSTRACT

One of the trends of the modern world is tendency towards integration expressed by growing interaction between different countries and regions through international economic relations. These relationships are expressed in implementation between countries of different economic activities such as export and import orientation. Important are issues of evaluating the effectiveness of implementation of these activities, choosing areas of export specialization. In this article the formation of analysis approach for goods export portfolio site in terms of its entry into international cooperation. The methodology defines the main steps in the analysis of exports and imports of the territory, its export portfolio. In work the system of indicators to measure import and export activities of the territory, analysis on import and export markets were formed. The proposed methodology allows to analyze the attractiveness of commodity groups from the standpoint of yield and the probability of joint exporting, to evaluate international economic activities of the territory and its export portfolio. This methodology can serve as a theoretical basis for the study of international economic activities of the territory, can also be represented in practice when developing concepts and strategies, the formation of infrastructure of development of foreign economic activity of the territory.

Keywords: *export, import, territory, export portfolio, international organization.*

INTRODUCTION

Today, countries enter into a greater number of economic relations, thereby forming various forms of international economic relations. In the economic literature emphasizes that in the modern world there is no country which would not be included in the system of international economic cooperation. International cooperation reflects the process of interaction between two or more business entities, which are prevalent joint search for the common interests. International economic cooperation can manifest itself in various forms such as foreign trade, scientific and technical cooperation, international tourism, etc. The development of such cooperation between actors in international relations contributed to the formation of various organizations of global and regional significance. While the economic literature stresses that the current international market is characterized by a regionalization of the economy, i.e. the process of globalization in small scale, involving a limited group of countries, creating enterprises to address a narrow or wide range of tasks.

This article presents the methodology of the analysis of the export portfolio site in terms of its entry into international organizations. The relevance of the proposed instruments is

determined by the strengthening of the globalization processes and the expansion of world economic relations in the individual territories actively involved in various forms of international cooperation. Also note that the importance of export development of territories is as a factor in their gross regional product. Today the demand needs of the economies of the individual territories is the issue of diversification of the economy and its development. The proposed tools allow to assess the structure of the export portfolio before and after joining the international organization, to assess the attractiveness of commodity groups in terms of their profitability and probability of joint exporting, to define directions of development of export territory after joining the international organization, which will allow you to determine the best practices for benchmarking.

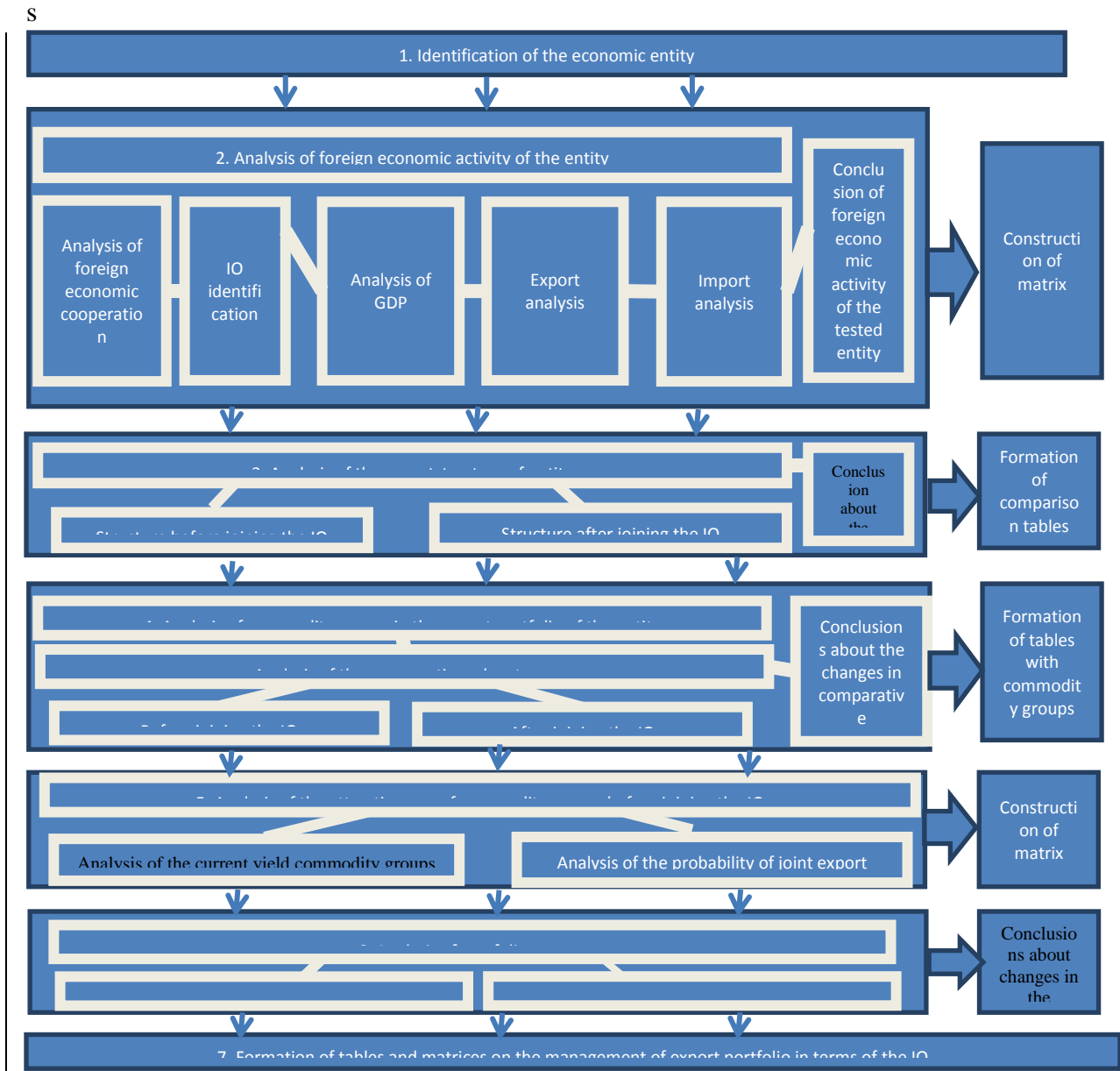
THE PROPOSED RESEARCH METHODOLOGY

The export development and selection of areas for strengthening management actions for the development of production in the international economic space has been addressed by many researchers (Chow and Kelman, 1993). However, the development issues of export potential of the territory are still relevant, especially in today's economic environment, when the boundaries of the economic actors become more open, the selection function and the provision of management actions are transferred to the regional level. This article proposes a methodology for analysis of export portfolio of the economic entity in the conditions of joining the international organization, which can be used to identify priority areas for export development of the territory after its accession to international organizations.

This technique involves 6 stages. The first phase focuses on the selection of prospective research object. The second phase involves the study of foreign economic activity of the selected subject and includes such topics as analysis of external economic cooperation, identification of international organizations (IO), analysis of GDP, export analysis, import analysis area. The third stage focused on the analysis of the structure of exports of the subject which involves the study of such indicators as the amount of commodity groups before joining the international organization and after. The fourth stage is the analysis of commodity groups in the export portfolio of a subject, in particular the analysis of the comparative advantages to joining the international organization and after. The fifth stage focuses on the analysis of the attractiveness of commodity groups and is divided into two parts such as analysis of profitability of product groups and the analysis of the probability of joint export. The sixth stage involves the analysis of portfolio returns. This block will be considered a change in the yield of the portfolio prior to the entry into an international organization and after. The seventh stage shows all conclusions about the management of export portfolio in terms of operating in the international organizations on the basis of generated on the previous step table and matrix.

The whole methodology of analysis of the goods export portfolio in terms of international cooperation is presented in figure 1.

Figure 1
RESEARCH METHODOLOGY OF GOODS FOR EXPORT PORTFOLIO IN THE TERRITORY
(REGION, COUNTRY) IN THE CONTEXT OF INTERNATIONAL COOPERATION



Let us consider in detail each of the stages of the proposed methodology.

The first stage involves the identification of the economic entity. At this stage, the choice of the object, i.e. a country, which we will analyze. The choice can be made from a position of strategic benchmarking, which involves the selection of the best experience; from the position of the structural similarity of the actors if the analysis is for countries with identical export structure of the economy; as well as with the strategic priorities of the economic policy of the party that represents the interest held by market research (Krueger, 1997).

The next block involves the analysis of foreign trade activities of the researched entity. At this stage, the full description of foreign economic activity of the territory. Note that by "territory" we mean operating on the international market for economic operators of the countries of the region. First looks at foreign economic cooperation, that is, it turns out, in which major international organizations have joined the analysed country or region. It allows to speak about development foreign economic activities of the given economic entity (Leontief, 1953).

Also, this block selects an international organization based on the effective date of which will be a further study.

The next stage of this unit of study involves the analysis of GDP. It examines the changes in GDP, and analyzes its volume prior to the entry into an international organization and after joining. Thanks to this index we can evaluate the efficiency of the economy of the country under consideration. From other factors, it is possible to draw conclusions about the degree of change in the economic activity of the subject after joining the international organization. The next is the analysis of the export and import areas. In particular, it examines changes in the volume of exports before and after entry into an international organization. Similar analysis is carried out with the imports. This analysis allows to draw a conclusion about foreign trade turnover of the country and the tendencies of its development (Shugaepova and Safiullin, 2014).

This unit examines such factors as: M – number of international organizations, which involve the reporting entity; B- changes in GDP; E– changes in export; I– changes in import. The results of the analysis will allow us to form conclusions about the foreign economic activity of the tested entity, and will be the basis of the matrices M-B-E-I.

The next unit of study involves the analysis of the export structure of the economic entity. At this stage, there is analyzed the structure of commodity groups in the export of the study area. Changes in commodity groups, highlighted a new trade group formed in the structure of exports after joining the international organization. Next, after analyzing the conclusions drawn about changes in the structure of exports of the subject under consideration, and produces a comparison table of the export structure of the subject prior to the entry into an international organization with the structure of exports after accession (Christ, 2016).

This unit examines indicators such as I – the volume of exports of the entity.

The fourth stage involves the analysis of commodity groups in the export portfolio of the entity. Here we investigate the comparative advantage indicator (RI), which will evaluate the trading opportunities of the country and the competitiveness of products in world markets. Analysis of comparative advantage carried out in order to be able to assess the level of export (import) of goods by country compared with the rest of the world. This index is calculated by the formula $RCAL_i$ [6]. After this analysis we can conclude, in what area the country is specialized. The analysis is carried out before and after joining the international organization. Some products had a high comparative advantage prior to the entry into the international organization could lose this advantage after it joined the international organization, and perhaps has only increased. Thanks, this analysis will identify the list of products which have got a comparative advantage after joining the international organization. The result of this block is to draw conclusions about

changes in comparative advantage, as well as the formation of the tables of commodity groups with comparative advantage.

The next stage involves the analysis of the attractiveness of the product groups prior to the entry into an international organization. This stage comprises such sub-steps as the analysis of the current profitability of product groups and the analysis of the probability of joint export. The first step is to review the current yield commodity groups (R). This indicator will be calculated by the formula R_i (Ballassa, 1978). At this sub-step, we can identify commodity groups that bear the greatest yield considering the entity.

The second sub-step involves the analysis of the probability of joint export (P). This analysis involves the study of certain commodity groups that are most often found in countries all over the world, provided that the entity is already exporting this product group. The indicator is calculated according to the formula P_{ih} . The result of this block is the construction of the matrix R-P.

The sixth stage involves the analysis of portfolio returns (ER). In order to determine the most potential product groups and the development direction of the export site must perform its export portfolio. At this stage, will be considered a change in the yield of the portfolio prior to the entry into an international organization with profitability after entry. Will also examine the factors that influenced this change. Then conclusions about the change in the yield of the portfolio. Pay will be according to the formula ER (Helliwell, 1994).

The seventh stage is intended for formation of the final conclusions from the tables and matrices on the management of export portfolio in terms of international organizations. Here, we collect all the data that was calculated in previous phases, combining table and matrix, will form the final conclusion on the management of export portfolio in terms of international agreements and directions of development of the exporting territory.

SUMMARY

Thus, the proposed in this article methodology will allow to study the indicators of foreign economic activity of the country, thus to consider the positive and negative tendencies of development of export potential of the territory. The proposed tools will allow to make the analysis of foreign economic activity of the territory, analysis of the export structure of the territory and its change as a result of participation in the activities of international economic organizations, to assess the attractiveness of commodity groups in the export structure of the territory and their change as a result of joining the international organization, to evaluate the export portfolio site. The methodology allows you to conduct a multivariate analysis of the attractiveness of the global product groups in global, country and regional breakdown. The advantage of the proposed approach is that it allows examining the indicators of foreign economic activity of the territories, to build the most probable composition of the export mix of goods in the structure of the export portfolio; to compare the international commodity markets producers and consumers, to highlight potentially attractive commodity groups and identify

opportunities for their joint exports through the country's participation in international economic cooperation.

CONCLUSION

This methodology can be used not only for theoretical study of foreign economic activity of the region, but also to be represented in practice when developing the strategy and the development of regional infrastructures development of foreign economic activity. An important limitation of the methodology concerns the problems associated with the correlation of the various statistical databases; different classification of goods and commodity groups within the databases of the country and its subjects and the world of practice. Also note that the results obtained on the basis of the analysis on the methodology applicable in the absence of significant distortion as protectionist policies, i.e., allowed liberal foreign trade regime. Note also that there is a possibility to continue and expand this analysis, including within individual fields, while also increasing informational efficiency of the Russian market.

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THE EFFICIENCY EVALUATION FEATURES OF THE PUBLIC PRIVATE PARTNERSHIP PROJECTS: FOREIGN EXPERIENCE AND RUSSIAN PRACTICE

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ABSTRACT

The public-private partnership is the important instrument of the national economy development. However efficiency of similar projects implementation shall be proved in their pre-investment phase. The public-private partnership represents institutional and organizational alliance of the government and private business for the purpose of socially significant projects implementation in a wide range of activity fields - from strategically important economy industries development to provision of public services in scales of all country or the separate territories.

The world practice shows that one of the main mechanisms of resource base expansion and mobilization of unused allowances for economic development, increase in effective management of the state-owned and municipal property is the public-private partnership. Considering problems with the government budget and a debt in many countries of the world, attraction of private investments for developing economy is very urgent. Need of ensuring outstanding performance of public private partnership interaction causes refining relevance of methodical approaches to economic case of the projects realized on the principles of public-private partnership taking into account specifics of national economy, identification of possible risks, methods of their assessment and the forms governing them.

Keywords: *state private partnership (SPP), public procurements, efficiency of SPP, Public Sector Comparator (PSC), Cost Benefit Analysis (CBA)*

INTRODUCTION

Projects implementation on the basis of the state private partnership (SPP) represents qualitatively new stage of the state and business interaction. This stage allows to overcome limited opportunities of the state and its subjects for financing social and infrastructure projects. It differs in scale, outstanding performance of resources use, opportunities for implementing innovations, allows to use effectively benefits of private ownership pattern to improve quality of services and effectively manage objects of public infrastructure.

The analysis of the last researches and publications demonstrates that separate aspects of the studied direction found reflection in works of foreign and domestic scientists, in particular A. Akinta, M. Bekk, F. Byurger, M. Lewis, M. Pangeran, V. Bazilevich, V. Boronos, I. Zapatrinoi, N. Kotenko, D. Nazarov, as well as in practical recommendations of the international financial institutions and the European Commission. However, questions complexity of an efficiency evaluation of the state private partnership projects and insufficiency of their reflection in scientific publications causes need for further deepening researches in this direction.

DATA AND METHODS

The research methods applied in this article are: the analysis and synthesis of literature, poll, observation method, analogy and comparison.

In article the analysis of methodical approaches to efficiency evaluation of public private partnership projects is carried out, features of the main approaches are provided, as well as possibilities of their application in Russia are studied and recommendations about their practical use taking into account the international experience are made (Burger and Hawkesworth, 2011).

RESULTS

As we already noted, implementation of SPP projects is characterized by multiple risks existence. Among the main risks inherent in projects which are implemented on the basis of the state private partnership, are:

1. commercial;
2. financial;
3. political;
4. ecological.

It is recommended to apply the following methods to evaluating risks and reasons for their influence on efficiency of the project.

Statistical method. Consists in determining level of risk threat emergence depending on degree of its occurrence probability. *The dispersive analysis* which consists in assessing the separate factors influencing frequency of its occurrence can be applied to determining degree of risk emergence probability.

The method of costs feasibility consists in determining level of risk threat emergence of means excess amount which are planned to be spent in case of accomplishing terms of the contract, in comparison with previously determined and approved partners. Level of such risk threat emergence is determined separately for each stage of accomplishing terms of the SPP contract. Application of this method in practice, in our opinion, contains certain difficulties in view of exact quantitative risk measurement need on each stage of project implementation taking into account unpredictability of domestic economy conditions.

The method of an expert evaluation consists in evaluating risks by the group of experts. This method is rather widely put into practice in view of practical experience lack and the initial stage of the SPP relations development.

The method of analogs based on determination of risk threat level emergence by studying the international partnership experience. Feasibility of this method application is especially urgent for the projects realized with participation of foreign parties.

We will consider evaluation methods of the most often found directions of SPP public efficiency.

Allocate social methods of the SPP assessment efficiency reflecting society satisfaction with project deliverables, compliance to the requirements and the purposes of society, to its main values. These are such directions: increase in the level of the population employment, increase in educational or spiritual level in society, increase in high-quality level of any social services, population security from various threats. It is possible to estimate efficiency of this directions by the comparative analysis of the population satisfaction level, before project implementation. In practice, at a project preliminary efficiency analysis stage it is possible to conduct such

assessment through social researches and surveys, taking into account expectations and interests of society members.

We will consider SPP infrastructure efficiency. Infrastructure projects (further – IP) are characterized by a considerable capital intensity and a long payback period of capital investments. As a rule, these are difficult and large-scale projects. Other important IP feature is high irreversible costs. It means that a considerable part of investments shall be enclosed in the project right at the beginning long before it heats up and starts making profit (Grimsey and Lewis, 2004).

Thus, SPP public efficiency at a provisional assessment stage shall be analyzed from the point of view of the impact on society, with attraction of expert opinions, social researches, the comparative analysis with the similar realized projects, the acquired world and domestic practice.

Today there are following main alternative evaluation methods of SPP projects efficiency based on application of the VFM concept in practice: Cost-Benefit Analysis (CBA) - complete cost analysis and benefits (Akintoye and Beck, 2009); Public Sector Comparator (PSC) - comparative expense analysis of public sector; and the competitive biddings (tender) (see Table. 1). The English PSC model of benefits comparison was adapted in many countries, such as Australia, Hong Kong, Japan and Canada.

Table 1
THE MAIN EVALUATION METHODS OF SPP PROJECTS EFFICIENCY ACCORDING TO FOREIGN PRACTICE

Method name		Method complexity level	Project type application	The countries in which the corresponding method is generally used for SPP projects implementation
Cost Benefit Analysis		Highest Priority	Traditional project	Germany, new EU Member States
Public Sector Comparator	prior to a procedure of the competitive auction	Medium	Traditional project	Japan, South Africa, Hong Kong, Ireland, Netherlands
	after the procedure of the competitive auction		Traditional project	Australia, USA
Competitive auction		Low	Other PPP projects	France, Latin America, Eastern Europe

According to the Organization for Economic Cooperation and Development (OECD) created at the end of 2010 we see that in the course of SPP projects efficiency evaluation with 20 countries participating in the research in 85% cases the PSC method was used as the main. In case of traditional purchases implementation, the method of Cost Benefit Analysis (CBA) is applied to an efficiency evaluation of 60% projects. However, the CBA method is also used in the analysis of the SPP projects, along with application of additional methodical instructions of the governments and organizations.

We will consider features of the given methods in Table 1 in more detail.

So, the Cost Benefit Analysis method represents systematic settlement process and comparisons of costs and benefits of the project. CBA pursues two goals:

- 1) to determine whether the investment / decision is reliable,
- 2) to create basis for comparison of various projects by comparison of the total expected cost of each option and the general expected benefits for the purpose of determining which benefits and in what amount outweigh project expenses.

Benefits of the CBA method application is assessment of complex influence of the project for possible factors on the project taking into account time factor that allows to estimate the project in general. However, when using a CBA method the accuracy of results depends on correctness of cost and benefits estimation. But in practice in the analysis of intangible assets actual expenses are often overestimated while the actual benefits are underestimated.

Recently the majority of the countries in case of SPP projects implementation apply the Public Sector Comparator (PSC) method known as "comparative expense analysis of public sector". Its feature is comparison of project implementation effectiveness on the principles of the state private partnership with traditional public procurements by "price-quality" criterion.

The PSC method provides assessment of total cost of the project realized at the expense of public funds during all lifecycle. In case of this method application implementations of the basic project and various project realization options on the SPP principles net present value is calculated. At the same time the difference between net present value of the project basic version and the SPP project actually determines the pecuniary benefit extent (Pangeran and Wirahadikusumah, 2010).

The indicator of a pecuniary benefit is the characteristic of cost assessment of benefits for one option of project implementation over another taking into account distinctions in distribution of risks, on condition of identical results achievement on quality and services amount. When calculating all-in cost of the project for all lifecycle adjusted for risk, amount and service quality, meeting user requirements is considered (Vaslavskaya et al., 2015).

The cost of risks in SPP projects for private partners can differ, the private partner can transfer a part of risks to intermediaries. In case of calculation of basic option effectiveness (the project of public procurements) it is necessary to consider influence of macroeconomic risks which are undertaken, as a rule, by the state because, the private partner isn't capable to control and manage them skillfully (Andrutsky, 2009).

DISCUSSION

Features of the CBA method application can be considered on the example of the high-speed highways construction project which is offered to be realized on the basis of the state private partnership, on the terms of concession like DBOM (Design, Build, Operate, Maintain). From the private partner detailed designing and construction of the road, ensuring the necessary amount of financing in capital expenditures, operation and servicing of an object according to requirements of the customer for the agreement of concession for a period of 30 years is expected. The analysis of the offered construction projects of the highway private and state by sectors is reflected in Table 2.

Table 2
RESULTS OF BENEFITS COMPARISON FOR THE BASIC PROJECT AND OFFERS OF PROJECTS
IMPLEMENTATION ON THE BASIS OF SPP

NPV (one million. Euro, with discount of 10%)	Basic project (PSC)	SPP projects	
		Offer A	Offer B
Capital expenditure	530,1	427,2	484,3
Economic and social costs because of untimely completion of construction	50,5		
Cost of design development		12,5	13,6
Management and control	6,1	30,4	26,4
Insurance	14,8	15,3	15,6
Operating expenses	30,8	49,6	44,7
Service and repair	34,2	27,6	32,1
VAT	3,2	3,0	3,1
Other taxes		20,5	21,3
Financing cost		61,2	63,4
Total	669,7	647,3	704,5
Pecuniary benefit		+22,4	-38,8

As we can see from the analysis results, the offer A provides the best price and qualities relation, than traditional public financing of the project as it allows to save about 22400000 euros. Implementation of the comparative analysis according to the concept of "Value-For-Money" shall be supplemented with the high-quality analysis of all available factors of influence on the project.

Both methods - PSC and CBA are in many respects similar as they provide use of an NPV indicator and shall consider the costs incurred during all project lifecycle. At the same time, the PSC method has a number of differences. If, in case of CBA application both cash flows, and intangible assets are analyzed, then PSC considers directly cash flows, apart from base of their charge.

Taking into account stated above, it is possible to determine the sequence of the main stages of carrying out the comparative analysis of alternative options for projects implementation. First of all, the project which method of implementation is chosen on project analysis results on the basis of SPP and a traditional method on the basis of public procurements is initiated.

Calculation of the basic project (PSC) effectiveness depends on value judgment therefore minor changes in an impact assessment of risks and the size of a discount rate can have unpredictable consequences for the assessment.

Confirmation of the fact that the PSC method is difficult and ambiguous in case of its application conclusions of the state audit report of Estonia in which it is specified that the Estonian state bodies in case of SPP improper relative appeal assessment use the PSC method. Results of SPP projects implementation were estimated by simple calculation, and benefits of the project were determined as reducing cost value and profit earning.

It should be noted that the PSC method isn't used in Russia. In our opinion, it can be caused by the following:

1) lack of objective statistical base for calculation of project cost which will be extended within 25 - 30 years that is connected with the initial stage of development of the SPP relations in Russia, as well as with long projects term;

2) lack of the technique adapted for the CIS countries taking into account features, it is also risk, inherent in these countries and their markets;

3) the high cost and labor input of financial modeling in case of the PSC method application;

4) use of the SPP mechanism, first of all, for the purpose of attracting private equity in large-scale projects with the minimum state participation that in the conditions of public financing lack of the project creates the bases for considering this method of financial resources attraction as the only one possible.

As foreign practice shows, the procedure of competitive selection provides the careful analysis of projects, considering their strategic feasibility and viability. In some cases the following benefits can be provided to the initiator of the project:

- 1) addition of bonus points within official process of requests assessment;
- 2) provision of the right to exceed the best competing request, offering own more profitable alternative (Swiss Challenge system);
- 3) provision of the right for automatic participation in a final tender stage;
- 4) compensation payment to the author of a project initiative by the state, winner of the tender or both.

The research of features use for methodical approaches to an efficiency evaluation of SPP projects proves prevalence of the CBA methods use - benefits and costs and PSC - the comparator of a public sector. The PSC method is based on comparison of assessment results for net present value and risks for all project lifecycle realized by method, traditional for the state (state. purchases) and on the basis of the state private partnership. In case of the PSC method application the accuracy of the received results depends on correctness of the income, expenses and project risks assessment. In turn, when using the CBA method comparison according to each project offer of the total given costs and benefits from project implementation is performed. The choice of a specific evaluation method depends on development of the SPP relations, level of economic development of the country, financial conditions, the investment climate in the country, etc. The author showed that the Russian technique of an efficiency evaluation of SPP implementation is based on the CBA method. However, it is clear that otherwise there are no accurate criteria of the universal evaluation method choice for the SPP projects efficiency to achieve an effective objective by the state.

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METHODOLOGICAL ANTICIPATION APPROACHES FOR ECONOMY CYCLIC DEVELOPMENT PHASE SHIFTS

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ABSTRACT

Great interest, within studying the theory of economy cyclic development, represents forecasting of macroeconomic generation on the basis of knowledge of the phase shifts nature and logic in the generated economic cycles. The widespread approaches based on the fact that nature and dynamics of cyclic development in the past determines nature and dynamics of cyclic development in the future in our opinion raise a number of debatable questions. Attempts to develop the considered prognostic models bear in themselves the whole set of risks connected with the prediction accuracy and anticipation of cyclic fluctuations. With respect thereto there is a need of development, scientific reasons (verification) and approbation of economic cycles models constructed on the basis of such factors which would have the high level of sensitivity to changes in external and internal environment of economic system and would not entirely rely on the previous periods trends.

Keywords: *economic cycles, forecasting, phase shifts, leading indicators, the advancing development cycles, taxonomical method, structural disbalance of economy.*

INTRODUCTION

The modern market order possesses a broad set of uncertainty factors and the macrogenerating processes transformation potential. Especially urgent it is represented in the context of studying cycles in the Russian economy characterized by congestion of administrative methods of regulation and, respectively, special nature of economic cycles. Thus, use of traditional forecasting methods of the phases cycle change based, mainly, on static and linearly-extrapolation methods, will not fully answer high prognostic properties. It causes development of the advanced mechanisms and methods of cyclic fluctuations diagnostics adapted for new realities. At the same time these methods shall consider without fail all set of the macroeconomic factors making impact on change of cyclic phases. For example, it is possible to refer dynamics of world and national economy growth rates, investment activity, change of price environment on the made products, etc. At the same time inclusion in model of a large predictors number can create a number of the known problems (Safiullin et al., 2015). Proceeding from it, development of model shall be created on the basis of limited number of the exogenous factors characterizing, first of all, dynamics of economic agents expectations as most important indicator of the phases in cyclic development change and fully estimating trends of economic activity in the economy – the main drivers of phase change in economy cyclic development.

The methodological approaches applied in this research are based on use of factorial approach, that is identification of the the factors set influencing economic agents expectations, and, therefore, economic activity of the system in general (Safiullin et al., 2013; Safiullin et al., 2014). In case of such approach at first the analyzed factors are united in subindexes which represent the amount of a set of the weighted average estimates on the analyzed components. On the basis of this system of indicators characterizing certain types of activity and an index method the integrated (composite) or consolidated index - "An index of the advancing development cycles" is calculated.

We will understand the fluctuations of economic agents expectations submitting to change of short-term, medium-term and long-term tactical and institutional factors as the advancing development cycles and creating conditions of phase generation of economic system cyclic development. At the same time the advancing development cycles are subdivided on short-term, medium-term and long-term depending on the lag structure of the variables having signs of the advancing development, cyclic fluctuations entering into analytical modeling base.

METHODS

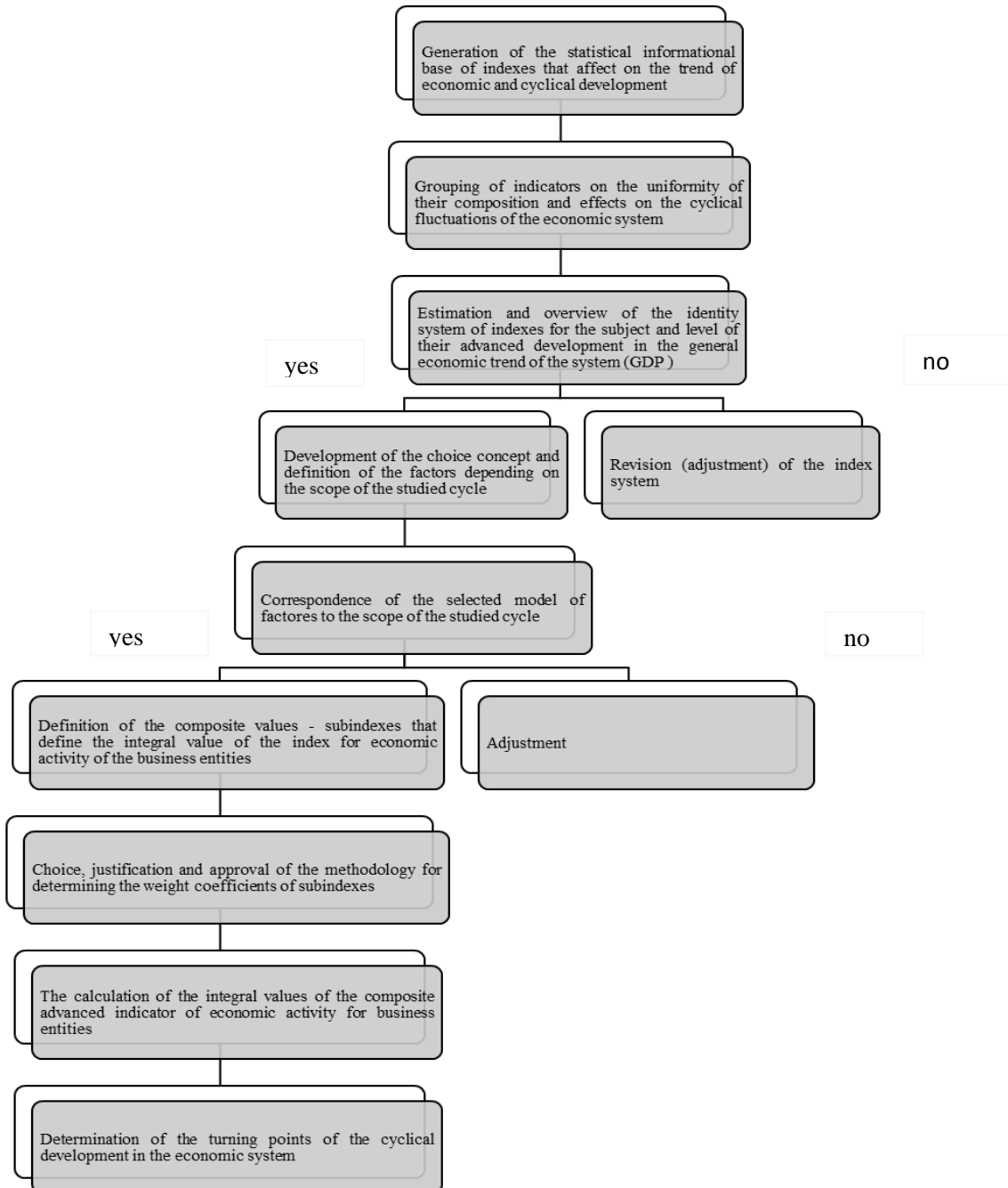
As the theory of expectations is the cornerstone of studying cyclic development, the modelled cycles will have the considerable predictive properties predicting rotary points of a cycle depending on the structure of the used factors and size their lag of values (Abalkin et al., 2002).

The structural and logical scheme of modeling the advancing development cycles is submitted in the Figure 1. In case of determination and reasons for the choice of the factors set we proceeded, first of all, from the theory of rational expectations by R. Lucas – the Nobel prize winner, 1995. Sources of indignations in economic agents expectations are, according to this theory, two groups of factors – cash (the change in price, interest rate fluctuations, change of a monetary supply, etc.) and real (emergence of technological innovations, change of consumer preferences as result of innovations implementation to the consumer sphere, etc.). Besides, in the basis of a system of the choice and reasons for factors A. Pigu's approach allocating was used as it was noted earlier, three groups of the factors exerting impact on economic agents expectations (Hicks, 1988):

1. Cash
2. Real, that is synchronized with Loukas's theory
3. The psychological factors reflecting the institutional arranged reality, creating representations and cognitive models of managing subjects which make the determining impact on orientation in dynamics of management national models. With respect thereto instead of the term "psychological" factors use of the term "cultural and institutional factors" is offered (Perez, 1987).

By results of the carried-out assessmnet based on economic-mathematical modeling seven main subgroups of the factors making the advancing impact on expectations and the corresponding behavior models of accounting entities were determined. Each of these subgroups concerns various integrated group, considered above.

Figure 1
THE STRUCTURAL AND LOGICAL SCHEME OF MODELING THE ADVANCING DEVELOPMENT CYCLES



The first subgroup included the factors characterizing changes of a the territory demographic framework and created an index of urbanistic development (I1).

The second factors subgroup created a so-called human capital index (I2).

The factors reflecting quantitative quality characteristics of the created resource and production base of national economy such as trade inventories, motor transport cargo turnover, mining, etc. entered a production and resource index (I3)

The fourth factors subgroup is oriented to determining the consolidated index of institutional quality and cultural development of system and includes a set of corresponding indicators to which it is possible to carry the indicators estimating the level of social infrastructure development, quality of the created mental society models (I4).

The fifth factors subgroup created a so-called index of accounting entities economic activity (I5). Such indicators as cash incomes, investments into fixed capital, consumer price index, etc. entered it.

The sixth factors subgroup created a so-called index of research potential. It characterizes an internal allowance of innovative economy development (I6).

The seventh factors subgroup determines the index of the equity change (I7) showing reaction of general economic trends to changes and adjustments of capital cost price indexes.

Finding solutions, the indicators directed to identification of regarding system and extent of their advancing development of rather general economic system trend (GDP) was performed on the basis of econometric tools use.

The calculations algorithm had the following sequence:

1. On the basis of linear coefficients of correlation cross-correlation functions of a resultant factor (a reference row) and the predetermined factors (advancing component) are constructed. According to methodology of the statistical analysis, cross-correlation function expresses narrowness of communication between levels of one temporary row y_t measured in time point by t and levels of other temporary row $x_{t-\tau}$ - remote from each other on units of time:

$$r_{(y_t, x_{t-\tau})} = \frac{\sum (y_t - \bar{y}_t) * (x_{t-\tau} - \bar{x}_{t-\tau})}{(n-1-\tau) * \sigma_{x_{t-\tau}} * \sigma_y} \quad (1)$$

Cross-correlation is a necessary condition for defining the period of advancing, or a so-called lag.

2. It is necessary to compare correlation with $r_{\text{крит}}$.

$$r_{\text{крит}} = \frac{t_{\text{крп}}}{\sqrt{t_{\text{крп}} + n - 2 - \tau}}, \quad (2)$$

n – poll volume, τ – lag.

$t_{\text{крп}}$ – Student's sorting (5%; $n-2-\tau$);

n – poll volume, τ – lag.

If $r_{(y_t, x_{t-\tau})} > r_{\text{крит}}$, then availability of significant correlation coefficients demonstrates dependence of the corresponding indicator dynamics on index of a reference row and causes its inclusion into system of indicators for calculation of the advancing development indexes.

Results of the considered statistical ranks cross-correlation analysis are: on the one hand, the productive factor (a reference row) acts with another – the researched temporary ranks of the analyzed factors, are provided in Table 1.

By results of the cross-correlation analysis the final factors structure, from originally certain list in number of 34 units included 19 pieces. At the same time those from them which will completely be approved with the existing theory-methodological approaches to modeling, so-called cycles of Kitchin, are carried to the factors making short-term impact on economic agents behavior model. At the same time rather unexpected result was the fact that the advancing

development in short-term cycles of economy signs possess the factors characterizing the institutional and cultural capacity of system. The found phenomenon undoubtedly requires the corresponding explanations and reasons.

Table 1
STRUCTURE OF THE FACTORS WHICH ARE CHARACTERIZED BY THE ADVANCING DYNAMICS OF A RELATIVE REFERENCE ROW (GDP) BY THE INTEGRATED ADVANCING INDEXES

№	Factor name	Lag value, number of years		
		Short-term cycle	Medium-term cycle	Long-term cycle
I. Index of urbanistic development change				
1.	Number of country people	1, 2	3, 4	
II. Human capital index				
2.	Number of school graduates		4	12
3.	Number of HEI graduates	3		
III. Production index				
4.	Trade inventory	1		
5.	Motor transport goods turnover	1		
6.	Mineral extraction	1, 2	3	
7.	Transported freights by railway transport	1,2		
IV. Index of social well-being				
8.	Number of medical institutions			11
9.	Number of theatres	3		
10.	Number of cultural and leisure type institutions	3	3, 4	
V. Economic activity index				
11.	Investments into fixed capital			8, 9
12.	Customer price index	1, 2	3	
13.	Monetary income of the population	2		
VI. Index of research potential				
14.	Number of scientists	3	4	
15.	Number of research institutes	1, 2		
16.	The number of the arrived offers in the field of research and development			9
17.	Internal costs of researches and developments	3		12
VII. Index of the capital change				
18.	Oil price			9
19.	Level of refinancing interest rate	3	3	

In the table values of lags for the factors meeting our requirements of rather advancing dynamics of their development of rather reference row are provided. At the same time the fact that the received results and calculations, lag values have very broad range from 1 to 12 years seems important. At the same time it is obvious that the factors having a lag 4 years cannot participate in modeling short-term advancing development cycles any more. As phase shifts in short-term cycles are determined by impacts of an operational order factors, that is adjustments of which lead to shifts of a reference row in the shortest prospect (1 - 2,3 years). The similar logic is fair for two other types of economy cyclic development as well.

In case of receiving the generalized statistical indicators there is always a need for the choice of the corresponding determination method of weight coefficients values. At the heart of weight coefficients calculation for the subindexes determining value of the advancing

development consolidated index the taxonomical method lies. It is based on determining distances between points of multidimensional space which dimension is determined by quantity of the factors participating in model. Distances between factors are determined by formula:

$$a_{rs} = \frac{1}{m} \sum_{j=1}^m |b_{jr} - b_{js}|, \quad r, s = 1, n \quad (3)$$

where a_{rs} – distance between factors r and s .

The final form of a distances matrix between factors will have the following appearance:

$$\begin{bmatrix} 0 & a_{12} & \dots & a_{1n} \\ a_{21} & 0 & & a_{2n} \\ \dots & & 0 & \dots \\ a_{n1} & \dots & & 0 \end{bmatrix} \quad (4)$$

After defining values of distances matrix the so-called critical distance characterizing the maximum distance between two factors is shown:

$$a_{\text{крит}} = \max_r \min_s a_{rs} \quad (5)$$

Further for each sign we find the sum of all distances which are not exceeding critical distance:

$$p_j = \sum_{s=1}^m a_{js}, \quad \text{для } a_{js} \leq a_{\text{крит}} \quad (6)$$

Then weight coefficients are calculated by a formula:

$$w_j = \frac{p_j}{\sum_j p_j} \quad (7)$$

Value of the summary indicator estimating economic agents expectations consists of the calculated indicators ranks, or subindexes. Respectively its component indicator is evaluated.

In a formular type calculation the consolidated index of the advancing development looks as follows:

$$I_i = W_k * I_{ki} + W_{\phi} * I_{\phi i} + W_p * I_{pi} + W_n * I_{ni}, \quad (8)$$

where I_i - value of the advancing development summary index;

i – value of the period (a year in our case);

$I_1(i)$ –index of urbanistic development in i -year;

$I_2(i)$ –human capital index in i -year;

$I_3(i)$ –index of production and resource development in i -year;

$I_4(i)$ –index of institutional and cultural development in i -year;

$I_5(i)$ –index of economic activity development in i -year;

$I_6(i)$ –index of research potential in i -year;

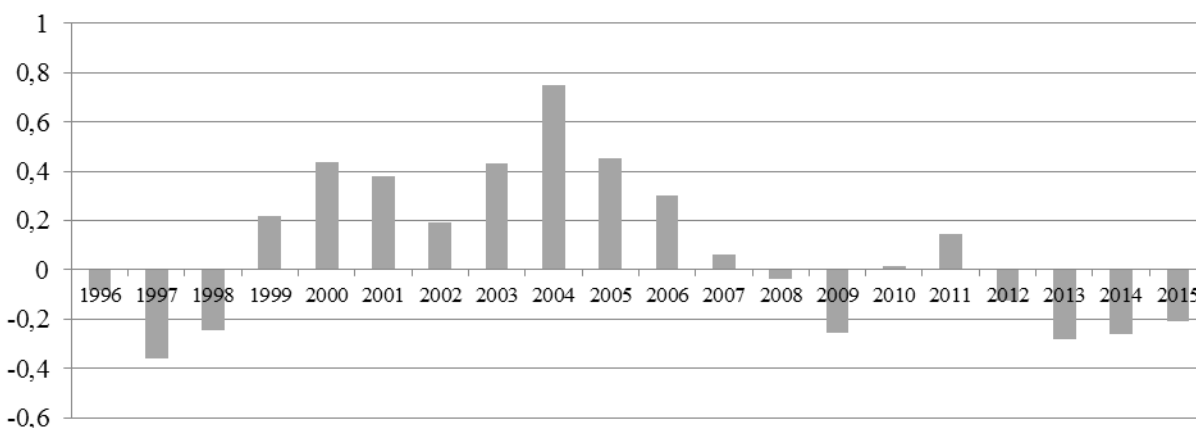
$I_7(i)$ - index of the capital change in i -year.

$W_1, W_2, W_3, W_4, W_5, W_6, W_7$ – weight coefficients of the corresponding subindexes.

RESULTS

Results of calculations for short-term advancing development cycles in relation to the Russian economy for the period of 1996-2015 are provided in the Figure 2.

Figure 2
THE ADVANCING DEVELOPMENT CYCLES OF THE RUSSIAN FEDERATION ECONOMY DURING THE PERIOD FROM 1996 TO 2015



In a generalized view, within the studied time period, the results of the analysis revealing features of various subindexes influence on cyclic development parameters are presented in Table 2.

Table 2
VALUES OF WEIGHT SUBINDEXES COEFFICIENTS OF AN ADVANCING DEVELOPMENT SUMMARY INDEX

№	Subindex name	Value of weight coefficient
1	Index of urbanistic development change (I1)	0,046
2	Index of the human capital (I2)	0,181
3	Production index (I3)	0,110
4	Index of social well-being (I4)	0,190
5	Index of economic activity (I5)	0,191
6	Index of the research potential (I6)	0,106
7	Index of the capital change (I7)	0,176

The largest level of impact on dynamics of the advancing development index creating a general trajectory of the advancing development short-term cycle is common to the I2 subindexes - the Human capital index, I7 the Index of the equity change, I4 - the Index of social well-being, as well as I5 an index of economic activity. These indexes most create representations of economic agents concerning market development conditions stability, as well as determine expectations of accounting entities economic and investment activity on the near-term outlook that completely corresponds to traditional theories of short-term cycles. Trajectory of short-term the advancing development cycles makes significant impact the factors belonging to the institutional category (I2 and I4 subindexes) and attracts interest. This phenomenon

undoubtedly requires additional studies and interpretations as traditionally after all it is considered that on short-term cyclic fluctuations the dominating impact is made by factors of a tactical order (fluctuation of interest rates level, monetary policy adjustment, etc.). Influence of institutional level factors determines average and long-term expectations in the sphere of social and economic structures transformation.

Use in our model of conceptual knowledge approaches to the studied objects through a prism of the adjusted economic agents expectations allows to look at economy cyclic development with a certain lag. And it, in turn, creates the considerable prognostic potential of the advancing development cycles model.

Confirmation of prognostic properties high level of the considered model are results of the carried-out econometric analysis. As the main approaches promoting carrying out this stage of work the methods of economic-mathematical modeling allowing to reveal dependence between the endogenous variable (IPP) and an exogenous variable reflecting dynamics of the advancing development index estimating the level of the created economic agents expectations in time are chosen.

Results of the regression analysis of the advancing development index influence on dynamics of the Russian Federation industrial production index from 1991 for 2015 are provided in Tables 3, 4. The method of dummy variables allowing to determine influence of high-quality signs and events on the explained variable an index of industrial production became the main instrument of regression model optimization. At the same time the dummy variable is dichotomizing, accepting, respectively, two values: $f=1$ if a remaining balance of the predicted row values gain positive value and $f=0$ - if negative. The final model estimating influence of the advancing development index on the IPP is provided in Tables 3, 4.

Table 3
REGRESSION STATISTICS OF MODEL

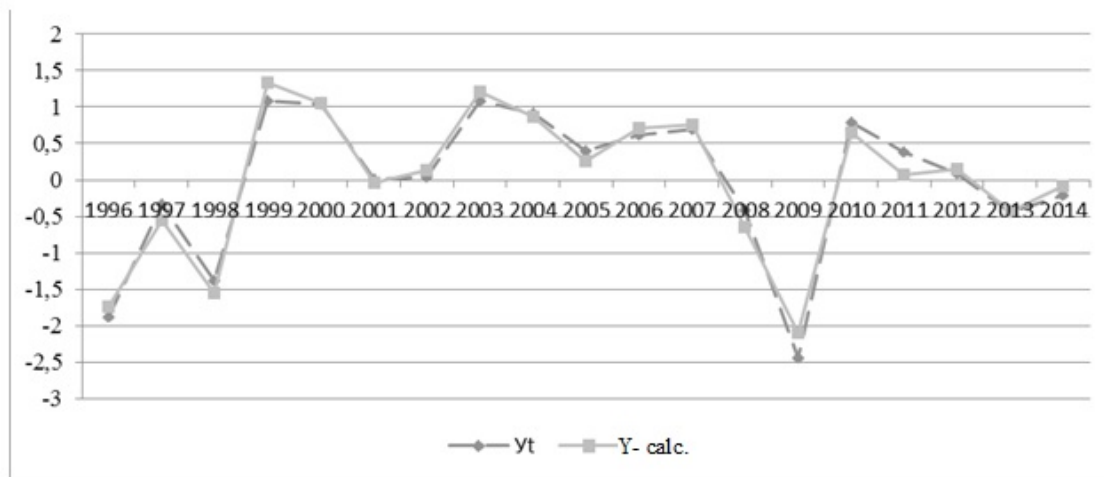
Multiple R	0,981373
R-square	0,963093
Rated R-square	0,953251
Standard error	0,216215
Supervision	20

Table 4
VALUES OF COEFFICIENTS AND THEIR STATISTICAL IMPORTANCE

	Coefficients	Standard error	t-statistics	P-value
Y-crossing	-1,68878	0,156449569	-10,79438289	1,81134E-08
f1	1,310764	0,110721997	11,83832971	5,20203E-09
Com. index	2,342487	0,17177273	13,63712801	7,39002E-10
oil	0,00387	0,001331465	2,906917332	0,010841504
z	0,646821	0,105582867	6,126195803	1,93891E-05

Accuracy and reliability of the received results visually is confirmed by almost full coincidence of the IPP rated values predicted by means of model and their actual level (figure 3).

Figure 3
RESULTS OF THE IPP RATIO RATED VALUES PREDICTED BY MEANS OF MODEL AND THEIR ACTUAL LEVEL



CONCLUSION

Results of modeling allowed to receive quite predictable, within, made above hypotheses and assumptions, results. With growth of the advancing development index on one point rated value of industrial production index increases on 2,34 units. Thus it confirms the high level of elasticity between two considered indicators. That is minor changes in economic agents expectations create the considerable reaction (which is multiply exceeding values of the advancing development index) in generating the economic processes which are expressed in the corresponding volatility of industrial production.

Pledged in the methodological device of a research the advancing development cycles, the tools providing implementation of the factorial analysis allow to reveal "contribution" of each subindex to a trajectory of cyclic fluctuations.

In the received results the fact that the realized approach allowed to simulate processes of generating so-called business cycles of the Russian economy (short-term cycles of Kitchin) in the range of 1991-2015 which are created with an advancing in 1 - 2 years from the operating trajectory of national economy economic development is important.

Also the fact that the operating algorithm of cyclic fluctuations diagnostics allows to identify rather accurately the phases of cycles in independence of their "entry" into a positive or negative zone of the advancing development created indexes is methodologically important.

ACKNOWLEDGMENTS

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DEVELOPMENT OF TAX STIMULATION OF INNOVATION ACTIVITY

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ABSTRACT

Currently, to ensure sustainable economic development dynamic primary role belongs to innovation, which is able to provide continuous updating of technical base of production, development and output of new competitive products, efficient world market penetration of goods and services. The most favorable conditions are required for the Russian economy's going over to the innovative path of development since today there is a low level of technical equipment and innovative development in comparison with other countries. One of the most important tools for stimulating the development of innovation is the tax stimulation, which is carried out by means of tax incentives. However, in spite of the existing tax stimuli for innovation activities in the Russian economy there is still a mismatch between innovative capabilities and putting them into practice. In this connection, the study of the modern theory and practice of tax stimulation for innovation, the development of ways of improvement of its sustainable development on the basis of scientific justification of the used instruments of tax stimulation and their performance evaluation methods have determined the choice of the issue and the relevance of the research.

Keywords: *tax stimulation, innovation, taxes, taxation, tax administration.*

INTRODUCTION

In Russia in recent years as a major goal of tax policy the creation of incentives to innovation activities has been announced. In this regard, one of the main tasks of the state at the present stage is innovation stimulation, the aim of which is the involvement and increase of interest of the subjects of business activity in innovation activity. Assessing the totality of tax incentives existing in the Russian Federation aimed at stimulating innovation, it should be noted that more of them have non-systemic character, characterized by the small number, inconstancy, lack of transparency and does not cover all totality of institutions and relationships inherent in innovation. The level of tax incentives in the Russian Federation significantly falls quantitative or qualitative indicators short of the level of foreign countries. Formation of trouble-free Russia is impossible without innovation socio-economic development and the effective implementation of population programs, quality job creation, an effective social control, effective guarantees property rights and contract execution, the competitiveness of the key factors for business, the effectiveness of the government, the fight against corruption, and other important factors (Demyanova, O.V., Mahmutovich Valitov, S., 2013). For the development of innovative Russia along with other factors, the efficient management of the tax system is necessary.

In addition, there is no law on innovation in the Russian legislation. The notion of innovation has not found a legislative fix so far. The study of innovations, innovation activity, innovation development of economy in Russia is traced in the works by the authors such as

Bagautdinova, N.G., Fatkhiev, A.M., Novenkova, A.Z. (Bagautdinova, N.G., Fatkhiev, A.M., Novenkova, A.Z., Safiullina, A.M., 2013), Safiullin L.N., Shigabieva A.M., Mazitov V.M., Saipullaev U.A. (Safiullin L.N., Shigabieva A.M., Mazitov V.M., Saipullaev U.A., 2014), Safiullina, A.M., Odintsova, J.L., Zhilina, N.N., Shamsutdinova, M.R. (Safiullina, A.M., Odintsova, J.L., Zhilina, N.N., Shamsutdinova, M.R., 2015), Kundakchyan R., Grigoryeva N. (Kundakchyan R., Grigoryeva N., 2014), Valentina Gerasimova, Sergey Mokichev (Valentina Gerasimova, Sergey Mokichev., 2013) and in other works. But there is a grand problem of lack of common understanding of the notions of innovation and innovation activity by taxpayers and by tax authorities when using tax stimuli in the form of tax breaks. It should be noted that most of the benefits in the tax legislation are not designated as tax incentives, not distinguished in individual groups of articles, which complicates the perception of requirements for establishing benefits by taxpayers, and the tax authorities do not carry out the appropriate explanatory work on their application.

The aim of this study is to elaborate practical recommendations for the development of a mechanism of tax stimulation of innovation activity in the Russian Federation.

METHODS

As of today, various tax incentives to facilitate tax stimulation for innovation activity in virtually all taxes are used in the Russian practice. Many tax concessions applicable in the Russian Federation are based on foreign experience. The overview of tax incentives and the study of their effectiveness in different countries show that developing countries in order to attract investment reduced the corporate income tax rate to the limit, used tax holiday, investment credits, which significantly reduced the tax revenues of the budget system (Van Parys, S.a, James, S.b, 2010). In the main, tax incentives are provided for by the income tax, value added tax and property tax. The applicable tax benefits do not meet the stated requirements in full measure. Various tax incentives, such as the investment tax credit, exemption from value added tax, accelerated amortization and so on, if to be more precise, their use does not result in a positive economic effect due to their reckless negligence. Also it is worth noting the fact that most of the tax privileges are haphazard and do not take into account the characteristics of innovation activity in full. The application of tax incentives to stimulate innovation in the Russian Federation is possible only when the entire system of indirect regulation is clearly built. Today, after undertaking the study, one can say that tax stimulation of innovation activity in the Russian Federation is ineffective. The authors such as M. E. Orlova, A. R. Khafizova are of the same opinion (Orlova M. E., Khafizova A. R., 2015).

In this regard, it is necessary to assess the effectiveness of tax incentives that are available to organizations engaged in innovation activity for the abolition of inefficient tax instruments. However, we may note that today there is no single method for assessing the effectiveness of tax stimulation for innovation activity among the economists and at the legislative level. We have studied the well-known methods for evaluating the effectiveness of tax stimulation of innovation activity which have their own particular advantages and disadvantages. It is important to note that the approaches we have studied do not allow to evaluate the effectiveness of tax incentives according to such criteria of effectiveness of stimulation of innovation activity as the achievement of the tasks before the government for the development of innovation activities, augmentation of the budget by increasing the profits of innovative companies, expansion of the volume of competitive innovation products. In this regard, we propose the method of assessment

of the effectiveness of tax stimulation for innovation activity, which is based on the calculation of the system of interdependent factors: the volume of tax revenue growth in the state of subjects of innovative activity, the amount of increase of turnover of organizations engaged in innovative activities, and the tax load on innovation activity, which will allow to evaluate the effectiveness of tax stimulation of innovation activity most accurately and objectively.

In order to reveal the impact of existing and applicable tax incentives in the Russian Federation on innovation activity we assessed the influence of certain types of tax incentives for innovation by their significance ranking on the basis of the results obtained by means of correlation-regression analysis using multiple regression. The tax reliefs to be directly allocated as tax incentives for innovation activity, included in the statistical tax returns of the Federal Tax Service were taken for analysis. Table 1 shows the statistics on tax incentives for innovation activity (<http://nalog.ru>).

Table 1
STATISTICAL DATA FOR ASSESSMENT OF THE INFLUENCE OF TAX INCENTIVES FOR THE DEVELOPMENT OF INNOVATION ACTIVITY OVER THE PERIOD OF 2007 - 2014. (IN MILLION ROUBLES)

Year	The reduced profit tax rate	R&D tax deduction	Investment tax credit for profit tax	Value-added tax immunity by realizing innovations and R&D fulfillment	Exemption from the tax of the assets of organizations the residents of SEZ, the participants of the project "Skolkovo", possession of state research centers	Investment tax credit on the tax of company assets
2007	1 265	16 233	290 735	77 732	251	33 541
2008	973	14 743	310 749	64 530	339	39 687
2009	1 121	19 876	332 759	79 637	365	41 532
2010	2 070	21 606	358 729	112 975	488	43 436
2011	2 992	39 661	454 063	118 442	975	48 141
2012	3 728	59 298	471 082	223 799	1 521	53 627
2013	3 202	47 925	381 773	261 606	3 226	61 052
2014	2 575	21 343	476 380	283 434	4 084	63 771
Average	2 241	30 086	384 534	160 769	1 406	48 098
Statistical deviation	1 046	16 661	74 024	88 383	1 468	10 634

In addition to the tax benefits applicable to date, we offer to assess the influence on the development of innovation activity used widely abroad, but underestimated investment tax credit on profit tax and tax of organizations assets in the Russian Federation. The investment tax credit has found no decent application in the Russian Federation, and the number of organizations that have realized the potentials of an investment tax credit is negligible.

For the study, we used the indicators of innovation activities, such as the volume of innovative products, services, innovation activity of organizations, patent activity of organizations and the global innovation index, and the factors influencing the development of innovation activities. In our case, the factors were exemptions for innovation: reduced rate of income tax, R&D tax deduction, investment tax credit on income tax, exemption from VAT by

realization of innovations and fulfillment of R&D, exemption from property tax on the assets of the organizations and the investment tax credit for organization asset tax.

RESULTS

Based on the analysis which made it possible to assess the influence of tax incentives on the development of innovation activities, a close link between the development of innovation and the provision of tax incentives for innovation activity was revealed. In order to assess the effectiveness of tax stimulation of innovation activity we have an opportunity to rank the most important tax breaks that will allow to evaluate the extent of their influence on the development of innovation activities. Table 2 shows a generalized view of our study where one can see how much each of the tax benefits influences the development of innovation activities.

Table 2
ASSESSMENT OF THE DEGREE OF INFLUENCE OF THE TAX INCENTIVES ON THE INNOVATION ACTIVITY

Tax incentives	Innovation activities			
	Quantity of innovation goods, works, services	Innovation activity of organizations	Patent activity of organizations	Global index of innovations
Reduced profit tax rate	average	average	average	average
Tax deduction for R & D	low	low	высокая	low
Investment tax credit on income tax	average	high	high	high
Value-added tax exemption on the sale of innovations and R & D fulfillment	high	high	low	high
Property tax exemption	high	low	low	low
Investment tax credit for the tax on company assets	high	average	average	high

The strongest influence on the development of innovation activity is exerted by the tax incentives such as an investment tax credit on income tax, exemption from VAT by the realization of innovations and R&D fulfillment, investment tax credit on business property tax. For greater clarity, we have ranked the results in Table 3.

Table 3
RANKING TAX BENEFITS ACCORDING TO THE DEGREE OF THEIR INFLUENCE ON THE DEVELOPMENT OF INNOVATION ACTIVITY

	Tax incentives	The degree of influence			
		A	H	H	H
1	Investment tax credit for income tax	A	H	H	H
2	Value-added tax exemption on the sale of innovations and R & D fulfillment	H	H	L	H
3	Investment tax credit for the tax on company assets	H	A	A	H
4	Reduced profit tax rate	A	A	A	A
5	Tax deduction for R & D	L	L	H	L
	Exemption from the tax of the assets of organizations the residents of SEZ, the participants of the project “Skolkovo”, possession of state research centers	H	L	L	L

We have concluded that the greatest degree of influence on the development of innovative activity in the Russian Federation has an investment tax credit for income tax and company asset tax. Therefore, it is necessary to revise the terms, amount and procedure of the investment tax credit for innovation activity.

One cannot but note the fact that the improvement of the mechanisms of tax stimulation of innovation activity should be focused not only on the introduction of additional tax incentives, but also the improvement of the efficiency of the existing tax benefits, such as reduced income tax rate, tax deduction for R & D and exemption from property tax. The low degree of influence of the exemption from the property tax is explained by the fact that the tax incentive is granted only to the organizations of the SEZ, the participants of the project “Skolkovo” (http://www.gks.ru/free_doc/new_site/business/nauka/ind_2020/pril3.pdf). For more effective tax stimulation, it is essential to pay attention to the investment tax credit for business property tax. The survey showed that if the state provided this type of benefits in a larger size and simplified the procedure for granting it, one could abolish the exemption from the property tax at all.

SUMMARY

Thus, in this study, by the correlation-regression analysis we have confirmed that, indeed, the provision of tax incentives influences the development of innovation activities. However, as shown by the results of the study of tax system of granting tariff preferences for innovation activities in the Russian Federation at the moment is not complete and characterized by a series of separate mechanisms, at the same time the loss of efficiency is largely due to the difficulties of using the benefits provided. All this predetermines the need to improve the tax stimulation of innovation activity in the Russian Federation. On this basis, we recommend the following ways to improve the tax stimulation of innovation activities: at the legislative level, to consolidate the need to create statistical reports on innovation activity; review the status and effectiveness of existing tax incentives; change the conditions and terms of the investment tax credit.

CONCLUSION

1. The tax legislation of Russia provides for innovative tax incentives which extend to the organizations. Innovative tax incentives are established for such taxes as the corporate income tax and property tax.

2. Improving the mechanisms of tax stimulation of innovation activity should be focused not only on the introduction of additional tax breaks, as well as enhancement of efficiency of the existing tax benefits.

3. In order to deepen the analysis of the effectiveness of innovative tax incentives, it is advisable in the tax statements to predict the reporting forms for the use of tax incentives. It will be possible with the development of electronic documents circulation between the tax authorities and taxpayers.

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INSTITUTIONAL AND TACTICAL POTENTIALS AND THEIR INFLUENCE ON DEVELOPMENT OF REGIONAL PRODUCTIVE FORCES AND TRAJECTORIES OF ECONOMIC DEVELOPMENT (PROGNOSTIC APPROACHES)

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ABSTRACT

The collected structural problems in the Russian economy, as well as its lagging on a number of technological directions development require the fastest solution. With respect thereto to the forefront there is a question of prospects assessment and development mechanisms and placement of productive forces taking into account the available regional features and their integration into world reproduction chains. On one hand, the solution of the matter can lie in the plane of resource optimization and infrastructure regional potentials. However it is necessary to consider that this way is in many respects oriented to extensive type of economic development that limits possibilities of timely transition of economic system to the new advanced types of organizational and economic development corresponding to the sixth technological way. On the other hand – the solution of the question posed shall consider all variety of the factors determining the innovative and modernization shift of trends of development of productive forces according to the created requirements. Thus studying of the concept of a contradiction between development of productive forces and more and more obsolete relations of production shall be created through a prism of identification of the mechanisms creating economic, social and institutional capacities of territorial systems. The last, most likely, also determine trends of the arising contradictions limiting or, on the contrary, the regional productive forces promoting development corresponding to perspective technological shifts.

Keywords: *institutional and tactical capacity, regional economy, social and economic appeal of the region, prognostic model, regional productive forces.*

INTRODUCTION

In case of the choice of tools and methods of management of development of productive forces of regions and their spatial development it is necessary to consider the whole complex of the factors characterizing and determining their social and economic potential and appeal. At the same time these factors shan't be limited to especially economic set of the indicators reflecting quality of economic growth. Management of organizational and economic development of productive forces of the region shall rely in many respects and on the indicators of an institutional order including including, and factors of social, ecological well-being, as well as the

factors considering conditions of innovative and modernization transformations of economic systems.

This methodological approach synthesizes the theories of cumulative growth and neoclassical concepts which are widely used in the theory of regional economy. If theories of neo-classics were based, mainly, on traditional production functions, then theories of cumulative growth relied on synthesis of institutional and neokeynesian views.

Proceeding from the aforesaid it is possible to assume that questions of identification of the factors making impact on the organization of development and placement of regional productive forces can't reveal only in line with one of the considered theories. There is a need of their synthesizing for the purpose of adaptation to the real managing conditions created for today time.

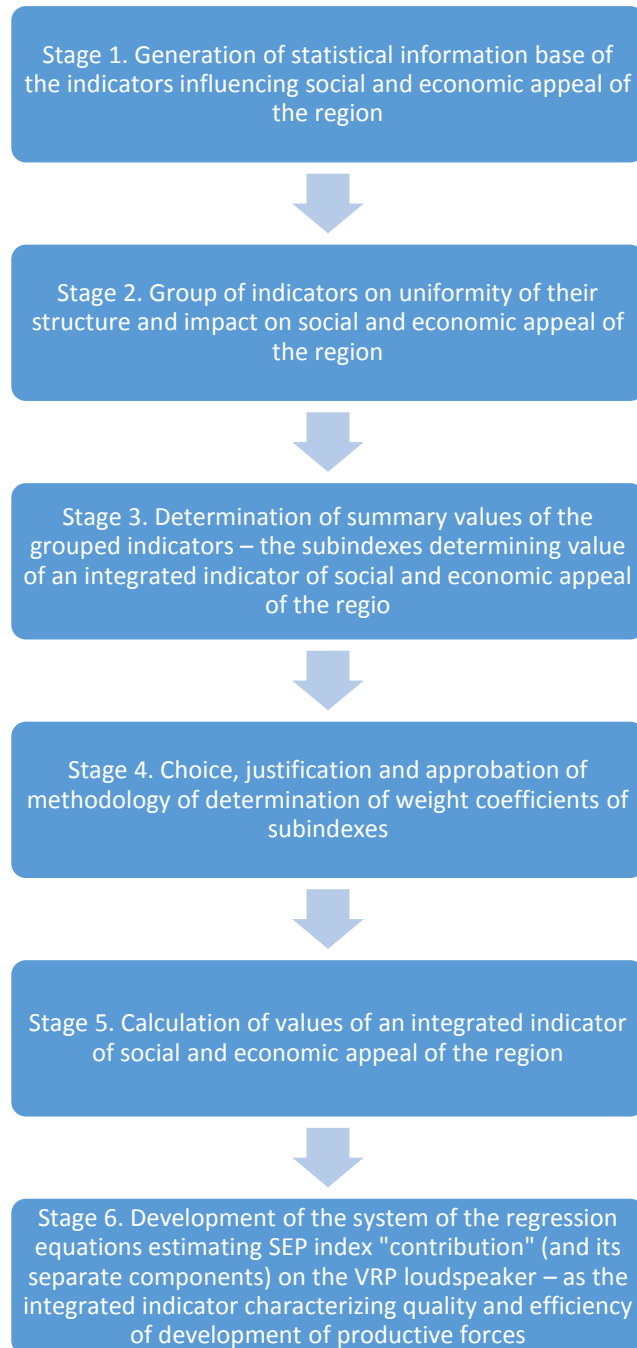
In our opinion in case of the choice of tools and methods of management of development of productive forces of regions and their spatial development it is necessary to consider the whole complex of the factors characterizing and determining their social and economic potential and appeal. At the same time these factors shan't be limited to especially economic set of the indicators reflecting quality of economic growth (neoclassical approach). Management of organizational and economic development of productive forces of the region shall rely in many respects and on the indicators of an institutional order including including, and factors of social, ecological well-being, as well as the factors considering conditions of innovative and modernization transformations of economic systems (the theory of cumulative growth). Thus there is a methodological approach of identification of this set of factors and development on their basis of an integrated indicator, estimating socially economic appeal of the region from line items of placement and development of productive forces.

The conceptual algorithm of determination of an integrated index of social and economic appeal of the region in the context of the problem (SEP index) (figure 1) studied in work is given below.

Following the logic of modeling of the SEP index which is schematically reflected in the figure 1, the stage 3 assumes determination of summary values of the grouped indicators – the subindexes determining value of an integrated indicator of social and economic appeal of the region.

In our research the structure of subindexes is determined by the logic of the choice and inclusion in model of the factors having under themselves various institutional and tactical basis, but having decisive impact on forming of social and economic appeal of the region from a line item of placement and development of productive forces given above (Borts and Stein, 1964).

Figure 1
STRUCTURAL AND LOGICAL SCHEME OF AN INTEGRATED INDEX MODELING FOR SOCIAL AND ECONOMIC APPEAL OF THE REGION



METHODS

So, by results of the carried-out reasoning and reasons three primary groups of the factors making impact on generation of the dynamic row revealing features of development of social and economic appeal of the region were determined. (Lesh, 1959)

The first group included the factors characterizing changes of economic potential of the territory and created a subindex of economic (resource and infrastructure) development (I1).

The second group of factors created a so-called subindex of the social potential (I2).

The third group of factors is oriented to determination of the consolidated index of quality of institutional development of regional system and includes a set of the corresponding indicators to which it is possible to carry the indicators estimating the level of scientific and educational development (I3).

For receipt of integrated values of indexes and subindexes the well-known tools in the theory of the statistical recording based on mark and rating estimates are used.

The fourth stage of the considered model of determination of the SEP index includes the choice, reasons and approbation of methodology of determination of weight coefficients of subindexes.

In case of receipt of the generalized statistical indicators there is always a need for the choice of the corresponding method of determination of values of weight coefficients (Kij). The most "advanced" method of determination of weight coefficients is the taxonomical method. It is based on determination of distances between points of multidimensional space which dimension is determined by quantity of the factors participating in model (Granberg, 1996).

The fifth, final stage of modeling, assumes determination of integrated values of the SEP indexes on the basis of addition of the weighed values of the calculated subindexes.

In a formular type calculation of the SEP index looks as follows:

$$I_i = W_1 * I1 + W_2 * I2 + W_3 * I3, \quad (1)$$

where I_i - SEP value;

i – value of the period (year in our case);

$I1$ – value of a subindex of economic development in i -year;

$I2$ – value of a subindex of social development in i -year;

$I3$ – value of a subindex of institutional development in i -year.

$W1, W2, W3$ – weight coefficients of the corresponding subindexes.

The developed integrated index of assessment of social and economic appeal of regions allows to perform sufficiently correctly ranging of regions on the level of appeal and the prospects of placement and development of the productive forces creating regional economic dynamics (Safiullin et al., 2014).

RESULTS

The developed integrated index of assessment of social and economic appeal of regions allows to perform sufficiently correctly ranging of regions on the level of appeal and the prospects of placement and results of calculations for regions of Volga federal district for the period 2005 - 2015 are provided in table 1.

Table 1
VALUES OF AN INTEGRATED INDEX (IN DECREASING ORDER OF) SOCIAL AND ECONOMIC APPEAL OF REGIONS OF THE VOLGA FEDERAL DISTRICT (SEP INDEX) OF THE PRODUCTIVE FORCES CREATING REGIONAL ECONOMIC DYNAMICS

Territory	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Republic of Tatarstan	46,3	48,0	54,6	57,7	57,7	58,5	59,0	61,7	62,9	63,9	62,6
Samara region	43,9	59,3	62,5	63,9	60,6	57,9	61,1	61,4	62,0	60,5	60,9
Nizhny Novgorod Region	41,7	45,4	46,9	50,3	50,9	50,7	52,3	53,7	55,8	57,5	69,5
Perm Krai	36,6	49,6	52,4	54,9	54,4	55,8	53,5	54,7	56,6	56,7	55,4
Republic of Bashkortostan	41,9	41,5	46,6	47,6	47,6	48,6	46,2	47,1	48,4	50,5	50,6
Saratov region	39,6	40,6	41,8	42,9	44,9	45,5	44,7	44,4	45,4	45,1	44,2
Kirov region	29,0	37,7	39,2	40,5	40,6	38,1	41,3	40,8	41,3	41,9	40,5
Republic of Mordovia	31,4	32,9	34,0	35,8	37,0	36,6	36,7	36,8	37,1	37,4	36,7
Chuvash Republic	32,7	31,7	35,7	36,6	36,2	37,3	37,4	37,2	37,4	37,4	37,2
Penza region	30,6	30,0	33,0	34,4	36,0	38,0	36,2	37,5	37,0	37,1	37,9
Orenburg region	26,2	28,4	31,0	32,8	32,9	32,3	32,3	31,8	33,2	33,5	34,1
Udmurt Republic	28,1	30,3	32,1	31,9	33,2	32,2	32,3	32,2	32,8	32,7	33,0
Ulyanovsk region	22,6	23,3	25,7	28,9	28,8	28,4	28,5	29,2	29,7	29,8	29,5
Republic of Mari El	19,3	21,5	19,9	19,1	20,6	23,5	22,5	23,0	23,6	24,1	25,1

Developed methodical approaches to assessment of social and economic appeal of regions in the context of placement and development of productive forces are capable to provide conditions for forecasting not only the SEP integrated index, but also to create scenario conditions of its trends depending on the set parameters of development of the factors which are its part. Thus the developed model is capable to generate various scenarios of development of social and economic appeal of placement of regional productive forces depending on programming of separate factors and their dynamics.

At the same time made assumptions and hypotheses undoubtedly require empirical reasons, verifying them.

As the main approaches promoting carrying out this stage of work the methods of economic-mathematical modeling allowing to reveal dependences between an endogenous variable (growth rates of VRP) and the exogenous variable reflecting dynamics of the SEP integrated index are chosen. Inclusion in model of growth rates of a gross regional product is reasonable the fact that this indicator in many respects reflects quality and efficiency of development of productive forces and their compliance to progressive technological ways. If delay VRP loudspeakers is observed, means the available technologically integrated regional production resources cease to create high economic effect and a marginal national income begins to be reduced. To the contrary, growth can mean VRP loudspeakers about optimum level of compliance of structure of productive forces to the requirements which are created in economy.

Results of the economic-mathematical analysis of influence of the SEP index on the VRP loudspeaker of the Republic of Tatarstan from 2005 for 2015 it is provided in the equation 7:

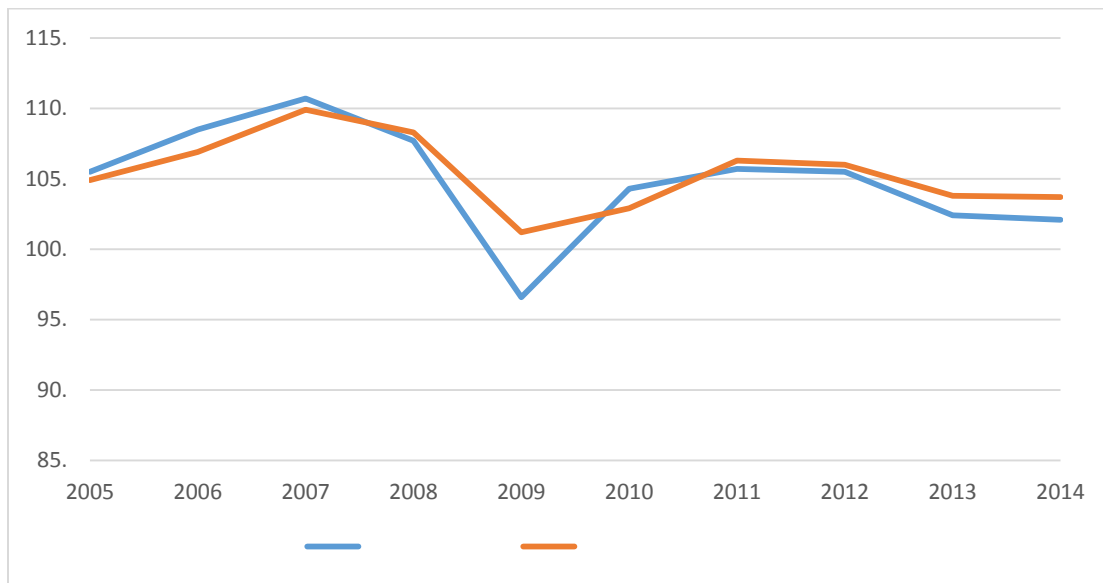
The following equation is received:

$$y = 75,23 + 0,35 * I + 2,19 * f_1 + 0,33 * f_2. \quad (2)$$

where, f_1 and f_2 – fictitious variables.

Accuracy and reliability of the received results visually is confirmed by almost full coincidence of the values of growth rates predicted by means of model VRP and their actual level (a R-square = 0,89) (figure 2).

Figure 2
RESULTS OF A RATIO OF THE VRP VALUES PREDICTED BY MEANS OF AND THEIR ACTUAL LEVEL MODEL



The offered model of creation of the VRP index needed to be modified further taking into account the corresponding adjustment of information base and addition in system of the factors reflecting dynamics of the macroeconomic parameters putting "pressure" upon trajectories of economic development. We carried to number of such factors: oil price, investments into fixed capital.

It should be noted that in econometrics dummy variables are used for modeling of interrelations, both in space, and in time, at the same time they can be both in right, and in the left member of equation. Considering features of the available data, it is necessary to stop on consideration of a class of the models based on spatial data with a dummy variable in the left member of equation. Those are: it is punched - a logit model and models of the multiple choice.

It is punched (probit) - it is the statistical model of the binary choice used for a prediction of probability of emergence of the interesting event on the basis of function of standard normal distribution.

$$F(u) = f(u) = \frac{1}{\sqrt{2 * \pi}} \int_{-\infty}^u e^{-\frac{1}{2} * z^2} * dz \quad (3)$$

In model it is shown - the calculated value of a dependent variable is expressed to regression as value of function of distribution of the standard normal law. It is punched - it is value for which is calculated functions of distribution of the standard normal distribution law.

The logit (logit) - model is based on the logistic distribution law of probabilities. Function of distribution of probabilities of the logistic law:

$$F(u) = \Lambda(u) = \frac{e^u}{1 + e^u} \quad (4)$$

Concerning the choice of this or that model in practice every time the issue depending on a specific situation is resolved. Function graphs of distribution of normal and logistic distribution in case of the corresponding normalization are rather close. On an interval they are almost identical. However the logistical function has more "heavy tails", i.e. tends to zero more slowly in case of $z \rightarrow -\infty$. or unit at $z \rightarrow -\infty$. Therefore the logit - is also punched - models yield similar result if only the studied probability isn't too close to zero or to unit.

In many economic tasks the quantity of alternatives can be more than two. In these cases use of a class of models of the multiple choice is pertinent. These models allow to describe probability of each of alternatives as function of observed characteristics of an object. At the same time probabilities shall lie in the range from 0 to 1, and the amount of probabilities on all alternatives shall be equal to unit.

The multiple logit is logical continuation binary. He arises when the choice between more than two alternatives is considered. There are two main types of multiple models: the ordered logit and actually multiple logit. The ordered logit develops threshold model, and actually multiple logit — choice model on useful things. The model of the multiple choice with the disorder alternatives has the following formula:

$$P(y_i = j) = \frac{e^{x_i * b_j}}{1 + \sum_{j=0}^{J-1} e^{x_i * b_j}} \quad (5)$$

In this research the model of a multiple selection as the resultant variable at accepts more than two values was used. Possible combinations of combinations of couples of values of the dummy variables used in model (11) give three possible variable values of y:

$$\begin{aligned} f_1 = 0, f_2 = 0 &\rightarrow y = 0; \\ f_1 = 1, f_2 = 0 &\rightarrow y = 1; \\ f_1 = 0, f_2 = 1 &\rightarrow y = 2; \\ f_1 = 1, f_2 = 1 &\rightarrow y = 3. \end{aligned} \quad (6)$$

{ { {

As the factors exerting impact on a resultant variable (VRP) we will choose the following indicators: oil price (x1), investments into fixed capital (x2). Turning on of such indicators will allow to expand significantly the practical importance of model from the point of view of forecasting of dynamics of regional economic development.

Parameters of the equation of the multiple choice a logit of model were found in STATISTICA packet (results are given in table 2).

Table 2
VALUES OF COEFFICIENTS AND THEIR STATISTICAL CERTAINTY IN MODEL OF THE MULTIPLE CHOICE

	y^a	Coefficients	Standard error	Vald	st.sv.	P-value
0	Absolute term	101,361	52,65	4,06	1	0,03
	x1	0,95188	0,49	3,45	1	0,06
	x2	0,10388	0,06	2,45	1	0,08
1	Absolute term	-55,1412	33,98	2,48	1	0,05
	x1	0,3763	0,26	2,11	1	0,02
	x2	0,11766	0,08	2,18	1	0,06
2	Absolute term	-63,7399	35,12	3,10	1	0,08
	x1	0,4505	0,26	2,74	1	0,13
	x2	0,12508	0,08	2,52	1	0,02

Therefore, the following values of probabilities of the multiple choice have been received:

Table 3
THE RECEIVED VALUES OF MODEL OF THE MULTIPLE CHOICE

t	Multiple y	x_1	x_2	p(0)	p(1)	p(2)	p(3)
2005	1	107,18	105,65	0,00	0,48	0,46	0,05
2006	2	84,64	113,70	0,99	0,00	0,01	0,00
2007	3	92,46	124,77	0,78	0,07	0,16	0,00
2008	1	120,90	110,81	0,00	0,04	0,01	0,95
2009	0	47,15	89,13	1,00	0,00	0,00	0,00
2010	3	202,95	103,00	0,00	0,00	0,00	1,00
2011	2	108,45	104,04	0,00	0,49	0,43	0,07
2012	2	78,43	105,70	1,00	0,00	0,00	0,00
2013	1	81,94	101,78	1,00	0,00	0,00	0,00
2014	2	101,43	94,20	0,02	0,39	0,59	0,00
2015	0	67,95	59,25	0,98	0,00	0,02	0,00

From the table it is visible that the greatest probability is reached in 2014 at $y=2$. Therefore it is expedient to use when developing the forecast of dynamics of development of VRP for 2015 model of the multiple choice at $y=2$ for the forecast of the studied model when $f_1 = 0, f_2 = 1$.

Thus, the following value of the VRP summary index of the studied model for 2015 turns out:

$$y = 75,23 + 0,35 * 62,6 + 2,19 * 1 + 0,33 * 0 = 99,3.$$

DISCUSSION

Considering that according to the data on dynamics of VRP of the Republic of Tatarstan in 2015 published by official organs of the government at the level of 100,0% it is possible to speak about the high level of convergence of the predicted value with actual.

Thus, the model verifying convergence of two dynamic rows which allows to connect with high degree of reliability dynamics of real VRP with dynamics of the settlement consolidated index acting as the tool of assessment of social and economic appeal of the region with dynamics of key macroeconomic indicators was received (Safiullin et al., 2013).

Summing up the result of the realized economic-mathematical calculations, estimating features of influence of the SEP index on the VRP loudspeaker, as well as proving reliability of the results predicted by means of model it is necessary to state the considerable level of elasticity between the SEP and VRP index. With growth of the SEP index on one point value of growth rates of VRP increases on 0,35 percent points. That is changes in the SEP index create noticeable reaction in generation of the economic processes which are expressed in the corresponding volatility of the created end product.

The realized approach allows to pass to development of forecasts of development of regional economic systems on the basis of scenario modeling of the potentials determining dynamics of social and economic appeal of regions. In this work an attempt of development of the forecast VRP loudspeakers for a number of regions of the Volga Federal District on the basis of the unique inertial scenario of development of the economic, social and institutional regional potentials which are a part of an integrated index of social and economic appeal (table 4) is made.

The settlement data provided in table 4 show a forward positive trend of social and economic appeal in the researched regions of the Volga Federal District on prospect till 2030.

Table 4
THE VRP FORECAST VALUES OF REGIONS OF THE VOLGA FEDERAL DISTRICT FOR THE PERIOD TILL 2030 (BY REGIONS – REPRESENTATIVES OF CLUSTERS)

	2014	2020 (prognosis)	2030 (prognosis)
Republic of Tatarstan	102,1	105,1	105,9
Republic of Mordovia	108,1	103,1	103,2
Ulyanovsk region	100,5	102,1	102,9

In the analytical plan the fact that values VRP loudspeakers are exposed to changes according to the trend of development of the analyzed potentials of social and economic development which was outlined in 2005-2015 is represented interesting. The fact that regions with the high level of institutional potential (Republic of Tatarstan) show more dynamic prognostic growth rates of VRP based, most likely, on development of the productive forces corresponding to the sixth technological way is important. Regions with less high level of

institutional potential have considerably smaller dynamics of growth of VRP. Thus results of economic-mathematical modeling confirm assumptions that the current vector of economic development relying on consumption of resource base isn't capable to provide dynamic trends of the end product created in economy. The transformation of institutes of development relying, first of all, on active implementation of mechanisms of stimulation of the "smart" economy based on implementation and development of innovative productive forces is required.

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WORLD POPULATION ESTIMATES AND PROJECTIONS: DATA AND METHODS

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ABSTRACT

In work results of the carried-out demographic forecasting as in general for the world, and by certain parts of the world (Africa, South America, North America, Asia, Europe) are provided. It allowed to carry out at the same time the analysis of the population growth dynamics by groups of the countries "North" - "South".

The analysis of the world population dynamics and certain parts of the world during 1950 - 2010 allowed to carry out the forecast of the world population and certain parts of the world before 2050. In work methods of regression and correlation analysis were applied. The received results in case of the various options choice like the approximating functions differ in the high level of the actual compliance and calculated values, i.e. insignificant errors of approximation, in case of high significance value of results ($p < 0.05$).

In the course of forecasting it was revealed that in the first half of the 21st century population growth will continue. This growth will be extremely uneven both on continents, and over groups of the countries. As a result of globalization processes the stage of demographic transition will be entered by all countries of the world (though differentiation in this plan will be very essential). In the second half of the century the period of demographic stabilization at the planetary level will begin.

Keyword: world population; forecast; UN data; Europe; Africa; Asia, North America; South America.

INTRODUCTION

In the 21st century in world economy more and more important are global problems of mankind which include not only economic, on and social, demographic, ecological, etc. All of them are closely interconnected with each other, one are the reasons of others and vice versa. So, the problem of a global overpopulation of the planet creates problems of shortage of resources, decrease in level and quality of life of the population, etc. At the same time there is a question why, despite persistent emphasis of a problem of an overpopulation of the planet, the countries of the West pursue policy of demographic stimulation and whether it is possible to refer separate demographic problems to category of global today? In this regard forecast studying of world's population and its continents at this conjuncture purchases even more urgent nature.

MATERIALS AND METHODS

In practice of demographic forecasting the methods of aggregative demographic modeling based on the concept of demographic potential (<http://www.demogr.mpg.de/Papers/workshops/ws001011.htm>) are most often used. The similar method, in particular, was tested on the Swedish data and showed outstanding performance when modeling various indexes of the population, including population and various age and sex groups.

In addition to the analysis of a demographic situation of Sweden, methods of aggregative demographic modeling were effectively used for demographic forecasting in such countries as the USA, France, Japan. Are known as well forecasts of population of the Russian Federation. Much attention is paid to influence of length of the horizon of forecasting for a forecast accuracy (Keyfitz and Flieger, 1990).

The comparative analysis of various alternatives showed outstanding performance of the offered method and allowed to receive practical recommendations about forecasting of population in case of various horizons.

The idea of the potential inherent in the current structure of the population arose in demography for a long time and there goes back to works of R. Fisher on reproductive potential, P.Vincent and J. Bourgeois-Pichat on the potential of a surplus of age structure, L.Goodman on the conditional reproductive potential, N.Keyfitz on the equivalent stable population and potential of a surplus with its numerous generalization, K.Tognetti on reproductive gross - to the value and works of L.Hersch and its followers within potential demography. (Fisher, 1930)

The concept of demographic potential closely adjoins the stated above concepts and arises from various requirements of modeling of the population. It can be received as the index pro rata to the asymptotic number of posterity of the population or its subgroup. The old person has the small demographic potential since all his children were already born, and with it no future posterity can be associated. The application of this approach to same-sex model of the stable population leads to the reproductive potential of R.Fisher. Fisher considered the birth as the loan this to the child and his reproductive potential as the current discounted value of future debt payment (that is his children). N.Keyfitz researched this concept and showed that reproduction potential is pro rata to the asymptotic number of posterity. The concept of demographic potential can be developed also for more difficult demographic models reflecting migration, a priority of the birth of children, etc. .

Other approach to demographic potential is related to its properties as the aggregated population index. The most important for the aggregated modeling of the population property is that rate of change of total demographic potential is equal to asymptotic growth rate of population (to so-called true coefficient of reproduction of the population, Lotka coefficient) . Within model asymptotically the stable population of this property is enough to define a concept of demographic potential. (Vincent, 1945)

The simplest implementation of the concept of demographic potential - within same-sex model of the population with constant povozrastny indicators of birth rate and mortality. In this case the demographic potential of the person of age x is given by a formula:

$$c(x) = \frac{e^{rx}}{l(x)} \int_x^{\infty} l(y)f(y) e^{-ry} dy, \quad (1)$$

where r – Lotka's coefficient, $l(x)$, $f(x)$ - survival functions (probability that the baby

will live up to age x) and birth rate (intensity of the birth of children aged x).

Besides, in practice of demographic forecasting it is often used as well a method of exponential smoothing which is most effective in case of development medium-term and long-term (up to 50 years) population forecasts in case of stationary dynamic series in case of steady dynamics of demographic processes. Its main advantages – relative simplicity of an algorithm of calculations and a possibility of accounting of weight parameters of temporary and demographic variables. The formula of the equation of exponential smoothing has the following appearance:

$$U_{t+1} = \alpha \cdot y_t + (1 - \alpha) \cdot U_t \quad (2)$$

where t – the period preceding expected;

$t + 1$ – forecast period;

U_{t+1} - the predicted indicator;

α - smoothing parameter;

y_t - the actual value of the studied indicator for the period preceding expected;

U_t - exponential weighed average for the period preceding forecast.

When forecasting two difficulties arise by this method:

- choice of value of parameter of smoothing α ;
- definition of initial U_0 value.

α depends on size how the weight of influence of the previous observations is quickly lost. The more α , the influence of the previous years affects less. If value α is close to unit, then it leads to the account at the forecast generally influences only of the last observations. If value α is close to zero, then the weight on which levels of a temporary row are weighed decrease slowly, i.e. at the forecast all are considered (or almost everything) last observations.

There is no exact method for the choice of optimum size of parameter of smoothing α . It is in some cases offered to determine size α , proceeding from smoothing interval length. In this case α it can be calculated on a formula $2 / (n + 1)$ where n – number of the observations entering a smoothing interval.

The problem of the choice of U_0 (exponential weighed average initial) is usually solved or use of expert estimates, or on the basis of the following procedures: if there are data on development of the phenomenon in the past, then it is possible to use average arithmetic and to equate to her U_0 ; if there are no such data, then as U_0 use reference first value of base of the forecast y_1 .

RESULTS

The decision of tasks of forecasting was passed in general for the world and by certain parts of the world (Africa, South America, Europe) since it allows to carry out at the same time and the analysis of dynamics by groups of the countries "North" - "South".

Data on certain parts of the world and on the world in general were obtained from a source "Data of the UN (UN Data)". (Bourgeois-Pichat, 1968)

The solution of tasks of the forecast of the world population included two stages:

1. The analysis of the world population dynamics and certain parts of the world during 1950 - 2010.

2. The forecast of the world population and certain parts of the world before 2050.

The analysis of the world population dynamics and certain parts of the world was carried out by means of methods of the regression and correlation analysis. The received results in case of the choice of various options like the approximating functions differ in the high level of compliance of the actual and calculated values, i.e. insignificant errors of approximation, in case of high significance value of results ($p < 0.05$).

The coefficient of determination (R^2) from 0,995 and is characteristic of all results of the regression analysis above. It testifies not only to a right choice like function, and exact calculation of parameters, but also to steady, stationary dynamics of processes of growth of the world population.

By the results provided in fig. 1-3 it is visible that dynamics of growth of population of Africa, Europe and South America (fig. 1, 2, 3) is nonlinear and can be provided by polynomial function (a polynomial of the second degree).

Figure 1
POPULATION TREND PARAMETERS OF AFRICA IN 1950 - 2010

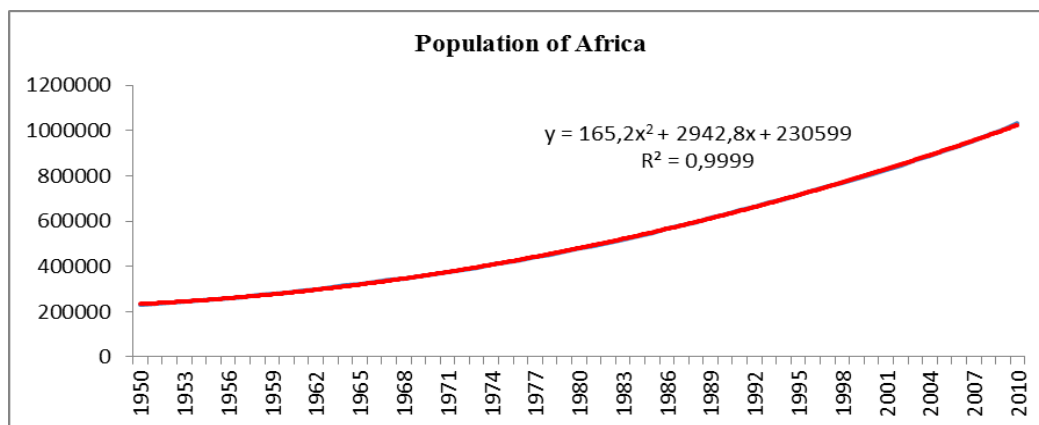


Figure 2
POPULATION TREND PARAMETERS OF EUROPE IN 1950 – 2010

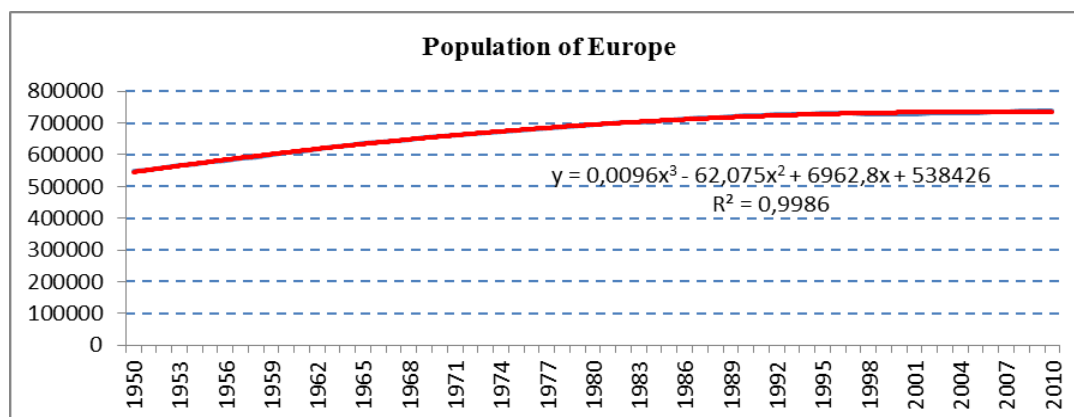
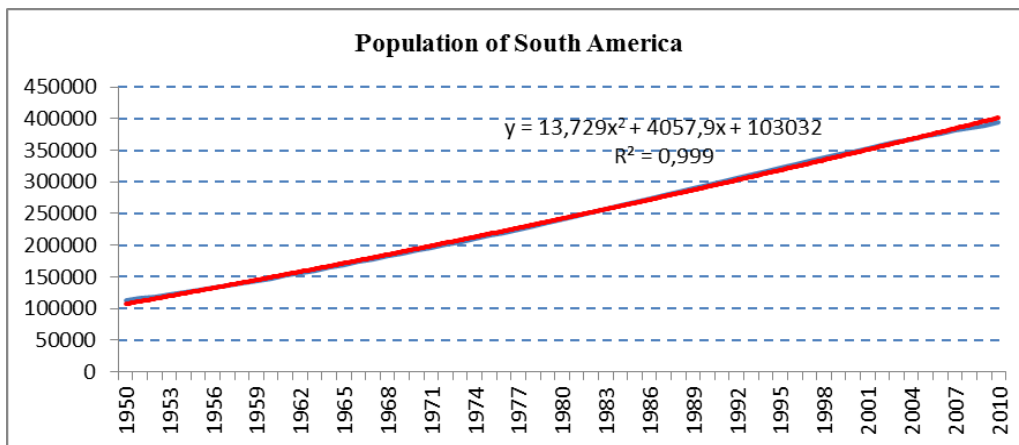


Figure 3
POPULATION TREND PARAMETERS OF SOUTH AMERICA IN 1950 – 2010



For these parts of the world these equations of dynamics have the following appearance (y – number the population, x - year):

- for Africa $y = 165,2x^2 + 2942,8x + 230599$ (3)

- for Europe $y = 0,0096x^3 - 62,075x^2 + 6962,8x + 538426$ (4)

- for South Africa $y = 13,729x^2 + 4057,9x + 103032$ (5)

At the same time if of Africa and South America it is characteristic nonlinear, rapid growth of the population, then nonlinear "excess" since growth period by the period of stabilization of number is characteristic of Europe.

Unlike this loudspeaker of growth of the world population, Asia and North America it is linear (fig. 4, 5 and 6) that it is possible to explain with discrepancy of demographic tendencies in the different countries of these parts of the world, for example, in China and Indonesia, in the USA and Mexico, etc.

Figure 4
TREND PARAMETERS OF THE WORLD POPULATION IN 1950 – 2010

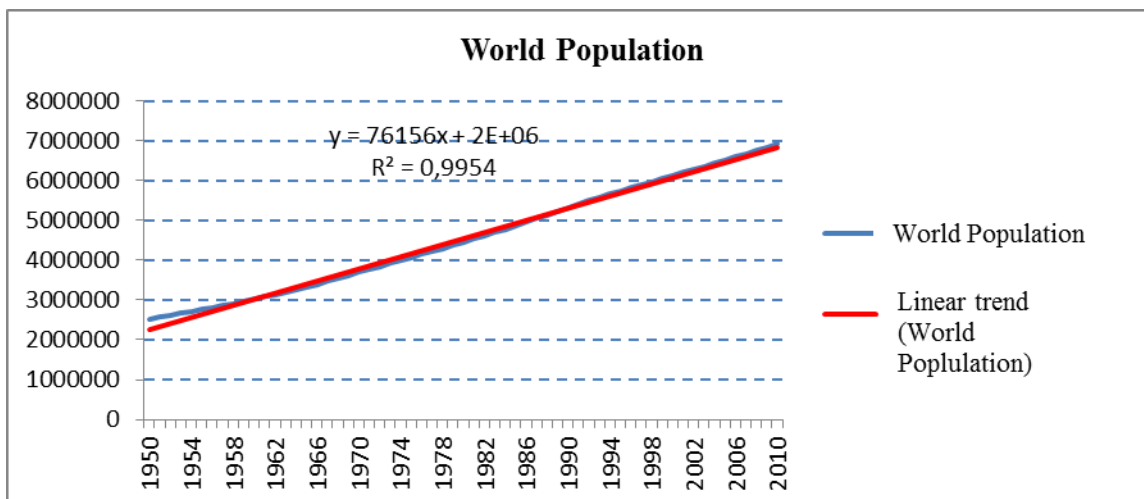


Figure. 5
POPULATION TREND PARAMETERS OF ASIA IN 1950 - 2010.

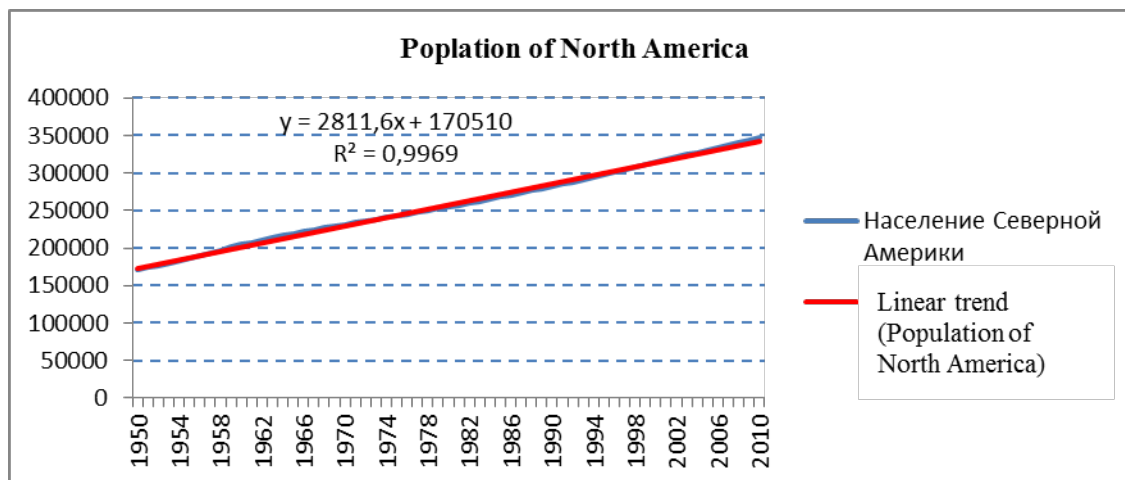
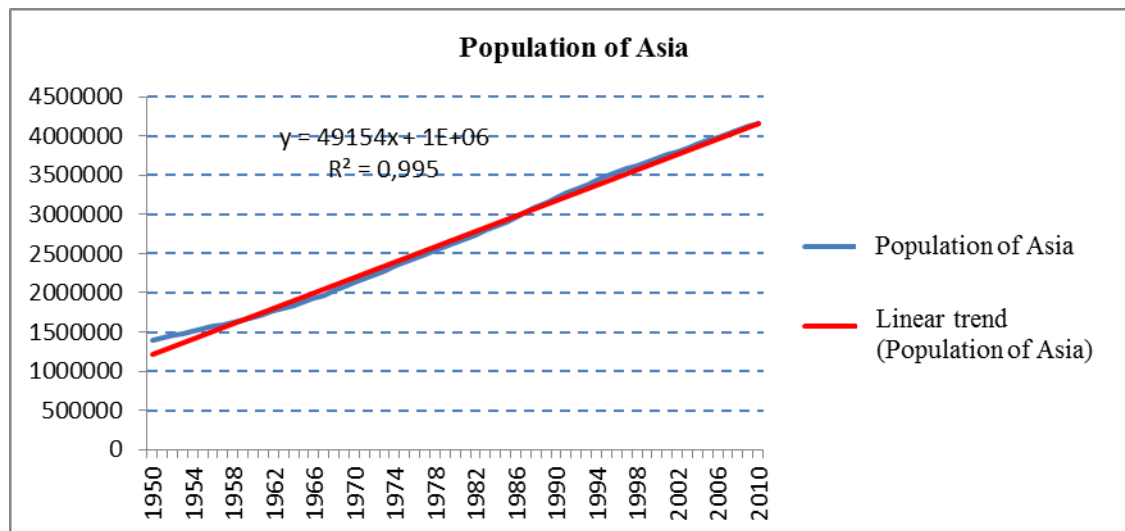


Figure 6
POPULATION TREND PARAMETERS OF NORTH AMERICA IN 1950 - 2010



For these parts of the world these equations of dynamics have the following appearance:

- for world population $y = 76156 x + 2000000$ (6)

- for Asian population $y = 49154 x + 1000000$ (7)

- for North American population $y = 2811,6 x + 170510$ (8)

Steady nature of dynamics of population during 1950 - 2010 can't form, nevertheless, a basis for the assumption of preserving stationarity of dynamics in the next 35 years. Thereof, as a methodical basis of the solution of tasks of forecasting of the world population the method of exponential smoothing considered in item 3.2 which, according to many analysts, allows to receive reasonable results of demographic forecasting for rather long period of time

was chosen.

The received results (tab. 1, fig. 7 - 11) will well be approved with conclusions of the leading demographers and specialists in economic demography. According to results of forecasting, the world population shall increase by 2050 approximately by one and a half times, to 10,3 billion people (tab. 1).

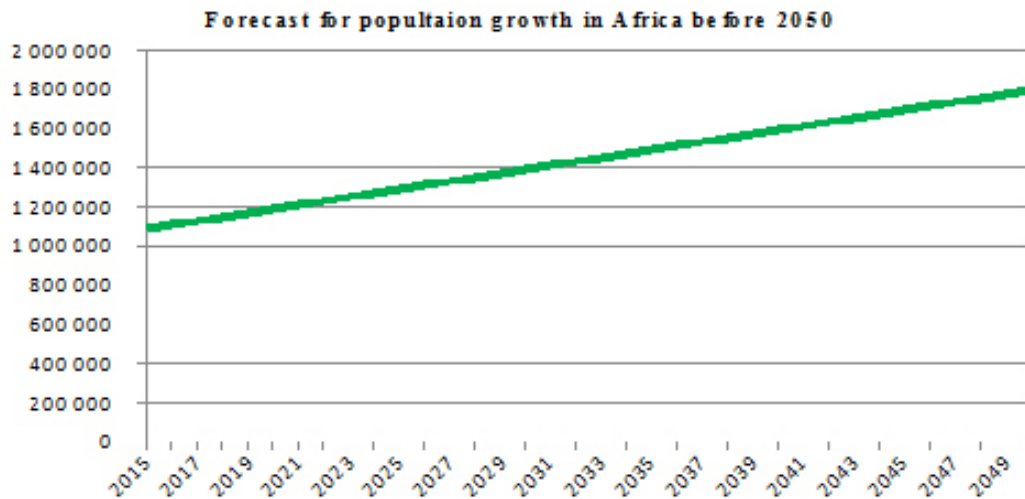
Table 1
THE FORECAST OF THE WORLD POPULATION BEFORE 2050

Year	Population (th.peop.)
2016	7 456 403
2017	7 541 020
2018	7 625 636
2019	7 710 253
2020	7 794 869
2021	7 879 486
2022	7 964 102
2023	8 048 719
2024	8 133 335
2025	8 217 952
2026	8 302 568
2027	8 387 185
2028	8 471 801
2029	8 556 418
2030	8 641 034
2031	8 725 651
2032	8 810 267
2033	8 894 883
2034	8 979 500
2035	9 064 116
2036	9 148 733
2037	9 233 349
2038	9 317 966
2039	9 402 582
2040	9 487 199
2041	9 571 815
2042	9 656 432
2043	9 741 048
2044	9 825 665
2045	9 910 281
2046	9 994 898

2047	10 079 514
2048	10 164 131
2049	10 248 747
2050	10 333 364

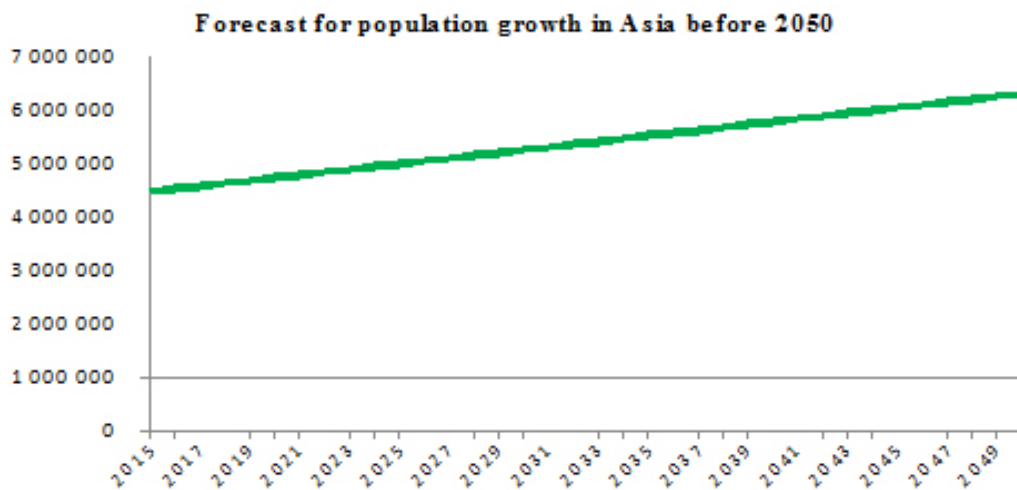
The population of Africa will grow most in high gear, approximately for 2-3% annually and will increase by 2050 by 1,7 times, having made 1,8 billion people (fig. 7).

Figure 7
THE FORECAST OF POPULATION GROWTH FOR AFRICA BEFORE 2050



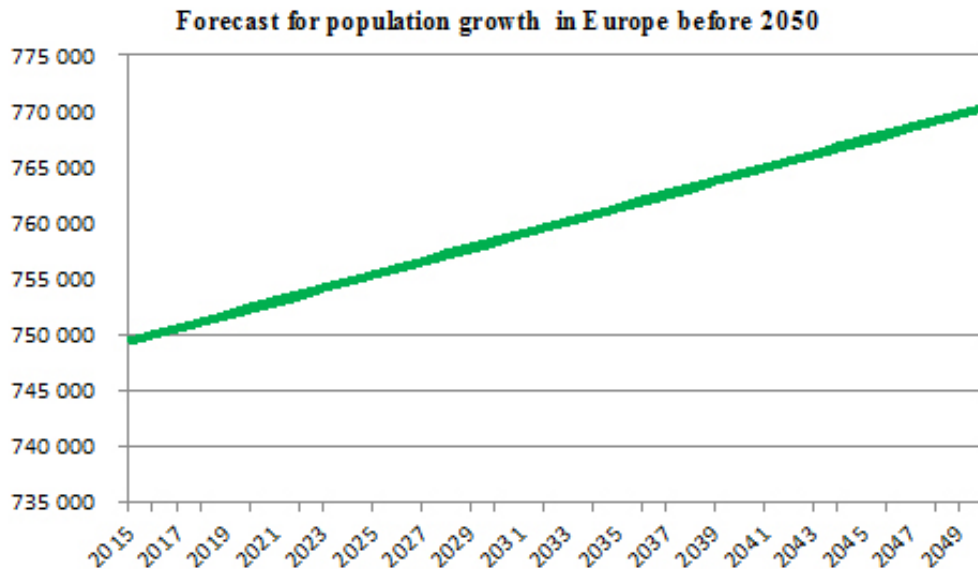
Smaller growth rates of the population will be characteristic of the countries of Asia (fig. 8) which population by 2050 will increase by 1,4 times, having made 6,3 billion people, i.e. about a half of world's population in 2050 according to the received results of the forecast.

Figure 8
THE FORECAST OF POPULATION GROWTH FOR ASIA BEFORE 2050



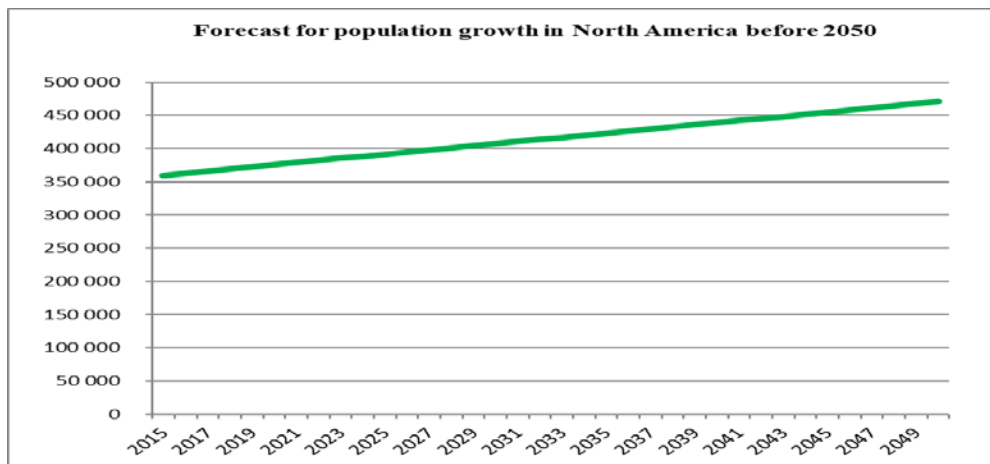
The forecast of dynamics of number of Europe (fig. 9) shows extremely insignificant growth of population of this continent – only 2,7%, but, at the same time, tendencies of depopulation won't arise.

Figure 9
THE FORECAST OF POPULATION GROWTH FOR EUROPE BEFORE 2050



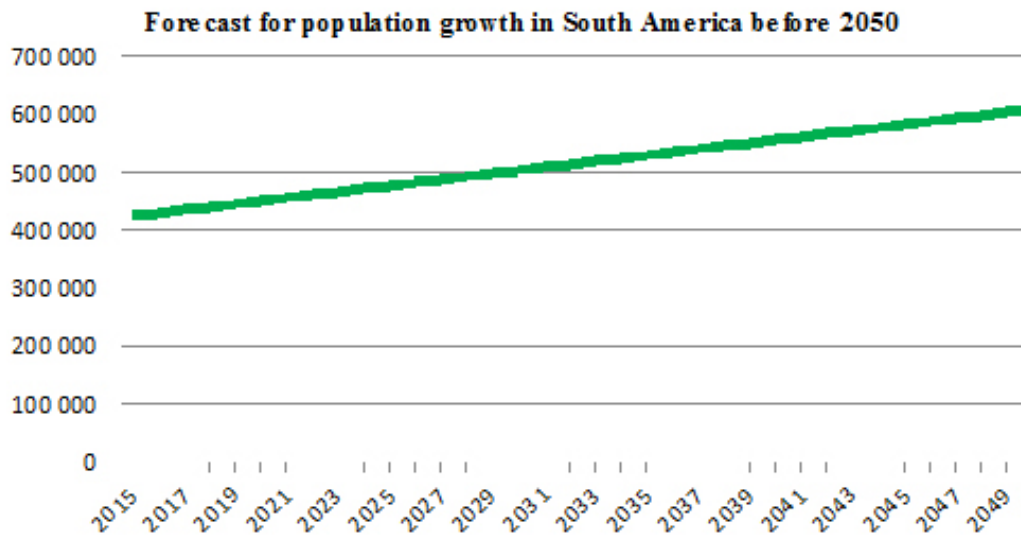
According to results of the forecast, population of North America by 2050 will increase by 30% that is one third lower than growth rates of the population of Asia and is 2,3 times lower than growth rates of the population of Africa (fig. 10). The predicted population will make 471 million people that will make 4,6% of the predicted total number of world's population.

Figure 10
FORECAST FOR POPULATION GROWTH IN NORTH AMERICA BEFORE 2050



Expected population of South America (fig. 11) in 2050 will make 610 million people, having increased by 44% that approximately corresponds to the predicted growth rates of the population of Asia.

Figure 11
FORECAST FOR POPULATION GROWTH IN SOUTH AMERICA BEFORE 2050



The share of South America will make 6% of the total number of world's population that is approximately equal to her share in 2010 (5,7%).

CONCLUSIONS

Results of forecasting allow to draw the following conclusions:

A. The offered forecasting model of the world population based on a method of exponential smoothing is rather adequate to a real world demographic situation and the developing demographic processes (Goodman, 1967).

B. One of the most basic problems of the long-term forecast is the answer to a question whether there will be growth of world's population stable after completion of demographic transition or it will decrease. In this work calculations are made of the assumption of stationary nature of world demographic processes that it was caused by conclusions of the analysis of tendencies of dynamics.

C. The results of projection of growth of the population and its consequences given in this work allow to formulate two problems which inevitably result from the provided forecast. The first problem – need to realize and set limits of opportunities of development of production of goods because of limitation of natural resources. The second problem – the relation to a natural wastage of the population in those countries where it already began which in modern conditions, perhaps, shouldn't be considered as degradation and a decline of the country and a civilization.

It is represented that the analysis of these problems will be useful further to

determination of prospects of dynamics of the world population to the middle of XXIV.

DISCUSSION

In the course of forecasting it was revealed that in the first half of the 21st century population growth will continue. This growth will be extremely uneven both on continents, and over groups of the countries. As a result of globalization processes the stage of demographic transition will be entered by all countries of the world (though differentiation in this plan will be very essential). In the second half of the century the period of demographic stabilization at the planetary level will begin.

The share of the population living in developing countries will steadily grow, and the share of the population of developed countries will be reduced. Moreover, population of developed countries (though not on many) will be reduced as well in absolute expression, i.e. depopulation will be characteristic of most of them.

Distinctions in the modes of demographic reproduction of the population will remain: birth rate in developed countries will continue to fall, promoting depopulation in them, aging of the population will lead to reducing number of labor, and, therefore, to the need for migrants; in developing countries, on the contrary, growth of total number of the population will remain, because of high birth rate in them rather young structure of the population will be created, and because of a weak inclusiveness in global economy in them poverty, the conflicts therefore migration in them will remain one of survival methods for millions of people will be aggravated. It will be promoted by the amplifying polarization of living standards of the population in developed and developing countries; an overpopulation in regions of the world backward (economically); distinctions in degrees of employment of able-bodied population and growth of the level of unemployment causing a labor migration.

ACKNOWLEDGMENTS

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FEATURES OF TERRITORIAL RURAL RESETTLEMENT AND SERVICE SYSTEMS TRANSFORMATION OF THE KURGAN REGION

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ABSTRACT

In the conditions of aging and depopulation of the Russian population human resources and human capital become the most scarce. So the region of the Russian Federation, the Kurgan region, for the last 25 years lost a quarter of the population (-208608 people). The village stagnates and degrades especially. Transformation processes of the last decades bared and strengthened problems in the village, testimonial of deep deformations in the social and economic sphere. How to stop negative tendencies in the village? What can become "points" of growth and stable development of certain regions? Specific regional researches of rural systems of resettlement, quality and a conduct of life, service level of a rural population can give answers to these questions. In this regard, the territorial research of systems of rural resettlement and services industry of the Kurgan region, conditions, mechanisms and results of transformation will help to reveal key problems and contradictions, to find ways of their decision. We will rely in the work on dialectic synthesis of the system and dynamic and territorial analysis.

Rural resettlement is considered by us as system, process and result of the territorial and functional interconnected combination and development of network of settlements and network of objects of services industry. Problems of interaction and development of systems of resettlement and servicing remain very urgent for the rural zone.

Systems of resettlement of the Kurgan region have uniform and average and big settlements, and distances between rural settlements average 6-7 km. It just also determines an integrated approach to forming of "set" of objects of services industry in this or that settlement depending on population, and not just "separate" calculation of schools, hospitals, etc., in particular, using the western models of "gravitation".

Key words: Country people, social service, transformation, Kurgan region.

INTRODUCTION

The Kurgan region – the youngest Area of Siberia. As the independent territorial administrative unit it was formed in military 1943 as a result of disaggregation of Chelyabinsk and Omsk region. From the moment of foundation of the area its area remains invariable, but settlements population, their functions and communication changes. The drawing of resettlement of area can be characterized as "centripetal", focused on the regional center – the city of Kurgan in which lives – 325,7 thousand inhabitants (on 1/1/2014).

The population census of 1959 has recorded in the territory of the Kurgan region the number of the rural settlements (RS), maximum for all history of development, with resident

population – 2209. In 1970 in the area was 1347 SNP, in 1979 – 1311, in 1989 – 1256, in 1999 – 1243, in 2010 – 1220. These figures demonstrate a tendency of reduction of network of settlements, but some delay of these rates at a boundary of the 20-21st centuries – (-36 SNP). The number of city settlements is quite stable.

The modern system of resettlement of the Kurgan region has generally kept natural and historical and economic conditionality, and the main basic framework of settlements which is actively transformed now. The main areas of resettlement and the drawing of settlements remain invariable since the end of the 19th century, but settlements population from 396 people in 1989 to 373 people in 2011 considerably changes, even more considerably in the 21st century functions and communications between them are reduced.

There is a compression of space – demographic, ekistic, social.

Dynamics of SNP network for the considered period demonstrates reduction of all types of settlements and growth of the smallest. As show researches in other regions, similar processes have already happened in the Central Chernozem area, the Volga region, the Cis-Urals where also average settlements "are already washed away" (Yemelyanov D. A., 2012; Levchenkov A. V., Rumyantseva M. G., 2011; Zubarevich N. V., 2013; Gabdrakhmanov, N.K., Egorov, D.O., 2015).

Settlements with a population 500 are steadiest and the person is higher, two thirds of villagers live in them. It is the Trans-Siberian Railway zone (28% of SNP) and valley settlements of the rivers (Iset – 37%, Tobol – 32%).

The analysis of scientific literature on problems of resettlement led to a conclusion that many authors use an integrated approach in the researches. At the same time problems of theoretical and applied regional nature remain, in particular a problem of interaction of factors and conditions of resettlement (including resettlement and servicing).

Rural resettlement is considered by us as system, process and result of the territorial and functional interconnected combination and development of settlements. The territorial system and dynamic analysis became a methodological basis of studying of systems of rural resettlement of the Kurgan region. It is based on dialectic synthesis of system, dynamic and territorial approaches.

System approach – one of the main general scientific methods studying development of "difficult systems" (including systems of resettlement and servicing).

Dynamic approach allows to carry out the retrospective analysis of change of system of rural resettlement and e è components for the long period of time.

Territorial approach is binding in system methodology as reflects focusing of processes of interaction of components of system in the certain territory.

The essence of transformation processes in the rural zone of the Kurgan region was shown at the turn of the century in processes of "compression" of space (in particular, demographic and territorial), polarization, stagnation and degradation of network of settlements and servicing, and also loss dynamic (most) and stability of resettlement structural (partly). Besides, in forming of a vicious "circle of poverty" (low economic level of development – the low income of the population – low quality of life – depopulation – the depopulated territories) as a result of unreasoned agrarian policy of the state.

As a result of reducing number of SNP, their population, amounts of industrial and agricultural production were reduced, territorial disproportions amplified. It concerns also placement of objects of services industry. The process of "compression" of rural space which

happened at the turn of the century demonstrates that the most full range of objects of services industry remains only in large, "mature" settlements which can become clusterization cores SR.

METHODS

Object of a research are systems of resettlement and services industry of a rural population of the Kurgan region.

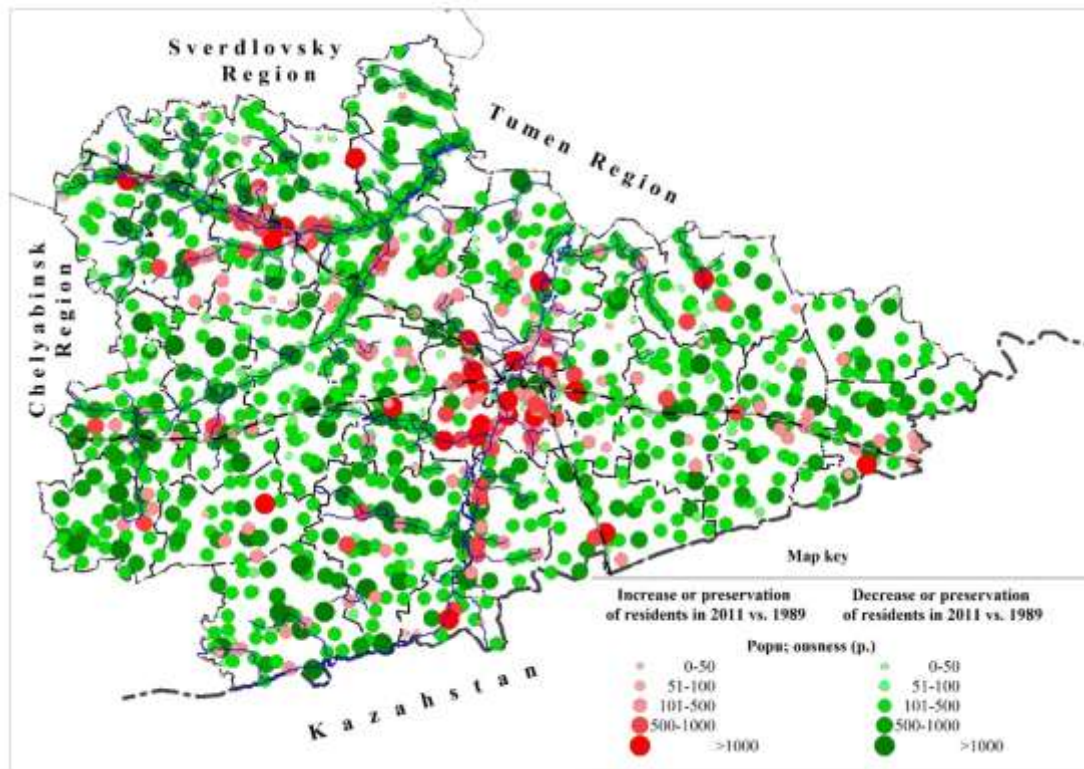
Work purpose: to study conditions, factors, territorial features of transformation of system of resettlement and servicing of a rural population of the Kurgan region at the turn of the century, to develop recommendations for its enhancement.

For achievement of an effective objective the following methods of a research were used: existential, system and dynamic, territorial, comparative, statistical, it is integrated - cartographical, typological, etc.

RESULTS

The drawing of resettlement of area can be characterized as "centripetal", oriented to the regional center – the city of Kurgan. According to a typology of rural resettlement of S. A. Kovalyov, the Kurgan region is mainly located in the 4th type "a strip of continuous agricultural development with big massifs of an arable land" (Kovalyov S.A., 1963). The rural population of area on production type, mainly, belongs to agricultural. The main areas of resettlement and the drawing of settlements remain invariable since the end of the 19th century, but a population of settlements, their functions and communications between them considerably change. The population or size SNP is created under the influence of various factors. First of all, it is closely connected with functional purpose of settlements, in particular its one - or multi-functionality, with degree of labor input of a main type of occupation of the population. In the majority old populated regions of the country the population in no small measure is "inherited", that is reflects settling history both last economic and social features of development of this territory. In a population of the existing settlements it is often possible to see a big lag effect – people reluctantly leave habitual habitats if to it they aren't forced by strong circumstances. In 1989 the average population of settlements in the area constituted 396 inhabitants, and in 2011 – 373. We constructed the cards of a population of settlements which are visually showing the prevailing resettlement types in the Kurgan region which were created during settling of area: along the large rivers (Tobol, Iset, Miass) and along long distance railways. East and northwest areas are characterized by middle-populated nature of resettlement, and southern – large-populated (figure 1).

Figure 1
RURAL RESETTLEMENT IN THE KURGAN REGION (1989-2011)



Settlements with a population of 500-1000 people are steadiest, two thirds of villagers live in them. Density of rural settlements in 1989 equaled 1,8 SNP/100 sq.km, and in 2011 – 1,7 SNP/100 kv. km. General density of population of area decreased from 15,1 to 12,7 people/sq.km, including density of a rural population – from 6,7 to 5,3 people/sq.km. Density of a rural population also decreased in all administrative areas, except for Ketovskiy who has steadily high rate (respectively, 16,2 and 16,8 people/sq.km) as it is the "capital", "suburbanized" area which is in a zone of influence of the regional center. Dynamics of SNP network for the considered period demonstrates reducing all types of settlements and growth of the smallest (about hundred inhabitants).

Thus, in the Kurgan region the single field of system of resettlement ceases to exist, and breaks up to parts, including the most "viable" SNP which are generally keeping economic and production and the social serving functions, and the degrading settlements losing opportunities for the development. Owing to negative all-Russian social and economic processes of the last decades, there is a disintegration of relations between settlements of different levels – district (between regional centers and peripheral) and region wide (between the central and local SNP). In general on area it is impossible to speak about mass reducing settlements, their general structural stability generally remains. At the same time a general tendency of the last years – loss of dynamic stability, that is reducing a population of the main types of settlements and growth of the middle-populated (Menshchikova L. V., 2013).

The most important direction of increase in comfort of activity of people is development of the services industry (SI). It affects growth of free time of citizens since developed SR reduces time for household affairs and respectively releases it for leisure activities.

The main criterion of the SR rational territorial organization is the most complete satisfaction of requests and the needs of the population for services and their maximum approach to the places of residence.

Placement of the entities of services industry is connected with nature of resettlement. Level, quality, a set of the provided services considerably differ between the city and the village, the central and peripheral settlements etc. A part is played also by amount of demand for services. In the village it is possible to create rather full range of organizations of daily servicing only in settlements with more than from one thousand inhabitants.

The SR territorial organization needs to be considered, both in a statics (current state), and in dynamics.

As it was noted above, in the area the number of rural settlements, their population decreased, amounts of industrial and agricultural production were reduced, territorial disproportions amplified. It concerns also placement of objects of services industry. From 1989 to 2010 in the Kurgan region the quantity of such socially important objects as kindergartens (by 2,7 times), schools (by 1,6 times), hospitals was reduced (twice).

We also carried out calculations and relative security with services industry objects (on 10000 peop.). Security with kindergartens and hospitals decreased twice, organizations of public catering and clubs – by 1,2 times. In 1987 preschool institutions were visited by 70% of children of the corresponding age, in 2013 – 63%. Especially difficulties in receipt of services are experienced by villagers.

During the Soviet period there were regulations of building of rural settlements with an obligatory set of organizations of the welfare sphere, now in the majority of villages there were only shops, is rare – medical and obstetrical centers and post offices.

Since 2000 there is a fixed decrease in number of schools (to 910 to 635 units). The negative impact on social life of the village is exerted by practice of reorganization of the main schools in initial. For the 90th of the last century the tendency of reduction of number of elementary and incomplete high schools and growth of high schools was characteristic. Where on the central estate there was a high school, there the economy economically always was stronger.

The transportation network in system of infrastructure and between-town servicing is basic, the existing disproportions in servicing of the population in many respects are connected with development of passenger transport. So, in 1989 density of highways public in the area made 47,9 km on 1000 sq.km of the territory, in 2010 this indicator grew twice (110 km / 1000 sq.km), but in general across Russia the Kurgan region takes only the 42nd place (www.kurganstat.gks.ru, date of access 20.04.2016).

For 1989 the absolute scope of all SNP bus traffic was characteristic that allowed the territory of area to be "permeable" for all inhabitants, the available to implementation serving activities. In total SNP of area were connected by bus traffic to regional centers, railway stations, the regional center.

We calculated coefficients of security with buses (Koa – the relation of number of flights in days to SNP number, the indicator of level of transport security in the area) and compared to data of 1989. Calculations show that in 1989 Koa from 1,3 to 3,1 (Zavyalova O. G., 1990)

changed. In 2013 this coefficient (Koa) even falls short of unit (0,16-0,4) (Battellino, H., 2009; Currie, G., 2010; Gabdrakhmanov, N.K., Rubtsov, V.A., 2014).

Thus, the level of "public" transport security of peasants in 20 years decreased in 5-11raz! But the park of individual cars grew.

Thus, in the 90th years there was a considerable degradation of objects of services industry and reducing the service level. So, complex places of acceptance of consumer services were liquidated, the number of preschool institutions, schools, medical and obstetrical centers, clubs was reduced, transport servicing considerably worsened. The situation is complicated also by catastrophically low income of the population. All this determines outflow of the population from the rural zone, results the "de-population" territories and further reducing network of objects of services industry (restructuring of schools, medical and obstetrical centers etc.), "the vicious circle of poverty" is created.

One of territorial aspects of optimization of system of resettlement remaining urgent and in the 21st century is a problem of enlargement of rural settlements. S. A. Kovalyov, one of founders of geography WITH, considered this process necessary a condition for creation in each rural settlement of a complex of well equipped SO organizations providing versatile cultural and community servicing of the population.

CONCLUSIONS

The analysis of territorial transformation of resettlement and services industry in the 20th century and the beginning of the 21st century has allowed to allocate the main trends (table 1).

Table 1
TERRITORIAL TRENDS OF TRANSFORMATION OF SYSTEM OF RURAL RESETTLEMENT AND SERVICE OF THE KURGAN REGION

80th years of the 20th century.	The 90th years of the 20th century – zero of the 21st century.
Territorial concentration of country people in regional centers and large villages	Exhaustion of demographic capacity of the area
Degeneration of a network of settlements, especially on the periphery	Further degradation of network and population of settlements with delay of rates at a boundary of the 20-21st centuries (-36) SNP
Considerable reduction from 1970 to 1989 (-91), mainly, networks of small SNP with removal them from regional centers	Loss of dynamic and partially structural stability of resettlement, transition of average SNP to small
Education the between-town of the centers of service in large and average SNP	Formation of a vicious circle of poverty
Good transport permeability of the territory and active development between-town of communications	The arising suburbanization

Assessment of activity of peasants by means of sociological methods of poll allowed to specify a quality evaluation of their life and to compare to statistical data especially as we had data of the budget examination conducted in the 80th of the last century. So, the greatest specific weight in the frequency of visits, it agrees to the sociological polls of time budgets of peasants of the Kurgan region held by us in 1989 and 2011, it is the share of shops and post offices (Zavyalova O. G., 1990).

In 1989 in the Kurgan region 6 types of service centers on completeness of set of services in this or that SNP were allocated. Availability in the most developed types of service centers was a condition of selection of SNP: schools (incomplete averages or averages) as major village-forming and village-stabilizing factor, and also shops, FARs, post offices, clubs, complex of consumer services. Such developed centers 403 were allocated. The centers of the average level with 3-4 services – 400. The "lowest" service centers with 1-2 services – 161. Respectively, inhabitants 853 SNP had to address in a varying degree to the "developed" service centers of municipalities of administrations of village councils (Menshchikova L. V., 2013).

Process of "compression" of rural space of the region, including, services industries, occurred at the turn of the century, demonstrates that the most full range of its objects remains only in large, "mature" settlements which can become clusterization cores SR. Now in the rural zone the most full range of the entities of services industry is concentrated only in separate points – the centers of municipalities.

Local systems of resettlement – base of the territorial organization of a social infrastructure in the village. They by determination have central position and the developed between-town (intrasystem) communications and the developed "high-quality" hierarchy. Earlier each system of resettlement had "the" services industry, now this rule "does not work". Reducing network of settlements, on the one hand, facilitates a task of forming of systems of servicing, with another, complicates it since there is a sharp reducing local systems of resettlement.

"Negative" transformation of services industry of the population and transition to shower financing (educations, medicine) puts it on the first place of a problem of reorganization of these systems. Local systems of resettlement need to be united, and it requires careful identification of already developed agglomerated areas and the SO systems. We suggest to develop for social and economic optimization and effective development of the rural zone, on the basis of a spatial integrated approach, the perspective territorial scheme of forming of local clusters of services industry of a rural population (LKSO).

Regional (local) cluster of services industry – it is system of the entities, interconnected, significant and attractive for the population of a certain territory, WITH.

It is natural that the large and small cities will belong to regional clusters to them. Here I was there was the widest range of the entities of service trade. Other large centers of resettlement (for example, SNP the St. 700 people) can become local – local clusters WITH.

Under **local clusters of services industry** we understand concentration of the entities of services industry of district and settlement type creating the types of service intended for inhabitants of a certain territory. Regional centers and rural settlements concern to them.

We consider the main sign of allocation of the local clusters of services industry (LCSI) availability in SNP of high school numbering pupils from 80 to 100 people (according to the federal standard rate for high schools – 100 people, regional – 80 people). Due to the closing or reorganization of rural schools, availability of high school with a large number of pupils serves as the guarantor of the fact that in the nearest future most of inhabitants "will be late" in the settlement, at least for training of children (Nicholl, J., West, J., Goodacre, S., Turner, J., 2007).

The hierarchy of LKSO was determined by us based on two parameters: population (consumers of services) and quantity of SNP which get to servicing"orbit". LKSO, by determination, have central position and developed between-town (intrasystem communications) – the developed "high-quality hierarchy".

According to these principles, all LKSO are broken into 3 types:

1) Order LKSO I – are provided all main types of servicing;

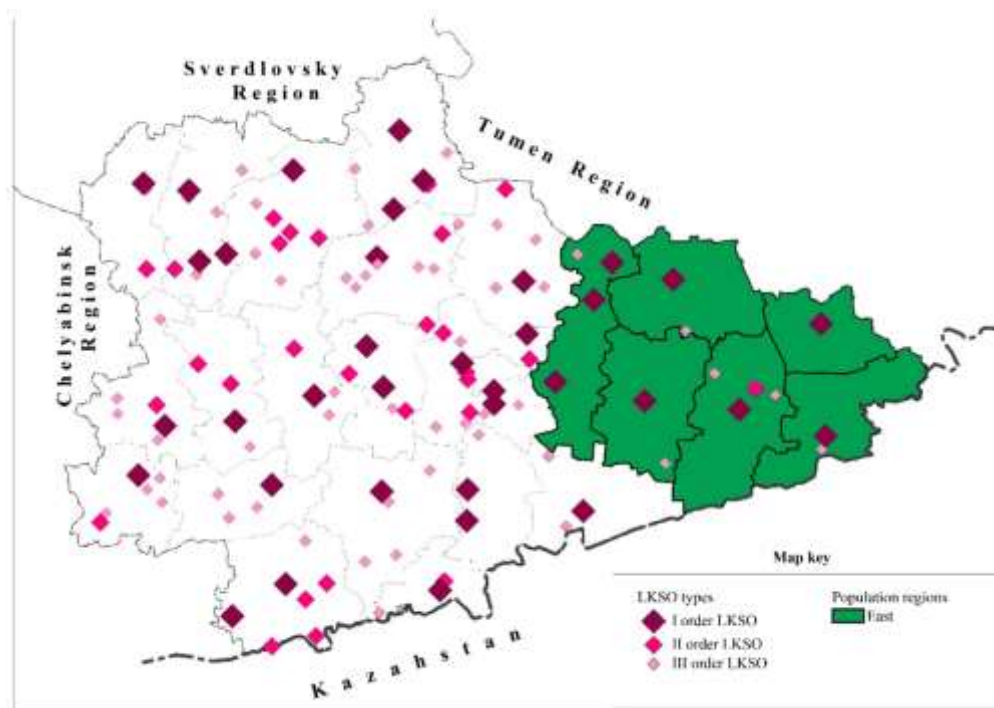
2) Order LKSO II – main types of servicing (the exception constitutes lack of the 1st – 2 incidental services);

3) LKSO III of an order satisfy daily types of service (shops, post offices).

According to cards of resettlement and availability of high schools, we allocated 121 LKSO, their number was distributed from the 1st (Chastoozersky district) to 14 (Ketovsky). The greatest number of LKSO is allocated in the Western and Northwest area of resettlement 61. In the Southern area of resettlement 31, in East area 15, in Central 14. And, in East area of resettlement (on 6 administrative areas of area) their (LKSO) only 15 (Menshchikova L. V., 2013).

Thus, East zone of area not only is least populated, but also is least developed in the territorial organization of services industry (Gabdrakhmanov, N.K., Rubtzov, V.A., 2014). So, in Vargashinsky and Makushinsky districts of East type of resettlement it is allocated on 4 LKSO, in Chastoozerskom – one, in Lebyazhyevsky, Mokrousovsky, Petukhovsky – on two. In genitive of Vargasha, the village of Vekhnesuyerskoye, village of Mostovskom, village of Mokrousovo, genitive. Swan, Mr. Makushino, the villages of Chastoozerye, Mr. Petukhovo are provided all objects of services industry - it is order LKSO I, in the village of Obutkovskoye (Makushinsky district) in addition to daily there are entities of a public catering – cafe, thus, it is order LKSO II, in the villages of Shastovo, Travnoye, Lopatki, Morshikha, Pionerskoye, Oktyabrskoye – there are neither dining rooms, nor subjects to consumer services, only shops, post offices, respectively, it is order LKSO III. The full range of types of servicing is provided only to 8 LKSO, and, 6 of them – regional centers, even not all types of service (figure 2) are provided to LKSO.

Figure 2
LOCAL CLUSTERS OF SERVICES INDUSTRY



SUMMARY

Thus, using this scheme, databases on a population and SO network developed by us, it is necessary to carry out the further social and economic calculations proving placement of objects WITH in specific LKSO of the rural zone of the Kurgan region. Besides, need of development and regional social standards for the sphere of provision of basic social set of services sharply ripened. The important direction of sustainable development of the region is also self-organization and development of a private initiative of the population in provision of services, it will allow to resolve partially issues of employment of the population and to develop other (not agrarian) types of activity.

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THE INTENSIFICATION OF THE STUDY OF ECONOMIC DISCIPLINES IN THE CONTEXT OF STRENGTHENING THE INFLUENCE OF EDUCATION ON THE SOCIAL AND ECONOMIC DEVELOPMENT OF THE REGION

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ABSTRACT

The transition to the information society, to the economy based on knowledge, makes new demands for work abilities of the individual, and therefore, issues different challenges in the sphere of education, employment of the rising generation. New specific requirements for the level of knowledge and skills are generated by the educational component. In modern conditions of the development of society characterized by the use of modern information technologies, the introduction of innovations in different sectors of the economy, the quality of human capital is a determining factor of economic growth. For this purpose, it is important for the employee, regardless of specialization and activity profile, to possess certain competencies, knowledge and skills, including ones in the economic sphere. The employers are interested in the specialists who are able within cooperation with market interaction to effectively collaborate, commercialize new technical ideas, creating new standards of consumption. The formation of the education market taking place, the preparation and adoption of adequate market system of economic management of solutions, including the field of higher education, also require the scientific and methodological definition in the context of strengthening the influence of education on the economic and social development. To analyze the problems stated in the article, the method of scientific abstraction, the statistical methods for economic and comparative analysis were used.

Keywords: *education, educational services, economic disciplines, economic and social development, economic growth, the Kazan Federal University, the Republic of Tatarstan.*

INTRODUCTION

The development of the modern economy, the economy of knowledge based on innovation techniques, is characterized by the fact that in economies of the developed countries an increasing share of GDP growth provide various types of intellectual activity, and intellectual capital acquires an important role in the national capital. Therefore, the investments into education and the development of educational system can have a significant impact on the growth and development of the modern Russian economy, gaining in an increasing importance in them. At the same time new technologies, high-tech industry are beginning to play a significant

role in increasing social capital and added cost. A prominent role here is given to the system of education, its modernization and development, since the growth of specialists with higher education is mostly typical for economically developed countries, which is reflected in the increase in the proportion of intangible product in the structure of the GDP (Chigarin A.Y., 2015).

The works covering the issues of studying economic disciplines in the context of the impact of education on social and economic development of the region are thinly represented in the scientific literature. The topic touched upon has an actual character, and the conclusions drawn in the article can be considered by educational institutions, public authorities, public and political organizations in making management decision in education.

MATERIALS AND METHODS

The competitiveness of the modern economy is largely determined by the foundation of knowledge that is laid by modern system of education. It determines the future leaders and outsiders of the world economic development in the conditions of globalization of the world economy, the process of change of technological structure. This relationship was the basis of the theory of human capital, which links the economic expansion and education of the population both at the level of country and at the level of individuals. Among a variety of definitions of human capital we will distinguish the following. S. Fisher defines human capital: "Human capital is a measure of the ability embodied in the person to generate income. Human capital includes innate abilities and talents, as well as education and acquired skills" (Fisher S., Dornbush R., Shmalenzi R., 2002). According to I. G. Shestakova, "in the present-day globalized world, thanks to universal schooling and universal testing, we find ourselves in the situation where all the precious human resources are extracted to the surface, to the general overview, choice and plundering. It is not only about the brain drain, but the genofond drain on the whole. Under these circumstances, Russia should think about the most important resource - human capital. If earlier Russia was represented by peasants, among whom there were hidden persons of natural gifts - human capital, at the present time there is almost no resources" (Shestakova I. G., 2014). These approaches help to understand and develop methodological approaches to assessment of the role of education in the socio-economic development of the country and the region.

In literature, one can distinguish different approaches to assessing the role of education in economic and social life, management of knowledge for attaining the goals. It is recommended to use a problem approach based on the correlation of the performance with the identified problems in the system of knowledge management (Pastukhov A. L., 2011). We also propose audit and valuation of intangible assets as the system of education in general, and the university complex, the educational institution, including audit and evaluation of knowledge and human capital (Chigarin A.Y., 2015).

Education impact evaluation on the social and economic life of the region is estimated through the activities of university in the region from the position of resource consumptions and the effects on the output (Pellenbarg P. H., 2005). The economic effects of university are identified according to the following groups: the gains of university, the impact on the labor market, the creation of a new business, the commercialization of knowledge. However, it is believed that the extent of impact of education on the social and economic development of the

region, as well as ensuring university success in the educational market is the presence of information of what the fates of graduates are (Efendiyev A. G., Balabanova E. S., 2010).

From our point of view reasonably sufficient are the proposed two approaches to assessing the contribution of education to the socio-economic development of the Russian regions: on the basis of the wage premium for the level of education and on the basis of wages differentiated according to employee age (Belyakov S.A., 2015). In other words, the higher regional average wages of workers with secondary (full) education, the higher the potential contribution of education to the economic and social development of the region. In addition, according to the researchers, the proportion of graduates entering the labor market is higher than that of graduates of institutions of primary and secondary professional education. University graduates demonstrate the highest economic activity and employment rate (Belyakov S.A., 2015). Also there is a known approach according to which the assessment of the effectiveness of general education is carried out in the context of advance of wages of teachers (E. M. Avraamova, S. A. Belyakov, T. L. Klyachko, D. M. Loginov, E. A. Polushkina, G. S. Tokareva., 2015).

Interesting is also an international aspect of this problem. So in the BRICS countries, according to the HSE research the reforms carried out in the field of education have led to a significant increase in population coverage according to the levels of education. Especially the situation has altered very much in India and Brazil, compared with 1999. By the population coverage, the Russian Federation is a leader and, therefore, can share education experiences during the cooperation of the BRICS countries. It is important the program for improvement of education of the population to take place simultaneously with solving the problems of poverty described above. The low rates for high and average level of education in India are connected with the fact that education is still not available to the poorest people who live mainly in rural areas. Despite the lack of accurate data for Brazil, the population coverage rates for it is higher a little than the Indian ones (Kulpina V. P., Morozkina A. K., Pavlyushina V. A., Shuvayeva D. V., 2015).

Equally important is the academic mobility of students and teachers. The highest proportion of Chinese students is in universities of other BRICS countries. This is determined, on the one hand, by the fact that the BRICS countries have a little-developed system of education of students in foreign universities in principle. There is only a small number of government programs that help to increase the stream of students to study abroad. For a substantial intensification of cooperation it is necessary to create a unified information platform through which the students can familiarize themselves with the possibilities existing for them. In this case, all information should be presented in the language they can understand (for example, English). Currently, there is no a unified database of the programs, and the information that can be found in the information sources of the Group is not always available in English and / or other languages.

RESULTS

The Republic of Tatarstan is one of the leaders of the market of educational services, including in the field of higher professional education. The document adopted at the legislative level “Strategy of Socio-Economic Development of the Republic of Tatarstan till 2030”, besides the priorities singled out on the basis of generalization of the world experience of successful regions, specifies that:

- people are educated, businesslike, active, talented, creative;

– the system of education is on the world level (http://tatarstan2030.ru/UserFiles/Files/Strategy_RT_1205.pdf).

It is in Kazan, where on the basis of a number of higher educational institutions, the Kazan (Volga) Federal University has been founded. Today, University combines more than 9000 employees and 44,000 students. The university budget in 2015 accounted for almost 12 billion rubles. As of January 1, 2016 the average pay of the faculty of the whole university, namely, this figure has been today monitored to assess the achievement of certain social dimensions, was 53762 rubles with growth relative to 2014 by 4.6%. It is equal to 56858 rubles in the head unit. The average salary for the entire university staff accounted for 39642 rubles with an increase in relation to 2014 by 9%. The average salary of the NDP of the Kazan Federal University (for all types of financial support) to the average salary on the economy of the Republic of Tatarstan, as of January 1, 2016 was 193%, although it was prescribed to bring it up only to 133%. In this connection, “a breakthrough of the year” can be considered as a hit of university, and it should be noted, for the first time, to the rating of Times Higher Education. In the final table the KFU has taken up a position within the range of 301-350. Prior to that, the University of Kazan was not included even in the top of 400 best universities, and according to the extended, unofficial version of this ranking it took only the 706th place (the 12th place among the Russian universities) in 2014. In 2015, the Kazan Federal University, first came also in the top universities of the BRICS countries and the countries with expanding economies according to the version of the aforementioned Times Higher Education and took the 31st position in it (Gafurov I. R., 2016).

Economic disciplines, the study of which is fixed by the state educational standards, have a great potential for the formation of both professional and communication skills, which allows to impart the students not only knowledge but also provide effective professional communication, teamwork skills. It is promoted also by the possibility of using in the course of teaching a wide range of active and interactive teaching methods, modern information and communication technologies – the method projects, the case method, the method of system analysis and others. The traditional educational technologies - game, information and communication learning technologies in small groups allow to simulate real conditions of professional work in the conditions of market competition environment.

In contrast to the specific (individual, special and private) economies, the political economy is intended to systematically reflect the economic structure of the modern world, which, in turn, is influenced by the natural environment, non-economic public factors - political, legal, social, religious, etc. Since at this stage of development the modern society acquires ever more distinctly the features of the information one, the basis becomes an intelligent, creative worker who possesses skills and information - the main tools to efficiently and effectively work with an increasingly complex and diverse information.

Economic theory together with the general university disciplines is an educational core being common to all educational programs included into this area. These disciplines which are called “general professional disciplines” or “direction disciplines”. They form an invariant core of the direction, the invariant part of the curriculum, regardless of any specialty. Not having acquired consistent knowledge of general university disciplines that are context quality base (tools) for further training and work, it is impossible to fully master the special disciplines and become a specialist possessing the skills needed in the transition to the information society.

A special feature of the course of economic theory is that it is based on the achievements of economic science and practice of the world civilization, it made an attempt to bring the teaching

to the world standards. The importance is given to the study of the categories, laws, forms and methods representing the universal values, among which the problem of the market and the market mechanism is in the first place. Teaching of the subject “Economic theory” is based on the principles of non-standard approach to the presentation of its main outlines. Originality consists not only in the methods of teaching of the very course, teaching methods (conversation, lecture, role play, discussion, seminars, etc.), but also in the principles of construction of modular training: - the principle of designated purpose of information material; - the principle of combination of comprehensive, integrated and special didactic purposes; - the principle of realization of feedback and other principles.

Great importance is attached to teaching economic disciplines at the Federal University, including to the students of non-economic specialties. Moreover, the subjects related to business education, “Economy”, “Economic theory”, “Microeconomics”, “Macroeconomics” have been introduced since September 2014 in virtually all natural-scientific unit of the university. Many potential employers, including the ones in the face of state agencies, state the need for additional competencies. On the site of the University there was held a conference of the representatives of the insurance business in Russia. The leader of the Russian State Insurance suggested that the insurance business today requires not only financial graduates, but also chemists and builders, and industrial engineers. Since they are needed for the examination of the damage, and it is important these professionals to work in the system of insurance.

SUMMARY

The main areas of modernization of education in the context of the increasing role and influence of the educational process on the socio-economic development include the following:

- openness of educational space, which implies a new approach to the definition of objectives and outcomes of education, to the quality maintenance of acquiring competences;
- strengthening prognostic orientation of education, combining educational activities with research ones at all stages of education;
- providing practical orientation of the process of studying economic disciplines with a view to a more complex realization of the acquired knowledge and skills, professional competences by the students.

In the modern world, almost all countries have adopted the principles of market-based economic development, so the market economy as the objective reality is the most important subject of economic analysis. At the same time a wealth of historical experience in the application of certain principles of organization of the economy has been accumulated. In this regard, economic theory studies the different in form and character variants of economic development, reveals the succession of different economic schools and methodological approaches in the unity of the historical and logical analysis.

CONCLUSION

With the current diversity of approaches to assessing the contribution of education to the socio-economic development of the region, one can say that at the present stage of development of society, in globalization of the economy, the multiplier effect of the impact of education on the whole economy intensifies. In this connection, it is essential to make fuller use of the potential inherent in economic disciplines, the studying of which allows to give the students the necessary professional competences, irrespective of the direction of training. A more complete

realization of the potential of economic disciplines leads certainly to a higher assessment of the contribution of education to the socio-economic development of the region. Also in scientific research and in teaching of economics, from our point of view, it is important to pay more attention to the forms of theoretical reflection of national originality of Russia, with the account taken for the characteristics of its individual subjects. An indispensable condition for effective realization of the educational potential of economic disciplines is, to our way of thinking, a systematic approach to construction (modeling) of its purpose, objectives, structure, content and forms of organization with consideration for specific economic development.

CONFLICT OF INTERESTS

The author confirms that the data do not contain any conflict of interests.

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EVALUATION OF FOOD SECURITY IN A REGION ON THE BASIS OF PERFORMANCE IN THE FIELD OF PRODUCTION (FOR EXAMPLE, THE VOLGA FEDERAL DISTRICT)

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ABSTRACT

Food security in a region is not only an important area of research, but also of public policy. It is a powerful geopolitical factor and the main instrument for achieving sustainable socio-economic processes in a region. The authors proposed analysis technique which allows comprehensively to assess the level of food security in a region as a whole and its constituent subjects of the Russian Federation, to trace the dynamics of change for a number of periods relatively with similar indicators in the country, to identify strengths and weaknesses of a region and its subjects in order to improve management efficiency .

Keywords: *food security, food availability, food security in the region.*

INTRODUCTION

The problem of food security in a region is integral, since it involves key moments of the agro-industrial and economic modernization, the real state and development trends of agricultural and food products production, the domestic food market, changes in the degree of its dependence on imports, and solvency of the population in different regions of Russia (Battalova A.R, Abdulin I.A., 2014).

The object of research is the Volga Federal District. The food security assessment indicators system includes three main groups: indicators in the field of production, consumption, and organizational management activity. In this paper we consider the first group of indicators. The information base for the study were the statistics for 2010-2014.

RESEARCH METHODS

The research methodology is presented by descriptive methods of analysis and synthesis, logical methods of information processing, methods of comparative analysis, and heuristic methods (Battalova A.R., Kundakchyan R.M., 2015). The study used a horizontal, vertical, graphic and ratio analysis, as well as expert assessment methods.

RESULTS

We proposed the technique of in-depth stage-by-stage analysis of food security in the region (by subjects) based on the following production parameters:

1. Main agricultural indicators: agricultural production in actual prices, the share of agricultural production of the subject in the Volga Federal District's volume in actual prices, the dynamics of agricultural production in actual prices (to the previous year);
2. Indices of agricultural production (in comparable prices, % to previous year) for agricultural production, crop and livestock production;
3. Gross harvest and yields of crops: corn, potatoes, sugar beets, sunflower seeds, vegetables;
4. The number of cattle, pigs, sheep and goats (end of a year);
5. The main indicators of livestock production: the production of livestock and poultry for slaughter (slaughter weight), milk production, milk yield per 1 cow in agricultural enterprises, egg production, average egg production of laying hens in the agricultural enterprises, honey production;
6. Food production: meat and edible offals from meat of animals for slaughter and poultry, sausages, fish and products from processed and preserved fish, unrefined vegetable oils, whole-milk production (in terms of milk), butter and oil pastes, meal from grain, vegetable and other crops, and mixtures thereof, cereal, bread and bakery products, sugar, mineral and carbonated unsweetened and unflavored water;
7. The food resource balance: potatoes, milk and dairy products, meat and meat products, vegetables, melons and gourds, fruits and berries, eggs and egg products;

Food security indicators in the field of production is characterized by providing the population with the main sources of food which include the products of agriculture, forestry, fishing, hunting, as well as the food industry (Hanushek E.A., 2000). The decisive role in ensuring food security belongs to an agriculture, fisheries and the food industry.

Due to its geographical location, the Volga Federal District does not specialize in fishing and fish farming, and therefore has a low level of performance in the fishery. In contrast to this, the region is one of the leaders in agriculture. After analyzing the main indicators of agriculture in the Volga Federal District for 2010-2014, the following conclusions were made (Safiullina A.M., Ivanov M.E., Ramazanov A.V., 2014).

During the analyzed period, the amount of agricultural products expressed in actual prices has increased almost in 2 times both across the Volga Federal District, and with a breakdown to its subjects. The main manufacturers of agricultural products in the region is the Republic of Tatarstan (17-19%), the Republic of Bashkortostan (13-15%), and the Saratov region (11-12%). The largest increase was observed in 2011 (23-69%), in 2012-2013 figures of some subjects felt slightly. 2014 has shown a steady growth of agricultural production in all subjects (4-27%). At the end of 2014 the Volga Federal District took 2nd place in Russia in terms of agricultural production (Garifova L.F., Kundakchyan R.M. Pratchenko O.V., 2014).

An objective assessment of agricultural production dynamics can be given by analyzing its values in constant prices what excludes the influence of the price factor on the results of the study. Data of this analysis show that the sharp increase in the indicator value in 2011 was due to the fact that in 2010 there was a significant drop as a result of natural climatic conditions that had a negative effect on crop production and, as a consequence, the whole of agriculture. The year 2011 was favorable in terms of weather conditions what will inevitably influence on the 2-3-fold

growth of crop production volumes in most regions (Safiullin L.N., Ismagilova G.N., Safiullin N.Z., Bagautdinova N.G., 2012).

A comparative analysis of the dynamics of agricultural production indicators expressed in actual and constant prices showed that in average the prices of agricultural products in 2011 decreased compared to the 2010 for the Volga Federal District, and they grow since 2012.

A study of agricultural products broken down to crop and livestock farming shows that the dynamics of livestock farming in the region is relatively stable, and the same cannot be said of the crop production, because this branch of agriculture directly depends on climatic conditions which are not amenable to control (Gotsulyak I. F., Ignatjeva O. A., 2015). Only in the last few years in our country we have begun to actively introduce new technical tools and irrigation systems as a method of dealing with droughts which are long-standing in recent years. As a result, in 2014, it was gained an increase in agricultural production volume both in the whole of the Volga Federal District, and in the majority of subjects of the Russian Federation included in its composition.

Dimensions of cropland acreage in the region for the 2010-2014 have not been significantly changed. Of the greatest interest are such crop farming indicators as gross yield and crop yields which analysis gave the following results.

The Volga Federal District is the third largest in Russia by the grain harvest giving under only to South and Central Federal Districts. Leaders in the gross harvest of grain are the Republic of Tatarstan (2011-2012) and Saratov region (2010, 2013-2014.) (Ignateva O. A., Abdullin I. I., 2015). The Republic of Bashkortostan, Orenburg and Samara regions also have high rates. By the yield of grain and leguminous crops we can distinguish the Republic of Mordovia (leader in 2010), Tatarstan (leader in 2011-2012 by a wide margin from other subjects), the Penza region (leader 2013-2014.). Chuvash Republic, Kirov, Nizhny Novgorod and Ulyanovsk regions have good performance in some years. The lowest yield of grain and leguminous crops is observed in the Nizhny Novgorod region. Mean yield indexes in the Volga Federal District for 5 years under analysis are inferior to average figures at 18-29%, upon that, the dynamics in the region with respect to the average value for the country is negative (Larionova N.I., Varlamova Yu.A., 2013).

Potatoes are one of the most popular types of crop production, in terms of the gross harvest of potato Volga Federal District is the second giving under only to the Central Federal District (CFD). The maximum yield of vegetables in the period under analysis is observed in the Saratov region, high rates are in Nizhny Novgorod and Samara regions, the Republic of Bashkortostan and Tatarstan. Minimum indicators of gross yield and crop yield of vegetables are in the Republic of Mordovia, the low value of yield are in Ulyanovsk and Kirov regions. However, despite this, over the period 2010-2013 the highest yield of vegetables is in the Kirov region, and only in 2014 it was a bit lost to the Republic of Mari El. In general, in the Volga Federal District, the crop yield of vegetables is much higher than the average for Russia.

Leaders in the amount of sugar beet gathering in the Volga Federal District are the Republic of Tatarstan (2010, 2013-2014) and the Penza region (2011-2012). Good results are observed in the Republic of Bashkortostan. Sugar beet is not cultivated in the Republic of Mari El, in the Perm Territory and in Kirov region. Only in 2011, the Udmurtian Republic has a gross product yield in the amount of 0.6 thousand tons. The low level of the indicator is also in Orenburg and Samara regions (Kundakchyan R.M., Zulfakarova L.F., 2014). In general, the Volga Federal District is the third largest in the country for the gathering of sugar beet. Yield indexes for the region during the analyzed period are significantly below the average for the

country. Upon that, high yield were demonstrated in the Republic of Mordovia, Saratov region (in 2013), a good performance for some years were in the Republic of Tatarstan, the Penza region, the low level of productivity is in the Orenburg and Samara regions, and the Republic of Bashkortostan.

The Volga Federal District ranks first in Russia by gross harvest of sunflower, but its productivity in the region is significantly lower than the national average level what indicates the availability of reserves for more effective use of the relevant acreage. About 40% of the total gross collection of sunflower is grown in the Saratov region, Orenburg and Samara regions also have high rates; the contribution of the Republic of Bashkortostan, the Ulyanovsk and Penza regions is approximately 7% of the total collection. In other subjects of the Federation this culture has not grown or its volumes are insignificant.

In the next stage of the analysis, it is advisable to assess the status and dynamics of indicators of livestock in the Volga Federal District for the analyzed period.

By cattle stock, in 2014 the Volga Federal District saved its leading position among Russian regions, despite the fact that the rates of its drawdown in the Volga Federal District are ahead of that of the country, as a result of what the share of cattle stock in the Volga Federal District in the total number for the Russian Federation decreases. Analysis on the regional level shows that 2 subjects (the Republic of Bashkortostan and the Republic of Tatarstan) take the first and second place by this indicator at the national level, respectively. The Orenburg region has achieved strong performance, and minimum values are in the Republic of Mari El.

The Volga Federal District gives under the CFD by the number of pigs, while the Republic of Tatarstan is a leader in this indicator within the region significantly outperforming other entities. Low values of the indicator are in the Nizhny Novgorod and Ulyanovsk regions. By sheep and goats stock, the Volga Federal District is only in fourth place in the country, the maximum value of the indicator in the region is in the Republic of Bashkortostan, and high indicators are also in the Republic of Tatarstan. In the Republic of Mordovia and in the Kirov region there are low enough values of sheep and goats stock. Dynamics of pigs, and sheep and goats stock is similar to the dynamics of cattle stock.

At the same time, the dynamics of livestock and poultry production for slaughter in the region is positive, however, the index growth rate is significantly below the rate of growth in the Russian Federation. As a result, the livestock and poultry production for slaughter in the Volga Federal District decreases with respect to values of the index in the country. During the period under analysis the Volga Federal District consistently ranks second among Russian regions in terms of this indicator. Milk production on which the Volga Federal District is also ranked second in the country, falls roughly at the same rate as in the whole country. The Republics of Bashkortostan and Tatarstan compete to be leaders in the sector. Saratov, Orenburg region and Udmurtia have good results also. However, if in these areas milk production dynamics is negative, the Udmurtia steadily increases rate of its production, in addition, the republic has high rates of milk yield per 1 cow, being behind only the Kirov region. It should be noted that in 5 years milk production has increased in all regions of Russia being a part of the Volga Federal District, and by 2014 in most of them it reached a high enough level that indicates an increase in the efficiency of milk production in the region. With increasing milk yield per 1 cow, milk production is reduced.

The Volga Federal District takes first place in egg production (25-27%) in Russia. Leaders in the region for this indicator are the Republic of Mordovia and the Nizhny Novgorod region. The Republics of Bashkortostan and Tatarstan, the Orenburg region, Udmurtia, the Perm

Territory and the Saratov region also have high rates. The smallest amount of egg production, as well as its effectiveness, are in the Samara region. The Udmurtian Republic is the region with the highest rate of efficiency throughout the analyzed period. Dynamics of egg production in the region as well as in the country, is quite stable. Only in 2014 its slight decrease in the Volga Federal District was observed with a slight increase in the indicator for Russia.

High growth rates, both in the Russian Federation, and in the Volga Federal District, are observed in the production of honey. The first place by this index is also occupied by the Volga Federal District, the Republics of Bashkortostan and Tatarstan occupy, respectively, the first and second places in the country. In the majority of subjects for 5 years the honey production has increased by 2-5 times. The minimum volume of production is in the Republic of Mordovia.

The Volga Federal District is among the top three in terms of the food industry indicators, namely, in the production of staple foods. The region takes first place in the production of butter and butter oil pastes (32-36%); second place in the production of meat and by-products (15-20%), sausages (18-21%), dairy products (22-24%), bread and bakery products (20-21%); third place in the production of unrefined vegetable oils (16-20%), flour (17-18%), sugar (9-16%), mineral and carbonated water (18-19%). At the same time, by production of cereals, the Volga Federal District is only in the fourth position (10-12%), and by the production of fish and fish products only in sixth place (1.2-1.6%). In general, the trend of major food production is quite stable in the region, there are small positive and negative changes.

The most generalising indicator of food security is food resource balance which characterizes their availability and use. Additional indicators can be calculated on the basis of resources balance components: the self-sufficiency coefficient (formula (1)), the import share (including import) in the capacity of the domestic market, the share of private consumption in the capacity of the domestic market, the import (including foreign products) and exports (including abroad) ratio. At the same time the domestic market capacity is the sum of production and personal consumption and losses.

$$K_{\text{self-sufficiency}} = \text{Production} / \text{Domestic market capacity} \times 100\% \quad (1)$$

CONCLUSIONS

In general, in 2014 indicators of food security in the Volga Federal District were at a high level, most of the subjects included in its composition, are self-sufficient in terms of basic foodstuffs availability, with some exceptions. For example, the Perm region has a low level of self-sufficiency ratio for dairy products (70.25%), meat products (47.66%), vegetables, melons and gourds (74.43%), when the standard value is higher than 80%. The Penza region experiences difficulties with self-sufficiency in eggs (75.59%), the Ulyanovsk region has difficulties with vegetables, melons and gourds (75.37%), dairy products (75.76%), meat and meat products (54.32%). The Kirov region produces enough vegetables, melons and gourds (59.23%) and meat products (60.89%) for domestic consumption. Problems with self-sufficiency in dairy and meat products are also observed in the Nizhny Novgorod (71.13% and 39.61%) and Samara (53.51% and 51.81%) regions. At the same time in all the subjects that are parts of the Volga Federal District, except the Republic of Mari El, there is a low level of self-sufficiency in fruit and berries what is associated the most with natural and climatic conditions in the region, rather than with the efficiency of production activities. The strong performance in the Republic of Mari El is associated not with the high volume of domestic production, but with low level of personal

consumption as a result of the low purchasing power of the population (the low income per capita). In general, self-sufficiency in fruit and berries in the region is at the national average level. Potato production is at a high level in relation to the capacity of the domestic market in all the subjects.

DISCUSSIONS

Based on the analysis of the state and development of agriculture and food industry at the regional level with breakdown to the Russian Federation subjects which are parts of the Volga Federal District, we can generally conclude that the food security indicators are high, the Volga Federal District is a leader in many indicators, and the development rates are positive. Among the most developed entities, we can distinguish the Republic of Tatarstan and the Republic of Bashkortostan, a little behind are the Nizhny Novgorod, Samara and Orenburg regions. The worst performance in the region is in the Ulyanovsk region, the weak positions are also taken by the Saratov and Kirov regions, the Republic of Mari El, Mordovia, Chuvashia, and the Udmurt Republic.

RESUME

Food security is an integral component of the economic and national security of a state and the condition of its independence. Food security is an urgent problem both for countries with a low level of economic development, and for developed countries. The main indicator of food security is the level of meeting the physiological needs of the population in energy and nutrients to meet the requirements of a balanced human diet in the absence of harmful food substances what depends on the physical and economic access to food for different social groups.

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ASSESSMENT OF REGIONAL INVESTMENT ATTRACTIVENESS WITH THE USE OF GIS TECHNOLOGIES

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ABSTRACTS

This article discusses problems of development and application of special geographic information systems (GIS) which promote performing objective assessment of investment attractiveness of territories for potential investors. This GIS class helps carry out analysis and forecast various businesses development on the territory of certain region, city, and areas with optimal business climate.

Relevance of the matter is connected with absence of real investment attraction instruments which help to increase economic competitiveness of Russian regions. The purpose of the conducted research is to determine territorial difference in investment potentials of municipal and city districts of the Republic of Tatarstan and mechanisms of their increase. An object of the research is territory of the Republic of Tatarstan with its unique physiographic characteristics and economic and social situation. Traditional geographical methods which were used in research included cartographical (based on methodological framework of thematic and complex mapping and on achievements in geoinformation technologies area), comparative and descriptive, spatial analysis, statistical methods. The technique of integrated assessment of investment attractiveness of rural and urban districts of the Republic of Tatarstan with the use of geoinformation technologies is the main result of undertaken research. Creation of specialized geographic information system "The Investment Portal of the Republic of Tatarstan" which helps to make effective presentation of regional investment potential to investors is also the research effect.

Keywords: *investment, competitiveness, geographic information system, geoinformation technologies, investment map, electronic government, spatial analysis.*

INTRODUCTION

Modern information technologies are elaborated for searching, handling and distribution of big data volumes, creation and exploitation of various information systems containing data and knowledge bases. In the broadest sense, information system is a system which elements are information objects (texts, schedules, formulas, the websites, programs and other), and communications have information character. In more confined sense information system is the system intended for storage of information in specially organized forms, supplied with means for performing procedures of input, placement, handling, and searching information on users' requests. The major subsystems of modern information systems are data bases and expert systems, including knowledge bases for artificial intelligence.

In modern scientific literature a lot of geographical information system determinations are met. One of the most exact determinations notes GIS as the hardware and software system solving set of tasks on storage, display, updating and the analysis of spatial and attributive information on objects of the territory (Berliant A. M., 1997). So it is necessary to consider geographic information systems as special class of information systems with their global distributing and widespread effective usage.

Geospatial data represent information which identifies the geographic location and properties of the natural or artificially created objects, and also their borders on the earth. It is one more confirmation of the fact that GIS the modern tool in researches of social and economic geography representing the centralized database of spatial objects which gives opportunities of storage, the analysis and handling of any information connected with various object that strongly simplifies process of use, interpretation and the analysis of information.

GIS are widely used for solving problems of socio-economic analysis of regional and urban systems, and also adaptation opportunities of GIS technologies for realization of main functions of regional governance are quite substantial (Panasyuk, M.V., Pudovik, E.M., 2014).

Assessment of administrative and territorial units (ATU) competitiveness became one of the most important problems of their survival in modern conditions. It is especially important due to deepening globalization processes and inceptive transition of global society to post-industrial stage of its development (Gallyamova, D.K., Toumashev, A.R., Malaev, V.V., 2014). Assessment of investment potential of various Russian regions is the important tool to determine quality and efficiency of governance areas (Glebova, I.S., Rodnyansky, D.V., 2015). In conditions of post-industrial regional development the role of their competitive positions has considerably increased because they guide success in fighting for investments, innovations and high technologies (Enright M.I., 1993; Bagautdinova N.G., Galeeva G.M., Fazlieva E.P., Arzhantseva, N.V., 2014).

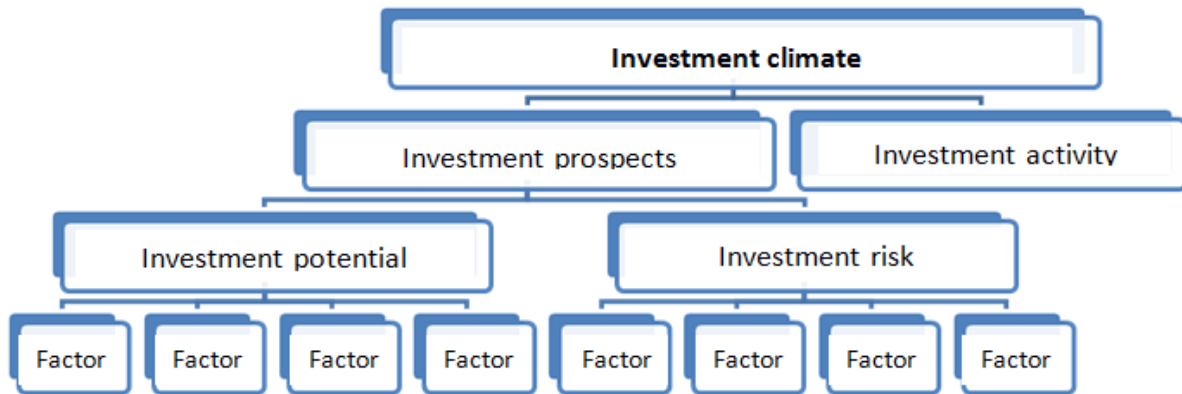
MATERIALS AND METHODS

The list of investments in the Republic of Tatarstan is extremely heterogeneous. Municipal districts significantly differ on the majority of socio-economic indices. Disproportions in developing regions testify to need of increase in their investment attractiveness for domestic and foreign investors. At the same time the investment policy on regional and municipal levels of governance which main purpose is to support development of territorial units, forms the basis for developing target programs and for supporting the most promising development projects. Now administrations of all regions and municipalities of the Russian Federation are heavily engaged in development and implementation of investment policy.

The most of economists has their own opinion on the sense of investment potential and investment attractiveness. In our opinion, the systematization of "investment potential", "investment attractiveness" and "investment climate" concepts is still necessary, because of abundance of various treatments and techniques for these terms definition.

In this context the definition and structuring of a concepts' set, including "investment climate", "investment attractiveness", enumerated by E. Sukhinova (Sukhinova E., 2004) (Figure 1), is of certain interest.

Figure 1
STRUCTURE OF INVESTMENT CLIMATE (SUKHINOVA E., 2004)



One of components of investment attractiveness is investment risk which interpretations are so various. The investment risk is almost indivisible element of any investment process and the technique directed to assessment of the investment climate, investment attractiveness as the risk is inevitable in case of any investment transactions.

One of the most important problems of regional investment policy is forming its favorable investment climate which creates prerequisites for the best use of the socioeconomic relations, appliances and scientific and technical updating of production resources through vigorous investing activities. The investment climate of the region creates at the investor own assessment of an investment object its investment attractiveness which is implemented in the practical actions which are reflected in category "investment activity". Thus, regional investment activity shows intensity of investing activities in the region. And investment attractiveness of the region is determined as a possibility of reliable and timely goal achievement of the investor based on economic results of activities of an investment object, in case of the favorable investment climate.

The lack of the majority of the existing techniques is that they are oriented to the analysis of various groups of factors and their principles of aggregating aren't fully proved. The basic moment of to determine the integrated indicator is calculation of weight of private indicators. How are set the weight of private indicators, the received result of assessment depends. Therefore, there is an opportunity to receive other results in assessment of investment attractiveness of the region according to the investor's wishes by adjusting shares of private indicators. It is especially important to pay attention to problem of correct calculation of the private indicators' weights in indication aggregate (Sukhinova E., 2004).

The context and purpose of this paper lead to concentration on geoinformation methods of regional governance. Authors elaborated the analytical method which promotes optimization of processes of regional governance. It has certain advantages among various methods of regional governance due to its ability to solve complex territorial problems effectively.

Development of this specific geoinformation method is caused by that role which geoinformation plays in governance process, and also distinct features of geographic information. A considerable part of information which is processed during regional governance'

operations characterizes its territorial nature and has, eventually, spatial binding that allows determining it as partially geographical.

This method is based on hypothesis that process of regional governance is a process of collection, transfer, conversion and use of geographical information. Separate stages of this process generally match stages of regional governance, i.e. their content is implementation of common management functions - the regional forecast, monitoring, the analysis of regional system, etc. Special geographical aspects of this method are shown, mainly, not in location of special stages, but in the interpretation of their content in geoinformation aspect and the analysis of the geoinformation flows that are inseparably linked with execution of governance functions.

Geographical or spatial data generation is primary connected with the organization of geographical information flows. Its essence is mainly determined by character of communications and relations between elementary geographical formations which are the reflection of more complex formations activity, conditions of their existence, relations between them, etc. (Panasyuk M. V., 2005).

Heterogeneity of investment attractiveness of territories is a consequence of their social and economic heterogeneity. For this reason it is necessary to discuss not only social and economic infrastructure of the region, but also spatial risks and geoinvestment policy of the region.

Thus, in our opinion, it is necessary to understand purposeful activities of public and municipal authority for attraction of external investments into various sectors of economy taking into account infrastructure, social and economic elements of space, using modern geoinformation technologies for forming "geoinvestment policy" of the region.

By means of a specially formulated technique based on geoinformation technologies using, the integrated assessment of investment attractiveness of municipalities of the Republic of Tatarstan was carried out. Integrated assessment of investment attractiveness used the set of indicators of regional social and economic development. It contains the complex of absolute and relative indicators. The indicators for assessment of investment attractiveness of the municipalities are chosen by the expertise.

Assessment of investment attractiveness was carried out by ranging municipal districts and city districts of the Republic of Tatarstan in decreasing order on values of integrated indices which are calculated as follows:

1. Numerical values of direct indicators (positive dynamics is determined by increase in a measure value) are transferred to norm-based values (X_{norm}^i):

$$X_{norm}^i = (X_i - X_{min}) / (X_{max} - X_{min}),$$

where:

X_i – value of an indicator of the municipal district (city district) of the Republic of Tatarstan;

X_{min} – the minimum value of an indicator among all municipal districts and the city districts of the Republic of Tatarstan (on group of municipalities);

X_{max} – the maximum value of an indicator among all municipal districts and the city districts of the Republic of Tatarstan (on group of municipalities).

2. Numerical values of the return indicators (positive dynamics is defined by reduction of value of an indicator) are transferred to norm-based values (X_{norm}):

$$X_{norm} = (X_i - X_{max}) / (X_{min} - X_{max}),$$

3. The sum of norm-based values of the indicators having absolute and relative values is calculated for each municipal district (the city district) of the Republic of Tatarstan.

$$S_{\text{norm}}^i = (X_{\text{norm}}^{\text{in}} + X_{\text{norm}}^{\text{im}})/2, \text{ where:}$$

$X_{\text{norm}}^{\text{in}}$ - norm-based absolute value of an indicator;

$X_{\text{norm}}^{\text{im}}$ - norm-based relative value of an indicator;

4. Norm-based indicators without absolute values with the norm-based indicators having absolute and relative values are summarized (S_{norm}^i):

$$Y_{\text{norm}}^i = \sum X_{\text{norm}}^{\text{ib}} + \sum S_{\text{norm}}^i, \text{ where:}$$

$X_{\text{norm}}^{\text{ib}}$ - norm-based indicator without absolute value;

S_{norm}^i - sum of norm-based values of absolute and relative measures;

5. The summary index is defined (I_i):

$$I_i = Y_{\text{norm}}^i / 9 \text{ (for municipal areas) } * 100\%,$$

$$I_i = Y_{\text{norm}}^i / 8 \text{ (for city districts) } * 100\%, \text{ where:}$$

Y_{norm}^i - sum of norm-based values of indicators.

It should be noted that in this technique the indicator weighing is based on equal weights to all indicators. For purposes of mentioned research weight of any indicator was evaluated to 0.5, because in expertise it was found that all indicators have equivalent influence on resultant estimates of investment attractiveness in municipal system of the Tatarstan, so weighting wasn't applied in fact.

Procedure of the summary index ranging results in giving the first place to municipal district (or city district) with the best (biggest) value of the index, and the last place is given to the municipal district (or city district) with the smallest value.

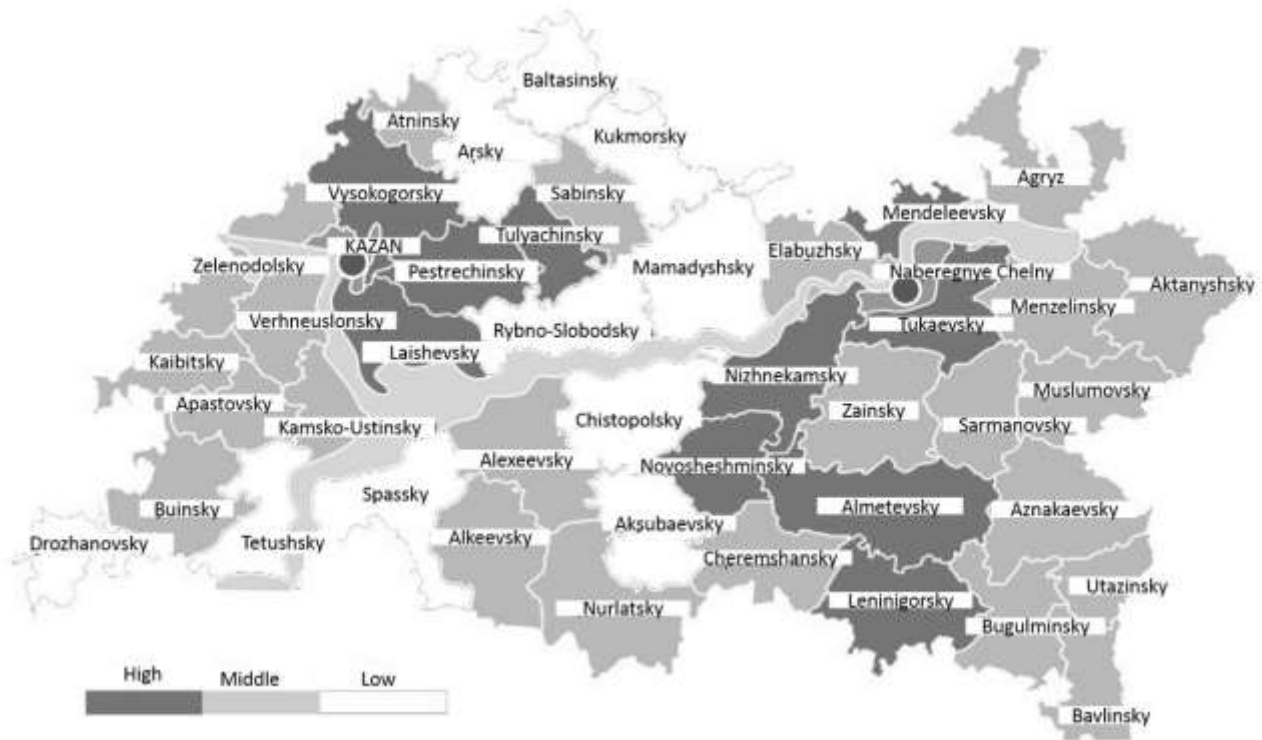
RESULTS

According to the method content, next step after indices of investment attractiveness calculations and their ranging includes the creation of thematic map which shows results of grouping of municipal and city districts of the Tatarstan region. Each group was connected with certain range of summary index values. The best division variant which showed the best classification quality estimation included three groups of municipal and city districts.

They are marked on map: with black color the highest value of summary index of investment attractiveness; with gray color middle level of investment attractiveness; with white color – low level of investment attractiveness.

The integrated assessment showed that the first group with the highest degree of investment attractiveness included the cities of Kazan, Naberezhnye Chelny, and also the Almetyevsk, Laishevsky, Nizhnekamsk, Tukayevsky, Novosheshminsky, Pestrechinsky, Tyulyachinsky, Mendeleevsky, Yelabuga municipal regions (Figure 2).

Figure 2
INTEGRATED ASSESSMENT OF INVESTMENT ATTRACTIVENESS OF MUNICIPAL REGIONS AND CITIES IN THE REPUBLIC OF TATARSTAN



The accuracy of calculated investment attractiveness of the mentioned cities and municipal regions of the Republic of Tatarstan is proved out by existence and location of republican development institutes. The Alabuga Special Economic Zone, the Innoplis Special Economic Zone, the Himgrad Technopolis, five industrial parks, nine science and technology parks, five investment and venture funds are the part of republican development institutes.

CONCLUSIONS

We came to the conclusion that problems of creation of information and analytical resources allowing potential investors objectively and quickly estimate the potential of future projects by providing analytical information on investment objects could be effectively solved by using described method and GIS possibilities. They allow obtaining the up-to-date data which are necessary for assessment of investment profitability and competitive environment, potential demand for investment project, long-range territorial development, and also information on technical capability of project implementation. As a research result we suggest specialized geographic information system "The Investment Portal of the Republic of Tatarstan" allowing effective presentation of investment potential of the region to investors.

Each part of the Investment portal should contain necessary information. When pressing each focus of interest (a project, a spatial object, etc.) a window in form of the table with short characteristic of investment project should appear. For example: platform type, name and form

of the organization (if a project is implemented or planned), address, a type of activity, category of lands, pattern of land ownership, the square, a property type, next routes, railroads, airport, project status, description of a social infrastructure, etc. The Portal should give the chance to perform search of perspective investment objects taking into account needs of potential investors according to the analysis of a competitive environment and demand of the market. Further developing the Investment Portal assumes creation capabilities for detailed analysis and identification of the optimal investments location.

Thus, geoinformation technologies (geographical information systems) open new opportunities and tools for assessment of investment attractiveness, allow to draw conclusions about investment opportunities of the region, to invite attention to certain territories which were not attractive from investment point of view earlier.

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METHODOLOGICAL APPROACHES TO FORECASTING THE MID-TERM CYCLES OF ECONOMIC SYSTEMS WITH THE PREDOMINANT TYPE OF ADMINISTRATIVE-COMMAND CONTROL

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ABSTRACT

The publication was prepared within the framework of a research project №15-32-01353 supported by the Russian Humanitarian Science Foundation.

As part of studying the theory of cyclical economic development, a macroeconomic forecasting of generations on the basis of knowledge of the nature and logic of the phase shifts within generating economic cycles is of considerable interest. The vast majority of works is focused on the fact that the nature and dynamics of the cyclical development in the past will determine the nature and dynamics of the cyclical development in the future. However, in our opinion, this approach generates a lot of controversial questions, especially in the context of the study of the administrative and command economical systems. It should be clearly understood that the cyclical development cannot be described as a regularly flowing phenomenon in a time, quite the opposite, irregular shifts of economic cycle phases is a natural process. Thus, definition of the probability for occurrence of these phases and their duration has a complex function with many uncertain variables. An assumption made determines the feasibility of the thesis on that the use of traditional methods of forecasting cyclical development of the economy may lead to a decrease in the quality of predictive models which are based on the extrapolation method using forecast scenarios for development of market and institutional factors which are drivers of the phase changes of a cycle. In this connection, there is a need for the development, scientific evidence (verification), and testing acyclical fluctuations model built on the basis of factors which would have a high level of sensitivity to changes in the external and internal environment of the economic system and reflect the predictive models of economic agents' management.

Keyword: *mid-term cycles, administrative-command economy, phase shifts, rapid development cycles, the forecasting and modeling of economic development.*

INTRODUCTION

Analysis and diagnosis of the cyclical development of a command economy has a number of specific features. They are expressed in the fact that traditional, classical instruments and mechanisms for regulating macroeconomic generations have no a stable institutional framework. However, in order to understand and identify the paradigm of transformation processes in the economy it is necessary to accurately determine the predominating mechanisms that trigger transformative processes which form the basis for the phase shifts within cycles. In

an economic system related to the administrative-command type, these mechanisms have a qualitatively different structure (as opposed to an economic system with a market economy) which, in turn, determines the unique features of all generated cyclic shifts.

It should be noted that a lot of scientific papers were devoted to problems on identification of such mechanisms and differences of their functioning and impact on the processes taking place in the economic systems of different institutional types (Ilyin M.V., 2014). Summarizing those studies, it is necessary to note that all of them, in one form or another, hold the view of significant transformation of objective economic regulation mechanisms due to excessive exposure to them from subjective internal political factors. Excessive government intervention creates a special, specific nature of cyclical fluctuations characterized by irregularity of their occurrence in time, and it forms the disparities in a production sphere. Thus, the characteristic features of such cycles is the lack of a single development paradigm for them.

That is, in other words, we can say about the absence of any traditional patterns in the phase shifts within a cycle characteristic to non-market models of cyclical development of economic systems. It is not necessary that the phase of depression followed by revival phase, and the phase of recession after the growth phase as it is inherent to the traditional classic cycles. As it was rightly pointed out by M. Ilyin (Ilyin M.V., 2014), excessive government intervention in development of sectorial markets can lead to unpredictable processes that violate the traditional idea about cyclic alternation of the phases (for example, phase of depression can begin after the growth phase, and the phase of revival follows by a phase of recession, etc.).

Thus the use of traditional methods for forecasting the change of cycle phases based mainly on static and linear extrapolation methods will not fully meet the requirements for high prognostic properties. This leads to development of improved mechanisms and methods for cyclical fluctuations diagnostic. At the same time these methods must necessarily take into account the totality of macroeconomic factors affecting the change of cyclic phases. However, inclusion in the model of a large number of predictors can generate a number of known problems (M.R.Safiullin, Elshin L.A., M.I.Prygunov, 2015). On this basis, the model should be developed on the grounds of a limited number of exogenous factors that characterize, firstly, the dynamics of the expectations of economic agents as the most important indicator of the phase shift in the cyclical development, and evaluate almost fully trends in economic activity, i.e. the main drivers of phase shift in the cyclical development.

The methodological approaches used in this study are based on the factorial approach, that is, identifying a set of factors affecting expectations of economic agents, and hence an economic system activity in general. A more detailed description with the presentation of a step-by-step algorithm for estimating the economic agents' expectations on the basis of a so-called rapid development cycle composite index simulation is represented in the earlier writings of authors (M.R.Safiullin, Elshin L.A., M.I.Prygunov, 2015).

METHODS

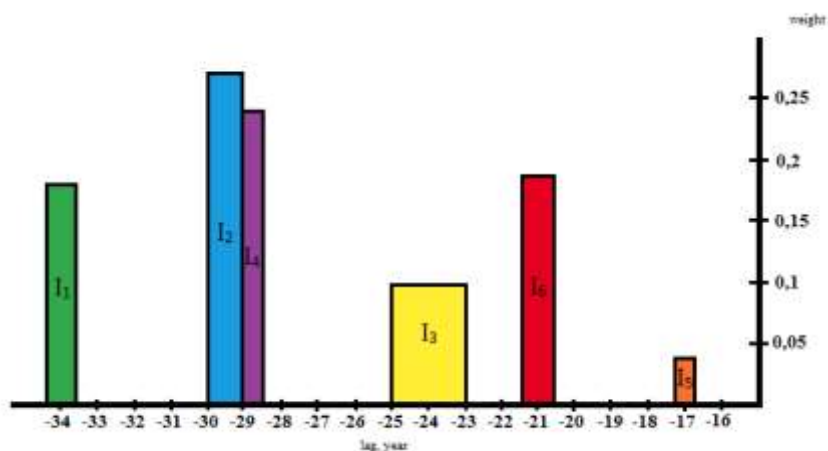
Following the basic tenets and provisions of the rapid development cycles study concept, we have grounded on the principle of rapid development of their dynamics with respect to the general economic trend to make basic definitions of the key factors for estimation of rapid development subindices.

In the process of implementation of the developed methodological approaches we have defined lag parameters, as well as the values of the weighting factors for studied subindexes within the mid-term rapid development cycles (see Table 1 and Figures 1, 2).

Table 1
THE VALUES OF THE WEIGHTING FACTORS FOR SUBINDEXES OF THE RAPID DEVELOPMENT COMPOSITE INDEX FOR THE USSR ECONOMY IN THE PERIOD FROM 1940 TO 1990. (MID-TERM CYCLES)

Item No.	Sub-index name	Weighting value
1	Urban development change index (I1)	0.216
2	Human Capital Index (I2)	0.111
3	Production index (I3)	0.076
4	Social well-being Index (I4)	0.210
5	Economic activity index (I5)	0.185
6	Research capacity Index (I6)	0.202

Figure 1
THE EFFECT OF THE INTEGRATED RAPID DEVELOPMENT INDICATORS (SUB-INDICES) ON THE NATURE AND DYNAMICS OF THE MID-TERM CYCLICAL DEVELOPMENT OF THE USSR ECONOMY IN THE PERIOD FROM 1940 TO 1990



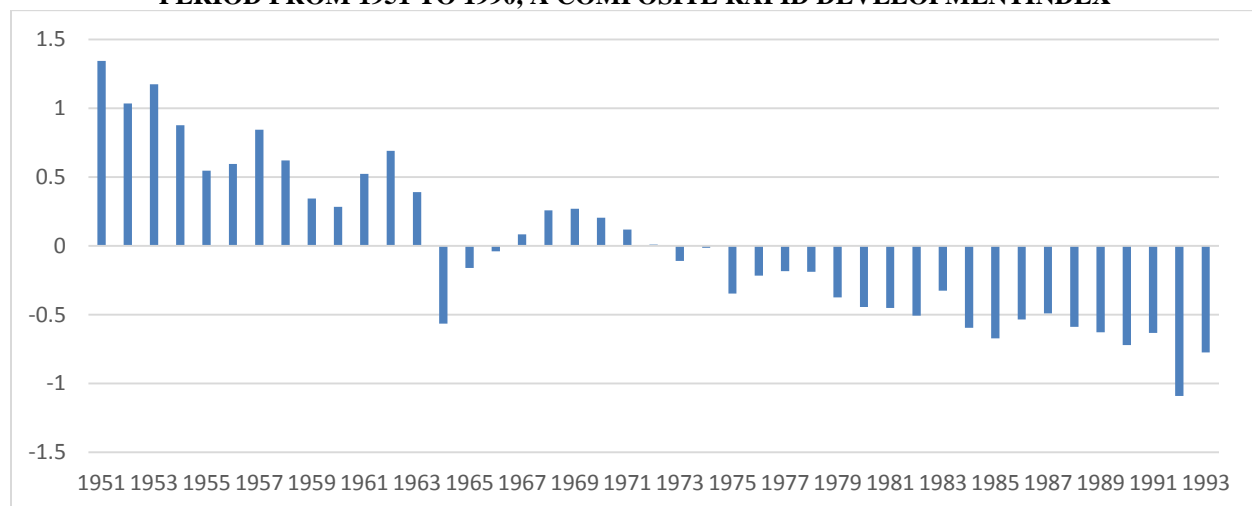
- I1 - Urban development index
- I2 - Human Capital Index
- I3 - Production index
- I4 - Social well-being index
- I5 - Economic Activity Index
- I6 - Research capacity index

The use of development diagnostics mechanisms put in the methodological model of rapid development cycles allows revealing the contribution of each factor in the path of the rapid development composite index. (J. Hicks, 1988) By rapid development cycles we mean fluctuations in economic agents' expectations subject to a change of short-, mid-, and long-term institutional and market factors which form conditions for phase generations of cyclic

development of an economic system. Upon that, rapid development cycles are divided into short-, mid- and long-term depending on the composition of lag variables which have characteristics of rapid development included in the analytical base for cyclical fluctuations modeling (L. Abalkin, N. Kondratiev, Yu. Yakovets, N. Makasheva, 2002).

Based on the estimates and calculations according to the methodological approaches presented above we have obtained results which determine the nature of the mid-term trends and cyclical development of the Russian economy as of 1951-1993 with a lag of about 8 years (Figure 2).

Figure 2
THE RAPID DEVELOPMENT MID-TERM CYCLES OF THE ECONOMY OF THE USSR IN THE PERIOD FROM 1951 TO 1990, A COMPOSITE RAPID DEVELOPMENT INDEX



We have selected 5 mid-term rapid development cycles for the period from 1951 to 1993. Upon that, it is clearly visible a turning point in the general trend of the rapid development index dynamics dividing the path into two segments. On the one hand (1951-1971) excess of optimism in relation to long-term trends is observed, on the other hand (1971-1991), their downfall. At the same time it is important that throughout the analyzed period (1951-1993 years) there is a clearly marked trend of progressive decline of the composite rapid development index what means a progressive decrease in the level of optimistic expectations of economic agents regarding the long-term prospects for economic development. Sure, in some periods of time the revival and growth phases are registered indicating the mid-term sinusoidal cyclic development of the economic system. However, if we talk in terms of the long-wave cycles, as reflected in Figure 2, the detected turning point (1971) reflects nothing more than a phase of transition of the Soviet Union's economy from one long-term cycle to another. Upon that, due to the limited time series under analysis (1951-1991's.), calculation results allowed revealing not all phases of the long-wave oscillations, but only their beginning and end registered in the turning point. A phase of recession turning into a depression phase is observed within the first conventional long wave. Buildup of depressive moods is observed within the second wave. However, since the 2000s there is a change of the depression phase into the phase of recovery.

Economic-mathematical analysis was conducted to assess the suitability of subindexes of rapid development composite index obtained by linear convolution to predict a dynamics of the

cyclic economical development (IPI, industrial production index) (Elshin L.A., 2004). Regression analysis results for the dependence of real values of the industrial production index on calculated values of the rapid development composite index with a lag of 8 years are shown in Tables 2, 3. Lag value was determined on the basis of the implemented cross-correlation analysis. In addition, this lag value is fully consistent with the results of the study according to which the lag values of the six sub-indices under study are within the range of 5 to 12 years that in average makes 8 years.

Table 2
REGRESSION STATISTICS OF THE MODEL

<i>Regression statistics</i>	
Multiple R	0.784772366
R-squared	0.615867666
Normalized R-squared	0.606498585
Standard error	0.627296911
Observations	43

Table 3
VALUES OF COEFFICIENTS AND THEIR STATISTICAL SIGNIFICANCE

	<i>Coefficients</i>	<i>Standard error</i>	<i>t-statistics</i>	<i>P-Value</i>
Y-intersection	0.014756759	0.095679196	0.15423164	0.8781838
Composite index	1.34229217	0.165558643	8.107653836	4.71974E-10

To improve the model quality, the dummy variables method has been applied allowing determination of influence of quality features and events on the explanatory variable that is on the industrial production index.

The term "dummy variables" is used as the opposite to "meaningful" variables indicating the level of a quantitative indicator which takes values from a continuous interval. As a rule, a dummy variable is an indicator variable which reflects the qualitative characteristics. This dummy variable is dichotomous and receiving, respectively, the two values: $f = 1$, when the remnants of values of the predicted series take a positive value, and $f = 0$, if negative (Safiullin M.R., Elshin L.A., Prygunova M.I., Galyavov A.A., 2013).

In this case, y is the observed value of the industrial production index (resulting factor), and a composite index and a dummy variable f_1 were chosen as the dependent variables. If $y - \hat{y} > 0$, then f_1 is set to 1, and if $y - \hat{y} < 0$, then $f_1 = 0$.

The final model for assessment of the effect of the rapid development index on dynamics of the industrial production index is presented in Table 4-5:

Table 4
REGRESSION STATISTICS OF THE MODEL

<i>Regressionstatistics</i>	
Multiple R	0.967250943
R-squared	0.935574387
Normalized R-squared	0.930618571
Standarderror	0.263403548
Observations	43

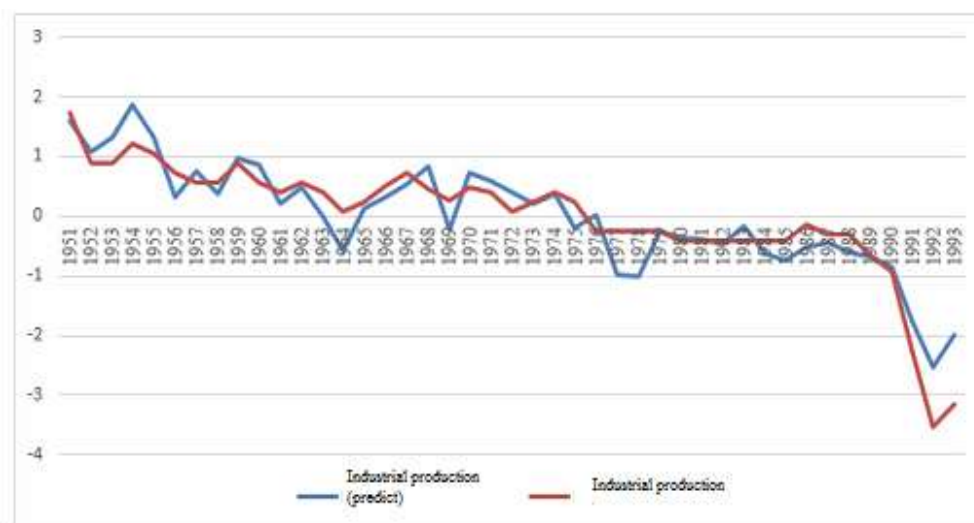
Table 5
VALUES OF COEFFICIENTS AND THEIR STATISTICAL SIGNIFICANCE

	<i>Coefficients</i>	<i>Standarderror</i>	<i>t-statistics</i>	<i>P-Value</i>
Y-intersection	-1.073545306	0.088561447	12.12203884	8.40979E-15
f1	1.16704896	0.092957334	12.55467325	2.81239E-15
f2	0.622649101	0.081486809	7.64110304	2.87034E-09
Compositeindex	1.768141494	0.07651304	23.10902149	2.28827E-24

The presented calculation results show the viability of the constructed model ($R^2 = 0.94$; p - value criteria are less than the specified significance level 0.05).

The accuracy and reliability of the results is illustrated by the almost complete coincidence of the normalized values of the industrial production index predicted by the model and their actual level:

Figure 3
RESULTS FOR THE RATIO OF THE NORMALIZED VALUES OF THE INDUSTRIAL PRODUCTION INDEX PREDICTED BY THE MODEL TO THEIR ACTUAL LEVEL



We received the following equation:

$$y = -1,07 + 1,77 * I[-8] + 1,17 * f_1 + 0,62 * f_2. \quad (1)$$

The proposed model intended for construction of the industrial production index need to be modified further taking into account the corresponding adjustment of information base and addition to the system of factors reflecting the dynamics of macroeconomic parameters that have a "pressure" on the path of economic development. We have included to these factors the following: the price of gold (x1), and the investment in fixed assets (x2).

It should be noted that dummy variables are used in econometric to model relationships both in space and in time, and they may be located in both the right and the left side of equation (Safiullin M.R., Safiullin A.R., Elshin L.A., Prygunova M.I., 2014). Given the features of the available data, it is necessary to turn attention to consideration of the class of models based on spatial data with a dummy variable in the left side of the equation. These are: probit- and logit models, and multiple choice models.

Probit is a statistical binary choice model used to predict the probability that the event of interest occur on the basis of the standard normal distribution function.

$$F(u) = f(u) = \frac{1}{\sqrt{2 * \pi}} \int_{-\infty}^u e^{-\frac{1}{2} * z^2} dz \quad (2)$$

In the probit regression model, a calculated value of the dependent variable is expressed as the value of the standard normal distribution function. Probit is the value for which the distribution function of the standard normal distribution is calculated.

Logit-model is based on a logistic probability distribution law. The probability distribution function of the logistic law is as follows:

$$F(u) = \Lambda(u) = \frac{e^u}{1 + e^u} \quad (3)$$

With regard to the choice of a particular model in practice, every time the issue is decided depending on the particular situation. Graphs of the distribution functions for the normal distribution and logistic distribution are close enough with appropriate normalization. They are virtually identical over an interval. However, the logistic function has a "heavier tails", i.e. it more slowly tends to zero at $z \rightarrow -\infty$ or 1 at $z \rightarrow \infty$. Therefore, logit and probit models give similar results, if only the probability under study is not too close to 0 or to 1.

A number of alternatives may be more than 2 in many economic problems. In these cases, it is appropriate to use a class of multiple-choice models. These models allow us to describe the probability of each alternative as a function of the observed characteristics of the object (M.R.Safiullin, Semenov G.V., Elshin L.A., Mingazova Yu.G., Shakirov A.I., 2012). Upon that, probabilities should lie within the range from 0 to 1, and the sum of the probabilities for all alternatives must be equal to 1.

Multiple logit is a logical extension of the binary one. It occurs when considering the choice between more than two alternatives. There are two main types of multiple models: ordered logit and really multiple logit. Ordered logit develops the threshold model, and really

multiple logit is a model of utility choice. Multiple choice model with orderless alternatives has the following formula:

$$P(y_i = j) = \frac{e^{x_i * b_j}}{1 + \sum_{j=0}^{J-1} e^{x_i * b_j}} \quad (4)$$

In this study we have used a model of multiple choice, because the resulting variable y takes more than two values. Possible combinations of pairs of dummy variables values combinations used in the model (5) provide three possible values of the variable y :

$$\begin{cases} f_1 = 0, f_2 = 0 \rightarrow y = 0; \\ f_1 = 1, f_2 = 0 \rightarrow y = 1; \\ f_1 = 0, f_2 = 1 \rightarrow y = 2; \\ f_1 = 1, f_2 = 1 \rightarrow y = 3. \end{cases} \quad (5)$$

Let's choose the following parameters on the capacity of the factors influencing the result variable (industrial production index): the price of oil (x_1), investments in fixed assets (x_2). Inclusion of such indicators will significantly expand the practical importance of the model in terms of prediction of business activity.

RESULTS

Parameters of multiple choice equation for the logit model were defined with the software package STATISTICA (results are shown in Table 6).

Table 6
VALUES OF COEFFICIENTS AND THEIR STATISTICAL SIGNIFICANCE IN THE MULTIPLE-CHOICE MODEL

y^a		Coefficients	Standard error	Wald	St.sv.	P-Value
0	Intercept term	113.3275	45.9418	4.8954	1	0.036
	x1	-0.9878	.4272	4.1574	1	0.054
	x2	-0.1078	.0534	2.	1	0.108
1	Intercept term	57.222	29.6459	2.	1	0.099
	x1	-0.3905	.2225	2.	1	0.135
	x2	-0.1221	0.06764	2.	1	0.126
2.	Intercept term	66.1452	30.64804	3.7392	1	0.072
	x1	-0.4675	0.23051	3.3087	1	0.099
	x2	2.	2.	2.	2.	2.

Therefore, the following values of multiple choice probabilities were obtained (table provides a truncated part of the calculation for the period from 1980 to 1993.):

Table 7
THE VALUES OBTAINED FOR THE MULTIPLE-CHOICE MODEL

t	Multiple y	x_1	x_2	p (0)	p (1)	p (2)	p (3)
1980	0	2.	2.	0.00	0.52	0.41	0.07
1981	2	118.3	103.4	1.00	0.00	0.00	0.00
1982	0	130.8	106.1	1.00	0.00	0.00	0.00
1983	3	158.7	101.0	0.00	0.00	0.00	1.00
1984	3	199.7	102.8	0.00	0.06	0.03	0.91
1985	1	75.1	104.0	0.00	1.00	0.00	0.00
1986	1	81.7	103.7	0.08	0.00	0.75	0.18
1987	3	113.0	104.3	0.00	0.36	0.22	0.42
1988	2	84.9	101.2	0.00	0.26	0.15	0.59
1989	1	88.0	103.4	0.00	0.48	0.46	0.05
1990	2	115.8	109.2	0.99	0.00	0.01	0.00
1991	3	121.5	106.0	0.78	0.07	0.16	0.00
1992	1	97.9	107.7	0.00	0.04	0.01	0.95
1993	0	87.3	104.1	1.00	0.00	0.00	0.00

A mechanism based on determination of the trajectories of the rapid development composite index with a lag of 8 years embedded into the original programming model and simulation of mid-term cyclical development of the economy, creates conditions for development of prognostic parameters of economic systems development (Safiullin, A.R., 2011). Verification of this statement was demonstrated by predicting the mid-term cycles of economic development of the Russian economy.

The table shows that the most likely in 1985 is achieved when $y = 1$. In 1986 - when $y = 2$. The results of further comparisons are presented in Table 10.

Table 8
OPTIMAL COMBINATIONS OF PAIRS OF DUMMY VARIABLES VALUES

No.	Year	y
1	1980	0
2	1981	2
3	1982	0
4	1983	3
5	1984	3
6	1985	1
7	1986	2
8	1987	3
9	1988	2
10	1989	1
11	1990	0
12	1991	3
13	1992	1
14	1993	2

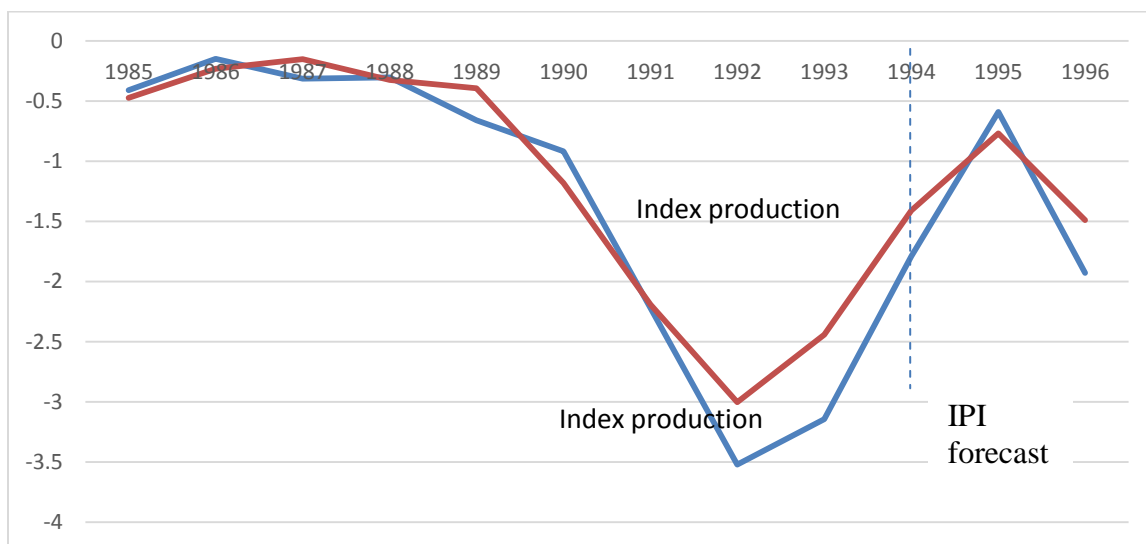
When determining a calculated predictive value of the industrial production index it is advisable to use the rapid development index with a lag of 8 years. For example, in order to determine the normalized value of the industrial production index for 1994, it is advisable to use the multiple-choice model at $y = 2$, when $f_1 = 0, f_2 = 1$. This is due to the fact that the highest probability in 1986 was achieved when $y = 2$.

Thus, we obtain the following value of the industrial production index for 1994:

$$y = -1,07 + 1,77 * (-0,54) + 1,17 * 0_1 + 0,62 * 1 = -1,41 \quad (6)$$

The dynamics of the calculated and observed values of the industrial production index for the period from 1994 to 1996 is presented in Figure 4:

Figure 4
THE RESULTS FOR THE RATIO OF THE NORMALIZED VALUES OF THE INDUSTRIAL PRODUCTION INDEX PREDICTED BY THE MODEL AND THEIR ACTUAL LEVEL FOR THE PERIOD FROM 1994 TO 1996



DISCUSSION

So, we have obtained a model which verifies the convergence of two dynamic normalized series which allows with a high degree of certainty to link the dynamics of real industrial production index with the dynamics of the estimated composite index acting as an assessment tool for rapid cyclical development of the economy, and with the dynamics of key macroeconomic indicators - oil prices and investment in fixed assets (Scott, N.W. and M.F. Peter, 2015).

The leading character of development of the studied composite index for assessing expectations of economic agents, allows accurately enough to predict the dynamics of the main macroeconomic indicators for the economic systems characterized by a high level of development of administrative institutions which control the full range of macroeconomic generations.

The developed structural-logical model for assessment of rapid development cycles based on rapid indicators system modeling that characterizes institutional and market shifts

allows accurately enough to identify future changes in the economy with a lag. This effect is achieved as a result of a conceptual framework embedded in the developed methodology which is based on the principle of programming economic agents' expectations about the prospects for development of mid-term socio-economic processes. Thus, it can be argued with a high degree of certainty and validity that the methodologies used make it possible not only to identify the cyclical fluctuations in the economy, but also to predict the phase shift within the cycles for a number of years prior to their formation. In addition, we have proposed a conceptual model which allows to a great extent to withdraw from the traditional forecasting models based on the extrapolation of the cyclic economy development data for future periods. Prognostic features of the model are provided as a result of the estimated adjustments to expectations of economic agents that form the basis for current, mid- and long-term trends in social and economic development of the national economy. Thus we can say that the model tools provides predictive diagnostics of cyclic development of the economy what largely provides accuracy and predictability of the measures developed by state authorities for the maximum possible smoothing of negative trends. In other words, the implemented approach contributes to enhanced understanding of the prospects for the phase shifts within cycles, and thereby to "preheat" optimism at the time of recession of expectations and, on the contrary, to "cool" excessive business activity of economic agents in periods of intensive raise of expectations in relation to the mid-term trend.

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LONG TERM CYCLES OF ECONOMIC DEVELOPMENT OF THE RUSSIAN ECONOMY: DIAGNOSIS MECHANISMS, TRENDS AND FORECASTS

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ABSTRACT

Evolutionary development of economic systems demonstrates their cyclical nature in time. Thus, those cyclical fluctuations cover all aspects of economic relations from the production sector and ending the sphere of services focused on ensuring the effectiveness of the interaction of economic relations. As the modern world experience shows, cyclical dynamics has a number of its individual features depending on a wide range of factors, such as the type of economic system (planned or market), market type, forms and methods of state or other influence on the regulation of cycle smoothing processes, etc. Awareness on these factors, the nature of their occurrence and influence on the long-term cyclical fluctuations is not a trivial matter and requires a comprehensive system analysis based on a synthesis and dialectics of the developed approaches.

Keywords: *long-term cycles, phase shifts, rapid development cycles, forecasting and modeling of economic development, technological modes.*

INTRODUCTION

The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

To this day, revealing the logics of influence of factors on the long-wave fluctuations is the most difficult task in the cyclical development theory for which there is a number of unresolved and controversial issues. As noted in the work of S. Glazyev (Glazyev, 2011) "generalization of the long wave theory requires an interdisciplinary approach for which it is necessary to have a common methodological basis allowing combination of results of research in the technological, economic, institutional, managerial and sociological fields". In fact, understanding the long-term cyclical fluctuations logic is impossible without a comprehensive analysis of the institutional and market factors initiating this process. Moreover, these factors analysis should not be limited to only economic parameters due to the fact that the long-wave fluctuations are a complex multidimensional process which includes "multiple-order" and multi-level complex of factors for assessment of the general condition of the evolving system. As it was rightly, in our view, seen in the work of Perez (Perez, 1987) "the concept of techno-economic paradigm reflects interaction between a technological mode and the socio-economic environment that mediates formation, growth and replacement processes". The methodologies designed in this study for diagnosing cyclical fluctuations completely fits in the defined research

paradigms. It is based on the mechanisms for diagnosing not only conjunctural, but also institutional factors, and not only economic parameters, but the parameters that assess the social component of the system development.

METHODS

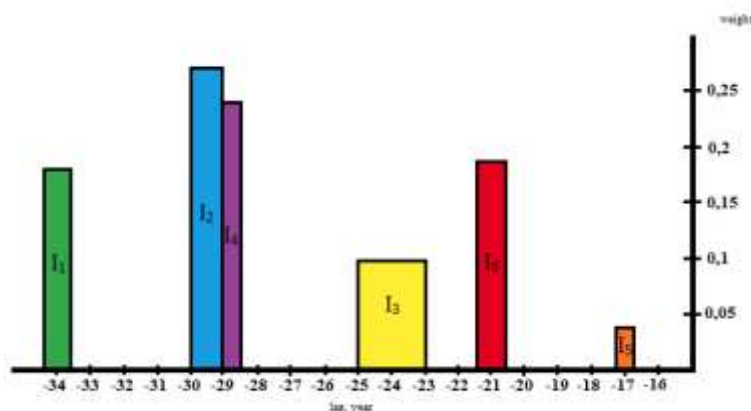
The results of the estimates and the experimental calculations based on rapid development cycles simulation have allowed revealing the contribution of each of the six indicators considered in influence on the nature and dynamics of the rapid development composite index (Table 1, Figure 1)

Table 1
VALUES OF THE WEIGHTING FACTORS FOR SUBINDEXES OF RAPID DEVELOPMENT COMPOSITE INDEX OF THE USSR ECONOMY IN THE PERIOD FROM 1940 TO 1990. (LONG-TERM CYCLES)

No.	Name of sub-index	Weighting value
1	Urban development change index (I1)	0.211
2	Human Capital Index (I2)	0.124
3	Production index (I3)	0.041
4	Social well-being Index (I4)	0.198
5	Economic activity index (I5)	0.208
6	Research capacity index (I6)	0.217

Figure 1

THE EFFECT OF THE INTEGRATED RAPID DEVELOPMENT INDICATORS (SUB-INDICES) ON THE NATURE AND DYNAMICS OF LONG-TERM CYCLICAL DEVELOPMENT OF THE USSR ECONOMY IN THE PERIOD FROM 1940 TO 1990



Methodological approaches to modeling the results obtained are presented in more details in the earlier writings of the authors. Their essence is in determination of the integral index dynamics that characterizes adjustments of expectations of economic agents through a system of

indicators, time series of which have rapid development character regarding general economic trends. The basis of these indicators is a subindexes system (Safiullin et al., 2015):

- I1 - Urban development index;
- I2 - Human Capital Index;
- I3 - Production Index;
- I4 - Social well-being index;
- I5 - Economical Activity Index;
- I6 - Research capacity index.

An important part of the rapid development indexes modeling is determination of the weight coefficients of the sub-indices considered. Upon that, the given stage of the simulation is grounded on taxonomic analysis methods (Safiullin et al., 2015).

In terms of estimating the significance of each of the six sub-indices used in the model based on indicators characterizing the values of weighting coefficients, the greatest contribution to the long-wave fluctuations is made by the subindex which forms the research capacity of the system ($I6 = 0.217$). The second most important indicator which estimates the effect of factors on the long-term cycle phase shift is the urban development change index ($I1 = 0.211$). It describes the institutional changes in the demographic profile of the national economy the effectiveness of which cannot be based on an understanding of current and projected urban trends which largely determine the potential institutional changes. It is necessary to take into account a whole range of characteristics of the demographic trends when addressing the organizational and economic problems on diagnosing and predicting cyclical fluctuations. In the context of the studied subject of research, these must involve, primarily, the formed and forming type and structure of urban and rural settlements, as well as its inherent positive or negative trends.

Indicators characterizing system social health ($I4 = 0.198$), as well as the economic activity of business entities ($I5 = 0.208$) make a significant contribution to the long-wave macroeconomic generations.

Assessment of significance of the studied factors for long-term cycles in the economy from the perspective of rate of changes occurring as a result of their exposure, generates a slightly different view on the strength of influence of the studied indicators. The values of integral indices that evaluate the effect of the studied collection of sub-indices on the dynamics of the rapid development composite index have been defined as the product of their weights to the corresponding parameters characterizing lag parameters of those subindexes. Upon that, we have accepted as an axiom the hypothesis that the smaller the lag value, the higher the level of effect caused by the subindex on the cycle phase transformation rate. And, therefore, the higher the level of significance given to this subindex. Thus, upon determining the integrated indicators of subindex significance, lag values of the variables have been assigned to the variables in accordance with feedback modality regarding the established lag values.

The human assets index ($I2$) has the greatest level of effect on the transformation of the phase processes of long-term cycle; its lag advanced value is 11 years. The second in the list of indexes relevant for the considered criterion is the social well-being index ($I4$). Term of ongoing intra-cycle transformation being a result of effect from a group of factors which determine the value of the index under consideration is 13 years (Figure 1).

According to the methodological approaches presented above the final level of effect from a group of factors is determined on the basis of an evaluation of the integral values (Table 2).

Table 2
INTEGRATED INDICATORS VALUES OF SUBINDEX INFLUENCE ON THE PATH OF LONG-TERM RAPID DEVELOPMENT CYCLES (IN DESCENDING ORDER)

No.	Sub-index name	Integral index value
1	Social well-being Index (I4)	0.793
2	Human Capital Index (I2)	0.746
3	Economic activity index (I5)	0.625
4	Research capacity index (I6)	0.434
5	Urban development change index (I1)	0.288
6	Production index (I3)	0.211

RESULTS

The results of the experimental evaluations show that the dynamics and rate of phase transformation in long-term cycles of the rapid development are mostly exposed by the social well-being index which makes allowance for the qualitative characteristics of the development of the institutional and cultural environment determining formation of mental models of society behavior which predispose to the relevant "strategic self-development matrices". The index that identifies the quality of human potential (the integral index value is 0.746) has become the second most important index forming a long-term institutional changes in the cyclical development of the economy. This is substantially in line with the generally accepted approaches to science that are used in the theory of long waves, and are grounded on the fact that the basis for generating long-term economic development cycles is the concept of technological modes. The basic idea of this concept is that "a technological conjugation creates synchronicity in the evolution of productions forming a reproducing integrity what creates the material basis of cyclical fluctuations. Development and expansion of each technological process is due to the development of the entire group of conjugated technological systems". Given that these shifts are formed largely as a result of improving the quality of labor resources, the last act as a center piece in the evolution of technological modes and hence, long-term cyclical fluctuations.

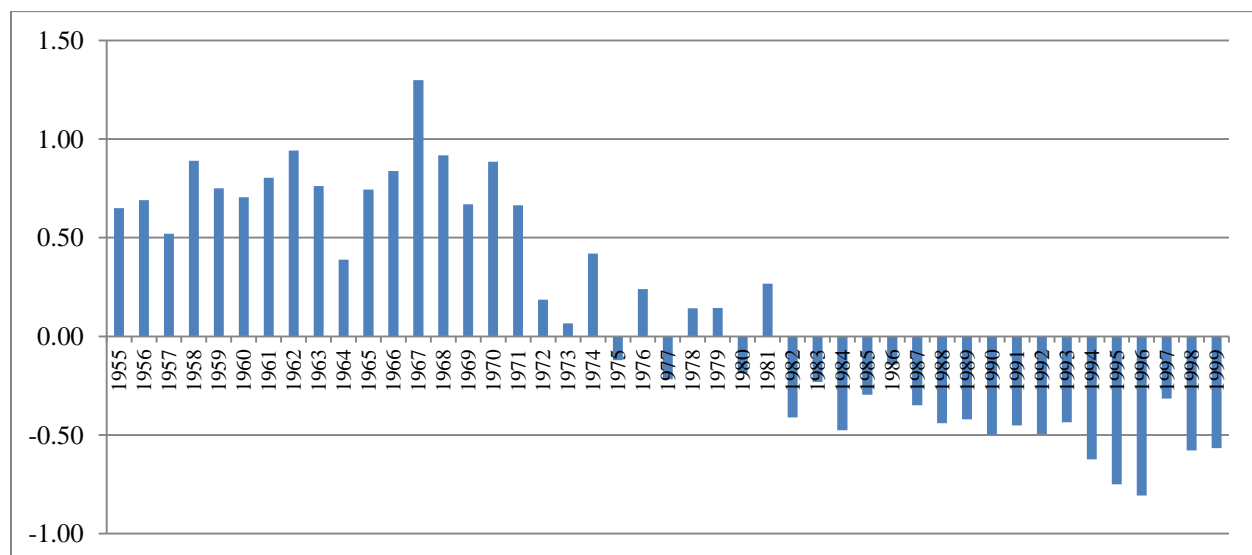
A similar pattern being in line with traditional ideas about the effect on the long-wave fluctuations of economic activity which trends are formed as a result of adjustments in prices for energy resources and investment activity, is found for the long-term cycles formed under the administrative-command system. For example, the work of C. Marchetti has shown clear relationships of the economic phenomena considered in the paper. Glazyev come to similar conclusions "... sharp spikes in energy prices taking place in the maturity phase of the dominant technological mode plunge a large part of its component industries in the unprofitable zone, the only way out of which is mediated by introduction of new technological mode technologies ... and, although later energy prices rapidly come down, the price shock activates the mechanism of irreversible structural changes in the economy". As a result of estimates obtained by us on the basis of the developed methodological approach of rapid development cycles diagnosing, it was found that the level of effect from the factor of business entities economic activity (formed on the basis of adjustments to price indices, as well as investment activity indices) on formation of long waves in the Russian economy is very significant. Thus it is possible to assert that there is

evidence of the convergence effect of this factor for various types of economic systems (administrative-command and market) (Safiullin et al., 2013).

Hardly less important, but at the same time extremely relevant and weighty effect on long-term cycles of the phase shifts of the planned economy is caused by the index that reflects the research capacity of the system. It is really hard to imagine a change of technological structures generating long-wave fluctuations without the development and implementation in the real sector of new technologies which trigger the mechanism for generating product, process and technological innovations. Conditions of formation of new technological modes are created in the process of implementing appropriate groundwork in scientific discoveries and design developments. As the available technological possibilities for capital increasing are depleted due to reduce their effect in the form of marginal performance indicators, these conditions have a powerful impetus to their implementation that expresses in the form of technology shifts in the evolution of economic systems. It is important to note that the established fact of the effect in the conditions of planned economy from the research capacity index on the processes of long-macroeconomic generations brings together theoretical approaches to the interpretation of the key factors forming the cyclic changes in the administrative-command and market types of economic systems (Safiullin et al., 2014).

Use of the development diagnostics mechanisms put in the methodological model of rapid development cycles reveals the contribution of each factor in the path of the rapid development composite index. Based on the feed-back from the estimates and calculations according to outlined methodological approaches, the results were obtained determining the nature and trends of long-term cyclical development of the Russian economy (Figure 2).

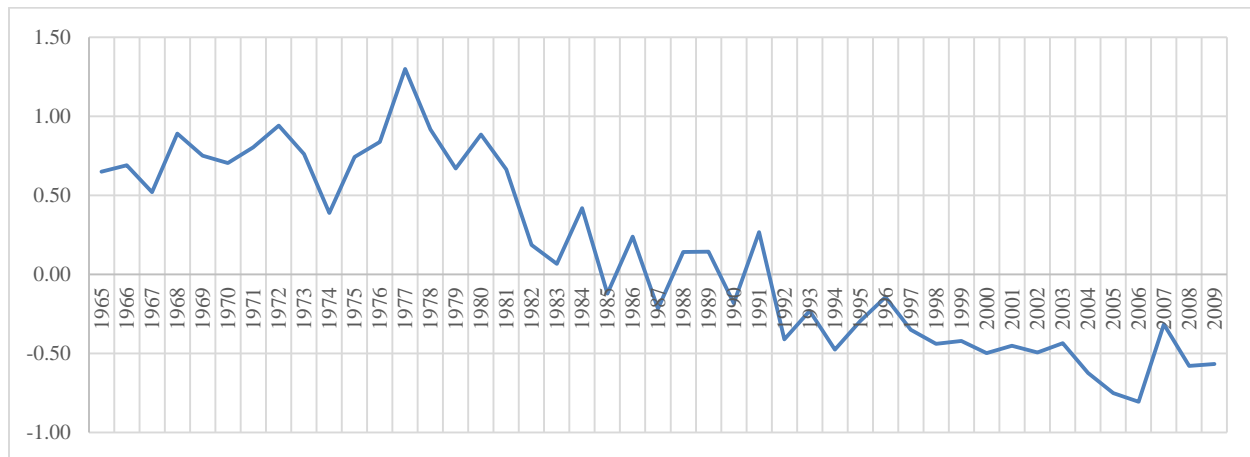
Figure 2
LONG-TERM CYCLES OF RAPID ECONOMIC DEVELOPMENT IN THE PERIOD FROM 1951 TO 1999



The simulation results demonstrate the "joint" between the two long-term cycles of the rapid development of the Russian economy. The beginning of the first of them presumably formed, according to the trend dynamics identified, in the 30-ies of XX century. End of cycle is

marked at the beginning of the 1970s. Given the advancing character of the cycle under consideration with a lag of about 10 years, real values and parameters of the cyclical development of the USSR economy will be dated 1940-the beginning of the 1980s (Figure 3). It is from this time period, the economy plunged into a long phase of depression, thereby forming a path to transition into a new long-term cycle of development based on the structural transformation and technological shifts.

Figure 3
LONG-TERM CYCLES OF THE SOVIET UNION'S ECONOMY IN THE PERIOD FROM 1965 TO 2009



It is worth noting that according to information received about the path of the rapid development composite index, a possible turning point of a depressive state of the economy, from the point of view of the long waves theory, is dated as the period 1997-2000 (and this is despite the default of 1998 which took place in the Russian economy). Thus we can assume (by projecting information about rapid development to the real time trend) that the phase of a new long-term cycle formation in the Russian economy characterized by the revival and development of new technologies corresponding to the sixth technological mode, entered into its "right" on the cusp of the end of the 2000s - the beginning of the 2010s. Given that the period of change in technological modes ("embryonic phase" in the terminology of S. Glazyev) last about 10-15 years, growth phase in the Russian economy will come no earlier than in 2020-2025.

It is interesting from the scientific and cognitive point of view that shifts of the long-term cycles of the Russian economy (including the administrative-command and market) show arrhythmia relative the periods of change of technological modes in developed countries. Traditionally, it is believed that in modern economic history there have been five long waves following in succession (Table 3).

Table 3
EVOLUTION OF THE TECHNOLOGICAL MODES

No.	Key structural drivers of technological way	Period
1	Textile machines with a steam drive. Improved steam engines	1770 – 1830
2	Introduction of steam power units in production sectors	1830 – 1880
3	Electric motors, electrical installations, steam turbines	1880 – 1930
4	Internal combustion engine Jet engines Digital and analog computers Semiconductors and semiconductor devices	1930 – 1970
5	Digital information transmission technologies Microelectronics	1970 – 2010
6	Nanoelectronics Nanotechnologies, nanomaterials, nanotools Solar thermal, and colloid nuclear propulsion units Precision medical technologies	2010 - 2040

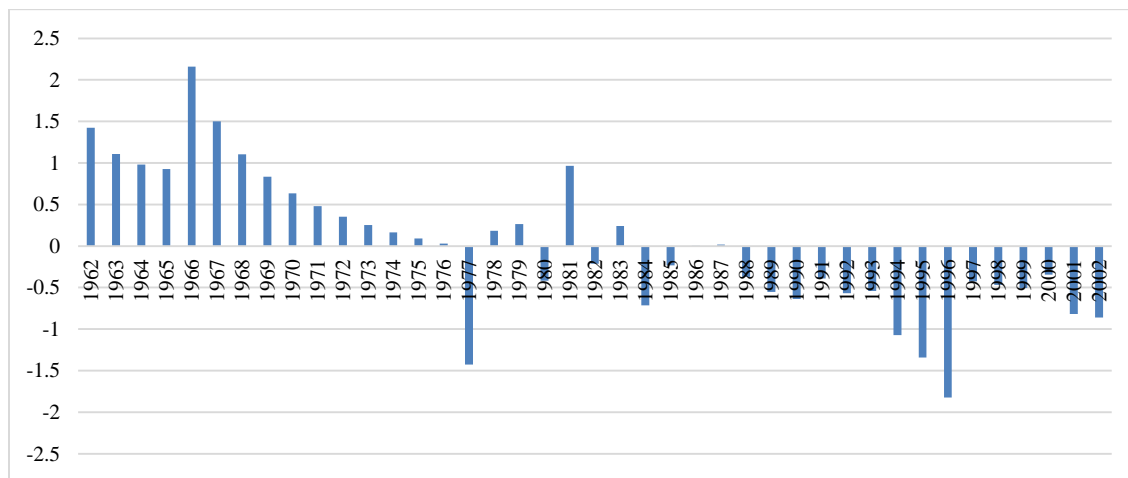
DISCUSSION

Projecting the discussed trends of the technological modes evolution to the nature of change in the long-term cyclical development of the Russian economy revealed by us, makes it possible to clearly observe a noticeable time lag in the change of the fourth technological mode to the fifth. So, if for the developed economies beginning of the fifth technological mode gained momentum in its development in the early 1970s (digital technologies), then such a transition in the command economy of the USSR has occurred 10 -15 years later in the period of 1980-1985 (Figure 3). However, the path of the rapid development composite index at the turn of the late 1990s - early 2000s shows a noticeable revival what according to submitted methodological prediction approaches determines a transition from the depression phase into a phase of revival of the real cycle in the period 2010 - 2015. It is thus possible with a high degree of confidence that in the case of retaining the trends of rapid development identified for 1997-2000 (Figure 2) transition of the Russian economy to the stage of the sixth technological mode occurs sufficiently in step with respect to developed countries. This, in turn, means that to the end of 2010s the economical model based on profit taking from energy and raw sources production has substantially sputtered out in the Russian economy and the capital starts to look for new niches for use that largely launches new mechanisms of profit taking on the basis of the updated business paradigms providing the ultimate technological shift of macroeconomic generations.

The trend change in long-term economic development cycles identified in the Russian Federation at the turn of 2010-2015 is also confirmed by the fact that one of the key indicators characterizing the effectiveness of the launch mechanisms of such transformations that estimates the extent and quality of the rapid development of research capabilities clearly demonstrates signs of breaking the downward trend of the composite index for the period of 1996 -2002 years. This means an increase in the demand for R & D products with a lag of 10+ years in accordance with the principles developed by the forecasting methodology. That is, the mechanisms of increased demand for innovative products, including technological, product, and process innovations, received significant impetus to the development in 2006-2012. Given that time for the transition of projects from R & D stage to the industrial stage of development is an average of 10-15 years, a change in the technological mode of the Russian Federation will come, in

accordance with the trend of the indicator under consideration, in the period of (2016-2021) - (2022-2027).

Figure 4
THE FORMATION PATHS FOR THE RESEARCH CAPACITY INDEX OF LONG-TERM RAPID DEVELOPMENT IN THE PERIOD FROM 1962 TO 2002



The implemented approach has demonstrated quite clearly that the study of nature and paradigm of the long-term cyclical fluctuations requires a comprehensive mix of theoretical and empirical methods. This approach is in demand primarily due to the fact that the use of the results of experimental calculations on the basis of multidimensional empirical research requires adequate explanation, interpretation and justification on the basis of selection and periodization of historical and evolutionary data. The analysis of cyclical development of the economy allows determination of phase shifts of the long-wave cycles based on a combination of methods of economic-mathematical processing of a statistics array and structural logic configurations in the historical development of the national economy.

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LONG TERM CYCLES OF ECONOMIC DEVELOPMENT OF THE RUSSIAN ECONOMY: DIAGNOSIS MECHANISMS, TRENDS AND FORECASTS

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ABSTRACT

Evolutionary development of economic systems demonstrates their cyclical nature in time. Thus, those cyclical fluctuations cover all aspects of economic relations from the production sector and ending the sphere of services focused on ensuring the effectiveness of the interaction of economic relations. As the modern world experience shows, cyclical dynamics has a number of its individual features depending on a wide range of factors, such as the type of economic system (planned or market), market type, forms and methods of state or other influence on the regulation of cycle smoothing processes, etc. Awareness on these factors, the nature of their occurrence and influence on the long-term cyclical fluctuations is not a trivial matter and requires a comprehensive system analysis based on a synthesis and dialectic of the developed approaches.

Keywords: *long-term cycles, phase shifts, rapid development cycles, forecasting and modeling of economic development, technological modes.*

INTRODUCTION

The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

To this day, revealing the logics of influence of factors on the long-wave fluctuations is the most difficult task in the cyclical development theory for which there is a number of unresolved and controversial issues. As noted in the work of S. Glazyev (S. Glazyev, 2011) "generalization of the long wave theory requires an interdisciplinary approach for which it is necessary to have a common methodological basis allowing combination of results of research in the technological, economic, institutional, managerial and sociological fields". In fact, understanding the long-term cyclical fluctuations logic is impossible without a comprehensive analysis of the institutional and market factors initiating this process. Moreover, these factors analysis should not be limited to only economic parameters due to the fact that the long-wave fluctuations are a complex multidimensional process which includes "multiple-order" and multi-level complex of factors for assessment of the general condition of the evolving system. As it was rightly, in our view, seen in the work of Perez (Perez C., 1987) "the concept of techno-economic paradigm reflects interaction between a technological mode and the socio-economic environment that mediates formation, growth and replacement processes". The methodologies designed in this study for diagnosing cyclical fluctuations completely fits in the

defined research paradigms. It is based on the mechanisms for diagnosing not only conjunctural, but also institutional factors, and not only economic parameters, but the parameters that assess the social component of the system development.

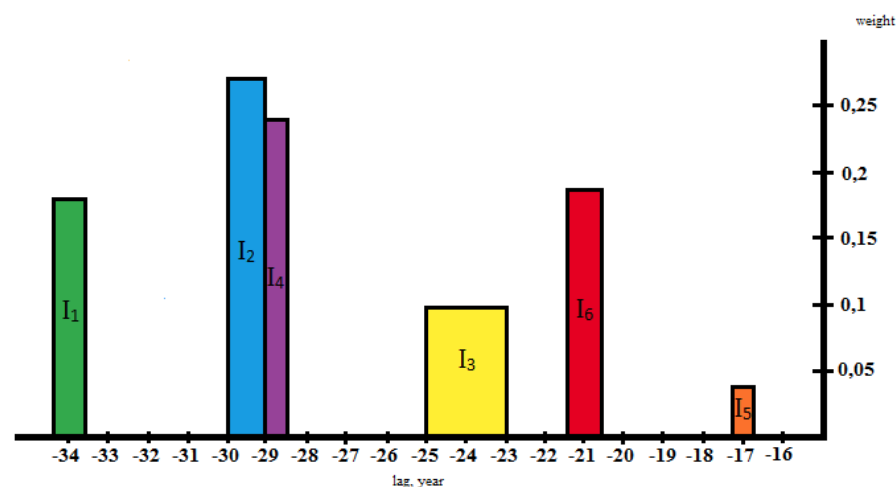
METHODS

The results of the estimates and the experimental calculations based on rapid development cycles simulation have allowed revealing the contribution of each of the six indicators considered in influence on the nature and dynamics of the rapid development composite index (Table 1, Figure 1)

Table 1
VALUES OF THE WEIGHTING FACTORS FOR SUBINDEXES OF RAPID DEVELOPMENT COMPOSITE INDEX OF THE USSR ECONOMY IN THE PERIOD FROM 1940 TO 1990. (LONG-TERM CYCLES)

No.	Name of sub-index	Weighting value
1	Urban development change index (I1)	0.211
2	Human Capital Index (I2)	0.124
3	Production index (I3)	0.041
4	Social well-being Index (I4)	0.198
5	Economic activity index (I5)	0.208
6	Research capacity index (I6)	0.217

Figure 1
THE EFFECT OF THE INTEGRATED RAPID DEVELOPMENT INDICATORS (SUB-INDICES) ON THE NATURE AND DYNAMICS OF LONG-TERM CYCLICAL DEVELOPMENT OF THE USSR ECONOMY IN THE PERIOD FROM 1940 TO 1990



Methodological approaches to modeling the results obtained are presented in more details in the earlier writings of the authors (Safiullin M.R., Elshin L.A., 2015). Their essence is in determination of the integral index dynamics that characterizes adjustments of expectations of economic agents through a system of indicators, time series of which have rapid development

character regarding general economic trends. The basis of these indicators is a subindexes system:

- I1 - Urban development index;
- I2 - Human Capital Index;
- I3 - Production Index;
- I4 - Social well-being index;
- I5 - Economical Activity Index;
- I6 - Research capacity index.

An important part of the rapid development indexes modeling is determination of the weight coefficients of the sub-indices considered. Upon that, the given stage of the simulation is grounded on taxonomic analysis methods (Safiullin M.R., Elshin L.A., Prygunova M.I., Galyavov A.A., 2013).

In terms of estimating the significance of each of the six sub-indices used in the model based on indicators characterizing the values of weighting coefficients, the greatest contribution to the long-wave fluctuations is made by the subindex which forms the research capacity of the system ($I_6 = 0.217$). The second most important indicator which estimates the effect of factors on the long-term cycle phase shifts is the urban development change index ($I_1 = 0.211$). It describes the institutional changes in the demographic profile of the national economy the effectiveness of which cannot be based on an understanding of current and projected urban trends which largely determine the potential institutional changes. It is necessary to take into account a whole range of characteristics of the demographic trends when addressing the organizational and economic problems on diagnosing and predicting cyclical fluctuations. In the context of the studied subject of research, these must involve, primarily, the formed and forming type and structure of urban and rural settlements, as well as its inherent positive or negative trends.

Indicators characterizing system social health ($I_4 = 0.198$), as well as the economic activity of business entities ($I_5 = 0.208$) make a significant contribution to the long-wave macroeconomic generations.

Assessment of significance of the studied factors for long-term cycles in the economy from the perspective of rate of changes occurring as a result of their exposure, generates a slightly different view on the strength of influence of the studied indicators. The values of integral indices that evaluate the effect of the studied collection of sub-indices on the dynamics of the rapid development composite index have been defined as the product of their weights to the corresponding parameters characterizing lag parameters of those subindexes. Upon that, we have accepted as an axiom the hypothesis that the smaller the lag value, the higher the level of effect caused by the subindex on the cycle phase transformation rate. And, therefore, the higher the level of significance given to this subindex. Thus, upon determining the integrated indicators of subindex significance, lag values of the variables have been assigned to the variables in accordance with feedback modality regarding the established lag values.

The human assets index (I_2) has the greatest level of effect on the transformation of the phase processes of long-term cycle; its lag advanced value is 11 years. The second in the list of indexes relevant for the considered criterion is the social well-being index (I_4). Term of ongoing intra-cycle transformation being a result of effect from a group of factors which determine the value of the index under consideration is 13 years (Figure 1).

According to the methodological approaches presented above the final level of effect from a group of factors is determined on the basis of an evaluation of the integral values (Table 2).

Table 2
INTEGRATED INDICATORS VALUES OF SUBINDEX INFLUENCE ON THE PATH OF LONG-TERM RAPID DEVELOPMENT CYCLES (IN DESCENDING ORDER)

No.	Sub-index name	Integral index value
1	Social well-being Index (I4)	0.793
2	Human Capital Index (I2)	0.746
3	Economic activity index (I5)	0.625
4	Research capacity index (I6)	0.434
5	Urban development change index (I1)	0.288
6	Production index (I3)	0.211

RESULTS

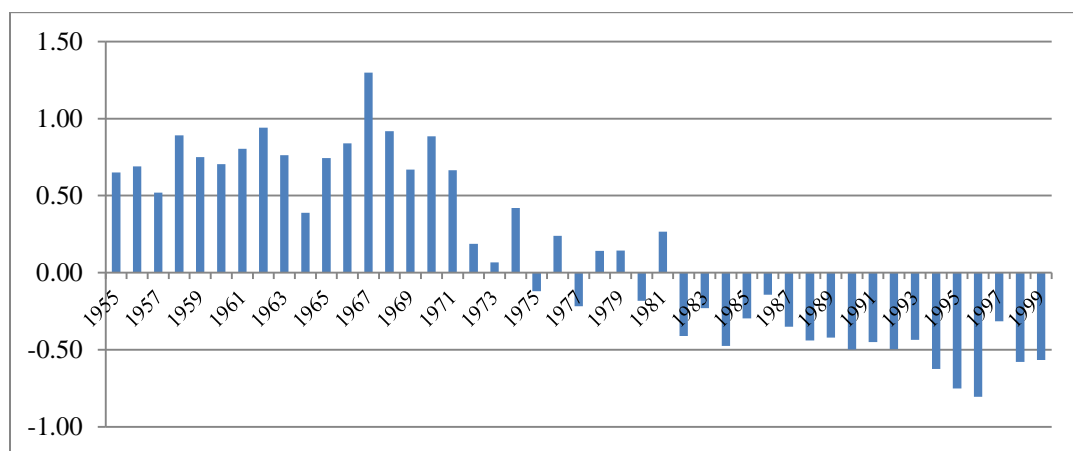
The results of the experimental evaluations show that the dynamics and rate of phase transformation in long-term cycles of the rapid development are mostly exposed by the social well-being index which makes allowance for the qualitative characteristics of the development of the institutional and cultural environment determining formation of mental models of society behavior which predispose to the relevant "strategic self-development matrices". The index that identifies the quality of human potential (the integral index value is 0.746) has become the second most important index forming a long-term institutional changes in the cyclical development of the economy. This is substantially in line with the generally accepted approaches to science that are used in the theory of long waves, and are grounded on the fact that the basis for generating long-term economic development cycles is the concept of technological modes. The basic idea of this concept is that "a technological conjugation creates synchronicity in the evolution of productions forming a reproducing integrity what creates the material basis of cyclical fluctuations. Development and expansion of each technological process is due to the development of the entire group of conjugated technological systems" (S. Glazyev, 2011). Given that these shifts are formed largely as a result of improving the quality of labor resources, the last act as a center piece in the evolution of technological modes and hence, long-term cyclical fluctuations.

A similar pattern being in line with traditional ideas about the effect on the long-wave fluctuations of economic activity which trends are formed as a result of adjustments in prices for energy resources and investment activity, is found for the long-term cycles formed under the administrative-command system. For example, the work of C. Marchetti (Marchetti Cesare, 1982) has shown clear relationships of the economic phenomena considered in the paper. Glazyev comes to similar conclusions "... sharp spikes in energy prices taking place in the maturity phase of the dominant technological mode plunge a large part of its component industries in the unprofitable zone, the only way out of which is mediated by introduction of new technological mode technologies ... and, although later energy prices rapidly come down, the price shock activates the mechanism of irreversible structural changes in the economy" (S. Glazyev, 2011). As a result of estimates obtained by us on the basis of the developed methodological approach of rapid development cycles diagnosing, it was found that the level of effect from the factor of business entities economic activity (formed on the basis of adjustments to price indices, as well as investment activity indices) on formation of long waves in the Russian economy is very significant. Thus it is possible to assert that there is evidence of the convergence effect of this factor for various types of economic systems (administrative-command and market).

Hardly less important, but at the same time extremely relevant and weighty effect on long-term cycles of the phase shifts of the planned economy is caused by the index that reflects the research capacity of the system. It is really hard to imagine a change of technological structures generating long-wave fluctuations without the development and implementation in the real sector of new technologies which trigger the mechanism for generating product, process and technological innovations. Conditions of formation of new technological modes are created in the process of implementing appropriate groundworks in scientific discoveries and design developments. As the available technological possibilities for capital increasing are depleted due to reduce their effect in the form of marginal performance indicators, these conditions have a powerful impetus to their implementation that expresses in the form of technology shifts in the evolution of economic systems. It is important to note that the established fact of the effect in the conditions of planned economy from the research capacity index on the processes of long-macroeconomic generations brings together theoretical approaches to the interpretation of the key factors forming the cyclic changes in the administrative-command and market types of economic systems. (L. Abalkin, N. Kondratyev, Yu. Yakovets, N. Makasheva, 2002)

Use of the development diagnostics mechanisms put in the methodological model of rapid development cycles reveals the contribution of each factor in the path of the rapid development composite index. Based on the feed-back from the estimates and calculations according to outlined methodological approaches (Safiullin M.R., Elshin L.A., 2015), the results were obtained determining the nature and trends of long-term cyclical development of the Russian economy (Figure 2).

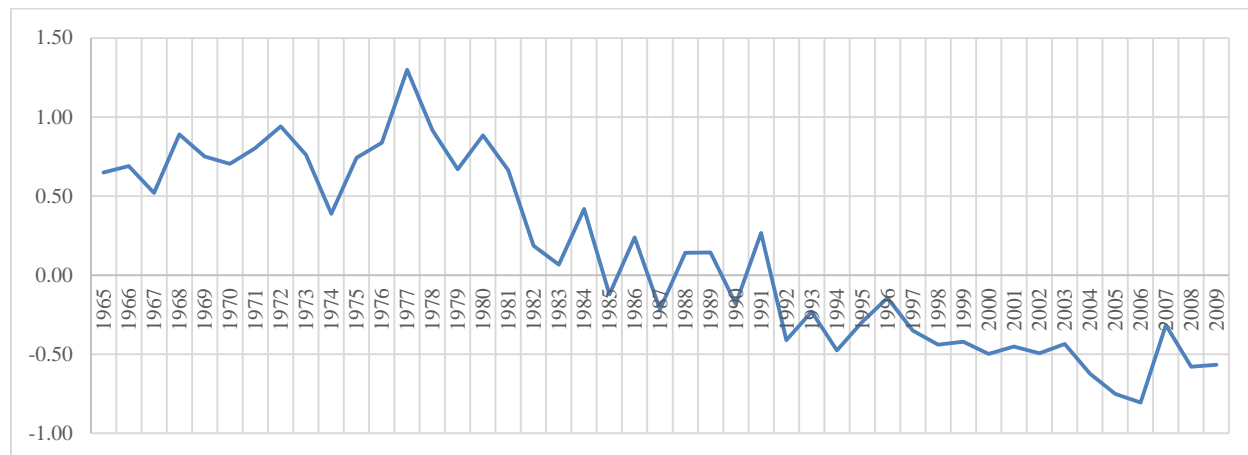
Figure 2
LONG-TERM CYCLES OF RAPID ECONOMIC DEVELOPMENT IN THE PERIOD FROM 1951 TO 1999



The simulation results demonstrate the "joint" between the two long-term cycles of the rapid development of the Russian economy (J. Hicks, 1988). The beginning of the first of them presumably formed, according to the trend dynamics identified, in the 30s of XX century. End of cycle is marked at the beginning of the 1970s. Given the advancing character of the cycle under consideration with a lag of about 10 years, real values and parameters of the cyclical development of the USSR economy will be dated 1940-the beginning of the 1980s (Figure 3). It is from this time period, the economy plunged into a long phase of depression, thereby forming a

path to transition into a new long-term cycle of development based on the structural transformation and technological shifts.

Figure 3
LONG-TERM CYCLES OF THE SOVIET UNION'S ECONOMY IN THE PERIOD FROM 1965 TO 2009



It is worth noting that according to information received about the path of the rapid development composite index, a possible turning point of a depressive state of the economy, from the point of view of the long waves theory, is dated as the period 1997-2000 (and this is despite the default of 1998 which took place in the Russian economy). Thus we can assume (by projecting information about rapid development to the real time trend) that the phase of a new long-term cycle formation in the Russian economy characterized by the revival and development of new technologies corresponding to the sixth technological mode, entered into its "right" on the cusp of the end of the 2000s - the beginning of the 2010s. Given that the period of change in technological modes ("embryonic phase" in the terminology of S. Glazyev) last about 10-15 years, growth phase in the Russian economy will come no earlier than in 2020-2025.

It is interesting from the scientific and cognitive point of view that shifts of the long-term cycles of the Russian economy (including the administrative-command and market) show arrhythmia relative the periods of change of technological modes in developed countries (Yu.V. Matveev and G.V. Semenova, 2015). Traditionally, it is believed that in modern economic history there have been five long waves following in succession (Table 3).

Table 3
EVOLUTION OF THE TECHNOLOGICAL MODES

No.	Key structural drivers of technological way	Period
1	Textile machines with a steam drive. Improved steam engines	1770 – 1830
2	Introduction of steam power units in production sectors	1830 – 1880
3	Electric motors, electrical installations, steam turbines	1880 – 1930
4	Internal combustion engine Jet engines Digital and analog computers Semiconductors and semiconductor devices	1930 – 1970

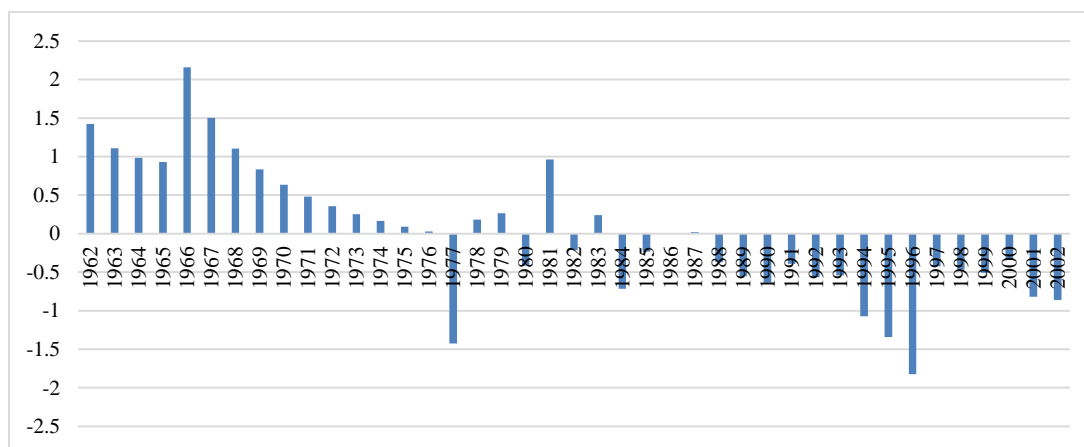
5	Digital information transmission technologies Microelectronics	1970 – 2010
6	Nanoelectronics Nanotechnologies, nanomaterials, nanotools Solar thermal, and colloid nuclear propulsion units Precision medical technologies	2010 - 2040

DISCUSSION

Projecting the discussed trends of the technological modes evolution to the nature of change in the long-term cyclical development of the Russian economy revealed by us, makes it possible to clearly observe a noticeable time lag in the change of the fourth technological mode to the fifth. So, if for the developed economies beginning of the fifth technological mode gained momentum in its development in the early 1970s (digital technologies), then such a transition in the command economy of the USSR has occurred 10 -15 years later in the period of 1980-1985 (Figure 3). However, the path of the rapid development composite index at the turn of the late 1990s - early 2000s shows a noticeable revival what according to submitted methodological prediction approaches (Safiullin M.R., Elshin L.A., Prygunova M.I., Galyavov A.A., 2013) determines a transition from the depression phase into a phase of revival of the real cycle in the period 2010 - 2015. It is thus possible with a high degree of confidence that in the case of retaining the trends of rapid development identified for 1997-2000 (Figure 2) transition of the Russian economy to the stage of the sixth technological mode occurs sufficiently in step with respect to developed countries. This, in turn, means that to the end of 2010s the economical model based on profit taking from energy and raw sources production has substantially sputtered out in the Russian economy and the capital starts to look for new niches for use that largely launches new mechanisms of profit taking on the basis of the updated business paradigms providing the ultimate technological shift of macroeconomic generations.

The trend change in long-term economic development cycles identified in the Russian Federation at the turn of 2010-2015 is also confirmed by the fact that one of the key indicators characterizing the effectiveness of the launch mechanisms of such transformations that estimates the extent and quality of the rapid development of research capabilities clearly demonstrates signs of breaking the downward trend of the composite index for the period of 1996 -2002 years (Safiullin M.R., Safiullin A.R., Elshin L.A., Prygunova M.I., 2014). This means an increase in the demand for R & D products with a lag of 10+ years in accordance with the principles developed by the forecasting methodology. That is, the mechanisms of increased demand for innovative products, including technological, product, and process innovations, received significant impetus to the development in 2006-2012. Given that time for the transition of projects from R & D stage to the industrial stage of development is an average of 10-15 years, a change in the technological mode of the Russian Federation will come, in accordance with the trend of the indicator under consideration, in the period of (2016-2021) - (2022-2027) (Yakovets Yu V. Cycles., 1999).

Figure 4
THE FORMATION PATHS FOR THE RESEARCH CAPACITY INDEX OF LONG-TERM RAPID DEVELOPMENT IN THE PERIOD FROM 1962 TO 2002



The implemented approach has demonstrated quite clearly that the study of nature and paradigm of the long-term cyclical fluctuations requires a comprehensive mix of theoretical and empirical methods. This approach is in demand primarily due to the fact that the use of the results of experimental calculations on the basis of multidimensional empirical research requires adequate explanation, interpretation and justification on the basis of selection and periodization of historical and evolutionary data. The analysis of cyclical development of the economy allows determination of phase shifts of the long-wave cycles based on a combination of methods of economic-mathematical processing of a statistics array and structural logic configurations in the historical development of the national economy.

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THE SUPRANATIONALITY PROBLEM IN THE FORMATION OF INTERSTATE ASSOCIATIONS (THE CASE OF THE EURASIAN ECONOMIC UNION)

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Aleksandr F. Malyi, Kazan Federal University

ABSTRACT

The formation of the Eurasian Economic Union has given rise to an abundance of opinions regarding various aspects of organization of this new interstate association. The question of the organizational structure of the Eurasian Union, and the basic principles underlying its construction is among the discussed ones. The paper analyzes the concept of "supranational organization". In particular, the different doctrinal approaches to the study of supranational international organizations are given, their basic features are formulated, including reference to legal independence within the framework of its competence and uncontrollability by Member States; the right to make regulations mandatory for execution by Member States; operation of interstate union officials in their personal capacity and not as representatives of Member States; decisions by a majority vote in proportional (weighted) voting; possibility to appeal acts of a supranational authority only in court.

The authors also address the problem of application of the supranational principle elements in the construction of the European Union and the EEU administration system.

The use of such methods of investigation as a comparative legal, systematic and structural, formal and legal, allowed the author to conclude about the absence of supranational features to the full extent in the EEU bodies and to identify concerns of countries for the loss of their sovereignty as the main reason for this decision.

Keyword: *supranational organization, EEU, principles, authorities.*

INTRODUCTION

Institutional system of any interstate association is based on the principles which have been recorded in the founding documents. The Eurasian Economic Union is no exception. Its organizational structure is based on the general principles which are universal and applicable to all activities of the Union. They are codified in the Article 3 of the Treaty on the Eurasian Economic Union as of 2014 (EEU) in the following terms: respect for the universally recognized principles of international law, including the principles of sovereign equality of Member States and their territorial integrity; respect for differences of political structure of the Member States; mutually beneficial cooperation; equality and taking into account the national interests of the Parties; adherence to the principles of market economy and fair competition; functioning of the Customs Union without exceptions and restrictions after the end of the transitional period (http://www.un.org/en/ga/sixth/70/docs/treaty_on_eeu.pdf, 2014).

The activities of such a powerful inter-state association as the European Union is founded on the principles reflected in the founding documents, as well as set out in the reasoning of the General Court of the European Union decisions. Among these principles are: legality,

subsidiarity, proportionality, transparency, respect for human rights and fundamental freedoms, equality, environmental focus, collaboration (S.Yu. Kashkin, 2010).

As you can see, a supranational principle is not formulated and is not formally codified in those basic principles of interstate associations. However, the terms "a supranational body," "supranational law" are widely used in legal doctrine. For example, the EU Court of Justice, the EU Commission, EU Parliament, the Court of Auditors are called as the supranational institutions (bodies) in the European Union. Even at the dawn of the European Communities supranational institutional mechanism has been established (Treaty of Paris in 1951) which "continues to be in force to this day, but as a mechanism of political power throughout the European Union" (S.Yu. Kashkin, 2010). It should be noted that "any international treaties, judicial decisions, as well as in any other sources of law does not give a definition of this concept" (Lenaerts K. Van Nuffel P., 1999).

In this context, the purpose of the work is determined by the need to identify the content of the supranationality principle and its features in the formation of interstate associations. This goal is achieved through the analysis of the legislation of relevant intergovernmental organizations.

METHODS

The method of comparative legal analysis of the European Union and the EEU institutional structure allowed revealing a supranational basis in structure of the key bodies of the intergovernmental organizations and highlighting their features.

The use of structured system method of obtaining knowledge has allowed identifying the main features of supranational international organizations.

Formal legal research method was used in determining the content of concepts such as "supra-national", "supranational organizations", "international communication", and others.

DISCUSSIONS

Supranationality as a principle of organization and activity in its various aspects is actively developed in the doctrine of international law. Such constructions as "supra-national organization", "supranational law", and "supranational authority", used to refer to entities vested with powers specific to the goals and objectives of international organizations, and interstate associations are subjected to analysis. It has been suggested that the term "supranationality" can be used to characterize an international organization as a whole, but not for the law of the organization. It is emphasized that the "supranational law by its nature is none other than a part of the international legal system that is just not able at this stage to develop to a certain level of statutory self-regulation" (Shmakov R.V., 2015).

In this regard, we offer to stay on the notion of a "supranational organization."

M. Bedjaoui considers that supranational organizations have the power over the states, and their goal is creation of supranational legal standards (and sometimes even against the will of states) which should be applicable in the relations between all the actors in the territories of the Member States of the organization. The author believes that supranational sovereignty is transferred to international organizations (Martinus Nijhoff Publishers, 1991).

According to P. Pescatore, a supra-national organization should be regarded as "an organization that was created in order to respond to the common needs of several states, consists of community institutions that are endowed with autonomy in decision-making, as well as

endowed with necessary standard-setting, executive and control powers that have an effect on states and private persons" (Pescatore P., 1961).

Also there is another position in science that supranational international organizations currently do not exist at all, because they are international, and intergovernmental organizations (Schermers H., 2003). Thus, it is believed that the International Civil Aviation Organization, the International Telecommunication Union, and the Universal Postal Union are supranational organizations, as Member States of those organizations do not run the risk to extend away from the rules laid down by those organizations despite the fact that their constituent documents have no indications about their supranationality (Martinus Nijhoff Publishers, 1991).

Let's consider that the above points of view do not correspond to reality. In our view, L. Malloun asserts right that supranational organizations are a relatively new milestone in the development of international law. According to him, "supranational organizations are the result of the division of powers between the Member States and the organization to which they gave a part of their sovereignty" (Malone L., 2008).

Indeed, an international organization would be able to realize its supranational properties if its bodies (institutions) will have the right to adopt binding acts in force in the territory of all member states. This is understandable, because without granting a body of an international organization the appropriate authority, it is difficult to achieve the purposes for which the community of nations has been created. According to A.S. Feshenko "supranationality is a set of powers that the States give to some international body for targeted regulation of their relations, and these powers have priority concerning the respective competences of the Member States, including the possible adoption of decisions binding to them" (Feshchenko A.S., 1988).

1. Transfer of sovereign powers of a state to bodies of an international organization is possible and necessary, but the question is what should be the scope of those powers and the manner in which they would be implemented. A range of transferred competence should not put the state in the "non-returnable" dependence on the international organization. Preservation of sovereignty is provided by the possibility of revocation of the delegated powers without any conditions. In this respect, of the key importance is Article 4 of the Treaty on European Union that states the following: "The Union shall respect the equality of Member States before the Treaties as well as their national identities, inherent in their fundamental structures, political and constitutional, inclusive of regional and local self-government. It shall respect their essential State functions, including ensuring the territorial integrity of the State, maintaining law and order and safeguarding national security. In particular, national security remains the sole responsibility of each Member State" ([http:// eurocollege.ru/filesserver/infcenter/Treaty-EU_2008](http://eurocollege.ru/filesserver/infcenter/Treaty-EU_2008), date of access 20.03.2016).

On the other hand, there is the problem of realization of decisions made in the practice of international relations. Without the enforcement mechanism, it is difficult to achieve fulfillment by Member States of the prescriptions of an international organization body.

Development of the "supranationality" concept in all its forms allows finding a balance between the interests of States and the need to achieve the goals and objectives of an inter-state association. M.M. Biryukov believes that a "supranationality is "a set of structural, functional and procedural characteristics of an international organization determining the priority of its competence in specific areas in relation to the respective competences of the Member States. It seems that at the forefront here is a possibility of adoption by an international authority of decisions binding for the Member States " (M.M. Biryukov., 2006).

Describing an interstate association body as a supranational, a number of features which it should have, must be noted. Firstly, it acts as a legally independent entity within its competence and not controlled by the Member States. Secondly, such a body is entitled to adopt acts which are binding for Member States even in the event of a negative attitude toward them on the part of one or several states. Thirdly, officials of intergovernmental associations act in their personal capacity and not as representatives of Member States. Fourth, decisions are taken by a majority vote by proportional (weighted) voting. Fifth, the acts of the supranational authority can be challenged only in court. The criteria are met by supranational EU institutions. Although this practice has met strong resistance from some member states, "by the end of the 1980s, all supreme courts of the Member States formally agreed with this doctrine" (M.M. Biryukov., 2006).

The situation is different with the bodies of the Eurasian Economic Union.

The treaty establishing the EEU on 29 May 2014 included to a number of bodies of the Union the Supreme Eurasian Economic Council (Supreme Council), the Eurasian Intergovernmental Council (Intergovernmental Council), the Eurasian Economic Commission (EEU Commission), the Court of the Eurasian Economic Union (Court of Union). The Commission consists of the Council and the Commission Board. Of these, only two bodies could be considered as supranational: the Commission Board and the Court of EEU. The rest, the Supreme Council, the Intergovernmental Council, the Council of the Commission, shall consist of representatives of Member States and are intended to reflect the interests of their states.

The Supreme Council is the authority of political leadership that makes decisions aimed at implementing the objectives of the Union. It is composed of the heads of the Member States. The Supreme Council considers fundamental questions on the Union's activities, determines the strategy, integration development trends and prospects (Article 12 of the Treaty). Decisions of the Supreme Eurasian Economic Council shall have precedence over the decisions of the Eurasian Intergovernmental Council and the Eurasian Economic Commission.

The Intergovernmental Council is a body of the Union that consists of the heads of the Member States' governments. Its meetings are held as necessary, but at least 2 times a year. An extraordinary session of the Intergovernmental Council may be convened on the initiative of any Member State or the Chairman of the Intergovernmental Council (Bedjaoui M., 1991).

The Council of the Commission composed of representatives, one from each member state who is the deputy head of the government and endowed with the necessary powers in accordance with the laws of the state. Thus, the Council of the Commission consists of officials who have a certain status in the government of a Member State and authorities of the Union do not affect on their appointment. The Member States shall only notify each other as well as the Commission Board on their representatives in the Council of the Commission.

Another procedure is used for formation of the Commission Board. It is composed of representatives of the Member States on the basis of the principle of equal representation of the Member States. The number of members of the Commission Board and the distribution of responsibilities among its members is determined by the Supreme Council. One of them is the Chairman of the Commission Board.

The members of the Commission Board work in the Commission on a regular basis. In exercising their powers, they are independent of government bodies and officials of the Member States and can not seek or receive instructions from authorities or officials of the Member States.

Members of the Commission Board are not allowed to combine work in the Board with the other work or engage in other paid activities, except for teaching, scientific or other creative activities for the entire term of their office.

Thus, the Commission Board may be considered for eligibility which is characteristic for a supranational body. However, on closer acquaintance with the powers of the Board and the organization of its work it can be found close collaboration between the Commission Board with the Commission Council and other bodies of the Union turning on the most important issues into relations of the hierarchical subordination.

Thus, the Board annually reports on its work to the Commission Council, and its meetings may be attended by representatives of the Member States. Execution of the decision of the Board may be suspended by the Intergovernmental Council, and amended or repealed by the Supreme Council. Thus, it is clear that the Commission Board does not have full autonomy in the adoption and implementation of its decisions, and therefore it can not fully be called a supranational body of the Union.

The only body corresponding to criteria of a supranational body is the Court of the Union. It has rights of a legal entity, keeps its own documentation, has a seal and letterheads with its name, establishes its official website and the official bulletin. It consists of two judges from each member state. They all have equal rights. Control of its activity is executed by the President of the Court which has a deputy. They have been elected a seat in the Court by judges from the Court in accordance with the Regulations and approved by the Supreme Eurasian Economic Council.

When taking up their posts, a judge ceases to be a representative of the State which nominated him/her for the post. The judges also are not representatives of the territories, nations, nationalities, social and religious groups, and individuals (Sweet A.S., Caporaso J.A., 1998).

After the appointment, a state is not able to demand the release of judges from office except for the grounds specified in the Statute of the Court. Therefore, its impact on a judge is objectively insignificant.

CONCLUSIONS

Founders of the Eurasian Economic Union have tried to exclude from the organizational structure of the Union the bodies with a pronounced supranational character. One can speculate on the reasons for this decision, but the fact remains that Member States are committed to neutralize any attempts to attack on their sovereign right to influence the content of binding acts of the Union. This approach is based on the simple assumption that any supranational body gets powers from sovereign states and upon a transfer of the powers to the body the states lose a part of their sovereign powers. It is hardly possible to share those fears, since upon transfer of its powers a state does not lose its sovereignty and can always get out of the interstate association (to terminate membership in an international organization).

That's exactly right that only states may possess attributes of sovereignty, and that an international organization is not independent and has no the political will (Bekyashev K.A., 2006). Only a state has the right to decide what amount of authority could be given to the bodies of an international organization. The judgment is fair on that only a sovereignty creates so-called supranational organizations such as the European Union (Meshcheryakova O.M., 2010). The lack of political will of an international organization eliminates the unconditional imposition of decision-making by supranational bodies of Member States. The very nature of an international

organization implies voluntary compliance by Member States of a supranational law (its rules) on their territory. Withdrawal from an integration association eliminates the need to follow the requirements of the Union bodies. Only federalization could lead to the transfer of sovereign rights to supranational bodies.

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CIVIL PROCEDURE IN THE CIS: CURRENT STATE AND PROSPECT OF DEVELOPMENT

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ABSTRACT

The article contains an analysis of the main provisions of legal regulation of the civil process in the countries of the Commonwealth of Independent States. There is revealed the judicial system of each state and interesting features, namely:

- the Constitutional Court of the Azerbaijan Republic is actually a superior authority to appeal the decisions of the Supreme Court;*
- the new judicial system of Armenia acts on the basis of case law;*
- the new Civil Procedure Code of Kazakhstan includes for the first time on the territory of the former Soviet Union the fixed possibility to appeal to the so-called participatory process along with the mediation;*
- the aqsaqal courts act in the Kyrgyz Republic;*
- a special independent body - the Supreme Council of Magistrates - acts in the Republic of Moldova;*
- in 2014 the judicial reform, which resulted in the abolition of the Supreme Arbitration Court of the Russian Federation and the delegation of its powers and functions to the Supreme Court of the Russian Federation, was carried out in the Russian Federation;*
- in the Republic of Tajikistan the persons, who are for the first time submitted to a seat on the bench, may work as a trainee-judge during the year upon a proposal of the examination commission of the Council of Justice of the Republic of Tajikistan;*
- Turkmenistan is the only one member-state of the CIS, which judicial system structure does not include the constitutional court as an institution of judicial review of constitutionality. A compliance with the regulations of the Constitution and laws is defined by the Majlis;*
- the possibility of participation of people's assessors in the administration of justice is retained in the Republic of Uzbekistan.*

Keywords: *civil procedure, mediation, arbitration, Commonwealth of Independent States.*

INTRODUCTION

The Commonwealth of Independent States (hereinafter - the CIS) is a regional international organization, designed to regulate the relations of cooperation between the states of the former USSR.

It was stated in the document consisting of the Preamble and 14 articles that the USSR ceased to exist as a subject of international law and geopolitical reality. However, "based on the historical community of peoples, relations between them, taking into account the bilateral

agreements, pursuance of a democratic law-governed state, intention to develop their relations on the basis of mutual recognition and respect for the state sovereignty, the parties agreed to form the Commonwealth of Independent States".

This article is devoted to the study and comparison of the main provisions of the civil procedural law and judicial systems of each state. For the convenience this study is constructed in the alphabetical order of the CIS countries.

MATERIALS AND METHODS

The methodological basis of this article consists of the dialectic and materialistic method of obtaining knowledge of the legal reality, along with which the scientific methods - analysis and synthesis, logic, and private and scientific methods - system and structural, formal and legal, comparative and legal - have been used.

The basis of research consists of the basic laws in the field of civil procedure of the CIS countries, as well as the scientific works of leading scientists of these countries.

RESULTS

Republic of Azerbaijan

In the last decade, the new progressive laws have been adopted, including the laws "On Constitutional Court", "On Courts and Judges", "On Office of Public Prosecutor", "On Police" and "On Investigative Activities", etc. There have been also adopted the Civil Code, the Civil Procedure Code and other codes fundamentally different from the previous ones. After signing the Decree No. 352 "On the Modernization of Judicial System in the Republic of Azerbaijan" by the President of the Republic of Azerbaijan Mr. IlhamAliyev on January 19, 2006, the judicial reform reached a qualitatively new level.

The Constitutional Court of the Republic of Azerbaijan, in accordance with the Constitution and in the cases stipulated by law, has the right to resolve questions on compliance of the decisions of the Supreme Court of the Azerbaijan Republic with the Constitution and laws of the Azerbaijan Republic. Thus, the Constitutional Court of the Azerbaijan Republic is actually a superior authority to appeal the decisions of the Supreme Court.

Armenia

From January 1, 2008 a new judicial system came into operation in Armenia, the creation of which was stipulated by the Judicial Code of Armenia adopted on February 21, 2007.

In accordance with the Judicial Code, the courts of general jurisdiction, specialized courts, the Administrative Court, the Appeal Court and the Cassation Court operate in Armenia from January 1, 2008.

It should be noted that the new judicial system of Armenia acts on the basis of case law (American Bar Association, 2012). The essence of judicial precedent consists of a uniform settlement of judicial disputes in the cases with similar factual circumstances, and the sources of case law in Armenia are the decisions of the European Court of Human Rights and the Cassation Court of Armenia.

Belarus

The judicial system in the Republic of Belarus is determined by the Constitution of the Republic of Belarus, the Law of the Republic of Belarus dated January 8, 2014 No. 124-Z "On the Constitutional Proceedings", the Code of the Republic of Belarus dated June 29, 2006 No. 139-Z "On the Judicial System and Status of Judges". The civil proceedings are regulated by the Civil Procedure Code of the Republic of Belarus dated January 11, 1999 No. 238-Z and the Economic Procedure Code of the Republic of Belarus dated December 15, 1998 No. 219-Z.

The judicial system is based on the principles of territoriality and specialization. It consists of the Constitutional Court, the system of general courts and the system of economic courts. The formation of emergency courts is prohibited.

The Supreme Court of the Republic of Belarus heads the system of general courts and is the supreme judicial authority, which executes justice in the civil, criminal cases and administrative offense cases, supervises the judicial activities of the general courts and exercises other powers in accordance with the legislation (O.N. Romanova., 2012).

The institute of participation of people's assessors in the administration of justice is retained in the Republic of Belarus.

Kazakhstan

The judicial system of the Republic of Kazakhstan consists of the Supreme Court of the Republic of Kazakhstan, local and specialized courts. The local courts include the regional and equated courts (court of Astana city and court of Almaty city), district and equated courts (city court, inter-district court).

The formation of special and emergency courts under any name is prohibited.

The regional and equated courts are formed in the same way as municipal courts, their structure is basically the same, the total number of judges of the regional courts is approved by the President of the Republic of Kazakhstan as advised by the Chairman of the Supreme Court of the Republic of Kazakhstan agreed with the Supreme Judicial Council.

From January 1, 2016 the Republic of Kazakhstan has the completely new Code of Civil Procedure adopted on October 31, 2015.

The new Civil Procedure Code of Kazakhstan includes for the first time on the territory of the former Soviet Union the fixed possibility to appeal to the so-called *participatory* process along with the mediation, which is an alternative method of dispute resolution through the negotiations between the parties with a mandatory participation of the lawyers of each party without the participation of a judge (<http://pps.kaznu.kz/kz/Main/FileShow2/51851/52/2/30/0/>. Access date June 21, 2016).

Kyrgyzstan

The judicial system of the Kyrgyz Republic consists of the Constitutional Court of the Kyrgyz Republic, the Supreme Court of the Kyrgyz Republic and local courts. The judicial power is exercised by means of constitutional, civil, criminal, administrative and other forms of legal proceedings (D.Maleshin, 2012).

The aqsaqal courts - the public authorities created on a voluntary basis and on the basis of election and self-government, called to carry out examination of materials sent to them in the prescribed manner by the court, prosecutor, internal affair bodies, other state authorities and their officials in accordance with the current legislation of the Kyrgyz Republic - act in the Kyrgyz Republic (Drobyazkina I.V., 2005).

The structure of the aqsaqal courts may include the elected citizens of the Kyrgyz Republic, who has reached the age of 50 years old, having completed secondary general education, living in the specified area for at least five years and enjoying the respect and authority among the population.

Concerning the family disputes the court makes a decision on the merits of the dispute considered.

Moldavia

The judicial system in the Republic of Moldova consists of a three-tier chain links: first tier courts, second tier courts and third tier (upper) courts.

As part of the court system there are functioning the specialized courts, namely the Military Court and the District Commercial Court.

There is a special independent body - the Supreme Council of Magistrates, which has been created with the purpose of the organization and functioning of the judicial system in the Republic of Moldova. The structure of this body includes the judges and state lecturers in law, as well as the Chairman of the Supreme Court of Justice, the Minister of Justice, and the Attorney General. The basic power of the Supreme Council of Magistrates is the selection of applicants for approval as a judge, for the vacant position and for the promotion to a higher authority (Svetlanov A.G., 2002).

The Supreme Council of Magistrates may form the judicial inspections to check the organizational activity of the court instances upon their justice administration, as well as to consider the petitions of citizens, directed to the Supreme Council of Magistrates, on issues related to the judicial ethics.

Russia

The legal proceedings in the Russian Federation are based on the Constitution of the Russian Federation dated December 12, 1993, the Federal Law of the Russian Federation dated June 26, 1992 No. 3132-I "On the Status of Judges in the Russian Federation", the Federal Constitutional Law dated December 31, 1996 № 1-FKZ "On the Judicial System of the Russian Federation", the Civil Procedure Code of the Russian Federation dated November 14, 2002 No. 138-FZ.

In 2014 the judicial reform, which resulted in the abolition of the Supreme Arbitration Court of the Russian Federation and the delegation of its powers and functions to the Supreme Court of the Russian Federation, was carried out in the Russian Federation. Thus, the system of arbitration courts lost its independence and became under the control of a single supreme authority - the Supreme Court of the Russian Federation, in the structure of which the Board for Economic Affairs was specially created (Valeev D.K., Baranov S.Y., 2014).

There is in progress the work on development of the common Code of Civil Procedure, which will lead to the creation of a uniform civil procedural form, according to which the cases will be considered both by the general jurisdiction courts and arbitration courts in Russia (Valeev D.K., Golubtzov V.G., 2014).

Tajikistan

In accordance with the Constitution of the Republic of Tajikistan the judicial power is independent and protects the rights and freedoms of the individual, the interests of the state, organizations and institutions, legality and justice.

The judicial power in the Republic of Tajikistan is exercised by the Constitutional Court, the Supreme Court, the Supreme Economic Court, the Military Court, the Court of Gorno-Badakhshan Autonomous Region, regional, city of Dushanbe, city and district courts.

The legal proceedings in the Republic of Tajikistan are governed by the Constitution of the Republic of Tajikistan dated November 6, 1994, the Constitutional Law of the Republic of Tajikistan dated July 26, 2014 No. 1084 "On Courts of the Republic of Tajikistan", the Civil Procedure Code dated January 5, 2008.

In the Republic of Tajikistan the persons, who are for the first time submitted to a seat on the bench, may work as a trainee-judge during the year upon a proposal of the examination commission of the Council of Justice of the Republic of Tajikistan.

The trainee-judge may be a person who has a law degree, is not less than 24 years old, has at least two years of professional experience, and has passed the examination commission of the Council of Justice of the Republic of Tajikistan.

Turkmenistan

The judicial power in Turkmenistan is carried out by means of arbitration, civil, administrative and criminal proceedings.

On July 1, 2016 the new Civil Procedure Code, which will replace the modernized edition of the Civil Procedure Code of the TSSR 1964, has come into force in the Republic of Turkmenistan.

There are the Supreme Court, the Arbitration Court, velayat (regional) courts and city courts with the rights of velayat, and etrap (district) courts and city courts with the etrap rights in Turkmenistan.

Turkmenistan is the only one member-state of the CIS, which judicial system structure does not include the constitutional court as an institution of judicial review of constitutionality. A compliance with the regulations of the Constitution and laws is defined by the Majlis (Oleg Stalbovskiy & Maria Stalbovskaya, 2006).

Uzbekistan

In 2000, a new version of the Law "On Courts" was adopted, according to which was made the courts specialization, i.e. the civil and criminal courts were created.

The judicial system of the country consists of the Constitutional Court, the Supreme Court, the Supreme Economic Court of the Republic of Uzbekistan, the Supreme Court of the Republic of Karakalpakstan, the Economic Court of the Republic of Karakalpakstan, as well as regional, Tashkent city, district, city and economic courts. In accordance with the Constitution and law the judicial system in Uzbekistan operates independently of the legislative and executive authorities, political parties and other public associations. The establishment of emergency courts is prohibited.

The possibility of participation of people's assessors in the administration of justice is retained in the Republic of Uzbekistan (Maksud Karaketov, 2011). In accordance with the Law "On Courts", the people's assessor may be a citizen of the Republic of Uzbekistan not younger than 30 years old, elected by open vote at the meeting of citizens at the place of residence or work for a term of two and a half years.

The people's assessors are called upon to perform their duties in the courts in the order of priority for not more than two weeks in a year, unless an extension of such period is determined by the need to complete the consideration of the case, which has been initiated with their

participation. During this period, they save an average salary in the workplace (Mamasiddikov M. M., 2014).

Ukraine

According to the Constitution of Ukraine the legal proceedings in Ukraine is carried out by the Constitutional Court of Ukraine and courts of general jurisdiction.

The courts of general jurisdiction specialize in the consideration of civil, criminal, economic, administrative cases and administrative offense cases. The system of courts of general jurisdiction includes the local courts, appeal courts, supreme specialized courts, the Supreme Court of Ukraine (Izarova Iryna Oleksandrivna, 2015).

The local general courts are the district, district in the cities, city and city district courts. The local economic courts are the economic courts of regions and the city of Kiev. The local administrative courts are the district administrative courts and other courts stipulated by the procedural law.

CONCLUSIONS

Among the most interesting features of the civil process of each of the CIS countries the following ones should be noted:

- the Constitutional Court of the Azerbaijan Republic is actually a superior authority to appeal the decisions of the Supreme Court;
- the new judicial system of Armenia acts on the basis of case law;
- the provisions of the Code of the Republic of Belarus "On the Judicial System and Status of Judges" enable to create the specialized courts in the system of general and economic courts.
- the new Civil Procedure Code of Kazakhstan includes for the first time on the territory of the former Soviet Union the fixed possibility to appeal to the so-called participatory process along with the mediation;
- the aqsaqal courts act in the Kyrgyz Republic;
- a special independent body - the Supreme Council of Magistrates - acts in the Republic of Moldova;
- in 2014 the judicial reform, which resulted in the abolition of the Supreme Arbitration Court of the Russian Federation and the delegation of its powers and functions to the Supreme Court of the Russian Federation, was carried out in the Russian Federation;
- in the Republic of Tajikistan the persons, who are for the first time submitted to a seat on the bench, may work as a trainee-judge during the year upon a proposal of the examination commission of the Council of Justice of the Republic of Tajikistan;
- Turkmenistan is the only one member-state of the CIS, which judicial system structure does not include the constitutional court as an institution of judicial review of constitutionality.
- the possibility of participation of people's assessors in the administration of justice is retained in the Republic of Uzbekistan.

SUMMARY

Thus, it may be noted on the basis of the study conducted that the judicial systems of the CIS countries as the former USSR republics are largely similar.

At the same time, about 25 years ago after the collapse of the USSR every CIS state started its unique path of development that was reflected in the judicial system.

CONFLICT OF INTEREST

The authors argue that the data do not contain any conflict of interest.

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EVALUATION OF REGIONAL INFRASTRUCTURE

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ABSTRACT

An infrastructure development level has a significant impact on the economy of a region as a whole, especially in the territorial and sectoral organization of production. The purpose of the study is to identify problems in the infrastructure of regions, and to develop the ranking of regions. The object of the study were 85 administrative regions of the Russian Federation. To assess the infrastructure of the regions there has been developed a technique that includes 8 blocks uniting 37 socio-economic indicators characterizing the level of logistics, transport, social, financial, investment, innovation, energy and telecommunications infrastructure availability. Application of linear scaling method has allowed comparison of data by regions and calculate the integral index of infrastructure availability on the basis of which we can determine the extent of disadvantages of one region from another.

The ranking of the entities of the Russian Federation under the calculated integral index of infrastructure availability will allow identifying regions with high, medium and low value of the indicator. The testing of the developed methodology for comparison regions in terms of infrastructure development level has revealed problem areas in subjects in the sphere of creation and development of infrastructure in terms of attracting manufacturing companies to their territory. Results of the study showed that there is considerable differentiation of entities of the Russian Federation by the level of infrastructure availability what must be considered when developing a territorial development programs. The proposed method of estimation of infrastructure availability can be the basis for drawing up a regional ranking by the level of infrastructure availability and investment attractiveness.

Keywords: *regional infrastructure, infrastructure availability, development of regions, linear scaling method, Russian economy.*

INTRODUCTION

Infrastructure acts as the major integrating factor of economic development. The review of existing research in this area held by R. Duran-Fernandez et al. showed that at the moment there are a number of empirical studies supporting the hypothesis about the dependence of regional infrastructure and economic development. (Duran-Fernandez R., Santos G., 2014) The more rich, diverse and well-organized infrastructure of the region's economy, the more attractive it is for new businesses to provide new jobs, inflow of taxes (in the budget of the region), and this entails the sustained improvement in the quality of life that is the main goal of regional economic development. Researches in this area are devoted to consideration of individual infrastructure aspects and indicators, but there is no comprehensive methodology to conduct a comprehensive analysis of the infrastructure availability of a region. Thus, A. Kemmerling et. al. considered transportation and institutional infrastructure in Europe (Kemmerling A. и Stephan

A., 2015), J.Alonso-Carrera et. al. focused on investment and technological infrastructure using the model constructing method (Alonso-Carrera J., Freire-SerénM., ManzanoB., 2009), and D.Hippel et. al. focused on power infrastructure (Hippel D., Gulidov R., Kalashnikov V., Hayes P., 2011).

The study of R.Pradhanet. al. has used the component analysis method to construct a composite index of telecommunications infrastructure what indicates the validity of the continued use of this method (Pradhan R., Arvin M., Hall J., 2016). The Federal State Statistics Service (Rosstat)holds the ranking of administrative regionsinRussia measured on individual indicators, and assigning the first place to the region with the highest value of the index, and the last with the lowest. The methodology used by Rosstat does not allow comparison the extent of scattering the index values, i.e. the difference between the first and last places.

METHODOLOGY

The objects of the study are 85 regions -administrative regions of the Russian Federation, including the Republic of Crimea and Sevastopol. Arkhangelsk Region and Nenets Autonomous District, as well as the Tyumen region, Yamalo-Nenets Autonomous District, Khanty-Mansiysk Autonomous District are presented in the study as a separate unit of observations.

A system of indicators which includes eight blocks (Table 1) to assess the infrastructure availability of the regions has developed. The choice of indicators was due to their public availability forall selected regions within the analyzed period. The data source was the official statistics published by Rosstat (Regions of Russia. Socio-economic indicators, 2015; Small and medium business in Russia, 2015), and Central Bank of Russia (Access: <http://www.cbr.ru>, 20.04.2016). Stock figures refer to the end of 2014, the flow-rates for the entire year 2014.

Table 1
INDICATORS OF INFRASTRUCTURE AVAILABILITY OF THE REGION

1. Material and technical capital	1.1 Fixed assets value
	1.2. Wear rate of fixed assets
	1.3 Share of fully depreciated fixed assets
	1.4 New fixed assets
2. Transport and logistic	2.1 Fixed assets value in transport and communications
	2.2 Commissioning of fixed assets in transport and communications
	2.3 Road haulage
	2.4 Road freight turnover
	2.5 Density of public paved roads
	2.6 Percentage of paved roads of the total length of roads
	2.7 Percentage of roads with improved pavement of the total length of roads
3. Energetics	3.1 Power generation
	3.2. Fixed assets value for production and distribution of energy, gas and water
	3.3 Commissioning of fixed assets for production and distribution of energy, gas and water
	3.4 Wear rate of fixed assets for production and distribution of energy, gas and water
	3.5 Share of fully depreciated fixed assets for production and distribution of energy, gas and water

	3.6 Power plants capacity in the region
4. Telecommunications and Internet	4.1 Digitalization level of the local telephone network in urban areas
	4.2. Number of active subscribers of fixed and mobile broadband Internet access per 100 people
	4.3 Companies which use electronic document management systems
5. Innovations and investments	5.1 Total area of business incubators established for the support of small and medium-sized enterprises
	5.2. The amount of subsidies allocated from the federal budget for state support of small and medium-sized enterprises
	5.3 Share of organizations implementing technological, organization, and marketing innovations
6. Financial availability	6.1 Number of credit institutions
	6.2. Number of branches of financial institutions
	6.3 Volume of lending to resident legal entities and individual entrepreneurs
	6.4 Share of profitable credit institutions
7. Inventory and sales availability	7.1 Turnover in wholesale trade
	7.2. Retail trade turnover per capita
	7.3 Provision of the population by modern marketplaces per 1000 people
8. Social infrastructure	8.1 Commissioning of apartment houses per 1000 people
	8.2. Commissioning of apartments per 1000 people
	8.3 Average living area in square meters per person
	8.4 Number of inmates per 100 places in organizations engaged in educational activities according to pre-school educational programs
	8.5 The number of students enrolled in undergraduate, specialties, master's programs per 10 000 people
	8.6 Population per a hospital bed
	8.7 Collective accommodation facilities

Material and technical capital block includes mainly indicators of fixed assets in the region being the main factors of national wealth. At the same time the better a transport infrastructure is developed, the more competitive is the region and the greater its freedom of its economic activity, higher its attractiveness to business. Energy is the basis for the development of key industries which determine the progress of public production.

The technological advancement level and the information society development has led to that the telecommunications and Internet became very important both in life of households and for businesses. It is almost impossible to develop modern industries without this component, hence the development of the territory, too. Block "Innovations and Investments" combines infrastructure indicators aimed at supporting enterprises in terms of organization and at public financial availability for innovations and investments.

Financial availability block includes the indicators describing how the banking infrastructure in the region is well-developed. This area is designed to provide the real sector with the full range of banking services, and above all, long-term credit resources. Inventory and sales

availability block is directly related with the transport and logistics block, and identifies opportunities for the realization of finished products in the study area both in the directions of the wholesale and retail.

Social infrastructure is set to accommodate the business in terms of living comfort for employees of companies, the possibility of holding business meetings and negotiations, training of professional personnel. The block includes figures on the dynamics of housing facilities, and infrastructure facilities of the social sphere.

In some cases, an instrumental variable was used to assess the level of infrastructure development of a certain type due to the lack of direct measurements of indicators in the public database. For example, innovation activity of enterprises in the block "Investments and Innovations" characterizes the level of development of the relevant infrastructure.

According to the proposed technique, the selected indicators have been converted into comparable form by linear scaling method. In the case of feedback of the estimated indicator it

was calculated according to the following formula:
$$I_j = \frac{X_{max} - X_i}{X_{max} - X_{min}}$$

In the case of direct connection of the estimated indicator, the following formula was used:

$$I = \frac{X_i - X_{min}}{X_{max} - X_{min}}$$

where I - the infrastructure availability index; X_i - actual value of i-th parameter; X_{min} and X_{max} - minimum and maximum values of the indicator among all studied regions.

Integral index of infrastructure availability of a region is calculated as the arithmetic average of the indices for the individual blocks. The grouping of regions in terms of infrastructure availability was based on the breakdown of the Russian Federation administrative regions by the calculated integral index into three equal intervals.

RESULTS

As a result of the calculations we have obtained partial and integral indices (see Table 2).

Table 2
INFRASTRUCTURE AVAILABILITY OF RUSSIAN REGIONS

Blocks									
Regions	Material and technical capital of the Region	Transport and logistic	Energetics	Telecommunications and Internet availability	Innovations and investments	Financial availability	Inventory and sales availability	Social infrastructure	Integral index
High									
City of Moscow	0.88	0.85	0.75	0.90	0.44	0.93	1.00	0.48	0.777
Medium									

Republic of Tatarstan	0.36	0.38	0.40	0.80	0.74	0.34	0.45	0.50	0.496
City of St. Petersburg	0.48	0.54	0.40	0.74	0.29	0.54	0.35	0.52	0.482
Moscow Oblast	0.45	0.52	0.43	0.55	0.24	0.31	0.51	0.66	0.459
Khanty-Mansi Autonomous District	0.24	0.64	0.62	0.72	0.13	0.20	0.50	0.42	0.434
Krasnodar Oblast	0.55	0.52	0.31	0.63	0.10	0.33	0.29	0.56	0.411
Sverdlovsk Oblast.	0.27	0.41	0.41	0.74	0.26	0.28	0.29	0.46	0.391
Nizhny Novgorod Oblast.	0.28	0.30	0.14	0.75	0.46	0.33	0.40	0.44	0.388
Krasnoyarsk Oblast	0.40	0.33	0.59	0.63	0.21	0.21	0.25	0.42	0.381
Low									
Rostov Oblast.	0.32	0.38	0.36	0.59	0.24	0.35	0.30	0.46	0.376
Chelyabinsk Oblast.	0.29	0.32	0.33	0.70	0.16	0.35	0.40	0.46	0.374
Tyumen Oblast.	0.34	0.33	0.14	0.72	0.19	0.23	0.39	0.62	0.369
Republic of Bashkortostan	0.26	0.31	0.26	0.76	0.37	0.28	0.26	0.45	0.368
Penza Oblast	0.23	0.27	0.14	0.67	0.58	0.27	0.31	0.47	0.367
Samara Oblast	0.23	0.30	0.38	0.68	0.26	0.26	0.30	0.47	0.358
Yamalo-Nenets Autonomous District	0.31	0.48	0.33	0.85	0.12	0.02	0.33	0.33	0.346
Novosibirsk Oblast	0.34	0.21	0.15	0.80	0.21	0.28	0.29	0.49	0.345
Belgorod Oblast	0.30	0.39	0.13	0.63	0.31	0.27	0.20	0.54	0.344
Kaliningrad Oblast	0.39	0.29	0.25	0.70	0.10	0.29	0.18	0.54	0.343
Lipetsk Oblast	0.28	0.26	0.20	0.66	0.23	0.27	0.35	0.46	0.340
PrimorskyKrai	0.49	0.27	0.33	0.70	0.15	0.25	0.17	0.37	0.339
Leningrad Oblast	0.43	0.30	0.31	0.53	0.15	0.21	0.26	0.53	0.339
Tomsk Oblast	0.22	0.22	0.23	0.65	0.35	0.28	0.31	0.47	0.339
Perm Krai	0.21	0.26	0.32	0.66	0.21	0.25	0.40	0.39	0.337
Kemerovo Oblast	0.35	0.25	0.31	0.64	0.16	0.24	0.33	0.38	0.333
Saratov Oblast	0.21	0.26	0.37	0.70	0.15	0.30	0.19	0.48	0.332
Chuvash Republic	0.20	0.24	0.27	0.57	0.44	0.26	0.19	0.49	0.332
Khabarovsk Oblast	0.46	0.26	0.29	0.70	0.15	0.18	0.19	0.42	0.330
Republic of Khakassia	0.42	0.20	0.48	0.61	0.10	0.25	0.19	0.37	0.329
Altai Republic	0.47	0.14	0.30	0.70	0.13	0.26	0.26	0.35	0.326
Stavropol Oblast	0.24	0.31	0.31	0.67	0.17	0.28	0.20	0.42	0.325
Tula Oblast	0.29	0.24	0.28	0.64	0.19	0.28	0.25	0.43	0.323
Republic of Karelia	0.35	0.21	0.22	0.81	0.10	0.27	0.19	0.42	0.323
Komi Republic	0.30	0.34	0.31	0.67	0.14	0.27	0.19	0.36	0.322
Republic of Buryatia	0.43	0.16	0.25	0.57	0.16	0.26	0.30	0.38	0.315
Irkutsk Oblast.	0.37	0.28	0.36	0.68	0.11	0.18	0.15	0.37	0.313
Omsk Oblast.	0.34	0.24	0.23	0.58	0.16	0.19	0.33	0.42	0.311
Vladimir Oblast.	0.31	0.23	0.19	0.64	0.23	0.27	0.18	0.42	0.309
TverOblast.	0.30	0.20	0.43	0.56	0.13	0.21	0.20	0.43	0.308
Voronezh Oblast.	0.30	0.28	0.29	0.64	0.19	0.05	0.20	0.50	0.308
Murmansk Oblast.	0.35	0.26	0.20	0.67	0.15	0.27	0.25	0.30	0.307
Altai Oblast	0.34	0.20	0.19	0.63	0.20	0.28	0.23	0.36	0.305
AstrakhanOblast. without AD	0.20	0.19	0.27	0.61	0.26	0.27	0.20	0.44	0.304
Ryazan Oblast.	0.23	0.23	0.22	0.61	0.17	0.27	0.22	0.47	0.303
Kaluga Oblast.	0.36	0.19	0.17	0.64	0.22	0.14	0.23	0.47	0.302
Vologda Oblast.	0.30	0.19	0.20	0.67	0.13	0.18	0.26	0.48	0.302
Yaroslavl Oblast.	0.25	0.21	0.22	0.65	0.17	0.30	0.19	0.43	0.301
Kostroma Oblast.	0.23	0.15	0.26	0.69	0.11	0.18	0.37	0.39	0.297
Kursk Oblast.	0.28	0.25	0.31	0.60	0.13	0.14	0.19	0.47	0.297

Kabardino-Balkar Republic	0.38	0.20	0.31	0.51	0.37	0.17	0.12	0.28	0.292
Kamchatka Krai	0.40	0.16	0.25	0.64	0.15	0.18	0.20	0.35	0.290
Pskov Oblast.	0.31	0.18	0.16	0.59	0.11	0.26	0.28	0.42	0.289
Volgograd Oblast.	0.18	0.27	0.33	0.61	0.13	0.25	0.15	0.39	0.288
Smolensk Oblast.	0.26	0.20	0.30	0.66	0.11	0.14	0.19	0.44	0.287
Sakha Republic	0.40	0.09	0.25	0.60	0.19	0.21	0.19	0.36	0.287
Republic of Mordovia	0.22	0.22	0.19	0.70	0.25	0.13	0.16	0.42	0.287
Tambov Oblast	0.20	0.23	0.15	0.67	0.14	0.26	0.17	0.47	0.286
Orenburg Oblast	0.09	0.22	0.24	0.72	0.25	0.21	0.14	0.42	0.285
Udmurt Republic	0.13	0.21	0.19	0.74	0.19	0.27	0.19	0.36	0.285
Novgorod Oblast	0.29	0.21	0.13	0.62	0.09	0.27	0.19	0.48	0.285
Sakhalin Oblast	0.46	0.15	0.19	0.62	0.05	0.11	0.25	0.38	0.276
Kirov Oblast	0.24	0.18	0.12	0.65	0.16	0.26	0.14	0.44	0.274
Amur Oblast	0.42	0.18	0.32	0.62	0.08	0.01	0.18	0.38	0.272
Ivanovo Oblast	0.33	0.18	0.19	0.59	0.09	0.22	0.22	0.37	0.272
Republic of North Ossetia-Alania	0.26	0.23	0.27	0.54	0.16	0.27	0.11	0.35	0.272
Ulyanovsk Oblast.	0.25	0.27	0.10	0.65	0.08	0.14	0.25	0.42	0.271
Republic of Dagestan	0.36	0.20	0.31	0.30	0.28	0.24	0.15	0.32	0.271
Bryansk Oblast.	0.30	0.25	0.19	0.57	0.10	0.01	0.31	0.42	0.270
Magadan Oblast.	0.33	0.14	0.23	0.73	0.18	0.01	0.17	0.36	0.268
Kurgan Oblast.	0.14	0.22	0.17	0.64	0.08	0.26	0.24	0.39	0.267
Arkhangelsk Oblast.	0.31	0.22	0.14	0.65	0.09	0.03	0.33	0.36	0.266
Karachay-Cherkess Republic	0.35	0.17	0.22	0.56	0.15	0.20	0.15	0.33	0.264
Oryol Oblast.	0.27	0.22	0.17	0.61	0.11	0.02	0.25	0.46	0.264
Mari El Republic	0.11	0.19	0.15	0.66	0.13	0.27	0.12	0.43	0.258
Transbaikali Oblast	0.41	0.19	0.27	0.59	0.14	0.01	0.18	0.29	0.258
Republic of Adygea	0.24	0.24	0.00	0.55	0.16	0.26	0.20	0.40	0.256
City of Sevastopol	0.41	0.33	0.20	0.46	0.06	0.01	0.14	0.44	0.255
Jewish autonomousOblast	0.45	0.19	0.17	0.58	0.07	0.01	0.22	0.36	0.254
Nenets autonomous district	0.37	0.10	0.25	0.58	0.03	0.00	0.14	0.42	0.237
Chukotka autonomous district	0.32	0.00	0.14	0.70	0.34	0.00	0.09	0.26	0.231
Republic of Crimea	0.28	0.23	0.24	0.42	0.15	0.02	0.13	0.30	0.219
Republic of Kalmykia	0.31	0.21	0.26	0.54	0.03	0.00	0.05	0.36	0.219
Chechen Republic	0.12	0.17	0.31	0.35	0.26	0.01	0.07	0.32	0.201
Republic of Ingushetia	0.22	0.17	0.31	0.15	0.36	0.00	0.00	0.32	0.191
Tyva Republic	0.40	0.13	0.10	0.54	0.03	0.00	0.05	0.16	0.178

According to Table 2, the leading region, city of Moscow, is a sequence higher than other regions of Russia by the level of infrastructure availability. Material support, transport and logistics, energy, telecommunications and internet, financial and inventory and sales availability of the capital exceed the level of development of all other regions. Moscow gives a leadership position in terms of infrastructure set up for investments and innovations to the Republic of Tatarstan, and by social infrastructure to the Moscow Oblast. The reason for the leadership of the Republic of Tatarstan for innovations and investments is in the amount of public funding allocated to support small and medium-sized businesses in 2014. The strong performance of the Republic of Tatarstan are correlated with the amount of state support in the region (Glebova I., Sadyrtinov R., Rodnyansky D., 2013). The Moscow Oblast is leading in the provision with housing residents and commissioning of houses and apartments.

The second group consists of eight regions, including the previously mentioned Republic of Tatarstan and the Moscow Oblast. This group also got a second federal city, St. Petersburg. The Krasnodar Krai has increased its infrastructure availability through the Olympic Games in Sochi in 2014, although it is far behind in the number of business incubators. The sport infrastructure of the region may be supplemented by a business infrastructure that will contribute to more efficient use of financial resources invested. The results are similar to the results of research of the investment attractiveness of regions by RA "Expert" for the component "Infrastructure capacity". The leading positions are occupied by the city of Moscow, the Moscow Oblast, Saint-Petersburg, and the Krasnodar Krai (Analytical Materials, 2014).

The third group which includes the regions with a low level of infrastructure availability is the most numerous - 76 regions. The results testify, on the one hand, the strong differentiation of Russian regions by infrastructure availability: most regions have a significant lag to the Russian capital, the city of Moscow. On the other hand, the research methodology used allows determination of the regions which should be of the highest priority. So, the new subject of the Russian Federation, city of Sevastopol, should focus on building financial availability to attract productions to its territory.

CONCLUSIONS

We have developed the assessment methodology for comparison regions in terms of infrastructure availability based on the use of index method and a system of indicators combined into eight blocks: material support, transport and logistics, telecommunications and Internet, innovations and investments, financial and inventory and sales availability, energy and social infrastructure. Selected blocks of indicators focused on characterization of the region's infrastructure in terms of attractiveness for the opening and running a business.

The use of index method allowed reducing 37 indicators to a single integrated indicator which determines the level of infrastructure development in a region. The developed methodology for assessment of infrastructure availability of a region made it possible to rank the regions under study and highlight regions with high, medium and low levels of infrastructure availability.

Comparison of Russian regions by infrastructure availability showed significant differentiation for this indicator when 89% of the regions are significantly behind the leading region - city of Moscow.

RESUME

The practical significance of the developed methodology for assessment of the infrastructure availability is the possibility of its application for monitoring the socio-economic development of regions, drawing up region rankings for infrastructure availability as a condition of investment attractiveness of the territory. Further development of the research may be directed to the testing of new indicators of infrastructure availability, and factor and correlation analysis of the infrastructure availability level of regions in Russia.

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METHODOLOGICAL BASIS OF THE REGIONAL SYSTEMS SOCIO-ECONOMIC PROFILE USING SURVEY METHOD

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ABSTRACT

The author's method of creating social and economic portrait of regional systems is offered. In its basis assessment by experts of economic indicators system allowing to open comprehensively tendencies of the region economic development is offered.

Handling of results is performed by a ball method with use of concordance coefficient and Pearson's criterion. The technique also includes population poll with use of economic activity indexes: consumer moods, usefulness of conditions for large purchases, independence worthiness, manpower mobility.

Their use shows forecasts of the population concerning level of living and economy of the region in general, consumer opportunities, labor potential and migratory moods. In total use of methods of expert poll and the population allow to constitute a social and economic portrait of the region on the basis of which to develop strategies of its development.

Keyword: *social and economic portrait, regional system, poll, indexes.*

INTRODUCTION

Within regional social and economic systems perhaps effective solution of the tasks connected with increase in stability of subjects of managing, providing competitiveness, carrying out Research and Development on creating new technological platforms and their production development. Allocation of regional social and economic systems as "growth points" radically changes content of industrial policy: efforts of authorities go not for support of the separate entities and industries, and for development of system of relations between subjects of economy and the state institutes that gives the chance to create and realize large investment and innovative projects of regional and national value.

The modern situation in world economy is characterized by discrepancy of signals and estimates. In spite of the fact that during the period from 2011 to 2013 there was some stabilization, and in some sectors of economy and growth, a number of key indicators continues to decrease (VCIOM, Access mode: 20.03.2016). It is also necessary to designate and transformation of social conditions: increase of migration flows, aging of the population, multilevel of culture and multivariability of vital standards and regulations; emergence and steady forming of marginal social groups, internal polarization of classes and status layers, social frustration which source is sharp property differentiation. Thus, at modern crisis conditions there is a need for development and deployment of qualitatively new technologies and techniques

allowing to estimate comprehensively a social and economic portrait of regional systems for the purpose of forecasting and planning of their further development.

Need of increase in efficiency of functioning of real production sector sets for the countries the new tasks, first of all, connected with the choice of competitive model of managing which will allow to use as much as possible the resource potential inherent in them, absolute and relative competitive advantages. Researches show that regional social and economic systems are the tool exerting the most significant impact on efficiency of the current production processes and in many respects predetermining the level of development of economy in the long-term period (Grachev A. V., 2004). The above proves that development of a social and economic portrait of regional systems will allow not only to outline a circle of the problems determining the main ways and methods of their development, but also in addition to economic indicators, to consider the public opinion provided by both expert evaluations, and opinion of the population that is urgent and has the practical importance.

DATA AND METHODS

In case of creating a social and economic portrait of regional systems expert poll and poll of the population was used. For determination of number of experts the commonly accepted formula in researches was used (Levada Center, Access mode: 20.03.2016):

$$N_{\text{Э.МИН.}} = 0,5 * \left(\frac{3}{\text{Ж}} + 5 \right)$$

Value of reliability of the received result is equal to 96% (i.e. the size of an error is equal to 4%), then $N_{\text{Min.}} = 0,5 (3/0,04 + 5) = 53$ peop.

For assessment of a measure of coherence of opinions of experts concordance coefficients have been used. In this case when using a ball method for finding of a concordance the received ball values of the importance of indicators have been transferred to ranks (a ranging method), a rank 1, is established to the most important, according to experts, to an indicator. The coefficient of a concordance was determined by a formula (Mishin V. M., 2003):

$$W = \frac{12 \times \sum_{i=1}^n \left[\sum_{j=1}^k A_{ij} - K \left[\frac{(H+1)}{2} \right] \right]^2}{K^2(H^3 - H)}$$

where W – concordance coefficient; $\sum A_{ij}$ – the sum of the ranks put by experts; K – number of experts; H – quantity of subjects to ranging.

In case of poll of the population measurement of its economic activity which was based on the basis of the following indexes was taken: consumer moods, current status of economy, consumer expectations, consumer activity, independence worthiness and manpower mobility. Indexes are under construction as an arithmetic average of the private indexes representing result of answers of respondents to a number of questions. These private indexes are calculated on the following procedure: the share negative is subtracted from a share of affirmative answers and to this difference increases 100 to exclude emergence of negative sizes (The resolution of the State committee of the Russian Federation statistically of August 2, 1999, date of the address: 10/11/2014; Electronic URL, reference date: 7.09.2015; Smirnov, S. N., 2008).

The formalized interview acted as a method of collection of information. The sample of a research is representative (5%) and constitutes 1000 respondents interviewed in 2015. Selection of respondents of 18 years was performed on the basis of quote selection. Its proportions (a sex,

age, settlement type) correspond to the main social and demographic indicators of the Republic of Tatarstan (Shishkin, S. V., 2003).

RESULTS AND DISCUSSION

In case of expert poll the following indicators were selected: amount of the gross regional product (GRP), VRP per capita, an index of physical amount of VRP, a balanced financial result of organization activity, a labor productivity, an index of industrial production, a consumer price index, amount of industrial output, level of industry clusterization, a geographical location of the region in relation to the foreign trade exits of Russia, degree of depreciation of fixed assets, a production index by the form economic activity "Mining", investments into fixed capital, an index of the physical volume of investment into fixed capital, innovative activity of the organizations, availability and level of efficiency of the electronic government of the region, number of the organizations using information and communication technologies, an index of general entrepreneurial climate, average life expectancy, size of a subsistence minimum (for the IV quarter of year), consumer spendings per capita, the level of the income of the population of the region, emissions of pollutants in air, receipt of foreign investments, level of political stability in the region, the level of unemployment, specific weight of highways with a hard surface in the general extent of highways public, density of railway ways, km of ways on 10 000 sq.km of the territory, commissioning of apartment houses (sq.m of total area) and electricity generation. In total number from 1 to 30 was assigned to each indicator (this numbering is reflected in the tab. No. 2).

Results were processed thanks to a method of direct estimation (a ball method) with which in compliance the researched indicators were ordered according to available for them balls. The greatest ball on the accepted scale was appropriated to the most important indicator. In our case the scale with the range was applied: from 0 to 10. Collected opinions of experts were processed not only quantitatively (numerical data), but also is high-quality (substantial information), the assessment of a measure of coordination of experts was carried out. For assessment of a measure of coordination of opinions of experts concordance coefficients were used. In this case when using a ball method for finding of a concordance the received ball values of the importance of indicators were to transfer to ranks (a ranging method), a rank 1, is established to the most important, according to experts, to an indicator. According to a formula the concordance coefficient is calculated

$$W = 12x[30450,25 + 21756,25 + 52441 + 36290,25 + 364816 + 355812,3 + 292140,3 + 431649 + 392502,3 + 372710,3 + 32041 + 2401 + 10404 + 6724 + 6561 + 33489 + 41412,25 + 16900 + 17292,25 + 26569 + 31152,25 + 11772,25 + 11772,25 + 329476 + 317532,3 + 287832,3 + 396900 + 352242,3 + 352836 + 20880,25] / 53^2 (30^3 - 30) = 0,74$$

The coefficient of a concordance can change in the range $1 > W > 0$. In $W = 0$ coherence of opinions of experts is absent, and at $W = 1$ coherence is full. Coherence is quite sufficient if $W > 0,5$. Thus, opinions of experts can be considered coordinated as $W = 0,74$.

The calculated size of coefficient of a concordance has been weighed by Pearson's criterion (X^2) with a certain significance value (B), i.e. with the maximum probability of the wrong result of work of experts. The importance within 0,005-0,05 is usually set (Grishina I. V., Polynev A. O., 2012). In case it is more obtaining settlement size tabular, i.e. $X^2_{расч} > X^2_{табл.}$ (with the chosen significance value), opinions of experts finally admit coordinated.

Table values $X^2_{табл.}$, values which are presented in the tab. (Griffits D.F., Higham D.J., 2010) depend on the accepted significance value and the number of degrees of freedom (S) determined by a formula:

$$S = H - 1$$

Estimated value $X^2_{расч}$ is calculated by formula

$$X^2_{расч} = WK(H-1) = 0,74 * 53 * 29 = 1076$$

At significance value 0,05 and number of degrees of freedom $S=29$ table value $X^2_{\text{табл}}$ it is equal about 43, i.e. it is possible to recognize opinion of experts finally with probability 0,95 coordinated as $X^2_{\text{расч}} > X^2_{\text{табл}}$. ($1076^2 > 43^2$) (see Table. 1)

Table 1
TABLE VALUES OF CRITERION OF PEARSON X^2

Significance level	Number of freedom degrees ($S=H-1$)								
	1	2	5	7	10	15	20	25	30
0,005	7,8	13	17	30,5	25	33	40	45	54
0,025	5	9,3	12,7	16	20,5	27,5	34	40	47
0,05	3,8	7,8	11	14	18,5	25	31	38	44

In total 53 experts representing three main groups have been interviewed: regional managers their deputies (11 people), experts are area studies specialists (the 12th persons), scientific economists (30 people). Data of poll with the made calculations are presented in the table No. 2 (see tab. 2).

Table 2
DETERMINATION OF RESULTS OF DIRECT ESTIMATION OF INDICATORS

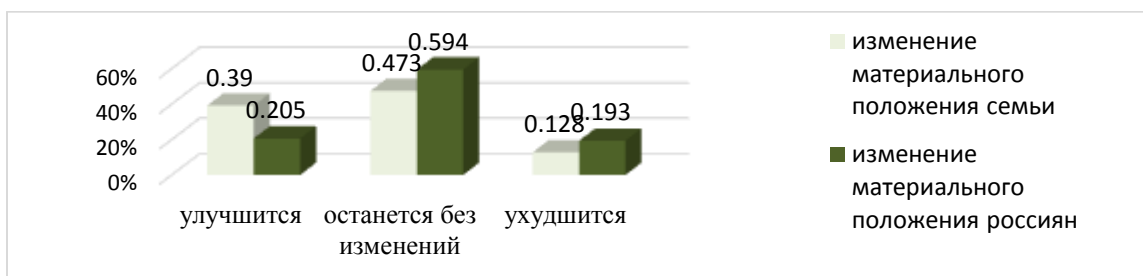
Subjects to ranging $H=30$	Σ expert grading	Resultant rank of an indicator	Indicator weight
1	305	21	0,027525
2	299	22	0,026983
3	324	13	0,029239
4	317	17	0,02860
5	471	7	0,04250
6	469	9	0,042325
7	462	12	0,041693
8	479	4	0,043227
9	470	8	0,042415
10	485	2	0,043769
11	313	19	0,0282
12	256	30	0,023103
13	278	27	0,025088
14	266	29	0,024005
15	272	28	0,024547
16	314	18	0,028337
17	320	15	0,028878
18	294	25	0,026532
19	292	26	0,026351
20	317	16	0,028608
21	323	14	0,029149
22	296	23	0,026712
23	295	24	0,026622
24	472	6	0,042595

25	468	10	0,042234
26	463	11	0,041783
27	491	1	0,04431
28	478	5	0,043137
29	480	3	0,04331
30	312	20	0,028156

By results of population poll the index of consumer moods is calculated on the basis of distribution of answers of respondents to five questions concerning the current financial position of families and expectations of his change, the prospects of development of economy in general and situations in the consumer market. The detailed description on questions shows that every second respondent claims that financial position of his family for the last year remained without changes (50,6%). Have declared improvement to 38,7% of respondents whereas about deterioration – 10,4%. Only 0,3% of respondents were at a loss with the answer.

Forecasts about changes in financial position of a family next year show that quite considerable part of respondents (47,3%), assume that it will remain without changes. At the same time 39% hope for his improvement, and 12,8% predict deterioration. Rather financial position of Russians in general the opinion is also in the lead that it will remain without changes (59,4%). However is twice less optimists (20,5%) and more pessimists (19,3%) (see fig. 1).

Figure 1
COMPARATIVE ASSESSMENT OF CHANGES OF FINANCIAL POSITION OF A FAMILY AND RUSSIANS

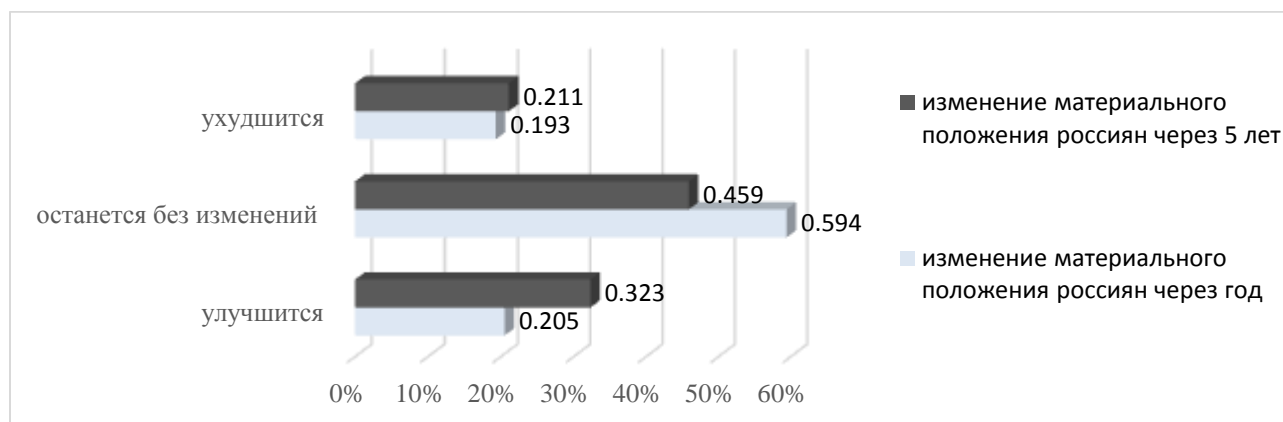


Under pic
change of financial position of a family
change of financial position of Russians
will get better
no change
will get worse

Thus, forecasts concerning the family are more optimistical since the share expecting improvement of marital financial position is almost twice more.

The analysis of answers on the subject of how financial position of Russians in the next 5 years will change, has shown that 45,9% of respondents assume that financial position will remain at the previous level. In spite of the fact that a third expects improvement (32,3%), 21,1% which have answered have the pessimistic point of view (see fig. 2).

Figure 2
COMPARATIVE ASSESSMENT OF CHANGES OF FINANCIAL POSITION OF RUSSIANS IN A YEAR
AND IN 5 YEARS



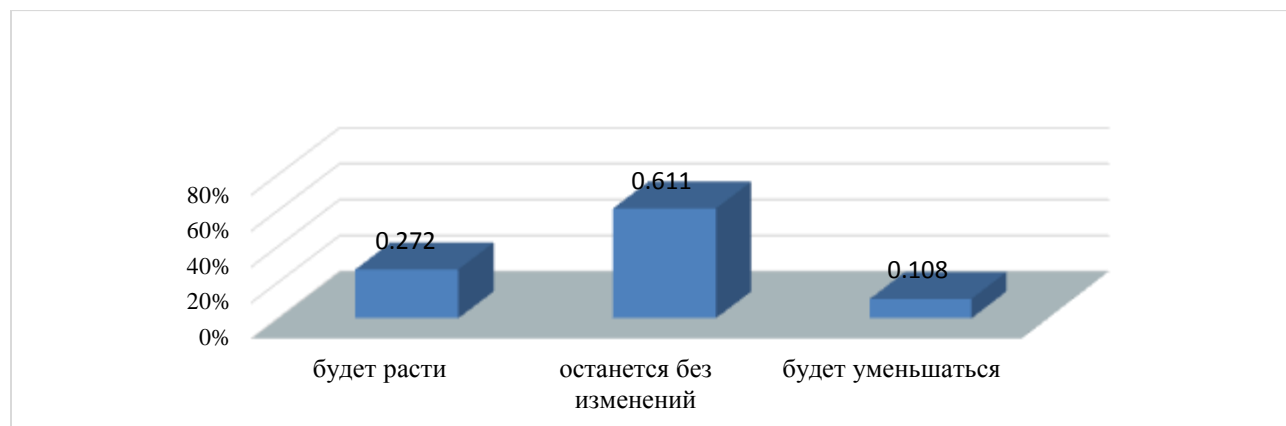
If to speak about large purchases for the house (furniture, the refrigerator, consumer electronics, the TV), then It should be noted that every third participant of poll believes that now good time for commission of these purchases (25,1%) whereas every tenth answered estimates this time as bad (9,7%). Most of respondents considers him in something good, but at the same time in something bad (54%).

In total answers to the questions posed have shown that the index of consumer moods makes 110,5 points that in general shows optimistical moods of the population. The index of current state has exceeded on indicators an index of consumer expectations (117 to 112,8 points). It demonstrates that respondents estimate the general state of the economy, than personal financial position and opportunities more highly.

The index of manpower mobility characterizes assessment by residents of the area of the opportunities existing in the region for realization of the labor potential. The index indicates a possibility of growth (reduction) of unemployment in the region, and also on a possibility of internal migration of a manpower and pays off proceeding from answers of data to three questions (Varian H.R., 2014).

One of the questions making an index sounded as follows: "How you believe, in the next 12 months as the situation with unemployment in the republic will change?" At the answer more than a quarter of respondents to him have predicted her growth (27,2%). Most of respondents are sure that unemployment rate will remain approximately at the same level (61,1%). Only every tenth has expressed confidence that unemployment rate will decrease (10,8%) (see fig. 3).

Figure 3
ASSESSMENT OF THE SITUATION WITH UNEMPLOYMENT



Every third inhabitant considers that now good time to come to our republic and to work in it (30,8%), and every tenth that bad (9,3%). The neutral position was taken by the vast majority of respondents (59,1%).

Approximately similar answers were heard at a question: Whether "It is worth remaining to live and work in our republic or it is better to go to other region of Russia?" One to three was made by answers "definitely to leave" and "definitely to remain" (10,7 to 37,8%). Every second inhabitant has chosen a neutral position (50,8%).

In general the index has made 111,6 points that demonstrates that the population in general is ready to realize the labor potential within the republic.

The index of independence worthiness shows readiness of inhabitants to confer on itself responsibility for key parameters of the life (and region lives), reflects degree of their daily and economic independence.

According to the obtained data, every fourth inhabitant is convinced that his financial position mainly depends on external circumstances (25,6%). Every fifth confers responsibility on himself (20,6%), and every second believes that equally both from, and from external factors (53%).

At assessment of an economic situation the priority to external circumstances was given by 24,1% of respondents while have put her into dependence on inhabitants and the local management 28,5%. Have chosen intermediate option 46,5%.

In spite of the fact that the index has accepted positive value (103,3 points), it is insignificant above an average value in 100 points. It demonstrates that the population can be divided into two groups conditionally. The first shows high readiness for independent decision-making, and also assessment by the population of independence of local authorities and their independence of external circumstances. The second, in some cases isn't ready to take the responsibility for the events in the region.

The Index of Consumer Activity (ICA) represents set of signs for reference of the population to various forms of consumer behavior in the field of acquisition of the real estate, cars, financial activity. According to the received results, this index has slightly exceeded average assessment and has made 103,2 points. Thus, this indicator shows existence two several polar groups. The active position in consumer behavior is characteristic of the first, the second is a little inert and isn't ready to long-term consumption.

CONCLUSIONS

During creating an author's technique of drawing up a social and economic portrait of regional systems it is offered to carry out synthesis of the following approaches. In a basis of the first the understanding that completeness of a portrait depends on a certain system of indicators which are estimated by experts with the calculated coherence measure is put (on the basis of coefficient of a concordance and Pearson's criterion). The received results allow to receive assessment of the specified indicators which in total shows the level of development of regional system, her state, and also to carry out the comparative analysis of the reached level of development with a reference state to which the region has to aspire in the course of realization of the developed strategy of the economic development.

The second approach of an author's technique is based on use of indexes of social and economic activity of the population. Among them an index of consumer moods, usefulnesses of conditions for large purchases, independence worthiness, manpower mobility were used. According to results of the conducted research some overestimate of the indexes showing financial position of the family in comparison with the indexes uniting estimates of economic and political situation of the country in general is characteristic of the population. At the same time ideas of the personal future are more optimistical, in comparison with ideas of the future of the country in general.

The regional cut of these indicators shows more appreciation of current state of the republic. The received results allow to say that at the population optimistical forecasts for the future relatively of both the standard of living, and republic economy in general dominate. However consumer opportunities of the population are at lower level. Despite the dominating tendency in manifestation of confidence in a situation with employment and an opportunity to realize the labor potential, there is a share of the respondents having migratory moods and showing uncertainty in the sphere of the labor employment.

At a social and economic portrait there are also negative aspects. A certain share of inhabitants which confers responsibility for personal financial position on external circumstances, and for an economic situation in the republic on its inhabitants and the local management is revealed. A certain part of the population has economic circumstances of life which fully don't suit inhabitants, and also negative estimates of the circumstances of life which are reflected in their consumer behavior.

SUMMARY

The offered technique in general is necessary for development and realization of regional social and economic policy, for development of regional strategy, programs socially - economic development of territorial subjects of the federation. She will allow to carry out measurements not only in one region, but also to carry out the comparative analysis of various regional systems.

ACKNOWLEDGMENTS

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MODELING OF ECONOMIC SYSTEM OF THE DEVELOPMENT OF THE RUSSIAN FEDERATION SYSTEM

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ABSTRACT

The article covers the main approaches to the macro economic modeling. It represents the author's model of macro economic modeling based on nine sector market model (with subdividing into classical markets – commodity market, labor market, market of capitals, and with mutual influence of these markets). The first segment is “Isoquanta of production function”. This quadrant shows main dynamic change ability of labor and capital as the factors of production. The second segment is called “Wage Dynamics”. The third quadrant is “The proportion of labor for the market”. The curves presented in it are an aggregate supply and an aggregate demand for labor force. The fourth quadrant is called “Production function on the basic production assets”. It shows what number of the main production assets is essential to generate production equal to composite demand (offer). The fifth quadrant “Commodity market” corresponds to the traditional model of the market, the diagrams correspond to the traditional curves of the aggregate demand and offer of goods. The sixth quadrant is a new graphic model which is headed as “Production function on labor function”. The economic purpose is to show many working hours (in the form of the employed in national economy) it takes to gear production. The seventh quadrant “The market of capitals”, as consistent with the title, describes the traditional dependence of the market of capitals. The eighth quadrant represents “Price influence on the cost of capital”. The conclusive ninth quadrant is titled “The influence of the cost of capital on employment”. The model by an example of the economic system of the Russian Federation was approved. In conclusion, the findings and recommendations on macroeconomic regulation of the main disproportions in economic system were given.

Keywords: *Macroeconomic modeling. Nine sector market model. Isoquanta of production function. Wage dynamics. Labor force market. Goods market. Capital market. Price index. Loan interest.*

INTRODUCTION

In the past decades the world tendencies of development of economic systems are characterized by sharp fluctuations of macroeconomic showing (gross domestic product, rate of inflation, currency, loan interest, etc.). The crisis periods of international economy have become more frequent. Meanwhile, in economic theory, there are certain proportions of sustainable development of macroeconomic indices. For example, for the harmonious development the level of loan interest must be less than the level of profitability in industry and trade. From our point

of view, these processes are caused by the lack of a mechanism of interaction between state and business structures. As the “invisible hand of Adam Smith” cannot regulate the market at the present stage, so it is necessary to measure the macroeconomic indicators and their adjustment in present.

MATERIALS AND METHODS

Macroeconomic modeling was presented in the works by foreign and home scientists. D. Ricardo and J.-B. Say used graphical methods for micro-level. K. Marx applied the mathematical methods for macroanalysis of the structure of social reproduction. Also, these tools were used by A. Marshall, J. M. Keynes, R. Harrod and A. Domar, P. Douglas and H. Cobb, R. Solow, E. Dennison, P. Samuelson, W. Nordhaus (Safiullin M. R., 1996; Safiullin M. R., 2007).

For the first time a consistent focus on the study of the intermarket interaction of markets of labor and capital was made in the works by J. Hicks and E. Hansen. At the same time, they overlooked the market of goods - the results of social production.

One should note such modern scientists in this field as A. Pigou, A. W. Phillips, M. Friedman, J. Kornai (Safiullin M. R., 1996; Safiullin M. R., 2007).

In the Soviet Union, among the most famous works in this area we would like to highlight the researches by L. Kantorovich, V. S. Nemchinov, A. Anchishkin.

The conceptual fundamentals of the system functional nine sector model of the market economy have been proposed by prof. M. R. Safiullin.

The nine sector model reflects the basic markets and intermarket interactions. Let us deal with the model mentioned above in more detail. The classical markets in Figure 1 are presented by quadrants: 3 (labor market), 5 (commodities market) and 7 (capital market).

The first segment- “isoquanta of the production function”. This quadrant shows mainly interchangeability of labor and capital as the factors of production. The general economic and mathematical model of the graph represented in quadrant 1 in Figure 1 is as follows (Safiullin M. R., 1996):

$$BPA_t = F(S_t) \quad 1$$

where, BPA_t the cost of basic production assets;

S_t annual wage.

The second segment was titled “The dynamics of wages”. The general economic and mathematical model for quadrant 2 is the following (Safiullin M. R., 1996):

$$S_t = F(PI_t) \quad 2$$

where, PI_t - formed at the point in time t in the national economy composite index of consumer prices.

The third quadrant “The proportions of the labor market” (see Fig. 1.-the traditional model of the labor market). The curves represented in it are aggregate offer and aggregate demand for labor power (Safiullin M. R., 1996).

The fourth quadrant (see Fig. 1) is “The production function on the basic production assets”. It shows the amount of fixed production assets being necessary in order to produce the products corresponding to aggregate demand (offer) (Safiullin M. R., 1996).

The economic-mathematical model of this quadrant has the following form:

$$GDP_t = F(BPA_t) \quad 3$$

where, GDP_t - gross domestic product.

The fifth quadrant (see Fig. 1.) “Commodity market” is a traditional market model, the graphs represent the traditional curves of aggregate demand and supply of goods.

The sixth quadrant (Fig. 1) is a new graphic model, which is called as “The production function for labor”. The economic sense is to show how much working hours (in number of the employed in the economy) the society needs to take in order to release the products (Figure 1) (Safiullin M. R., 1996).

The economic-mathematical model of the sixth quadrant has the following form:

$$GDP_t = F(U_t) \quad 4$$

where, U_t unemployment rate.

The seventh quadrant (Fig. 1) – “Capital Market” describes in accordance with the title the traditional dependence of the market of capitals (Safiullin M. R., 1996).

Very interesting is the following macroeconomic model shown in the eighth quadrant (Figure 1) – “The impact of product prices on the cost of capital”. It will have the following form (Safiullin M. R., 1996):

$$R_t = F(PI_t) \quad 5$$

where, R_t - the average rate of interest for the national economy;

PI_t - the composite index of prices of the commodity market.

The final, ninth quadrant represented in Figure 1 is “The influence of cost of the capital on labor employment”.

The economic-mathematical model of the ninth segment is as follows (Safiullin M. R., 1996):

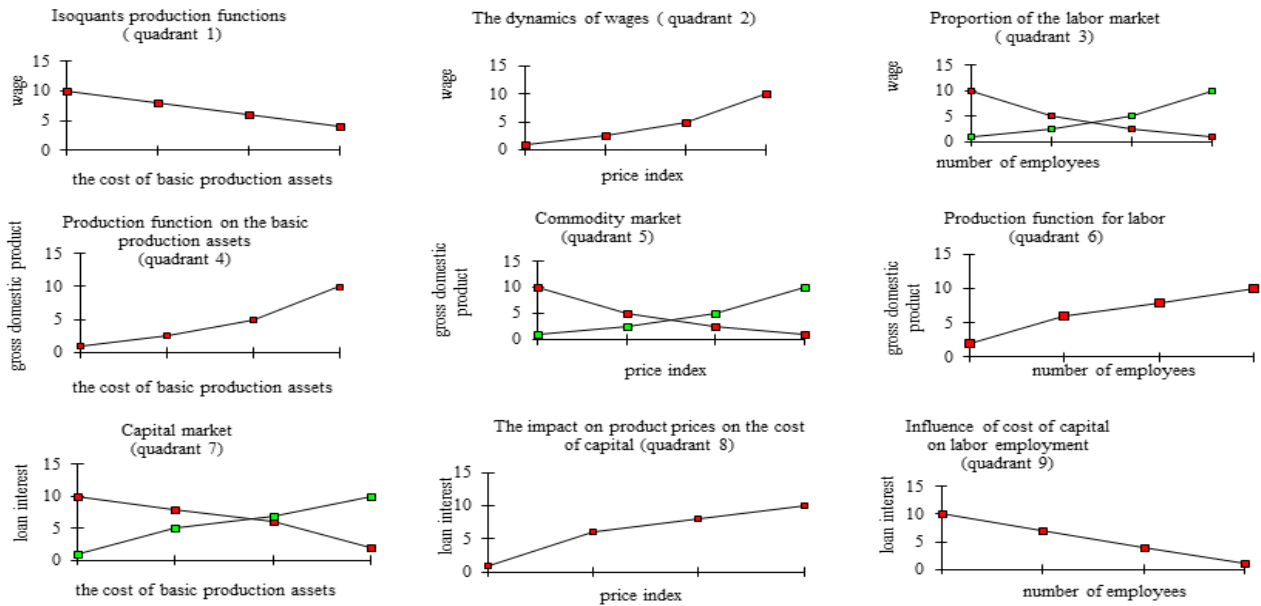
$$U_t = F(R_t) \quad 6$$

Then we will appraise this model in terms of the Russian Federation on the basis of statistical compilations for years 1994-2015. Our calculations allow us to judge how much further we have approached the normative dependencies on macro indicators.

THE RESULTS AND DISCUSSION

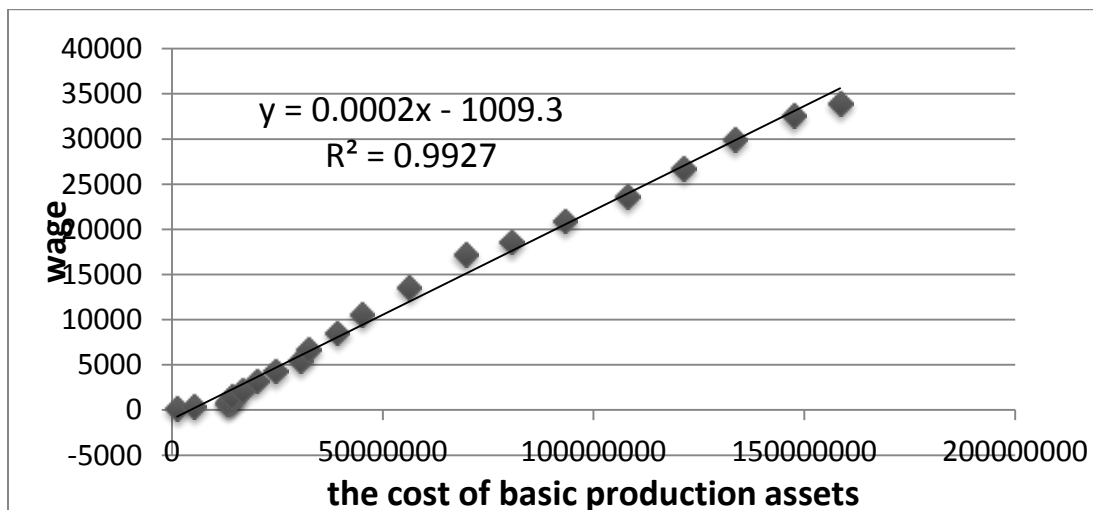
We have tried to create pointers that have more long-term dynamics and thus allow, from our point of view, to judge more reasonably the nature of the changes taking place. On the basis of the methods described above, we have calculated the statistics of the Russian Federation.

Figure 1
SYSTEM-FUNCTIONALMODELDEVELOPED BYM.R.SAFIULLIN



The first quadrant reflects the interdependence of wages of labor and the cost of basic production assets. The regression analysis based on the application yielded the following results (see Fig. 2.). In this case, for years 1994-2015 in Russia the equation of regression of correlation of wages and basic production assets amounted to $Y=0,0002 \cdot X-1009,3$. The nature of the correlation between wages and asset is significantly different from the theoretical feasible. In domestic economic system there is a continuous dominance of the extensive way of development.

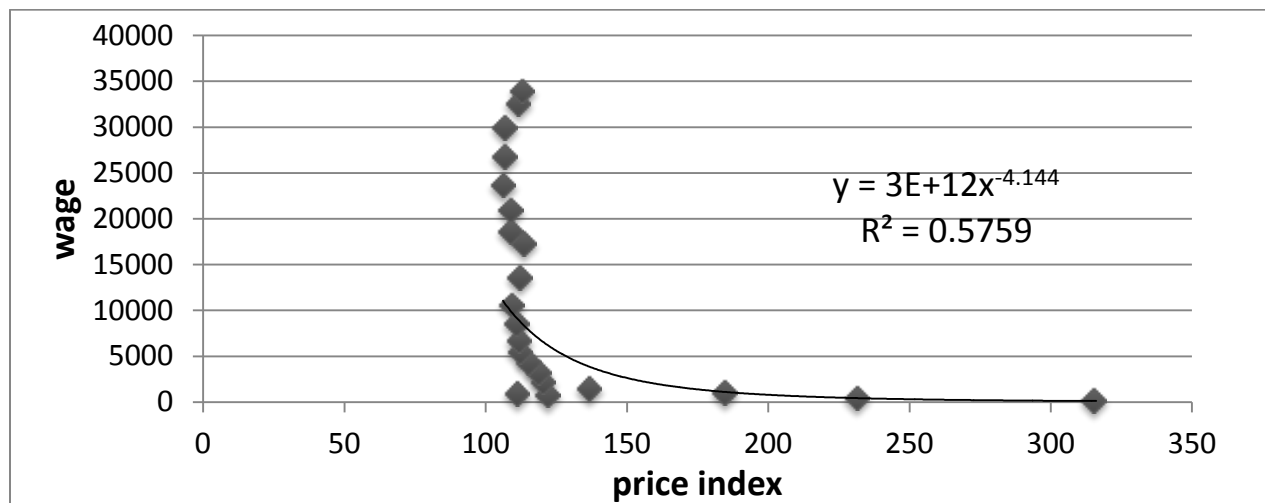
Figure 2
THE ISOQUANTA OF PRODUCTION FUNCTIONS (THE WAGES AND BASIC PRODUCTION ASSETSCORRELATION IN THE RUSSIAN FEDERATION)



The second quadrant is the dynamics of wages (dependence of the average wage and price index). The regression analysis on the basis of applications yielded the following results - see Fig. 3. Hereby, for years 1994-2015 in the RF the equation of regression of wages accounted for $Y = 3E + 12X^{-4,144}$.

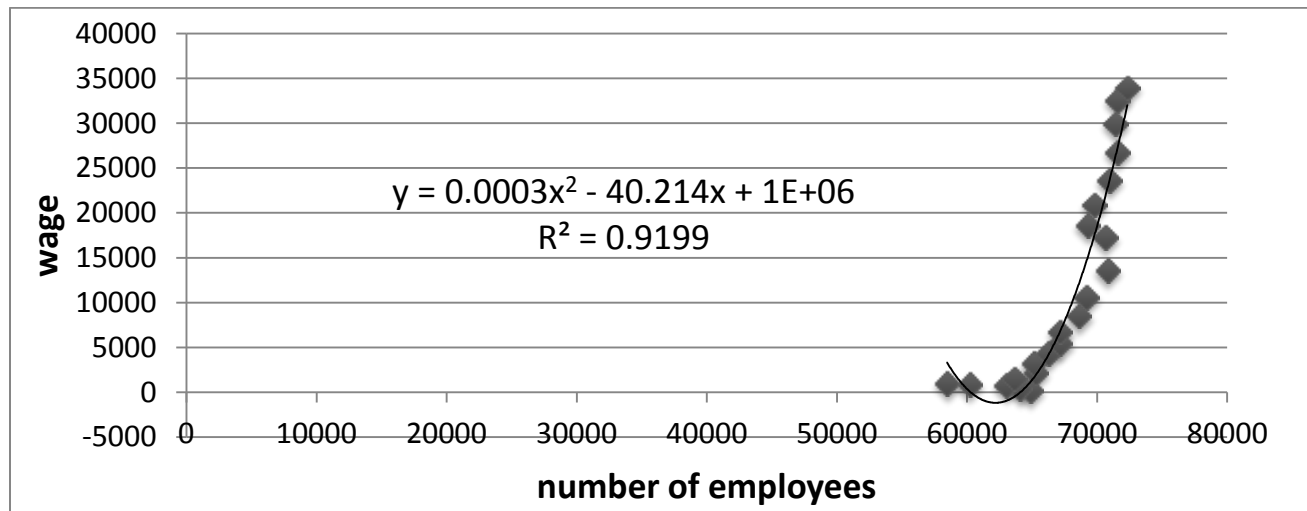
The actual curve in this case is different from the theoretical value. In the classical scheme the advance of wages must be accompanied by an increase in the price index. In reality - wage increase with a decrease in the price index. It is indicative of the rise in the standard of living of population. However, the wage raise should be proportional to the increase in productivity of labor, moreover, the rate of productivity growth should outpace the wage rise.

Figure 3
THE DYNAMICS OF WAGES IN THE RUSSIAN FEDERATION



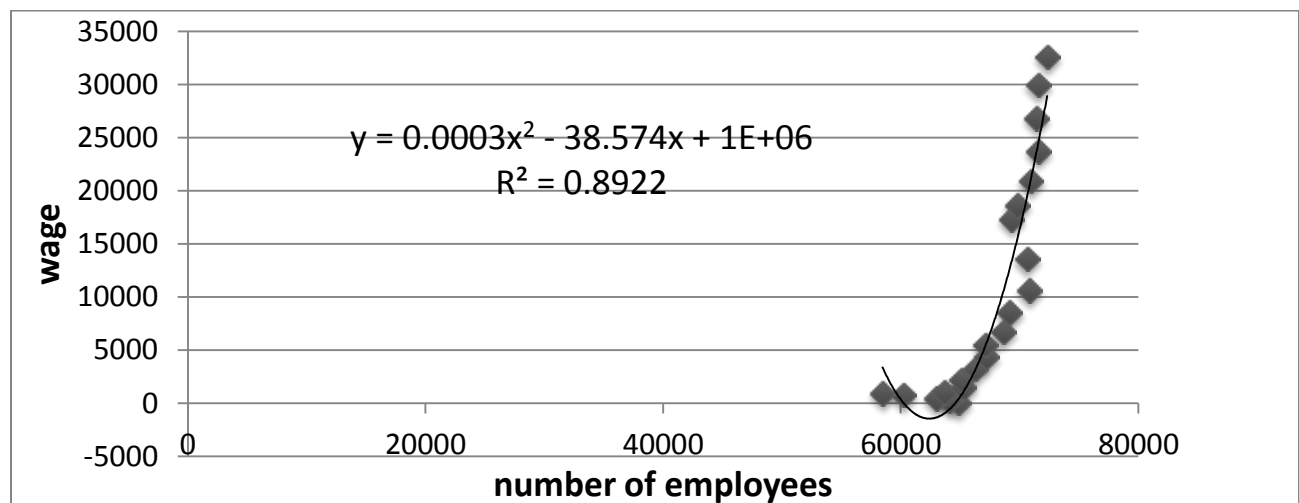
The third quadrant is the proportion of the labor market. Here it is necessary to plot the demand and supply of labor (Fig. 4). We proceeded from the hypothesis that the current offer is formed on the basis of prices and conditions of the previous financial period. In this case for years 1994-2015 in the Russian Federation for the equation of regression of aggregate demand for labor power was $Y = 0,0003 * X^2 - 40,214 * X + 1E+06$. As shown in Figure 4 the nature of the wages and labor supply (demand) correlation has not been corroborated. This indicates that our economic system weakly applies the mechanism of economic motivation of employees.

Figure 4
THE PROPORTIONS OF THE LABOR MARKET (AGGREGATE DEMAND FOR LABOR IN THE RUSSIAN FEDERATION)



The tendencies of the aggregate offer demonstrate somewhat explainable dynamics (Fig. 5). In this case, for the years 1994-2015 in Russia the equation of regression of the aggregate offer of labor was $Y=0,0003*X^2-38,574*X+1E+06$. The economic growth is largely accompanied by an extensive way. Labor productivity is not high. Economically active population responds to rise in wages more flexibly, employment is increased.

Figure 5
THE PROPORTIONS OF THE LABOR MARKET (AGGREGATE OFFER OF LLABOR IN THE RUSSIAN FEDERATION)



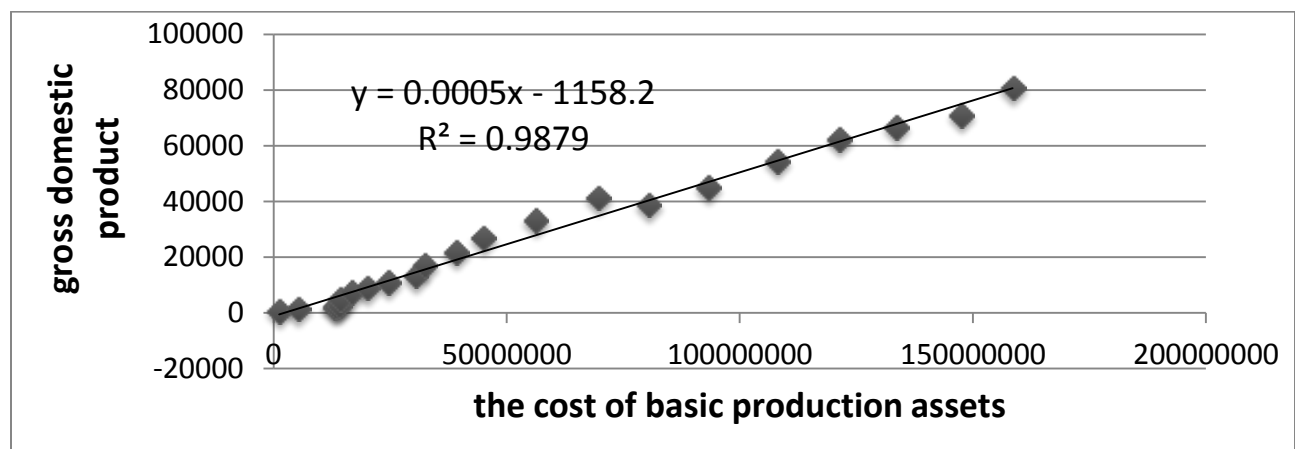
The fourth quadrant is the production function on the basic production assets. After the regression analysis we obtain the following parameters of the production function (Fig. 6). In this case, for the years 1994-2015 in Russia the equation of regression of the production function (for

BPA) was $Y=0,0005*X-1158,2$. As shown in Figure 6. the nature of the relationship between gross domestic product and the basic production assets has been corroborated. With the increase in basic production assets there is the increase in the gross domestic product. This is quite natural.

The fifth quadrant is the commodity market. We started from the hypothesis that the present proposal is formed on the basis of prices and conditions of the previous financial period, while the current prices have determined the current level of demand. The idea of basic markets is not new, here we followed the classic Keynesian views. Here it is necessary to plot the demand and supply of goods.

As a result of modeling (as a method of constructing, the model the regression analysis tools were selected) of the behavior of gross domestic product and the composite index of consumer prices, we have obtained the following results, which are presented in Figure 7 (the raw data in the annex) (Russiainfigures, 2003; Russiainfigures, 2004; Russiainfigures, 2005; Russiainfigures, 2006).

Figure 6
THE PRODUCTION FUNCTION (FOR BPA) IN THE RUSSIAN FEDERATION



As shown in Figure 7 the nature of the relationship between the gross domestic product and the price index has not been corroborated, the actual distribution of figures is close to the classical (theoretical) scheme - the price increase leads to the decrease in demand for goods. This means that with the decrease in price index there is the increase in gross domestic product in the country. In this case for years 1994-2015 in Russia the equation of regression of the aggregate demand was $Y=3E+12X^{(-3,937)}$ (Russiainfigures, 2007; Russiainfigures, 2008; Russiainfigures, 2009; Russiainfigures, 2010; Russiainfigures, 2011; Russiainfigures, 2012; Russiainfigures, 2013).

Figure 7
THE COMMODITY MARKET (AGGREGATE DEMAND IN THE RUSSIAN FEDERATION) NOW
CONSIDER THE PECULIARITIES OF THE AGGREGATE OFFER (SEE FIG. 8)

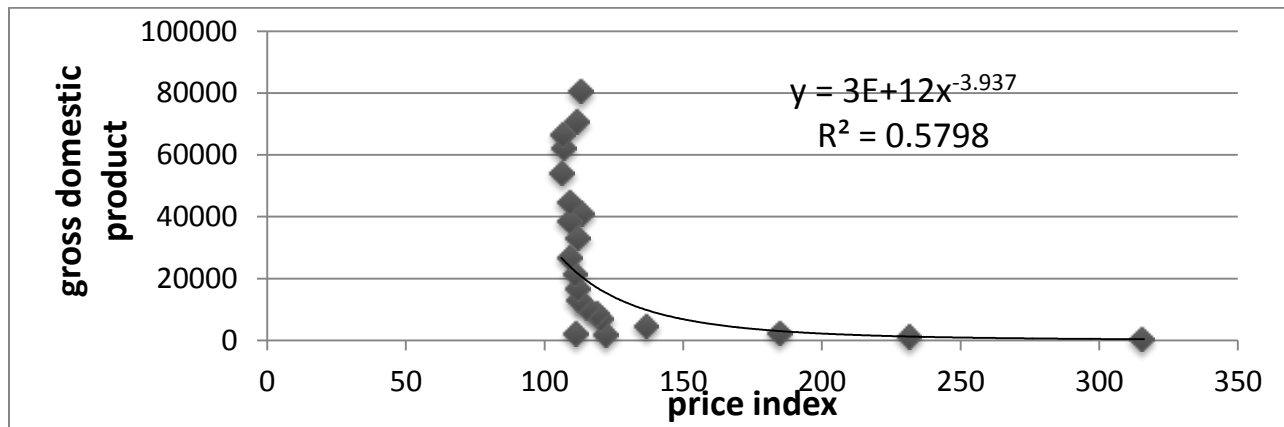
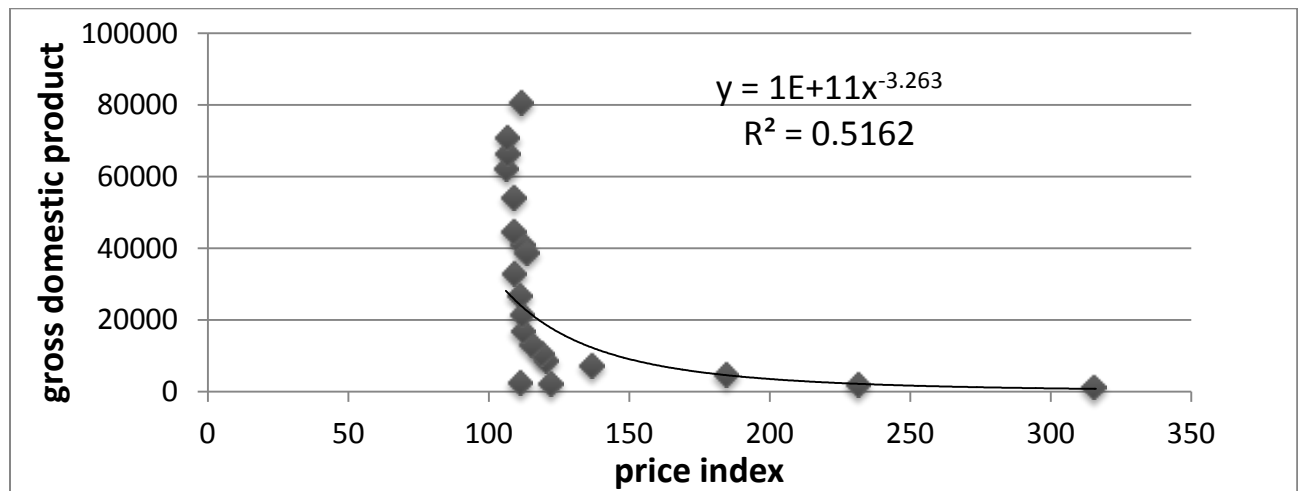
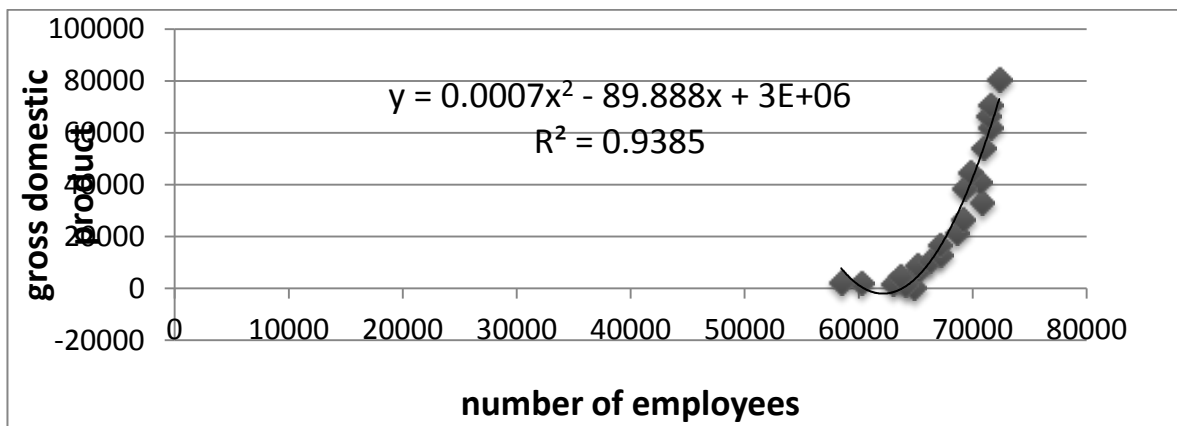


Figure 8
THE COMMODITY MARKET (AGGREGATE OFFER IN THE RUSSIAN FEDERATION)



During the years of 1994-2015 in the Russian Federation the equation of regression of the aggregate supply was $Y=1E+11X^{-3,263}$. Here the tendencies are markedly different from the theoretical ones. As one can see in Figure 8, the character of the formation of the aggregate offer practically merges with the trends in the form with the aggregate demand. From our point of view, the reasons for this situation are that the aggregate supply is formed not on the basis of the market pricing. The sixth quadrant is the production function for labor. After carrying out the regression analysis on the basis of the application the following results have been obtained which are shown in Figure 9.

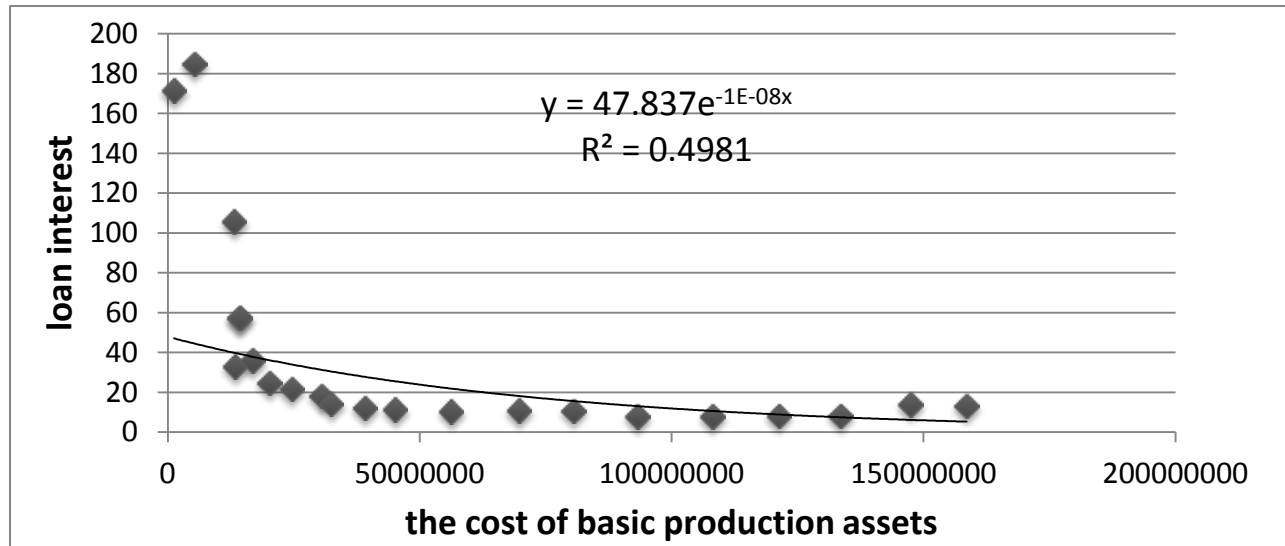
Figure 9
THE PRODUCTION FUNCTION FOR LABOR (THE FUNCTIONS OF LABOR PRODUCTIVITY IN THE RUSSIAN FEDERATION)



In this case, for the years 1994-2015 in Russia the regression equation of labor productivity was $Y=0,0007*X^2-89,888*X+3E+06$. It can be concluded that productivity of labor has been gradually increasing for the past decade (Russia in figures, 2016).

The seventh quadrant is the capital market. Capital is treated here as the material, its “materialized” component, the assets used in the reproduction process are the basic production assets. We started from the hypothesis that the current proposal is formed on the basis of prices and conditions of the previous financial period. The reference indicators in this model are the average annual value of basic production assets and the average rate of refinancing of the Central Bank. The curves represented in it is the aggregate supply and the aggregate demand for capital. We proceeded from the hypothesis that the current proposal is formed on the basis of prices and conditions of the previous financial period. After carrying out a regression analysis on the basis of applications the following results have been received - Figure 10. At the same time for years 1994-2015 in Russia the equation of regression of the aggregate demand for capital was $Y=47,837*e^{(-1E-08X)}$. As shown in Figure 10, the nature of the relationship between the loan interest and the cost of basic production assets (demand) has been confirmed.

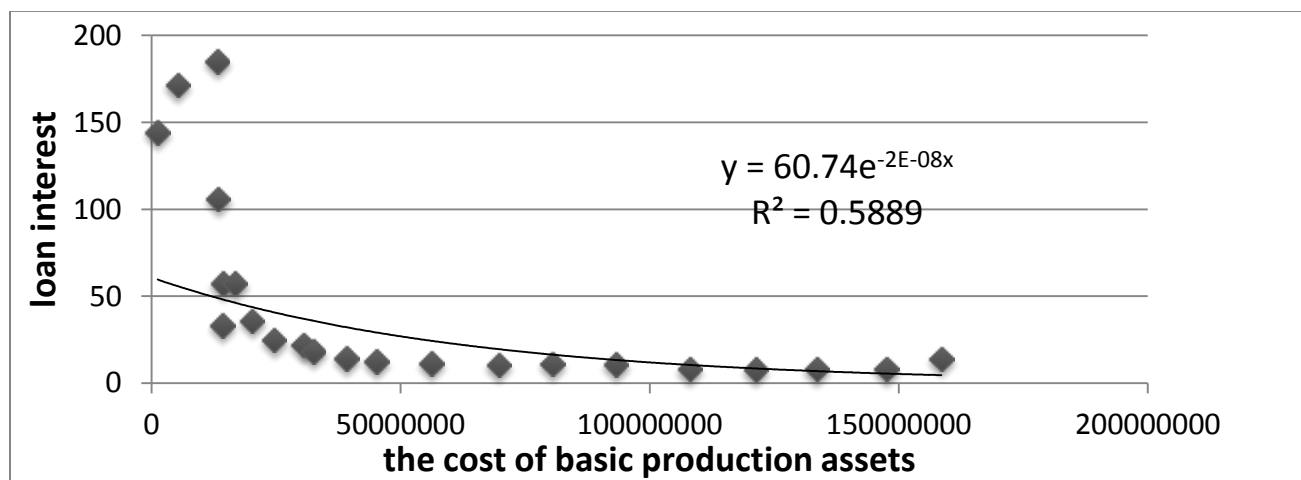
Figure 10
THE CAPITAL MARKET (AGGREGATE DEMAND FOR CAPITAL IN THE RUSSIAN FEDERATION)



Herethe model is also close to the canonical. It can be concluded that with a decrease in the refinancing rate there is the increase in the demand for modernization and technical re-equipment, otherwise, the behavior of the aggregate offer to the capital.

The aggregateofferto the capital.For years 1994-2015 in Russia the equation of regression of the aggregate offer to the capital amounted to $Y=60,74*e^{(-2E-08X)}$.As one can see from Figure 11,the correlation character of the loan interest rate and the costof basic production assetsdiffers from the theoretical.

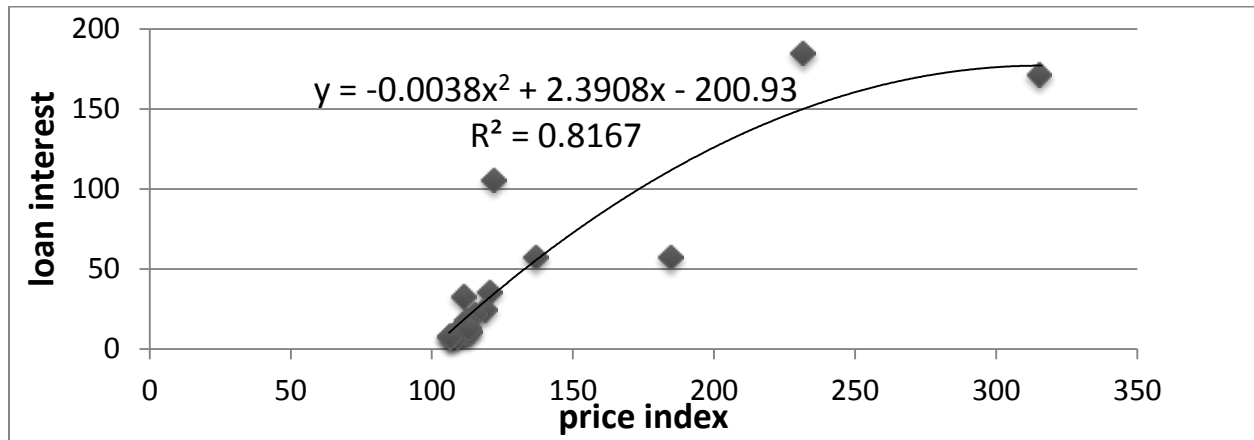
Figure 11
THE MARKET OF CAPITALS (AGGREGATE OFFERTO THE CAPITAL OF THE RUSSIAN FEDERATION)



The eighth quadrantis the impact of the prices on products on the cost of capital. The results of the regression analysis based on the application are given in Figure 12. At the same

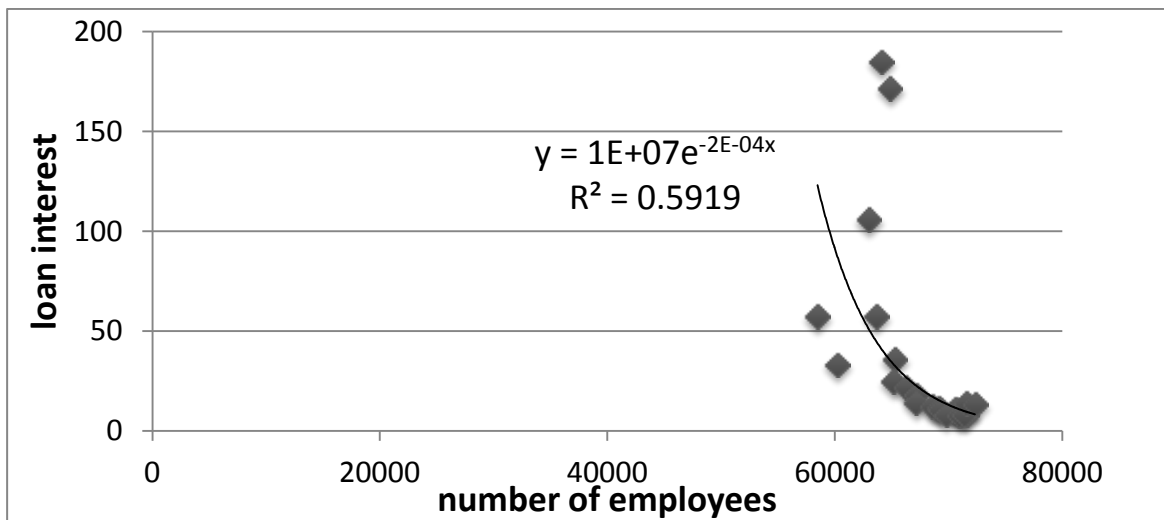
time for the years 1994-2015 in the Russian Federation the equation of regression of isoquanta of the capital market (according to price index) was $Y = -0,0038 * X^2 + 2,3908 * X - 200,93$.

Figure 12
THE IMPACT OF PRICES ON THE COST OF CAPITAL IN THE RUSSIAN FEDERATION



As one can see in Figure 12, the nature of the relationship between the loan interest and the price index has been corroborated. With the reduction of the refinancing rate the consumer price index also decreases. This is quite natural, since low-interest credit resources allow to sell goods with fixed price growth. The final, ninth quadrant is presented in Figure 13. After carrying out the correlation and regression analysis on the basis of applications, we have obtained the following results - Figure 13. At the same time, for the years 1994-2015 in Russia the equation of regression amounted to $Y = 1E+07 * e^{(-2E-04X)}$. With the reduction of the refinancing rate the number of the employed increases moderately. There is interchangeability of the factors of production. In this case, our theoretical predictions about the possible (and appropriate) behavior of the function have coincided.

Figure 13
THE INFLUENCE OF COST OF CAPITAL ON EMPLOYMENT OF LABOR IN THE RUSSIAN FEDERATION



The following dependencies correspond to the theoretical distribution: by the proportion of the labor market - the aggregate offer to labor (quadrant 3), the production function for the OPF (quadrant 4); by the commodity market - the aggregate demand for goods (quadrant 5); the production function by the labor force (quadrant 6); by the capital market - the aggregate demand for capital (quadrant 7); product prices impact on the cost of capital (quadrant 8); the influence of the cost of capital on the employment of labor (quadrant 9).

The following dependencies do not correspond to the theoretical distribution: isoquanta of the production functions (quadrant 1); dynamics of wages (quadrant 2); by the proportion of the labor market - the aggregate demand for labor (quadrant 3); by the product market - the aggregate offer of goods (quadrant 5); by the capital market - the aggregate offer to capital (quadrant 7).

SUMMARY

In our opinion, the following conclusions and recommendations logically arise from the study: to develop the motivation system for businesses and organizations, which will allow to apply the mechanism of interchangeability of costs on wages and basic production assets on the basis of staff and equipment rate setting; to develop a system of wage indexation depending on the level of change in the price index for consumer goods and labor productivity; to develop measures on employment stimulation on the basis of the motivating factor – wages; to impose certain restrictions on the formation of pricing in order to increase the price elasticity on the market of goods and services; to stimulate the supply of capital on the market by the methods of the state regulation.

CONCLUSION

Macroeconomic modeling has a long history. Many scientists took interest in and developed macro-economic proportions, explored the influence of some indicators in the economic system on the other. In this paper, we studied nine sector market model proposed by prof. M. R. Safiullin. It explores three main markets – the commodity market, the capital market, the labor market. And additional sectors that show the productivity of labor of factors of production, as well as the general macroeconomic equilibrium. Based on official statistics, we have calculated the nine sectors of the economy and drawn conclusions on changes in the economic system of the Russian Federation. Not all of the studied sectors develop in a normative way. Therefore, the recommendations for regulation of the economic system of the Russian Federation have been proposed.

ACKNOWLEDGEMENT

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Annex

THE DATA FOR THE CALCULATION BY THE MODEL FOR THE YEARS 1994-2015 IN THE RUSSIAN FEDERATION

Period	GDP (mldroubles)	Price index (in percentage)	Loan interest	The cost of OPF (mlnrroubles)	Wages (roubles)	Number of employees (thousandpeople)
1994	610,7	315,1	171,66	1198684,71	220,4	64858
1995	1428,5	231,3	185	5228697,5	472,4	64055
1996	2007,8	121,8	106	13104702	790,2	63000
1997	2342,5	111	33,16	13324466	950,2	60208
1998	2629,6	184,4	57,5	14169061,4	1051,5	58464
1999	4823,2	136,5	57,5	14271671,5	1522,6	63633
2000	7305,6	120,2	36	16759851,7	2223,4	65273
2001	8943,6	118,6	25	20109320,1	3240,4	65124
2002	10819,2	115,1	22	24553338,5	4360,3	66266
2003	13208,2	112	18,33	30448562,6	5498,5	67152
2004	17027,2	111,7	14,33	32384630,4	6739,5	67134
2005	21609,8	110,9	12,5	39114277	8554,9	68603
2006	26917,2	109	11,5	45058360,1	10633,9	69157
2007	33247,5	111,9	10,5	56193510,8	13593,4	70814
2008	41276,8	113,3	11,071	69687913,6	17290,1	70603
2009	38786,4	108,8	10,77	80462968,7	18637,5	69285
2010	44939,2	108,8	8,12	93185612	20952,2	69804
2011	54369,1	106,1	8	108001247	23693	70933
2012	62356,9	106,6	8,25	121269000	26822	71545
2013	66689,1	106,5	9,5	133522000	29960	71391
2014	70975,8	111,4	14	147430000	32611	71539
2015	80804	112,9	13,33	158533000	33981	72324

DETERMINANTS OF FOREIGN DIRECT INVESTMENTS: EVIDENCE FROM BRICS

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ABSTRACT

To date, the countries of the BRICS (Brazil, Russia, India, China and South Africa) have the highest economic growth rates among the developing countries and countries with economies in transition, as well as a growing influence on the world stage. Their economies are largely complementary. The purpose of the study is to identify the major factors that affect the Foreign direct investment. The objects are the BRICS countries. We use the index and regression analysis to confirm the hypothesis about the impact of infrastructure and socio-economic factors on FDI.

The index method allows grouping the socio-economic indicators in the key areas that makes it possible to conduct a comprehensive analysis of FDI. The following indicators have been proposed in the study: market capacity indicators, financial development indicators, infrastructure development indicators, human resources indicators, technological development indicators. The analysis allows revealing the factors that affect the flow of investments, and dividing countries on the basis of their investment attractiveness. Regression analysis allowed building models on the basis of the relevant integral indices. The results of the study have allowed us to identify the main factors influencing FDI what should be considered when carrying out the economic and investment policy.

Keywords: *Foreign direct investment, financial development, BRICS, investment attractiveness.*

INTRODUCTION

Developing countries attract more and more attention in the conditions of a changing global order. In the early 2000s, the ratio of distribution of Foreign direct investment (FDI) flows between developed and developing countries was 80% to 20%, but developing countries have played a leading role in 2013. If FDI inflows to developed countries increased to 566 billion US dollars accounting for 39% of global flows, the flows to developing countries reached a record level of 778 billion dollars, or 54% of global flows (World Investment Report , 2014). The rest, i.e. 108 billion dollars accounted for FDI flows in countries with economies in transition. FDI influences the economic development of countries (Gui-Diby S.L., 2014; Azman-Saini W.N.W., Baharumshah A.Z., Law S.H., 2010): there is a positive relationship between FDI and GDP, economic freedom, and competitiveness.

Rapidly growing participation of the BRICS states in the international movement of capital feature them among the main economic characteristics that allows identification of this group as a separate object of study. In this context, it is relevant to carry out a comparative

statistical analysis of factors for FDI attraction in the BRICS countries to develop specific actions and directions to stimulate the inflow of foreign capital there.

METHODOLOGY

The purpose of the study is to identify factors which influence FDI. Data for 8 years for BRICS countries have been taken as a sample multitude. The main research methods chosen are the index method and the regression analysis. The study tested the following hypotheses. First, among the European countries there are differences in the level of FDI, however, there can be identified integrated indicators that have an impact on investments. Secondly, the FDI depends on the index built by us, i.e., indicators included in it are valid and can be used in the future for the analysis of investment attractiveness of an economy.

The analysis was carried out in four stages. At the first stage of the analysis, there were identified the indicators describing the main factors affecting attraction of the FDI. This analysis involves assessment of the factors by using various indicators. Assessment of the investment climate of countries was based on the factors that influence the decision to invest, and their indicators.

Different sources published various classifications of FDI factors, from the classic socio-economic: infrastructure, GDP, domestic investment (Luke Chana M.W., Houb K., Lic X., Mountaina D.C., 2014), the economic potential, technological outlook, competitiveness, market capacity (Villaverde J., Maza A., 2015), to the exotic, such as natural disasters (Anuchitworawong C., Thampanishvong K., 2015; Zhang K.H., 2014). Previously considered research allowed identifying five major groups of factors for FDI attraction in the economy (Table 1).

Table 1
FACTORS THAT AFFECT ATTRACTION OF FOREIGN INVESTMENTS

Group rates	Indicators
Market capacity indicators	GDP (billion US dollars)
	GDP per capita (current US \$)
	Total population (million people)
	Number of enterprises and organizations at the end of the year
	Final consumption expenditures (billion US dollars)
Financial Development Indicators	Total tax rate (% of commercial profits)
	Inflation rate (annual %)
	Market capitalization of companies and organizations (billion US dollars)
	Refinancing rate (at end of year, %)
	Volume of foreign trade in goods and services (billion US dollars)
	Primary income from FDI (billion US dollars)
Infrastructure development indicators	Total length of railway lines (% of country area)
	Number of cellular mobile subscribers (per 100 people)
	Number of telephone lines (per 100 people)
	Level of electricity consumption (kW / h)

Labor resources indicators	Number of working-age population (mln. people)
	Percentage of working-age population (% of total)
	Economic activity rate (% of the total population aged 15 years and older)
	Unemployment rate (% of working-age population)
Technological development indicators	Number of patent applications (residents, per 1,000 people)
	Fee for the use of intellectual property (% of GNI)
	Expenditure on research and development (% of GDP)
	Number of Internet users (per 100 people)
	The volume of exports of high technology products (% of total goods exports)

At the second stage, values of each indicator have been indexed by the following formulas:

$\frac{X_i - X_{\min}}{X_{\max} - X_{\min}}$ - For the indicators the values of which have a positive effect on attracting foreign investments;

$\frac{X_{\max} - X_i}{X_{\max} - X_{\min}}$ - For the indicators the values of which negatively affect the attraction of foreign investments;

where X_i - value of the indicator for a given country, X_{\min} and X_{\max} - minimum and maximum values of the indicator in the period under consideration among all the countries studied, i - quantity of indicators.

At the third stage we have calculated five intermediate indexes by the arithmetic mean of indicators: market capacity index (ICM), financial development index (IFD), infrastructure development index (IID), labor resources index (ILF), and technological development index (ITD).

Integral index for factors affecting attraction of foreign investments in a country was calculated by a weighted arithmetic mean of the intermediate indexes. Weight coefficient was determined on the basis of expert assessment.

$$I = \frac{0,25 \times ICM + 0,25 \times IFD + 0,15 \times IID + 0,20 \times ILF + 0,15 \times ITD}{(0,25 + 0,25 + 0,15 + 0,20 + 0,15)}$$

The fourth stage is to build econometric models. FDI for each country was taken as the dependent variable, the explanatory variables were composite indexes built. Thus, we have obtained five models and have the opportunity to check the accuracy of the built index.

RESULTS AND THEIR DISCUSSION

The table 2 shows the coefficients of the independent variables as well as the overall quality of the regression equations.

Table 2
THE RELATIONSHIP BETWEEN FDI AND THE INTEGRAL INDEX

	LnFDI (Brazil)	LnFDI (China)	LnFDI (India)	LnFDI (Russia)	LnFDI (South Africa)
Index (Brazil)	9.59 (0.69)				
Index (China)		2.15 (0.27)			
Index (India)			3.12 (0.78)		
Index (Russia)				6.47 (0.96)	
Index (South Africa)					-14.7 (0.59)
R ²	0.82	0.81	0.79	0.79	0.8

Figures in brackets are standard errors, ** p < 0.05 (India, South Africa); *** P < 0.01 (Brazil, China, Russia).

The built model indicates a strong positive relationship between the built index and FDI. The only exception is South Africa. This country has a negative impact of the index on FDI due to lack of its development that leads to a decrease in investment attractiveness of the country. Thus, we have confirmed the second hypothesis, and we can talk about the reliability of the built index. Let's proceed to its analysis.

The most significant positive change in indicators was also noted for China which in 2007 lead by a combined indicator of market capacity.

Meanwhile, due to the steady growth of the population during the period under consideration in China and India, these countries are inferior to others by such indicators as GDP per capita. It is worth noting a tendency to enhance this indicator in Brazil, India and South Africa from 2005 to 2011, with a further decline in growth in 2012. The highest value was recorded in Russia, and it was 14,090.6 US dollars, what is 2.6 times more than in 2005. For comparison, in India in 2012, GDP per capita was almost 10 times less, or 1503 USD.

With regard to assessment of the tax burden on companies and organizations, the most favorable conditions are observed in South Africa, although there was a tendency of increase in the tax rate from 30 to 32% since 2009. In Russia, from 2005 to 2010 the level of tax burden decreased by 1.3 times, but then this indicator has worsened due to higher tax rate. The gradual improvement of the situation with the taxation of commercial organizations is observed in India. In Brazil, in 2012 there was the highest tax rate among the BRICS countries, it made 69% of commercial profit.

In 2012, the lowest inflation rate was recorded in South Africa: it has decreased in 5 times in comparison with the previous year. China was on the 2nd place, with inflation of 2.7% in 2012. In general, it is worth noting that in the 2008 crisis year, inflation has risen in all the BRICS countries. In Russia, it was the highest rate for the whole year, and among the BRICS countries. The following year, 2009, only in India inflation continued to rise. In 2011, only in this country, the rate of inflation has fallen, in the rest countries we saw an improvement in this indicator.

The market capitalization of Chinese enterprises and organizations is almost 3 times higher than the figure in India which has reached the 2nd place, and in Brazil which is not far behind. In general, significant changes were not observed in the last 7 years in any country, only year 2007 was notable when in China the market capitalization of companies and organizations had increased in almost 3 times, but then in 2008 it decreased by 2.5 times.

Lowest refinancing rate of all the years was recorded in India in 2009-2010, and it was 4.25%. In the following years the rate moved upward due to the tightening of monetary policy. Since 2007, the South African government has gradually reduced the refinancing rate by facilitating commercial organizations an access to credit. And by 2012 the country had the lowest rate. Gradually, Brazil goes the same course, although in 2008 and 2011, interest rates rose temporarily there. Of further note is the relatively low rate in China which ranked 2nd by this indicator.

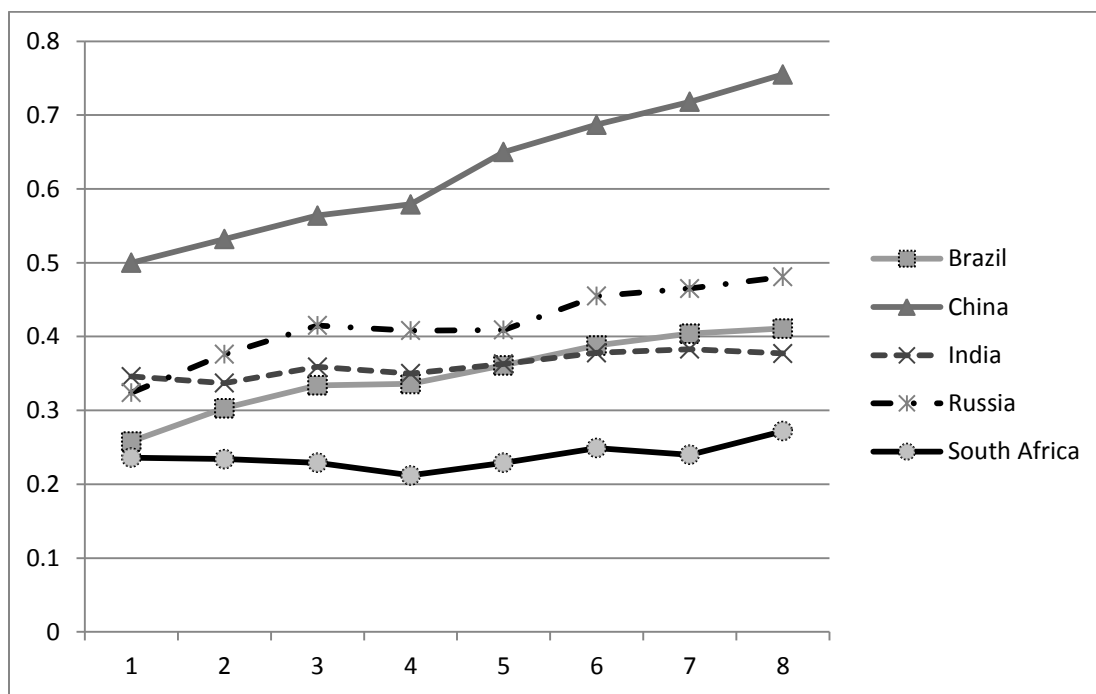
China has also shown the most active foreign trade, and it significantly outpacing the rest of the BRICS countries, and gradually increases the volume of exports and imports from year to year. The worst performances are shown by South Africa and Brazil. By the latest indicator, primary incomes from FDI, China has a leadership what is primarily due to the large volume of incoming FDI in the country and their high yield.

Russia is on the 1 place by the infrastructure development level, South Africa is the second. Russia is ahead of other countries by such indicators as the number of subscribers of cellular mobile communication (for 100 people), the number of telephone lines (per 100 people), and the level of energy consumption. It shows the development of mobile telephony and communications. But in the meantime, it's worth to note a gradual positive trend of improving these factors in China and Brazil.

The next group of factors is the labor force indicators. Here we also see the Chinese leadership which is ahead of the rest of the BRICS by the absolute and relative size of the working population. Every year, the level of the labor force increased. On average, the economic activity level of the population in China was made 73%. The unemployment rate is also low, being second by this parameter only to India. The highest unemployment rate is observed in South Africa: in 2012 every 4th able-bodied citizen remained without work. In Brazil, they successfully fight with unemployment: for 7 years, its decline was 3.4%. A similar situation is observed in Russia: it decreased here over the same period by 5% and amounted 5.5% of the working population in 2012. Other indicators of labor resources also have a positive trend.

As shown by the results of calculations, since 2005, China has successfully developed technologically. The share of R & D expenditures in GDP amounted to 1.98% in 2012, allowing China to take 1 line. Also, every year the number of applications for patents among residents increases. 2nd place is occupied by Russia, although strong changes in the last 7 years were not observed. In all countries, there is strong growth in Internet users. As for the share of exports of high-tech products in total exports of goods, in China it was 26% on average what is 2.3 times greater than that of Brazil which data rate began to decline in 2009.

Figure 1
DYNAMICS OF THE INTEGRAL INDEX FOR THE FACTORS AFFECTING ATTRACTION OF FOREIGN INVESTMENTS IN THE BRICS COUNTRIES *



* Own calculations based on data of WIR, BRICS: JSP, World Bank, OECD library (Joint Statistical Publication, 2015; The world bank database; OECD library database)

In the course of the analyzed period, the integral index in all BRICS countries has increased. The leader in terms of factors increasing rates affecting the attraction of foreign investments is China. In 2012, the index was 0.755. High rates of investment attractiveness growth are also recorded in Russia and Brazil. Note that in 2005, Brazil was in a group of outsiders with the lower value of the integral index. The lowest growth is in India and South Africa. In these countries, there is an imbalance of factors affecting the attraction of foreign investments.

Thus, we can conclude that even though Russia takes 2nd place by these factors, and Brazil is slightly ahead, Russia is far from China which with steady pace increases both its investment potential, and consequently the volume of incoming FDIs.

China is far ahead of other BRICS countries in terms of market capacity, financial development, human resources, and technological development. This breakaway was achieved due to:

1. Large population in the country, including those in working age, that together with a high level of economic activity of the population (the average level of 71.75% in 8 years) and low unemployment (average 4.21%) makes it an attractive country for foreign investors due to considerable manpower and, as a consequence, low-cost labor.

2. Also, foreign investors prefer China due to its saturated domestic market, high purchasing power of the population (that is associated with relatively high incomes of citizens),

and as a result, opportunities for sale goods and services. Also of considerable importance is the high level of GDP in the country.

3. In financial terms, China has surpassed the other BRICS countries due to its favorable conditions for doing business, that is, in particular, in a low refinancing rate, low inflation, and also due to the high profitability of FDI.

4. China pays much attention to high technologies sphere; that helps attract foreign investors as the level of technologies may have an impact on the costs of enterprises, the quality of products, and innovations. China has more than any other BRICS countries invested in research and development (2% of GDP in 2012); it accounts for more applications for patents and a high percentage of exports of high technology products.

Together, all these factors make it possible for China to become a leader in attracting foreign investments not only among the BRICS countries, but also worldwide.

Let's consider these factors for other countries. Indicators of Russia and Brazil are at a comparable level. However, Russia is distinguished by a growing working-age population and rising costs for final consumption; successful fight against unemployment and the systematic development of infrastructure, as well as a soft monetary policy and increasing level of implementation of scientific and technological progress achievements.

Year after year, India also increases interest in the development and production, IT-technologies; the country attracts by cheap intellectual resources, its large population, and the lowest unemployment rate.

The strongest side of South Africa is related to business conditions, i.e., in particular, there are the lowest tax rate for businesses and organizations, low refinancing rate and the inflation rate here.

CONCLUSIONS

During the period under consideration there was an increase in capacity of the market worldwide what is primarily due to the growth of GDP and final consumption expenditures. It's worth noting the China's leadership by these two indicators: in 2012 GDP of the country was 4 times higher than GDP in Brazil which went at the 2nd place. Speaking about the countries' financial development, it is worth paying attention to 2008 which had a negative impact on the integral performance of all countries. A similar situation occurred in 2011. In general, for 7 years, China has achieved the greatest success in the financial growth. The situation in India, on the contrary, led to a reduction of financial indicators what began in 2010 and continues to this day. Thus, we have identified the main trends in the development of the five groups of factors that have an impact on direct foreign investments what has allowed building econometric models confirming their importance.

RESUME

As a result of the study, we have analyzed the influence of various factors on FDI. We have classified factors influencing FDI into five groups: indicators of market capacity, financial development indicators, indicators of infrastructure development, indicators of human resources, indicators of technological development. On the basis of these groups we have built composite index and carried out the analysis of the dynamics of the partial indices.

The results of the econometric analysis showed that there is a strong relationship between FDI and the composite index. In addition, the positive correlation with the various socio-economic indicators has been revealed. This makes it possible to talk about the need for

appropriate policy to attract foreign investments. Understanding this relationship can help in carrying out effective socio-economic policy to increase investment attractiveness of a country.

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STIMULATING AGGREGATE EXPENDITURES USING FINANCIAL INSTRUMENTS FOR THE PUBLIC CULTURE

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ABSTRACT

The article presents interpretation of the content and structure of consumers' financial culture using the gnoseological potential of alternative economic schools and the interdisciplinary approach, and it analyzes the features of the Russian households' financial culture. The evolution of concepts about the content and structure of the financial culture was analyzed, the factors influencing its formation and development were determined, and a thesis about the growing role of financial culture in forming saving strategies of households was also proved. It is proved that a low level of financial culture is a form displaying inefficiency of institutions (institutional trap), which prevents the accumulation of human capital and limits the growth of aggregate expenditures. The provisions presented during the study demonstrate the need to develop and implement some programs aimed at improving the financial literacy and developing the financial culture among the population. The role of the households' financial culture is substantiated in stimulating the consumer and aggregate expenditures, as well as in forming the progressive dynamics of the aggregate income. Certain recommendations were made; they are aimed at developing the elements of financial culture and financial literacy as a prerequisite for preserving the living standards of the population in the conditions of worsening macroeconomic conditions, and an overview of the target programs implemented in this area was given.

Keywords: consumers' financial culture, consumers' financial literacy, consumer and aggregate expenditures, RF GDP, Gini coefficient, savings strategies.

INTRODUCTION

The current state of the Russian economy is characterized by a drop in the main macroeconomic indicators, which is due to a combination of external and internal factors. The external factors include worsening of macroeconomic risks and introducing, in 2014 by the USA and the European Union, the restrictive anti-Russian sanctions comprising the restricted access to international capital markets, which in turn led to frozen export crediting in Russia and financing of backbone projects. The internal factors embrace the decline in aggregate expenditures, which is due to multiple price and non-price factors, among them - inflation, state budget deficit, high level of bank lending rates, ruble depreciation and others. The above factors have an impact on the dynamics of the aggregate expenditures' components - consumer expenditures, private domestic investment expenditures of employers and government expenditures, and they cause

their decline. If the aggregate volume of the Russian citizens' consumer expenditures amounted to more than RUB 6.6 billion in 2014, the same indicator considerably decreased in 2015: about RUB 5.9 billion were spent on the current and long-term consumption (Statistical compilation "Social conditions and living standards of the Russian population", Access mode:15.05.2016). In this case, the structure of consumer expenditures changes; in the crisis conditions, a share of durable goods shrinks; such goods are replaced by the ones for current consumption, which make up, according to the expert estimates, up to 80% of the households' aggregate expenditures. This is one of the essential reasons for drop in the real gross domestic product of the Russian Federation (RF), which declined by 3.7% in 2015 after rising by 0.7% in 2014. The GDP volume in 2015 amounted to RUB 80 trillion 412.5 billion compared with RUB 77 trillion 893.1 billion in 2014 (Statistical compilation "Social conditions and living standards of the Russian population", Access mode: 15.05.2016).

Surely, formation of the governmental anti-crisis policy inevitably involves the need to develop some measures aimed at stimulating the components of aggregate expenditures. At the same time, recognition that the share of consumer expenditures in the aggregate expenditures exceeds similar values of other components suggests the need of a more detailed study of the factors defining them. Traditionally, the non-price factors affecting the consumer expenditures' dynamics are composed of consumer expectations, volume of accounts payable, taxation level, household incomes. In turn, the consumer expectations and accounts payable are, to a large extent, determined by a condition of the financial culture among the population. Recognition of the low level of consumers' financial culture in the contemporary Russian society is a necessary but not sufficient precondition for forming a system of measures aimed at improving it. Content of the financial culture and composition of the instruments, the use of which allows to realize its potential for stimulating the consumer expenditures, are to be determined. It defines the relevance of the research topic, its theoretical and practical significance.

The financial culture concepts underwent a long period of formation. Methodological bases for studying the households' financial behavior were formed in the works of M. Weber, T. Veblen, G. Simmel, W. Sombart, K. Marx, O. Spengler and others, who examined the basic laws and principles governing the functioning of their contemporary society in the industrial stage of development. Certain provisions determining the content of the consumers' financial culture were formulated in XX century in the works of J.M. Keynes, K. Polanyi, P.A. Sorokin, M. Friedman, F. Hayek, J. Schumpeter and others. Examining the financial culture among the population is interdisciplinary, which is due to the characteristics of the object under study. In this connection, a significant contribution should be recognized made to interpretation of the financial culture content and manifestation forms by T. Parsons as a representative of the social action theory, P. Sztompka, who studied social changes and a social field, Jürgen Habermas, who studied the principles of communicative action, J. Coleman, who analyzed the rational choice factors, M. Granovetter, H. White as founders of a network approach to the socio-economic processes. The human capital theory by G. Becker and T. Shultz considerably influenced formation of the concepts of financial culture. Modern interpretations of the consumers' financial culture involve using the methods of economic and mathematical modeling (A. Alchian, R. Battalio, G. Becker, A. Ditton, J. Cox, J. Muehlbauer, R. Sippel, M. Taylor, R. Hall et al.), as well as achievements of other branches of scientific knowledge, including psychology and sociology (J. Kornai, D. Canneman, M. LaVoi, G. Foksol, R. H. Frank, G. Hodgson, R. Shveri, G. Angel et al.).

In the Russian economic science, the issues of consumer behavior aroused increased interest in the period of structural transformation in the economy. During this period, there were

numerous studies, which analyzed the strategies of consumer expenditures, forms of consumer's debt and credit behavior, financial culture and human capital relationship. The works of T.I. Zaslavskaya, V.V. Radaev, R.V. Ryvkin and others are devoted to this issue. Certain challenges connected with forming the financial culture among the population are represented in the works of V.S. Avtonomov, E.M. Avraamova, T.Yu. Bogomolova, A.M. Maloletnev, G.G. Sillaste and others.

Despite a considerable number of studies in this area, alternative approaches to the content of the financial culture in the economy and other branches of scientific knowledge, use of gnoseological potential of alternative economic schools and trends, limited understanding of this phenomenon persists. This prevents using the potential of the financial culture to stimulate consumer expenditures and to justify the rational consumer choice.

Developments, concepts and hypotheses proved in the works on economic theory, economic sociology, etc became the **methodological basis** for the study. The information basis for the study includes information obtained from official federal and regional statistical agencies of the Russian Federation and foreign states. General scientific and specific methods of study were used during the study. The methods of content analysis, expert assessment, inquiry and others appear as the latter ones.

RESULTS

As scientific hypothesis of the study an assumption was made that the financial culture among the population serves as a significant factor determining certain consumer expectations, dynamics of the accounts payable and consumer choice. Thus, formation (change, rise in level) of financial culture becomes a prerequisite for increasing the consumer expenditures and growing the real RF GDP. In the context of this study, households are interpreted as a set of individuals (a single individual) characterized by the total budget (incomes and expenses).

The authors proceed from the concept of the households' financial culture as an aggregate of general cultural and professional competencies, which are expressed in a set of common and specialized knowledge of the subject-object composition and mechanism of functioning of financial markets, institutions regulating them, as well as the skills and abilities of their use taking into account individual, group and public interests. In this case, realization of these competencies is aimed at maximizing the individual utility function, if any consumer budget constraints are available. As key knowledge in the structure of financial culture we consider the knowledge about the financial system institutions, skills and abilities of their application to maximize personal utility.

The authors proceed from the axiom of complete ordering of consumer preferences in determining the content of financial culture that assumes an absolute rationality of consumers as economic agents. At the same time, financial culture as an essential category and financial behavior as a form of its implementation should be distinguished. The consumer decision-making takes place in the conditions of limited information and (or) limited instruments for information processed by consumers. In this connection, a consumer may reach no optimum when deciding on the distribution of income between expenditures and savings, as well as when selecting instruments of savings.

The conducted study shows that with all the diversity of consumer expenditure strategies, it would be expedient to highlight, in their composition, the strategies aimed at reducing the amount of the accumulated human capital; strategies that ensure simple reproduction of the

human capital; strategies that provide accumulation of the human capital and strategies that ensure innovative reproduction of the human capital. Long-term goals of socio-economic development of a state suggest the need to encourage the expanded and innovative reproduction strategies of the human capital, which is the dominant factor of economic growth in a post-industrial society. Therefore, formation of financial culture along with solution to short-term tasks (provision of the positive macroeconomic dynamics) ensures achievement of strategic goals of progressive development, since it contributes to a change in the composition of economic growth factors.

The low level of financial culture can be seen as an institutional trap (QWERTY-effect or inefficient institute), which becomes an obstacle to functioning of social elevators, since it limits consumer expenditures for the human capital accumulation, and it also stimulates an increase in overdue indebtedness of households.

As of the beginning of 2016, the retail market of bank crediting sees two key trends: while the consumers' credit debts are reduced, the overdue indebtedness on existing loans is growing. According to official data, the total credit debt in the past year decreased by 5.8%, and as of January 1, 2016 it amounted to RUB 10.63 trillion (a year earlier the figure was RUB 11.29 trillion). At the same time, the overdue indebtedness increased by 29.4% over the year, and as of January 1 it amounted to RUB 861.4 billion (a year earlier – RUB 665.6 billion) (Statistical compilation "Social conditions and living standards of the Russian population", Access mode:15.05.2016). This situation is caused by deterioration of the macroeconomic situation, which determines the need to make smarter financial decisions. In absolute terms, the highest credit indebtedness per household is observed in the Yamal-Nenets Autonomous District – RUB 493 thousand, Khanty-Mansi Autonomous District (Ugra) – RUB 458 thousand and in the Republic of Sakha (Yakutia) – RUB 337 thousand. At the same time, overdue debts in some regions are much higher than the average indicator. The Republic of Ingushetia (32.8%), Karachay-Cherkess Republic (14.7%), Kabardino-Balkar Republic (12.7%), Republic of Buryatia (11.7%) and Kemerovo Region (11.7%) became the overdue indebtedness leaders (Statistical compilation "Social conditions and living standards of the Russian population", Access mode:15.05.2016). The credit debts-to-annual income ratio ("debt overburden") was 22% on average in Russia. The Republic of Kalmykia still leads the parade in this indicator - debts to banks per household account for a half of the annual family income (51%) there. In all other regions, the debt overburden level remains below 40%, but the highest indicators are seen in Irkutsk Region (38%), Kurgan Region (36%) and Tuva Republic (36%) (Investment behavior of Russians in 2006-2015, Access mode:15.05.2016).

The Russians' savings continue growing: over 2015, the total volume of deposits placed by individuals increased by 24.5%, and as of January 1, 2016 it amounted to RUB 23.26 trillion. This trend is largely determined by the revaluation of foreign currency deposits, which account for about 30%. The average bank deposit per every Russian household was RUB 412.8 thousand. The highest savings activity is traditionally observed in the Central and Northwestern Federal District, where, according to estimates, the average family deposit amounted to RUB 756 thousand and RUB 459 thousand, respectively. Poor savings activity is characteristic of Ingushetia and Chechnya, where the average deposit does not exceed RUB 60 thousand. The presented figures show that the regional differences in the household's financial behavior are a form of manifestation of the economic space polarization. In this case, the designed instruments for developing the financial culture must take into account the peculiarities of the consumers' territory.

The presented figures do not demonstrate the high level of the Russian citizens' income polarization. The Gini index, which reflects how much the country's income distribution deviates from the ideal equality, was 0.412 in the Russian Federation in 2014, while its value amounted to 0.411 in the United States, 0.230 - in Sweden, 0.497 - in Brazil and 0.469 in China (BRICS, 2015). Rather low living standards of a significant part of the population do not allow the households to act as subjects of investment activities.

However, even if there is a sufficiently high level of income, the Russian households have, due to the lack of financial culture, no idea of modern investment instruments involving securities (stocks and bonds); structured products of bank; mutual investment funds (MIF); shares of exchange-traded funds; hedge funds; precious metals (gold, silver, platinum, etc.); alternative instruments, including precious stones, antiques, luxury and art, collections of ancient coins, wines and others. The Russian households' knowledge of investment instruments is limited to the knowledge of bank deposits (or deposits); in some cases - insurance and pension savings program.

The Russian households show absence of their family budget system; when concluding agreements with credit and financial institutions, decisions are made spontaneously without regard to the totality of the conditions; a comparative analysis of the conditions of providing financial services is not carried out; there is insufficient knowledge for solving disputes with financial institutions; the basic skills of tax planning are lacking.

The average per capita income serves as an essential factor determining the households' savings strategies. Table 1 presents dynamics of the average per capita money income of population/funds attracted by commercial banks in deposits ratio.

Table 1
DYNAMICS OF THE AVERAGE PER CAPITA MONEY INCOME OF THE RUSSIAN POPULATION AND DEPOSITS ATTRACTED BY COMMERCIAL BANKS AND PLACED BY INDIVIDUALS (BANK OF RUSSIA STATISTICAL BULLETIN, ACCESS MODE:15.05.2016)

Year	Average per capita money income of the RF population		Attracted deposits placed by individuals	
	RUB	growth, %	billion, RUB	growth, %
2010	18,958.4	-	9,818.1	-
2011	20,780.0	9.6	11,871.4	20.9
2012	23,221.1	11.8	14,251.1	20.0
2013	25,928.2	11.7	16,957.5	19.0
2014	27,754.9	7.1	18,552.7	9.4
2014/2010		46.4		89.0

According to official data, the analyzed period saw an increase in the average per capita income of the population, while the growth rate gradually declined, which led to synchronization of the dynamics of average per capita income of the population and attracted deposits placed by individuals.

Another significant factor in the choice of savings strategies of the population is the level of inflation and the consumer price index, which reflect dynamics of the real incomes of the population and define the public opinion about personal financial position and goods and savings market conditions. The index of current personal financial position and the index of favorable savings conditions serve as an indicator of change in opinion about the personal financial

position. Analysis of the data collected by the Federal State Statistics Service, which calculates the indicator in accordance with the developed methods, shows that the population considers the existing conditions for savings as the most unfavourable now. In 2015, the negative values of this index reached its maximum value (Dynamics of household deposits in the banking system of 2014 and 2015, Access mode: 15.05.2016).

According to the Central Bank of the Russian Federation, until 2014 there was a relatively stable inflation and consumer prices for goods and services. In 2015, all indicators of inflation, including food prices, increased.

Table 2
DYNAMICS OF CONSUMER PRICES BY GOODS AND SERVICES GROUPS (MONTH TO A CORRESPONDING MONTH OF PREVIOUS YEAR, %) (BANK OF RUSSIA STATISTICAL BULLETIN, ACCESS MODE:15.05.2016)

Date	Inflation	Basic inflation	Growth in prices for food products	Growth in prices for non-food products	Growth in prices for paid services
01.2011	9.6	7.2	14.2	5.6	8.2
01.2012	4.2	6.0	2.0	6.2	4.7
01.2013	7.1	5.7	8.6	5.1	7.8
01.2014	6.1	5.5	6.5	4.3	7.8
01.2015	15.0	14.7	20.7	11.2	12.3

Comparison of the attracted deposits placed by individuals, average per capita income of the population, consumer market inflation and index of favorable savings conditions reveals a relationship of these parameters.

Table 3
CORRELATION ANALYSIS IN RELATION TO INDICATORS OF THE RF HOUSEHOLDS' SAVINGS BEHAVIOR FACTORS (DYNAMICS OF HOUSEHOLD DEPOSITS IN THE BANKING SYSTEM OF 2014 AND 2015, ACCESS MODE: 15.05.2016)

Year	Attracted deposits placed by individuals, billions, RUB	Average per capita money income of the RF population, RUB	Consumer market inflation, %	Favorable savings conditions, %
2010	9,818.1	18,958.4	9.6	-41
2011	11,871.4	20,780.0	4.2	-40
2012	14,251.1	23,221.1	7.1	-35
2013	16,957.5	25,928.2	6.1	-34
2014	18,552.7	27,754.9	15.0	-36
Pearson correlation coefficient (R)	-	0.9994	-0.9801	0.8381

The Pearson correlation coefficient value confirms a high correlation between the attracted deposits placed by individuals, average per capita income and index of favorable savings conditions; in this case the above mentioned factors stimulate the inflow of deposits placed by individuals in banks. At the same time, an inverse correlation was found between the attracted deposits and inflation, i.e. the consumer price growth limits the inflow of deposits placed by individuals in banks.

According to the Center for Strategic Research of the company Rosgosstrakh (Index of current personal financial position, Access mode: 15.05.2016), in February-March 2015, despite the crisis situation in the Russian economy, 58% of respondents expressed their confidence in the financial system, the share of the population making savings decreased by 5 percentage points compared to the same period of 2014, and it amounted to 53%, nevertheless, 28% of families set aside a certain amount regularly. The savings rate is in direct proportion to the income of the population and level of education. The marginal propensity to save decreases, as far as the respondents' age increases. For example, 67% of young people (18-30 years) and only 42% of older people (over 50 years) make savings (Economic mood, Access mode: 15.05.2016). In 2015 the study involved 7,802 respondents.

Conservatism of the financial culture among the population can be confirmed by a permanent composition of the set of instruments used as part of the savings strategies (Nikiforov O., 2012; Presnyakova L.A., 2009). The RUB bank deposits and cash appear as the most sought savings instruments.

Table 4
TYPES OF INSTRUMENTS USED BY THE POPULATION TO FORM THE SAVINGS (SUBJECT TO THE AMOUNT OF THOSE WHO MAKE SUCH SAVINGS), UNIT

Indicator	2011	2012	2013	2014	2015
Bank deposit	61	62	64	63	61
Cash	32	33	32	31	32
Investments in real property for resale	6	7	4	8	10
Bank deposit in foreign currency	9	9	9	11	9
Investments in own business	6	7	5	5	6
Gold, jewellery, antiques	3	3	2	3	3
Securities	2	4	2	2	1
Accumulative insurance	2	1	1	1	1
MIF (mutual investment fund)	1	2	1	1	1
Other	2	1	2	3	2

In 2015, the average term of deposits was 1.6 years, while in 2008 - 3.1 years. Shortening of terms of the deposits placed by individuals reduces stability of the resources attracted by commercial banks, exacerbates the problems of the national bank system's liquidity, and decreases the investment potential of such system (Naveh M.H., Torosyan T., Jalae S.A., 2012; Mansor H.I., 2015). Such reduction is due to inflation in the consumer market, as well as a decrease in the real income of individuals. At the same time, the above data testify a fairly high level of confidence in safety of the savings in the bank sector. Thus, in addition to the objective factors determining the savings instruments selected by households, an essential role of the financial culture should be recognized; it is able to largely neutralize a negative impact of external factors.

CONCLUSIONS

In the Russian Federation, a number of programs and projects has been developed and implemented in this area. It included the Government Program Promotion of the Population's Level of Financial Literacy and Financial Education in the Russian Federation implemented by the RF Ministry of Finance in cooperation with the World Bank with the organizational support of the Foundation for Enterprise Restructuring and Financial Institutions Development; Federal Program Financial Culture and Safety of the Citizens of Russia created with the support of the All-Russian political party United Russia; educational project of the Center for Investment Education focused mainly on senior pupils; educational project the School of Money and others (Klaas J., Vagizova V., 2014; Postalyuk M., 2014).

However, analysis of these programs suggests that they are oriented towards a narrow segment of consumers and can not solve the challenges connected with an increase in the financial literacy across the country. In this regard, we think it necessary to include academic disciplines in the exemplary programs. This also concerns the issues, which are considered in secondary and higher education institutions and with which solution forming the basic knowledge of the taxation and tax law, financial institutions, financial services and investment instruments is related. Mastering the professional and general cultural competences within the walls of secondary and higher schools will allow to future professionals, regardless of their field of activity, to select appropriate knowledge replenishment technologies. At present, such technologies can include distance learning, information on the websites of credit institutions and professional securities market participants, specialized courses, etc.

The conducted analysis shows that the choice of effective investment instruments, formation of rational savings strategies of the population is a necessary prerequisite for increasing aggregate expenditures, which is a source of progressive macroeconomic dynamics and improvement of living standards of the population.

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FEATURES OF ISLAMIC INSURANCE TAKAFUL INSURANCE AND OPPORTUNITIES OF ITS USING IN THE RUSSIAN FEDERATION

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ABSTRACT

The article defines the essence and principles of functioning of the system of Islamic insurance takaful, its differences from the traditional and mutual insurance, the basic directions of activity of Islamic insurance institutions. Particular attention is paid to the analysis of the mechanism functioning of Islamic insurance organizations, which revealed four takaful fund management model: a model of participation in profit agency model, combined model; specific model. The article presents the possibilities and limits of application of elements of Islamic insurance in the Russian Federation.

Keyword: *The system of Islamic insurance takaful, takaful fund, the financial system, traditional insurance, mutual insurance, insurance companies, insurance risks, insurance contracts.*

INTRODUCTION

The global economic crisis of 2008-2009. predestined aggravation of contradictions between the real and financial sectors of the economy. This was the reason for increased interest in Islamic financial institutions that exclude the use of speculative instruments and practices that served as the cause of the deterioration of the western countries and the macroeconomic indicators caused by the Asian financial crisis of 1997-1998. In this regard, it is a particular interest to study the Islamic insurance takaful, for the development of which the Russian Federation has the following prerequisites.

For the development of takaful in the Russian Federation has the following prerequisites.

1. There is the presence of the customer base. In Russia, a permanent resident between 14 and 20 million. Muslims believe. "Ethnic Muslims", i. e. nations, traditionally Muslim majority population in seven Russian regions: in Ingushetia (98%), Chechnya (96%), in Dagestan (94%), in Kabardino-Balkaria (70%) in Karachay-Cherkessia (63%), in Bashkortostan (54.5%), Tatarstan (54%). In addition to the Muslims in the Russian Federation, the number of citizens as the main consumers of takaful may act migrants from Central Asian republics, the number of Muslims, against which potential customers are expected to increase by 5-7 million. Man.

2. There is the appeal of the conditions for the owners of takaful insurance policy. Unlike traditional insurance companies participants (investors) Takaful - the Fund relies on the results of the remuneration of the company, if there was no insurance claims.

3. There is the rapid development of takaful insurance in the world. According to experts of Ernst & Young by 2015 could increase the volume of insurance premiums of companies

operating under Sharia principles in the global market to \$ 11.0 billion. 5 bln. Dollars in 2009 (PwC).

4. there is the ability to work as part of the Russian legal field. The principles of Takaful is a whole fit into the legal framework adopted in Russia. In the Civil Code of the Russian Federation have been provided a form of "Mutual Insurance Society" (OER), which can be taken as the basis for the establishment of Takaful companies in Russia.

METHODS

The methodological basis is the prominence of the alternative economic schools and trends, including the theory of insurance, banking theory and banking systems, the theory of institutions and institutional change, and others. Multidimensional nature of the subject of research requires the use of the cognitive capacities of the various branches of scientific knowledge, which makes use of a multidisciplinary approach to solving the formulated tasks.

Information base of research information constitute official federal and regional statistical agencies of the Russian Federation and foreign states.

RESULTS

Takaful or Islamic insurance (from the idiom "kafala" denoting in Arabic "giving each other mutual warranty of any kind"), is the direction of development of the Islamic financial system.

There are various definitions of the categories in the works of modern scholars of the Islamic financial system:

1. According to the interpretation R.I.Bekkina, Takaful - is an independent alternative system that can exist both in commercial and in mutual form (Bekkin R.I., 2003).

2. According to the interpretation I.L.Logvinovoy, Takaful - a method of creating an insurance protection (Logvinova I.L., 2012).

3. According to the definition A.S. Ryskulova, A.O. Soldatova. H. S. Umarov, S. P. Fukin, Takaful or Islamic insurance, - a system based on principles of mutual aid (Taawun) and voluntary contributions (Tabarre), which provides a collective and voluntary risk-sharing among group members. Takaful is a form of insurance that satisfies the principles of Islamic law (Ryskulov A.S., 2010; Fukin S.P., 2014).

4. According to the definition Ya.Bumbadzhi, A.A.Tsyganova, Takaful - a way of organizing the provision of insurance protection, established in accordance with the norms of Sharia on the distribution of profits and losses between the principle participants and the operator (Bumbadzhi Ya., Tsyganov A. A., 2014).

5. A number of authors believe that the classic insurance and takaful identical, while noting that the takaful concept is not contrary to the Sharia. It is noted that any classical commercial insurance or takaful does not eliminate the risk, and help reduce the risk of adverse consequences of these events through the reimbursement of financial losses (Badawi Z. A ., 1998).

Main principles and provisions of takaful:

- Absence of excess gharar (uncertainty) due to the fact that part of the premiums that are paid by each participant, is considered as a gift or a donation and sent to a special fund, from when the insured event compensation is provided. The operator is also in accordance with the

terms of the contract, is aware of its share of the profits, negotiated in advance. Dimensions of revenues depend only on the ongoing operations of the company and does not represent a fixed, independent of the actual profit resulting percentage;

- Providing a guarantee of the risks of the insurance process, as the main purpose of takaful, where parties to a contract can act as the guarantor, and the role of those who are warranted;

- The use of a special profit-sharing mechanism ("Mudaraba") avoids the percentages that are widely used in commercial classic insurance;

- The creation of a specialized body for the evaluation of new products (services), takaful companies, control performed by the takaful operator actions in terms of their compliance with the rules and principles of Islamic law (Sharia Supervisory Board);

- The highest management principle of good faith (utmost good faith) as the basic law according to which all parties must act takaful contract;

- Insurers have the right to nominate their representatives to the Board of Directors of Takaful company;

- In contrast to the classic commercial insurance Takaful can not violate the conditions of inheritance (the principles of "Miras" (Heritage, heir) and "vasiya" (testament, left during the life of the deceased person)). The policyholder has the right to bequeath to the designated beneficiary up to a third of all available any property included in a list of insurance premiums paid and the expected profit. If the beneficiary is one of the heirs of the testator by law, he can get all that remains after the payment of debts of the deceased, funeral and other expenses, as well as payments on the will, together with other legal heirs.

European Classical theory does not consider takaful insurance in the context of the evolution of the insurance relationship, and limits the analysis of the history of insurance in its two main forms - mutual and commercial (traditional). The difference between the traditional insurance, which is defined "set of relations on the organization and use of the insurance fund by contributions from insurers policyholders" (Gromov S.V., 2011) and the mutual insurance is that the latter "insurers simultaneously act and the role of insurers and insurance fund is created on the basis of mutual" (Gromov S.V., 2011). Such an approach means that the mutual insurance principles do not contradict the principles of the Islamic faith, while commercial insurance contains elements that are contrary to the provisions of Shari'ah. For this reason, the Council of the Islamic Academy of jurisprudence (fiqh), the Organization of the Islamic Conference, at its second session, held in Jeddah (Saudi Arabia), 22-28 December 1985 issued a decree №9 «On Insurance and reinsurance" (Resolution №9, 1985). This document also shows the invalidity of commercial insurance contract in terms of Shari'ah, and by offering an alternative in the form of takaful, calls for Islamic countries to accelerate the development of takaful in their territories.

Analysis of commercial classical insurance system shows that it last present restricted elements from the position of the Islamic faith: *riba* (usury), *gharar* (uncertainty), *meysir* (excitement) and *haram* (forbidden activity) (Magomadov M.M., 2012), as well as risk-sharing (reinsurance). The last element is contrary to the principle prohibited in Islam, the formation of contractual relations, involves the transfer of risk of monetary (or other) fees from one company to another or to a third party. Takaful assumes that all contractors are required to equal (or corresponding to their participation) the extent to share the risks inherent in the transaction; It based on the principle of the sanctity of contracts, i. e. It considers as the most important duties of the parties to the transaction - performance of contractual obligations; money are treated

exclusively as a potential capital, real capital they are considered only after being invested in productive activities (investment allowance).

Thus, Takaful - a set of redistributive relations, based on reciprocity and mutual assistance.

Islamic insurance can be implemented both in commercial and in mutual form for all groups of consumers, regardless of religion due to the fact that it provides for both voluntary collective risk sharing and profit. Takaful provides for the mutual granting of a guarantee, and its implementation in the form of mutual insurance companies is not contrary to the Federal Law of 29.11.2007 number 286-FZ "On mutual insurance" (On mutual insurance: fader., 2007).

Comparative characteristics of traditional, Islamic insurance and mutual presented in Table 1.

Table 1
COMPARATIVE CHARACTERISTICS OF TRADITIONAL, ISLAMIC INSURANCE AND MUTUAL

Characteristic	Traditional insurance	Mutual insurance	Takaful
Purpose	Making a profit	The provision of mutual assistance	The provision of mutual assistance
Risk	The transfer of risk to the insurer	The allocation of risk between the parties	The allocation of risk between the parties
Protection	The insurer provides insurance protection	Coordinates the work of insurance fund	Coordinates the work of the takaful Fund
The conclusion of the contract	Purchase and sale	Partnerships	Partnerships
Profits from the sale of insurance services	Receives	Does not receive	Does not receive
Investing	Allowed	Allowed	Allowed
Types of insurance	There are no restrictions	Forbidden life insurance	Property and personal insurance, corresponding to norms of Sharia
Management	Insurers cannot participate in the management of	Insured persons may participate in the management	Insured persons may participate in the management
State regulation	State insurance supervision authority	State insurance supervision authority	State insurance supervision authority + Syariah Court

The main directions of activity of Takaful are:

1. General Takaful: insurance dwelling, cartakaful, insurance of property interests of the accident.

2. Family Takaful: investment takaful (cumulative life insurance) Takaful for education, medical takaful and takaful health insurance; Medical Takaful for persons traveling abroad, takaful accident.

Analysis of Islamic insurance organizations functioning mechanism shows that there are four takaful fund management model currently: Model with participation in profits - Mudaraba

used in Malaysia; agency model - Wakala, widely spread in the Arab world; Combined model - Wakala, Mudaraba; specific model - the Waqf, applied in Pakistan (Hadiullina G. N., 2003).

The Mudharabah model. Islamic insurance company acts as mudarib (trustee), and participants takaful fund as rabb-ul-mal (the principal). Mudharabah model implies that the takaful operator engaged in investment management of insurance fund assets and underwriting. All investment income is divided between the Islamic insurance organization and the insured according to a predetermined ratio. The insurance excess (as amended by the difference between the premiums and the insurance indemnity) remains in the takaful fund, i. e. owned by the participants. The modified model Mudaraba insurance excess is distributed among the takaful fund and takaful operator in predetermined proportions. All operating expenses in both models carries takaful operator. As a result the company's share in the investment income is often higher than that of the fund.

There are different opinions on the legality of conducting Islamic insurance activities under the "Modified Mudaraba" model among the Muslim legal scholars. The controversial issue in this case is the concept of apportionment between the insured and the insurer of the insurance excess. Some experts believe that it is contrary to the principles of Sharia, and this surplus should be wholly owned by the insured.

As part of Wakala model, an insurance organization acts as an agent (Wakil) for insurers. In this model, the takaful operator receives a fixed amount of remuneration - pre-agreed proportion of contributions (donations) insurers. This takaful operator is not involved in the insurance or investment income. In a modified Wakala model is similar to the modified Mudharabah model, the insurance excess is distributed among the participants and the takaful operator in predetermined proportions. At the same time this allocation is also subject to criticism and active is not absolute in the legitimacy of the Islamic system of insurance. In both versions of the model Wakala cover operating expenses is due to the funds paid by the operator as a reward.

At present, some financial regulators and international financial institutions recommended to use a hybrid model Wakala, Mudaraba. The hybrid model is a combination of models Mudaraba and Wakala. Takaful operator receives a fixed percentage of contributions paid by the insured, plus a share of the profits derived from investment activities.

The model Waqf takaful operator carries out an initial contribution (Waqf) in Waqf Fund, whose assets (i. e .down payment) exclusively used in investing activities and not spent. Insurers makes contributions (Tabarre) in Waqf Fund, which are used for the settlement of insurance claims. All profits from the investment management of waqf divided between the insurer and the insured in the pre-approved percentage. In addition to revenue Islamic insurance company includes a fixed amount of agency fee. Excess waqf fund remains in the fund's property.

A special feature of this model is the use of the mechanism of the charity - Waqf. Operator Shareholders make an initial payment in the form of special contributions, thus losing the title to him. But this title is not transferred to the participants of the Fund. According to Sharia exclusive ownership in this case belongs to Allah. Thus Vakif i.e. Shareholders have the right to specify the transmission of different kinds of conditions for the use and management of the funds transferred as a waqf.

The difference in these models is in the way of formation of the takaful operator's profits.

Profit takaful operator is formed by:

1. The model of "Mudaraba" - profit-sharing;
2. The model of the "Modified Mudaraba" - profit-sharing;

3. The model of the "Wakala" - the agency fee;
4. The model of the "modified Wakala" - agency fees and profit sharing;
5. The hybrid model "Wakala, Mudaraba" - profit-sharing and agency fees;
6. The model of the "Waqf" - profit-sharing and agency fees.

In turn, participating in profits means:

1. The model of "Mudaraba" - investment income;
2. The model of the "modified mudaraba" - investment and insurance income;
3. The model of the "Wakala" - is not intended to participate in the profits;
4. The model of the "modified Wakala" - insurance income;
5. The hybrid model "Wakala, Mudaraba" - investment income;
6. The model of the "Waqf" - investment income (part of the investment income generated by funds contributed by shareholders takaful operator in the Waqf Fund)

It should be noted that the model "Wakala" much like existing in Kazakhstan model of functioning of mutual insurance companies. The hybrid model "Wakala, Mudaraba" is most similar to the model adopted in the traditional commercial insurance. Pakistani model "Waqf" has a unique feature of the formation of waqf fund that can provide a significant competitive advantage in attracting customers. Models "modified Wakala" and "Modified Mudaraba" are the least attractive in terms of takaful fund participant as imply the division of insurance balance, the presence of which is difficult to attribute to the merits of the operator.

The analysis shows that the most acceptable to the Russian reality model serves "Wakala", which can be used for production cooperatives (mutual insurance companies), as well as hybrid or "Waqf" model for joint stock companies. In this case the variant of implementation of Islamic insurance in all these models. In this case, using the takaful operator of a particular model will be a competitive criterion. An obstacle to adapting legislation to the use of models Waqf acts inability to legalize the ownership rights to the Waqf Fund for any operator nor the participants.

Currently, most of the insurance premiums collected takaful companies in the countries of the Cooperation Council for the Arab States of the Gulf (GCC), where only Saudi Arabia accounts for 48% of the collected global takaful premiums, while in the period from 2009 to 2014. the volume of collected premiums by major member countries of the Council doubled (Engku Rabiah Adawiah Engku Ali, Hassan Scott P. Odierno, 2008). Many potential customers are takaful companies use traditional insurance services according to "emergency rule", which allows Muslims to use the traditional insurance protection until until an insurance product that meets the standards of Shariah. After the appearance of the product takaful companies are beginning to compete with insurance companies.

Among the factors hampering the development of Islamic insurance in Russia are:

- 1) licensing of takaful - companies (the definition of supervisory and licensing authority, the shape and purpose of licensing, reporting, etc.);
- 2) separation of the insurance industry on 2 (takaful and insurance);
- 3) Insurance Payments Guarantee Fund;
- 4) The institutional infrastructure of the takaful industry;
- 5) professional associations;
- 6) re-insurance (re-takaful);
- 7) separating the takaful fund of fund from shareholders;
- 8) the division of investment income and the surplus from operating activities;
- 9) requirements for investment and asset diversification;

- 10) restrictions on the payment of dividends to shareholders;
- 11) qualifications and other requirements for executives;
- 12) The establishment and functioning of the Shariah Council in Takaful companies and the regulator structure.

Application of Shariah principles in the field of insurance it is possible under the following assumptions.

1. The creation of legal framework regulating the use of Takaful insurance operations, and contains rules that determine the order of solving the above problem (see. Pp. 1-12).

2. There should be awareness of the population about the methods, mechanisms, takaful insurance benefits and demand for such services. Hypothetically, such a need exists, however, a lack of public awareness and the traditional distrust of Russian consumers in financial institutions may be the factors that will hinder the development of takaful insurance in the early stages.

3. There must be the risk management. Work in accordance with the principles of Shariah brings to the work of takaful companies and additional risks as the risk of compliance with the principles of Sharia, legal risks, and so on. Therefore, takaful companies will be forced to spend additional funds for the establishment of a risk management system.

4. There should be availability of the infrastructure of Islamic economics, above all, the Islamic financial institutions (banks, investment funds, insurance companies, etc.). Its absence in Russia significantly reduces the opportunity for investment in the country for insurance companies, which will lead to excess liquidity and increase the value of assets.

5. There should be Standardization. At the moment, there are no common standards of financial reporting and the regulatory framework for Islamic financial institutions. As a result, in some countries they are working in accordance with AAOIFI standards (Accounting and Auditing Organization for Islamic Financial Institutions), while in others they use standards developed exclusively for this country, for example, in Iran.

6. Lack of skills in the field of Takaful insurance of the staff of financial institutions and Sharia experts versed in financial matters.

7. There should be IT resources, adapted to work with new financing instruments.

8. Lack of development of Islamic financial institutions and the lack of an Islamic stock market considerably restricts the possibilities for liquidity management, as a consequence, increases the value of the assets.

9. The small scale industry, resulting in high administrative costs.

One of the possible ways of legalizing the industry of Islamic finance in Russia involves the creation of a new (or improve existing) legal form of organization, which allows to perform all Islamic financial transactions, which would be equivalent in terms of the tax burden similar to traditional financial transactions. The list of permitted operations such organizational-legal form should include: cash and settlement operations in the broad sense (settlement account maintenance, collection of cash and settlement services, purchase and sale of foreign exchange, money transfers, operations with plastic cards, etc.) all types of Islamic financial transactions in debt on rent and profits and losses of the separation principle), the operation of attracting investment deposits, allowing yields to charge, depending on the profits of financial companies and does not guarantee the return of the principal amount of the deposit.

It is necessary to ensure equivalence in terms of the tax burden for each of the three groups of Islamic financial instruments (similar in economic content and the final result for the client) to traditional financial instruments:

- A tool based on duty shall be equivalent in terms of the tax operations of a conventional bank loan;

- There should be a tool based on the lease which is the operation of financial leasing;

- There should be tools based on the principle of division of profits and losses which are the operations of venture capital funds and private equity funds.

Currently, Russia is at the initial stage of development of Islamic insurance, and the above problems is related to the potential "challenges". Tatarstan in 1999 adopted a law on waqf, which was later challenged as inappropriate federal legislation of the Russian Federation. However, the first in the field of Islamic finance steps have been taken. According to the principles of Shariah, some financial institutions operate in Russia: Finance House "Amal" has been operating since 2010 in Tatarstan, functioning since 2011. The partnership TNV "Lariba Finance" in Dagestan, the bank "Ak Bars" syndicated financing on the principle of "murabaha". Islamic Finance News has recognized the first Islamic deal "Ak Bars Bank" as the best in Europe in 2011. LLC IC "Allianz Life" has prepared an Islamic insurance product adapted for the Russian market.

In May 2014, Russia ratified the protocol on the establishment of a common insurance market of states which are members of the Eurasian Economic Community (EurAsEC). One of the tasks that need to be implemented in order to establish a common insurance market, is to harmonize the laws of the Parties regulating insurance activities. We believe that non - Muslims can hedge their risks by using this system, given its attractiveness in the financial plan. In April 2016 the Central Bank of Russia and the bodies of state management of the Republic of Tatarstan amounted to a road map for the introduction of Islamic banking in Russia, which is an important step in the formation of the Islamic finance system in the Russian Federation (Cheeraert, L., Weill, L., 2015).

According to the research, in the Republic of Tatarstan as an object the introduction of takaful services it was formed an acceptable market environment, characterized by the presence of solvent groups of the population, low level of use of competitive insurance products (mainly voluntary forms of insurance), a relatively high level of religiosity and the presence of takaful products needs. Tatarstan became a pilot region, where for the first time in Russia will be tested Islamic insurance. In 2014, located in the city of Kazan in the Russian Islamic University courses were opened that are taught knowledge about Islamic insurance. The training program was organized by the Russian Centre of Islamic Economics and Finance (RCIEF) jointly with the development of Islamic Business and Finance (IBFD Fund), Volga Federal University, the insurance company "Allianz Life" with the support of the All-Russian Insurance Association and the Union of Insurers of Tatarstan (Rahman A., Rosman R., 2014).

Unfortunately, there is no single Takaful - in Russia. But the potential of the domestic market Takaful insurance is considerable. It is estimated by experts of Pricewaterhouse Coopers that the potential of takaful is more than \$ 2.6 billion a year, and the number of potential customers is more than 25 million people.. The industry in the world is growing at 15-20% per year, and is projected to reach the 2014-2015 volume of \$ 20.5 - 25 billion (www.ey.com, Date of formation tion: 09/05/2015).

CONCLUSIONS

Given the above, we consider it necessary:

1. establish a working group with the participation of representatives of interested structural divisions of the Ministry of Finance and other organizations, to discuss the introduction of Islamic insurance in the Russian Federation;
2. initiate amendments to some legislative acts on insurance;
3. involve experts / consultants on Islamic insurance, including from abroad.
4. To encourage educational institutions to license master education on issues of Islamic finance programs that provide training for this field of activity.

Under these circumstances, we consider it possible to develop Islamic insurance project and run an insurance product on the basis of summarizing the experience of Islamic insurance in foreign countries and taking into account the Russian reality.

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DEMOGRAPHIC POTENTIAL AS OBJECTS OF RESEARCH OF SOCIAL GEOGRAPHY

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ABSTRACT

In this article the definition of the term "potential" and "demographic potential". Presented place as part of the concept study of social geography. Demographic potential presented as part of demographic and socio-economic development. The basic factors influence the demographic potential of the area. Indicators which characterized the influence on the demographic potential and its peculiarities were calculation. The basic demographic indicators - rate of reproduction, fertility, mortality, survival, population growth rate, and sex and age structure of the population. Demographic potential as defined as qualitative and quantitative potential of playing a certain area population now and in the near future.

Keywords: *potential demographic potential, the reproduction rate of the population, demographic modeling, demographic forecasting.*

INTRODUCTION

One of the important areas of socio-economic development, achieve competitive advantage in a globalized world is a rational and efficient use of the resource potential of the area. This is the basis which is based on economic activity, formed territorial structure of production and population settlement, the interaction of natural and social components. Given the limited financial resources, reduce macroeconomic effectiveness of internal controls is a major area of potential resource development of regions (Rubtzov, Rozhko, Gabdrakhmanov et al., 2015). One of the main components of the integral capacity territory is demographic potential.

TOPICALITY

The demographic development as part of social development, including social and economic transformation of society and the resulting parameters of these processes have traditionally characterized by ambiguity directions of development. In differentiating of phenomenon of demographic development on the positive and negative impact with an appropriate arsenal affect specific measures. In terms of demographic potential formation is important to understand that the best demographic development model is most real (Segida, Kostrikov, 2013). Formulated the question in this way has fundamental in nature and requires analysis and detection methodologies to study the demographic potential of the region.

METHOD

To solve the problems we have identified methodological approaches, selected a number of methods and techniques that can be used in social and geographical research to determine the demographic potential.

At the present level of understanding of the importance of demographic factors in social and economic development during the regional demographic research reinforced the relevance of the study of demographic processes not in isolation but in direct connection with the various factors relevant processes in society, that is, with the system approach (Niemets, Segida, Kobylin, 2014). Its essence lies in the fact that all objects of research, events and processes are considered as integral entities - systems that are in constant development, and all their elements are interconnected, interrelated and interdependent. Each system operates in an environment that affect, its internal processes through the action of direct and indirect factors.

Relatively new is the synergistic approach, the essence of which is the study of self-organization and formation of new ordered structures. The subject of the study provided a synergistic approach is spontaneous mechanisms of formation and preservation of complex systems, including those in a state of stable disequilibrium with the environment, which is the demographic potential of the region (Niemets, Segida, Niemets, 2012).

Modern information approach is the essence of which is that the study of any object, process or phenomena in nature and society are above all the most characteristic aspects of the information for him. Note that almost all the processes and phenomena have a knowledge base. In turn, the information content is the bearer of all the processes in nature and society, as existing in nature and society relationships are for informational purposes (Niemets, Segida, Pogrebskiy, Barylo, 2015).

In research the region demographic potential, the following general scientific methods, dialectic, comparison and analogy, analysis and synthesis, induction and deduction, abstract logic, ordering, graphic, historical and retrospective, mathematical and statistical modeling, synthesis and more (Niemets, Segida, Niemets, 2012).

RESULT

The term "potential" is widespread in models of biological, social and economic sciences in different interpretations. Since the mid XIX – early XX century scientific revolution was introduced various "potential", reflecting different aspects of demographic system. In modern literature there is not specific demographic potential defaults. At the same time in the scientific literature used category of labor resource potential. Most authors give a total estimate demographic and labor resource potential, not dividing them into two separate definitions. In our view, this is not justified, despite the fact that the basis of labor resource potential is demographic. Consider that includes demographic potential (Gabdrakhmanov, Rozhko, 2014):

- 1) demographic potential of the regional economy, which includes the possibility of human reproduction and human development, characterized by indicators of social development, quality of life, future life expectancy, literacy level of the adult population, the GDP per capita;
- 2) demographic potential is a set of knowledge, skills, abilities and motivations of man with economic value. Demographic potential increases as a result of a kind of investment (the birth and upbringing of children, education of people, migration and others.);

3) demographic potential is considered in the context of the ideology of human potential population, qualitative and quantitative potential of reproduction is the condition and basis for development of society and the state.

To date, proposed several formulations of demographic potential, reflecting the impact of various factors on population reproduction capacity. In fact, highlights various potential (growth potential population P. Vincent, the inertia of demographic growth N. Keyfits, reproductive potential P.A. Fisher etc.) (Fisher, 1930). Each of which describes the impact of certain demographic factors. These private potentials can be represented as components of the overall demographic potential. However, we note that these components are not fully independent. For example, the reproductive potential of P.A. Fisher largely coincides with the potential growth of the population of P. Vincent and the inertia of demographic growth of N. Keyfits (Fisher, 1930; Wachter, 1988).

A. Wisniewski, S. Vasin and J. Zajackowskaya note that the demographic potential of the country is the number of its inhabitants. Describing the demographic potential, the authors used the following indicators: population and its reproduction (fertility, mortality), age structure, life expectancy, migration growth, population growth forecasts, the potential life of the population, demographic aging.

E. Motrych under demographic potential realizes the number and sex and age structure of the population. It should be noted that gender and age structure is part of a quality indicator demographic potential, that this definition to more fully disclose the contents term demographic (Niemets, Segida, Husieva, 2015).

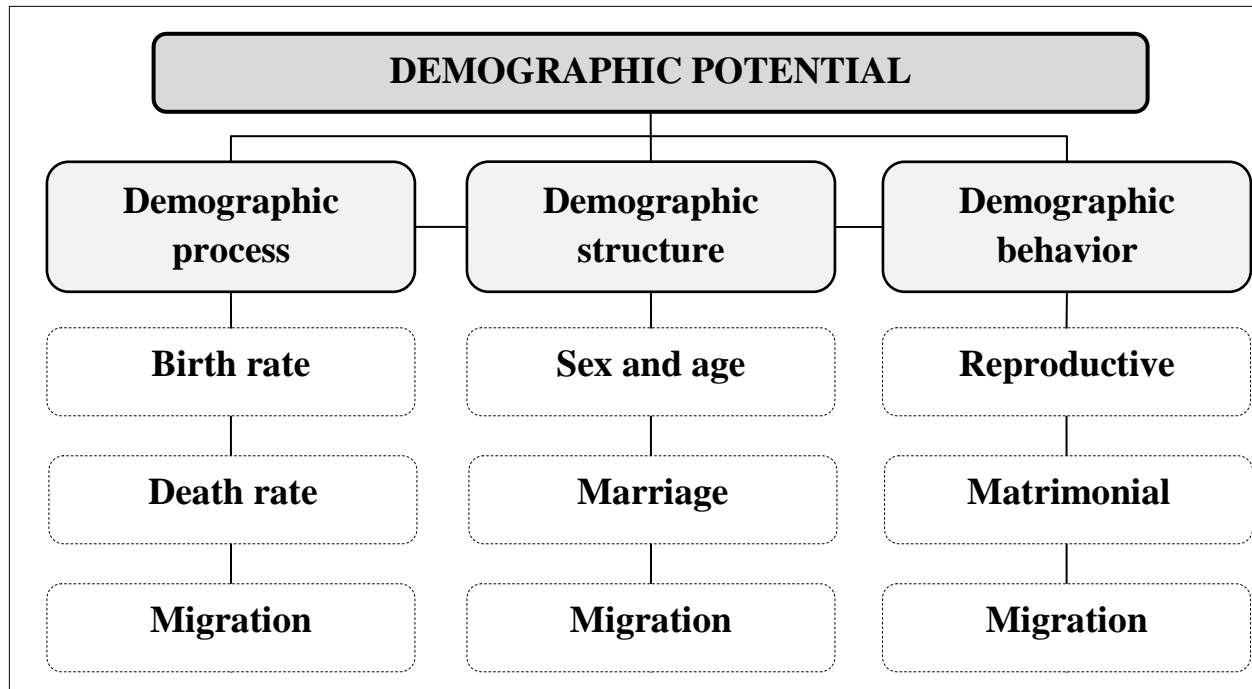
L. Hirsch and E. Filroze understand the term demographic potential as life potential. However, this is not quite complete definition, because despite the fact that life potential is often seen as a central concept and basic general indicators of potential demography, it is still only part of it, characterizing the demographic potential of high-quality side (Ediev, 2003).

The study demographic potential is reflected in studies of S. Sukneva. In the works is determined that the total demographic potential characterizes the ability of the region's population to reproduce, constant renewal of generations as a result of births, deaths and migration. The main components of demographic potential, which are closely linked, are the total number of the population, formed structure of the population and especially its demographic behavior (Niemets, Segida, Husieva, 2015).

According to D. Ediev, demographic potential is a measure of characteristics of the dynamics reproduction, as well as its demographic prospects at the aggregate level. Unlike previous views on this definition, the author focuses on the demographic prospects. This means that the population reflects not only potential current dynamics of reproduction, but also predictable demographic picture in the future (Ediev, 2001).

Socio-economic conditionality of demographic processes has a significant effect on the components of demographic potential, leading to changes in quantitative and qualitative characteristics of the population. It should identify the main factors (factor group) that determine the formation of demographic potential. First of all, it is factors such as demographic trends, structure and behavior (Figure 1) (Barylo, 2015).

Figure 1
FORMATION OF DEMOGRAPHIC POTENTIAL (BUILT ACCORDING TO THE AUTHORS
(BARYLO, 2015))



Demographic processes that cause changes in the number and demographic structure of the population, characterized by birth rate, death rate and migration irrevocable.

Important characteristics of fertility in terms of population reproduction are the total fertility rate by coefficient of birth, age structure of fertility, the proportion of children born out of marriage (Niemets, Segida, Niemets, 2012).

A indicators of death rate are important in terms of the formation of demographic potential, should provide the structure of causes of death for the main classes, the proportion of preventable deaths in the structure of causes probably die, having reached a certain age, mortality of working age, the rate and structure of child mortality expectancy life. This is particular practical significance in the analysis of the death rate and its impact on a potential, population figure estimates losses demographic potential of various causes of death (Gabbrakhmanov, Egorov, 2015).

Irrevocable migration plays an important role in regional reproduction process, which characterized by indicators of migration increase (decrease) of population, migration intensity turnover, the impact of migration ties, share intraregional migration.

The demographic structure is determined by age and sex, marriage and genetic composition of the population. Age and sex structure of the population is characterized by growth potential indicators of age structure, economic and demographic burden, the number of men per 1,000 women, senescence of population and age-sex pyramid of population and demographic potential. In consideration of the marriage structure of population, demographic potential is important indicator acting proportion never married to 25-29 men and women. The part of local natives, newcomers and old-timers in the population and their ratio reflects the level

of migration activity of the population (Niemets, Segida, Pogrebskyi, Barylo, 2015).

An important role in shaping the demographic potential plays demographic behavior of the population. The study of reproductive features, matrimonial and migratory behavior of the population may in the course of social and demographic population surveys.

The indicators characterizing the reproductive behavior are the desired and expected number of children, factors that promote and prevent the birth of children, the place of children in life values (Preston, 1986).

Features of matrimonial behavior of the population make by obtaining answers to questions about age of marriage and divorce, the order of marriage and divorce, celibatary duration period for marriage and marriage between attitude to marriage and divorce in the case of children, place families in the system of social values (Preston, 1986).

The migration behavior make by the results of the study population migration plans determined by the assessment of the positive and negative aspects of living in the region, the share of potential migrants among survey participants.

In Table 1 we present the main indicators that may be taken into account when determining the demographic potential of the region.

Table 1
QUANTITATIVE INDICATORS FOR ASSESSING DEMOGRAPHIC POTENTIAL (Niemets, Segida, Niemets, 2012)

№	Index	Features and method of calculating the index
1.	The absolute number of the population (permanent and actual)	It determined on the basis of census data. The permanent population is defined as the difference between the actual population and temporarily present at the time of the census in the territory. Temporarily absent residents of this area are added to the difference
2.	Population	Population censuses are usually held in December or January, so a critical moment does not coincide with the first of January. To get the population at the beginning of the year to the census, when it was held at the end of the previous year, added the results of natural and migratory movement of the population during the period of time that separates the census date of January 1 next year. The results of natural and migratory movement is subtracted if a census was carried out after January 1 of the current year. Similarly done and the estimated population in the years between censuses.
3.	Average annual population (average population)	If there are interim data, for example, on the first day of each quarter, the easiest way to find the quarterly average numbers, add them and divide by the number of quarters. You can also do like this to find the average number of for a number of years.
4.	Growth rate (reduction) population	Private branch population at the beginning of this year (may be taken year forecast) by the population at the beginning of last year (any year of the past period). Multiplying the result of dividing by 100, getting the growth rate in percentage terms.
5.	The rate of accretion (reduction) of population	From the rate of growth (reduction) 100 is subtracted. For example, the growth rate is 105.2%. Then the rate of accretion is equal to $105.2 - 100 = 5.2\%$
6.	The absolute increase (decrease) of	The difference between the number of population at the beginning

	population	and end of the period (and the beginning of the next period).
7.	Population density	The quotient of the average population by the number of square kilometers of the region, people in the square. km.

Not less important for assessing demographic potential quality indicators. These need to include the structure and composition of the population of the territory (Barylo, 2015).

Demographic potential summarizes the characteristics and indicators for its definition, which suggested above. It can be calculated as the index is proportional to the number of straight-line descendants of the population or its sex-age groups. For example, older age groups have small demographic potential, so that all their children are born, and it can not associate any future offspring (Ediev, 2001). This approach to determine the demographic potential, R. Fisher used the concept of reproductive potential (Fisher, 1930). He saw the birth as a loan that was issued child and its reproductive potential as the current discounted value of future payments of debt (its children).

Another approach to determine the demographic based on its properties as an index of the generalized population. The most important for demographic population modeling feature is that the rate of change of total demographic potential is uniform rate of population growth (true reproduction rate of the population). The simplest implementation of the concept of demographic potential – within same-sex population model with constant sex-age birth rate and mortality. In this case, the calculation of demographic potential includes indicators such reproduction rate, fertility rate (children born intensity), survival rates (the likelihood that the baby will live to a certain age) (Ediev, 2003).

At the same time, under certain potentials of different age-sex groups, demographic potential of the whole population can be obtained as (Ediev, 2000):

$$C(t) = \int_0^{\infty} n(x;t) c(x) dx$$

Where $C(t)$ – generalized demographic potential, and people in certain age at that time t .

Also still in the research Ediev was presented a generalized model for determining demographic potential (Ediev, 2000):

$$C_{total}(t) = (1 + \gamma) \sqrt{C_{female}(t) \cdot C_{male}(t) / \gamma}$$

Where $C_{population}(t)$ – total demographic potential of the respective population at time t , γ - ratio of sexes at birth (boys to one girl).

Direct generalized notion of a true factor for reproduction bisexual model does not exist. However, given the demographic potential property gay population, the rate of change of generalized demographic potential can be taken as a true reproduction rate bisexual population (Ediev, 2001; Preston, 1986).

The population cannot be adequately modeled as easy as the demographic potential. Changes at the age structure and demographic processes of making simplified model. However, the fact that, despite its generalized nature of the model adequately reflects changes in the sex and age structure of the population, opening the way modeling aggregate population.

All these options should be evaluated on the basis of sex and age structure of population modeling. True reproduction rate and life expectancy at birth should be evaluated separately

(example: as a function of certain economic variables). To open additional population assumptions must be made concerning migration (Ediev, 2000).

Thus, demographic potential is characterized by certain features, including:

1) continuity - demographic potential is a continual function of the age of its population;
2) the additive - the total capacity of the entire population is the sum of its potential groups;

3) sensitivity - characterizes the dynamics of total capacity play a closed population. It can vary depending on the characteristics and patterns of population reproduction. An example is the independence of the dynamics of the total capacity of the overall structure. Demographic patterns of regular time play mode.

CONCLUSIONS

The basis of human potential demographic potential, defined quantitative indicators and their population dynamics. Thus, we conclude that the demographic potential is the condition and basis for development of society and the state. The demographic potential is a qualitative and quantitative potential of playing a particular area population now and in the near future.

Reflecting qualitative changes in population reproduction are stable marriages, harmonious marital relations, democracy in relations between generations, healthy offspring, active lifestyle, including susceptibility profound social change, and others.

Future population growth will depend on how society will appropriate steps to preserve and strengthen demographic potential. Thus, research into the demographic potential of today is relevant and important.

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METHODOLOGICAL BASE OF URBAN AGGLOMERATIONS AND THEIR SUBURBAN AREAS

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ABSTRACT

The article forms methodological approaches to the study of urban agglomerations and their suburban areas. Basis and regularities of the social and economic development of urban agglomerations and suburban zones are determined. Data on definition of the territorial structure of urban agglomerations and their suburban areas is systematized. The basic regularities and laws of environmental complex formation in the region are highlighted. Cluster analysis has been used in order to establish a territorial structure of Krasnoyarskiy region. The main directions of the complex social and economic development of urban agglomerations and suburban areas are determined. The main problems of administrative allocation in urban agglomerations are highlighted.

Keywords: *territorial socio-economic and ecological complexes, urban agglomerations, suburban areas, complexation, territorial structure.*

INTRODUCTION

The study of integrated territorial development in Russia becomes more actual due to the intention to establish a nationwide system of interconnected strategies, schemes and programs of the federal, regional and local significance; the necessity to improve the legal framework which leads to the development of regions and municipalities; and the revival of the physical planning system in consequence of the adoption of a new Town Planning Code of the Russian Federation.

All these developments are extremely necessary to improve the economic efficiency, standards of living, the conditions for the market activity and investment process. Territorial Administration mechanism should provide the expanded reproduction of material production on innovative basis and in total with the population reproduction and environment improvement.

Objective: to define the theoretical and methodological basis of complexation in the development of urban agglomerations and their suburban areas under market conditions.

The objective is achieved by solving following tasks:

- the methodology development for studying urban agglomerations and their suburban areas development;
- the development of theoretical basis in integrated socio-economic development in urban agglomerations and their suburban areas;
- the definition of the basic territorial forms of complexation, the criteria for their selection and factors of the complex social and economic development in urban agglomerations and their suburban areas;

- the systematization of methods of the territorial structure isolation in urban agglomerations and their suburban areas;
- the definition of characteristics and the main directions of the complex social and economic development in urban agglomerations and their suburban areas (on the example of Krasnoyarsk agglomeration).

Scientific novelty of research:

- the point of urban agglomerations and suburban areas concept has been defined and represented in the unity of production, social sector, human capital, natural and environmental components;
- complexation basis has been defined, in particular, isolation of functional and environmental identical elements and combining them into urban agglomerations and their suburban areas (complexes - clusters), according to the centrality and peripherality of their development; gradation in the construction of public services and facilities; mainly radial-hexagonal building of environmental planning structure;
- data on the definition of the urban agglomerations and suburban areas territorial structure has been systematized;
- the main directions of complex social and economic development of urban agglomerations and suburban areas (on the example of Krasnoyarsk agglomeration) have been defined.

REVIEW

Russian and foreign scientists-regionalists mainly studied the distribution of productive forces and resettlement, resource, economic and geographic factors of regions and cities development, zoning, creation of clusters in development areas and industrial zones (Lappo, 1992). However, there were no specific studies of complexation in agglomerations and suburban zones development, considering the transition to an economic innovative model, strengthening of human potential factors as well as environment, and a combination of functional and environmental structures.

Agglomerations and suburb territorial structure research has become widespread in the postwar period. Researchers from the EU and the USA established the theoretical basis, introduced the concept of peripheral zones in large agglomerations. These zones are the platform for scientific innovation and production capacity of the leading multinational corporations and upgraded innovative industries; wholesale and retail trade, so-called moles, storage facilities, management, various consulting and service centers, logistics centers, banks and other types of businesses (Mills, 1993).

Modern periphery of global cities represents a complicated puzzle of residential areas, industrial and office zones, recreational areas, agricultural lands and, as a rule, does not have a continuous construction. As a result, it brings new and fresh approaches to the study. So a special type of suburban territories named «exurbia» is defined in the United States in the modern period, it is located on the border of suburban and rural areas. (Wright, 1981; Audirac, 1999). The researchers emphasize the diversity of the territory development and especially its functioning capacity. Generally all the authors conclude that this area has a low population density and depends on the municipal regulation, which functions through the suburbs management. Measurement methods of such areas and delimitation of settlements were aimed at a single or double delimitation. The first type involves measurement of the geographical location area and at the same time highlights the difference between region and suburbs, city and countryside (Nelson, 1992).

In China as well as in Russia scientists are just beginning to explore new forms of settlement and territorial complexes such as urban agglomerations. A certain number of scientists from the Department of Urban Development and Ecology in Beijing University points out that the phenomenon of suburbanization takes place in most major cities in China (Beijing, Shanghai, Shenyang, Dalian). Other scientists from the Department of Urban Development and resources in Nan Jing University state that suburbanization in China is at the formation stage and most of China is not a subject for these processes. (Zhang, 1998). In China an important aspect of economic development is improving the industrialization level and the expansion of urban area. Nowadays in big cities the subject of study is an extension of the suburbs and a coordination of sustainable development between the city and its suburbs. Xi Wei Ming and others suggest that the area which is located nearby the city has a unique geographical advantage and might be used to overcome negative consequences of the development of big cities, urban and rural areas and also will benefit common prosperity and sustainable development. (Yang, 2000). Zhu Xiang notes that sustainable development of the suburbs is an important component for economic development, social well-being and stability of resource utilization and environmental protection. (Zhu, 1998). Due to the lack of experience in management and urban agglomerations development in Russia, it is necessary to use foreign experience of the development of new territorial systems under market conditions.

METHODOLOGICAL BASE

Increasing efficiency of social production, including economic entities in the region, in a high level of socialization is largely determined by the complexity of its development. It is based on the spatial and temporal elements combination of the reproductive structure of the region.

Reproductive region complex as a category of regional economics and economic geography is defined as a community of industrial, social, natural objects and human development in an area which proportion, interaction and spatial configuration improves the efficiency of its functioning and, consequently, the region as a whole (Rubtzov, 2015).

A region reproductive structure is to be considered as a socio-economic-natural complex. A regional socio-economic-natural complex is determined as the highest form of spatial organization of the productive forces. This kind of form increases the efficiency and competitiveness of the region, municipality and the country as a whole, as well as enhances human potential, enabling environment and rational environmental management.

Territorial reproductive complexes are divided into district (with a considerable length) and local. A district type, which includes regions as well, is characterized by spatial gaps in the location of productive forces. Meanwhile a local type, mostly represented as a city, excludes a "distance friction", has purely an artificial living environment and provides better interaction between all the structural elements and processes in the territorial complex.

There is another third type of spatial reproductive complexes which has certain characteristics of both – local and district types. This type is represented as a group of cognate settlements with a very clear settlement center which can be the basis of manufacture (industrial) hub. The most developed category of this territorial complexes type is urban agglomeration.

Complexation in the region is largely determined by the nature of the production and resettlement location, relationship and interaction between center and periphery. Moreover, the settlement plays an important role in the distribution of productive forces and capital - especially

leading centers of human potential, which are usually the "points" of innovation growth (Scott, 1985).

In a post-industrial phase and transition to the information society the main factors of development are innovative model of reproduction and improvement of human potential. Thus the most favorable environment for this includes metropolitan areas and major agglomerations where the most advanced management structures, business life, science, education, culture and material production are located. Major urban centers achievements in the form of knowledge, culture, manufacture, social, management technologies and high-tech products, as well as the provision of quality services is later spread to the periphery (other cities and settlements) in order to stimulate its growth (Gabdrakhmanov, 2015). So that a dialectical contradiction between the center and the surrounding periphery is resolved and luckily providing their reproduction complexation.

Complexation in the region between center and periphery is fairly defined by the functioning division (of labor) among city and village, major, medium and small settlements. The territorial extension of the social reproduction process is determined due to the necessity of natural resources usage, periodicity and stages of extracted resources processing up to the final product. It is considered to be quite effective to support city companies and organizations and their branches located in periphery, to create their subsidiaries and to form other regional associations including holdings, industrial and financial groups etc. Also those companies and organizations in periphery often show great support and service towards the socio-economic complex of the center.

Here are the main regularities of functional complexation in the region:

- environmental and functional isolation of identical elements and their combination into a specialized reproductive systems;
- hierarchy in the interaction of complexes as well as centrality and peripherality adequate placement according to their role in the reproduction process;
- gradation in constructing centers and social services for the population and economy in the region (city).

Economic and social interaction of center and periphery including the region forms hierarchical production and settlement systems - territorial reproductive systems.

There are 80 regional facilities (complexes) formed at a higher level around the administrative, industrial and cultural centers of republics, provinces and regions. Centers of the regional type of complexes are presented as big or major cities (Smirnyagin, 2011). Those cities are specialized in the large industrial manufacture and service functions and also are the centers of authority of the Russian Federation subjects, financial, scientific, educational, information and communication centers of regional importance (Gabdrakhmanov, 2014). Intersettlement social infrastructure is also represented by companies of specialized services, middle and high rank personnel training.

Next hierarchical level forms 10 district type territorial reproductive complexes which are represented by major economic regions (Federal Districts), including all modern reproduction structural components of the economy and social life. The largest megalopolises and their developing urban agglomerations are the centers of those complexes. The megalopolis is a platform for the main innovative, research, consulting and project activities, highly qualified personnel training and the most important media centers.

Agglomerations, as special types of territorial complexes (the most advanced group of populations), are formed around major cities which are districts and regions centers (Lesyuta,

2010). The main feature of agglomerations is a strong economic and social connection between central cities and suburbs. The most peculiar connections are considered to be a pendulum labor migration and commuting from suburbs to central cities for educational purposes as well as commuting from central cities to suburbs for recreational reasons (Leng, 2014). Filiation of various companies and organizations as well as central city universities in a suburban area is particularly typical.

Industrial specialization in suburban settlements, as a rule, is the result of the diversification of big city economic complex. Many organizations in suburbs are only subsidiary to the center so they do show a great support and high quality service, though agriculture is actually working on the whole food supply for the residents. The development of transport, water, gas, electricity, sanitation, solving problems of recreation, protection and improvement of the environment in center and suburbs should be implemented on the unity and community principles.

METHOD

When we select and study intra reproductive systems it is rational to use a cluster analysis. This method of grouping multi-dimensional objects with similar characteristics is in fact the selection of attributes (indicators). We implement a method of recognizing the images in order to explore the territorial structure of Krasnoyarskiy region and the allocation of industrial sites - group systems of settlements and centers.

The main criteria (features) in definition of territorial reproductive complexes types are the following:

- kind of specialization in the social and territorial division of labor;
- economic potential - the cost of production and services, as well as the value of fixed assets;
- human potential - the population;
- settlement structure - the population of center, the number of urban and rural settlements and their population;
- availability of inter-settlement population and economy services наличие;
- the territory length - accessibility to the complex center (gross).

The main indicators of the study of industrial centers territorial structure and their boundaries (contours) detection are combined into seven groups, which are reflecting:

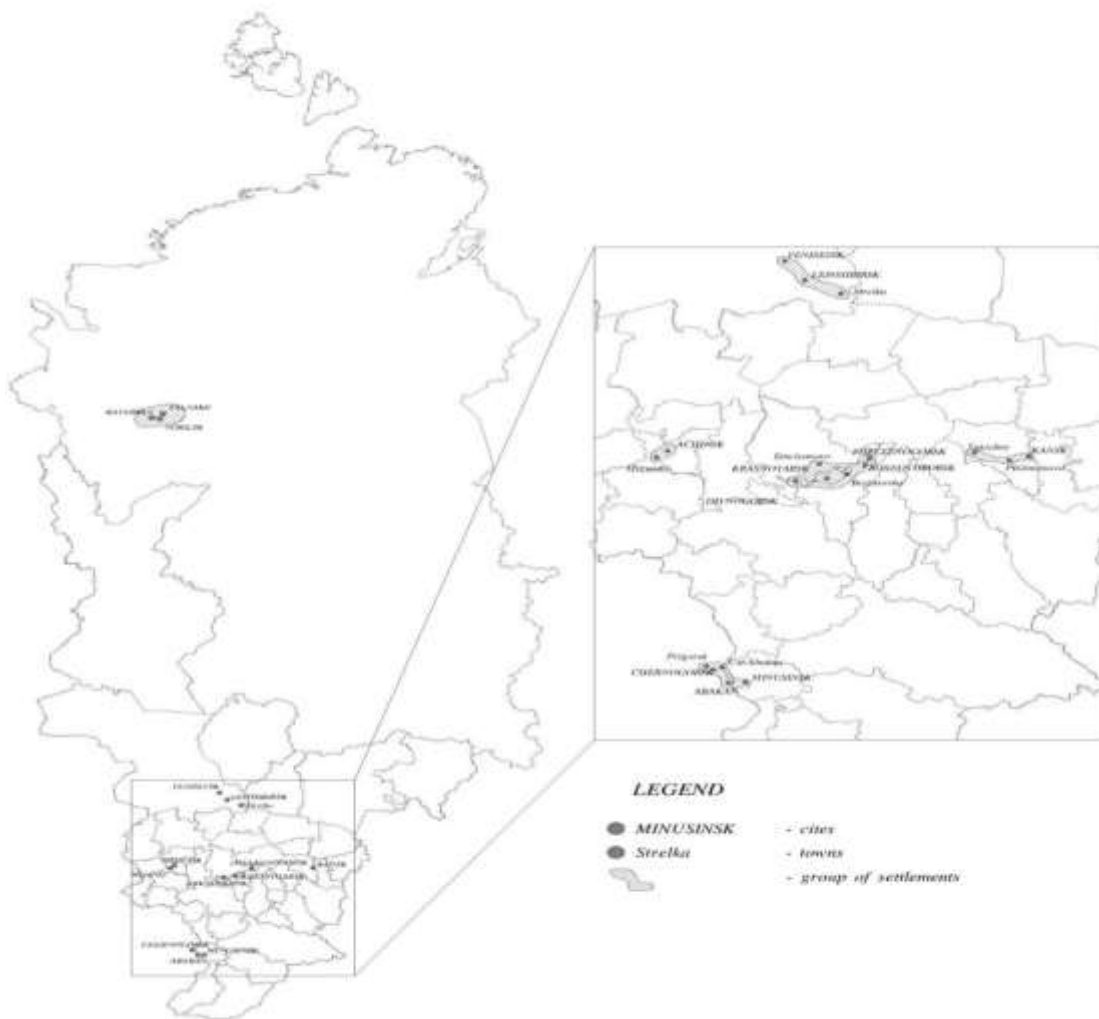
- administrative-territorial division and resettlement,
- economic territory burden,
- availability of engineering infrastructure,
- territorial, economic and social connections,
- urban use of the territory,
- natural resource capacity,
- territorial development restrictions.

RESULT

By the use of this method there are following industrial centers – settlement groups in Krasnoyarskiy region are defined (pic.1):

- Krasnoyarsk (cities: Krasnoyarsk, Divnogorsk, Sosnovoborsk and townships: Emelyanovo, Berezovka);
- Abakan-Minusinsk (cities: Abakan, Minusinsk, Chernogorsk and townships: Ust-Abakan, Prigor'sk);
- Noril'sk (cities: Noril'sk, Talnakh, Kayerkan);
- Lesosibirskiy (cities: Lesosibirsk, Yeniseysk and Strelka township);
- Kanskiy (Kansk town, townships: Tayozhniy and Filimonovo);
- Achinsk (Achinsk city and Mazul'skiy township).

Figure 1
SETTLEMENT GROUPS IN KRASNOYARSKIY REGION



CONCLUSION

In the new Russia, management of territorial development should be strengthened in order to increase the complexity and efficiency of the population reproduction (human capital), economy (production of goods and services), natural systems and territorial infrastructure base.

Reproductive complex economy in the region is first of all economy of the city, and in a broad sense it is represented by the complex interaction of centers and peripheries (gravity zones).

In order to ensure the effective implementation of the socio-economic development strategy in Russia, its regions and municipalities, as well as urban planning, a territorial complex scheme of economic and social development, including the General Scheme of Russia should be designed.

Thereby the General Scheme of complex economic and social development of Russia and regional territorial planning schemes should include the definition of basic territorial development aspects in the long term perspective and conditions of its provision considering the efficient usage of multi-purpose resources. Optimization of center and periphery development, the convergence of social development levels in different regions and settlements, cluster organization of manufacture and social sphere, as well as linking the formation of industrial and territorial structures are all particularly important.

Sustainable socio-economic development can be achieved only if the economy of self-development and self-financing in regions and municipalities takes place. The centers of the Russian Federation subjects and local reproductive complexes (administrative districts) should have greater rights, mandates and terms of reference compared to other municipalities in their economic and social role, performing inter-settlement functions including public service, infrastructure economy and development in gravitation zones.

We can no longer postpone the solution of the problem of suburban areas subordination to central cities administration and a special administrative allocation of urban agglomerations. Otherwise it is impossible to ensure the unity of management, strategies and development programs, urban planning and statistics complex of the local production and resettlement, increasing the complexity and efficiency of territorial development.

ACKNOWLEDGEMENTS

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SPATIAL AND TIME REMOTENESS AS A SUBJECT OF TRANSPORT AND LOGISTICS RESEARCH (BY THE EXAMPLE OF THE REPUBLIC OF TATARSTAN HEALTHCARE SYSTEM)

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ABSTRACT

This article describes the possibility of using the transport-logistic approach in the study of the efficiency of the spatial and temporal organization of social infrastructure in example of the healthcare system of Tatarstan. Emphasis is placed on identifying the problems of spatial discrimination of the population in terms of distance and time expenditure to major healthcare centers of regional value. Many studies show a direct dependence the life quality from transport accessibility. As a rule, the population in the more remote areas is disadvantaged in receiving quality affordable healthcare at the expense of additional time, financial and physical costs, which ultimately affects the increasing disease incidences, accumulating of chronic diseases, reducing life expectancy and increasing mortality. At the same time in many regions with low population density, it is impossible to create a system when in each local point would be a full and maximal set of social infrastructure oriented to satisfying the needs of the population at any stage of their lifecycle. Efficient spatial organization of logistics processes and the development of the transport complex significantly help improve the quality of life and eliminate any spatial discrimination and social exclusion. This is possible by maximizing the physical and financial availability of quality goods and services regardless of the remoteness of settlements.

Keywords: *spatial discrimination, transport accessibility, time and spatial remoteness, transport-logistic optimization, healthcare system, social infrastructure, social logistics, healthcare centers, healthcare infrastructure, accessibility of healthcare services, death rate, the Republic of Tatarstan.*

INTRODUCTION

Transport and logistics processes are present in any territorial and social system and concern all its components, involving them into the global transport and logistics turnover as producers and consumers of the various flows. This turnover is not only time-space moving. It also includes other operations, which are carried out with the material and intangible objects (storage, distribution, fragmentation, processing, transformation, etc.).

Traditionally, it was decided to talk about the role of logistics mainly in management of material (business) flows and military supplies. Subsequently logistic activities spread on questions of optimization financial and information flows; on the study of service, migration, labor and tourism flows; on issues of spatial optimization the health care system, educational processes, diffusion of innovation and scientific knowledge, etc. (Szoltysek, Twarog, 2012).

At the same time transportation and logistics approach can be successfully developed within the framework of human geography in dealing with matters of optimization and management of the social processes, ensuring the availability of social services.

Currently, there are new directions: social logistics, socially oriented logistics and logistics of the social infrastructure, that concern the problems of infrastructural maintenance of social needs. Thus, under the term of social logistics to be understood «the art of managing flows in society, in order to achieve certain spatial and temporal qualities, necessary to ensure the proper functioning of society and an appropriate quality of life» (Szołtysek, 2011).

Social logistics is becoming more common (Takahasi, 1988; Wei, Zhenggang, Zhang, 2009; Szołtysek, Twarog, 2011, 2012). It affects the health system, education and science, social support for certain population groups, culture and arts, physical culture and sport, recreation and leisure. In addition, many of the authors into the social sphere include personal services and supply of goods, security and policing, etc.

Effective spatial organization of logistics processes and the development of the transport complex significantly improve the life quality of the population (Spinney, 2009), by ensuring the physical and financial availability of any goods and services.

Also it remains actual the question about the spatial discrimination of the population, including existence of the physical, temporal and financial limits for people living in peripheral areas. These aspects are widely used in the study of social exclusion, which is closely associated with transport accessibility and time remoteness (Kenyon, Lyons, Rafferty, 2003; Preston, Raje, 2007; Neutens, Schwanen, Witlox, 2009; Battellino, 2009; Currie, 2010; Lucas, 2011).

According to the comprehensive survey of living conditions conducted by Federal State Statistics Service of Russian Federation (Rosstat) in 2011, 34% of the rural population in the Republic of Tatarstan noted the problem of inaccessibility of state and municipal services in the field of health care in their locality. Among the urban population the proportion who chose this option was 20%.

In this paper considered using transport-logistic approach in the study of the efficiency spatial and temporal organization of social infrastructure in the health system of the Republic of Tatarstan. Emphasis is placed on identifying the problems of spatial discrimination of population in terms of access to facilities of the health system at the regional level. As a rule, the population in the more remote areas is disadvantaged in receiving quality affordable healthcare at the expense of additional time, financial and physical costs, which ultimately affects the increasing disease incidences, accumulating of chronic diseases, reducing life expectancy and increasing mortality.

METHODOLOGY

S. Curtis in his work «Health and Inequality» shows that the distribution of income is not the fundamental cause, which determines the level of health. In his opinion other factors are more important, including the situation in transport network. A number of diseases depend almost linearly from transport availability (Curtis, 2001). Even in the UK among the living in 40 km from the hospital regularly observed only 61% of the population. In developing countries and Russia sharply reduced level of clinical examination of the population living in the 4 km from paved roads, and thus chronic disease accumulates and mortality increases. According to the research of LLC «Geogracom» (the Russian company in the field of geographical research of

transport systems) in 34 regions of Russia and Commonwealth of Independent States (CIS), tuberculosis, infections and infant mortality depend on transport availability.

Thus, the mortality rate can be considered as an indicator which indirectly depends on the state of the transport network (Nicholl, 2007), transport accessibility, spatial and temporal organization of logistic processes in the healthcare system.

Considering that transport accessibility and logistics mainly have an indirect effect, must take account of their cumulative impact. The physical unavailability and inaccessibility of health-care facilities is a factor that affects the level of mortality directly (Arcury, 2005). At the same time, the absence of an effective system of clinical examination and health status monitoring in the local areas is reflected in the later detection of many diseases, which in turn reduces life expectancy (Syed, Gerber, Sharp, 2013). In this regard, the mortality rate as an indicator should be taken on average for a number of years to neutralize all stochastic and random factors.

In the regions, there are municipalities in which the mortality rate is at a minimum. As a rule, it is administrative centers and cities with well-developed health care system (Gabdrakhmanov, Egorov, 2015). They should be considered as the territory with normative indicators in the region on the current level of its development.

Identifying the most important healthcare centers of regional value can be based on the number of health facilities as well as the number of specialists in them. For the calculation will use an upgraded coefficients of localization (K_l) and specialization (K_s):

$$K_l = \frac{D_v}{D_p} \qquad K_s = \frac{D_p}{O_v}$$

D_v – The share of physicians from the region, %; D_p – The share of population from the region, %;
 D_p – The share of population from the region, %;
 %.
 O_v – Physicians per capita (doctor coverage).

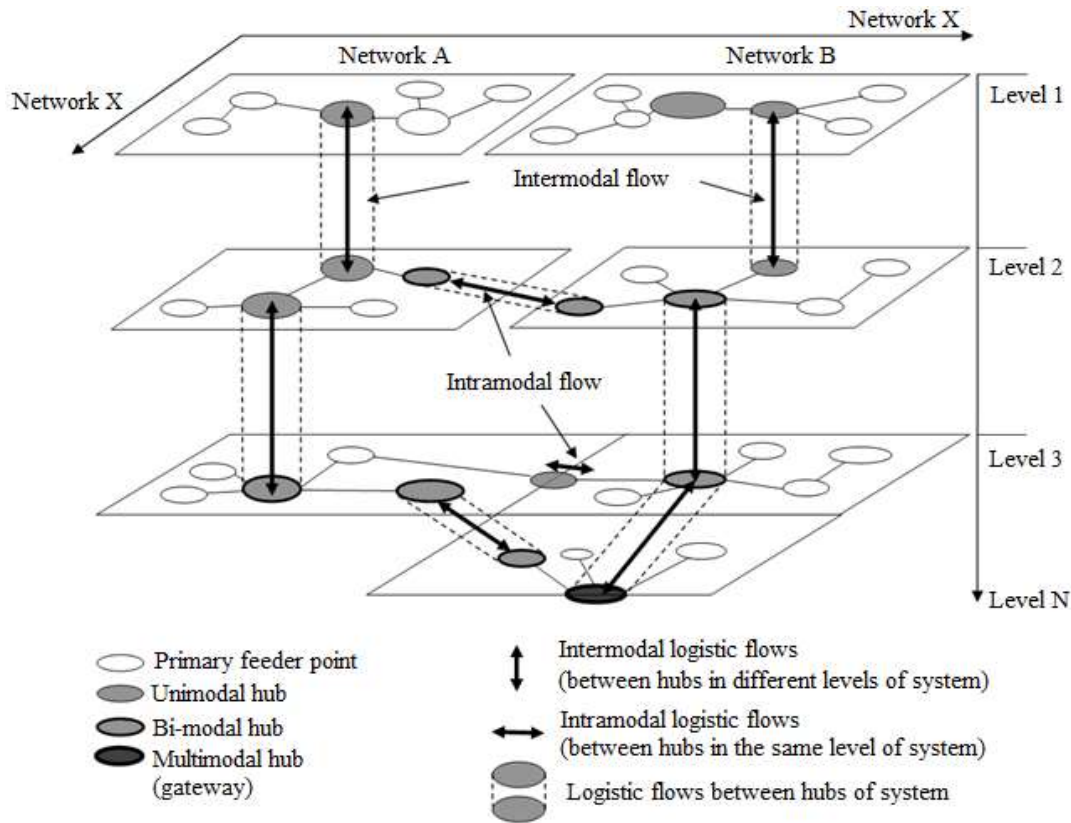
In each center of territorial systems is formed a complex of social infrastructure with different set of services by range, quality and price (Gabdrakhmanov, Rubtzov, 2014). These multifunctional centers have its own attraction area, depending on the development level of social infrastructure complex, its capacity and transport accessibility. So each point represents an attractor to which gravitate the various flows.

Typically multifunctional centers are characterized by great diversity in the incoming and outgoing flows, so they feature as multimodal transport nodes. These nodes in the transport and logistics systems take part in intermodal and intramodal transportation (Figure 1).

In many ways, these centers provide not only medical services, but also carry out logistic functions (accumulation, storage, distribution, fragmentation and so on).

They are related to the management and optimization of material (medical devices and equipment, pharmaceuticals and medical supplies, consumables, blood and so on), service (physicians and other experts), human (patients and relatives), information and financial flows.

Figure 1
SCHEME OF THE OPERATION AND INTERACTION OF TRANSPORT AND LOGISTIC SYSTEMS
AT DIFFERENT LEVELS OF THE HIERARCHY



Multifunctionality of health centers suggests their good transport links, including the presence of various types of transport, sufficient number of public transport links, good infrastructure condition.

Detection of gravity zones of each healthcare centers (attractors) is based on data of time expenditures to achievement them from the centers of municipalities using public geo-information services (Yandex.Maps – russian analog of Google Maps). In this study, carried out the first phase of a comprehensive study: the identifying the gravity zones on the basis of travel time accessibility by road, in other words without regard to public transport. The minimum time expenditure of achieving the healthcare center is the predominant factor in the calculation of gravity zones and evaluation of transport accessibility.

$$L_n = \min T_a$$

L_n – time accessibility of point n

$\min T_a$ – minimum time to reach the nearest attractor

Besides time expenditure should be taken into account the level of skill of experts in the centers (k), capacity (c) and a variety of medical services (d), which define the attraction force (F_a).

$$F_a \in (k, c, d)$$

However, it should be considered also integrated indicator of the availability to all healthcare centers (where n – the number of attractors).

$$I_n = \overline{Ta}, \quad \overline{Ta} = \frac{\sum \min T_a}{n}$$

To determine the correlation between mortality rates and remoteness from healthcare centers is possible on the basis of mathematical-statistical methods – analytical grouping and regression analysis. Identifying areas of gravity allows to make zoning and define internal features of the territorial organization of the healthcare system.

RESULT

Using data on the number of physicians in all categories in districts of Tatarstan were calculated coefficients of localization and specialization. These data has allowed to determine centers with intraregional specialization in medical services. Data on the number of medical institutions, their functionality and specialization, their service area confirm the obtained results.

Currently, the major attractors in healthcare sector of Tatarstan are the Kazan, Naberezhnye Chelny, Nizhnekamsk and Almetyevsk, where focuses diverse health infrastructure of regional importance (table 1). Usually it consist of hospitals, emergency medical care, various dispensaries, specialized agencies, the medical unit and so forth. Despite the fact that the Nizhnekamsk stands out as a center of specialization, it will be considered in this article, coupled with Naberezhnye Chelny.

Table 1
PRIMARY HEALTH CENTERS OF FLOW ATTRACTION IN TATARSTAN IN 2014 YEAR

Centers and their areas	Population, thousand people	Doctor coverage (physicians per 10 000 population)	The share of the physicians from the region, %	The share of the population from the region, %	K_l	K_s
c. Kazan	1190.9	78.4	58.7	31.0	1.9	0.40
c. Naberezhnye Chelny	522.0	33.5	11.0	13.6	0.8	0.41
Nizhnekamsky	273.8	30.5	5.3	7.1	0.7	0.23
Almetyevsky	201.4	28.9	3.7	5.2	0.7	0.18
Zelenodolsky	161.8	27.1	2.8	4.2	0.7	0.15
Bugulminsky	109.2	23.5	1.6	2.8	0.6	0.12
Leninogorsky	85.8	23.7	1.3	2.2	0.6	0.09
Yelabuzhsky	83.7	27.0	1.4	2.2	0.7	0.08
Chistopolsky	79.5	27.5	1.4	2.1	0.7	0.08
...

Relatively diverse medical infrastructure is also presented in Bugulma, Chistopol, Leninogorsk and Zelenodolsk, but the data of the current and regulatory mortality rates suggest that it is not a centers that provides a qualitative improvement in this sphere. These districts have relatively high mortality rates, despite the presence of a variety healthcare infrastructure. In

contrast, Kazan, Naberezhnye Chelny and Almetyevsk where there is a presence of a wide profile specialists and healthcare infrastructure have lower mortality rates.

The mortality rate in the Republic of Tatarstan for the last five years in the areas varies greatly. It is possible to identify groups of areas with a similar situation. The lowest mortality rates is fixed in major cities: Kazan (11.3‰), Naberezhnye Chelny (8.3‰), Nizhnekamsk (9.06‰), Yelabuga (10.7‰), Almetyevsk (11.72‰). In addition Baltasinsky District have also lower mortality rate over the past five years (11.08‰) (Figure 2).

Analysis of demographic processes makes it possible to conclude that much of the mortality is determined by the age structure of the population (Keilman, 2010). In this region, the linear correlation coefficient between mortality and the proportion of the elderly population (more 65 years) is more than 0.84, which indicates a high level of dependence.

If eliminate the influence of all other factors, including time away from the center, it is possible to obtain data on mortality rates adjusted for age structure of population, other words in situation with equal access to public health services regardless of place of residence (table 2). It can be regard as some normative (ideal) death rate (Figure 3).

Table 2
DEATH RATE IN SOME TERRITORIES OF TATARSTAN

Districts	The average mortality rate since 2010 to 2014	Normative (ideal) death rate adjusted for age structure of population	The deviation between the current and normative level
c. Naberezhnye Chelny	8.3	8.3	0
c. Kazan	11.3	11.3	0
Nizhnekamsky	9.1	8.6	0.5
Yelabuzhsky	10.7	9.1	1.6
Almetyevsky	11.7	9.7	2
Zelenodolsky	15	12.8	2.2
Leninogorsky	14.1	11.9	2.2
Chistopolsky	16	13.5	2.5
Bugulminsky	14.8	11.3	3.5
...

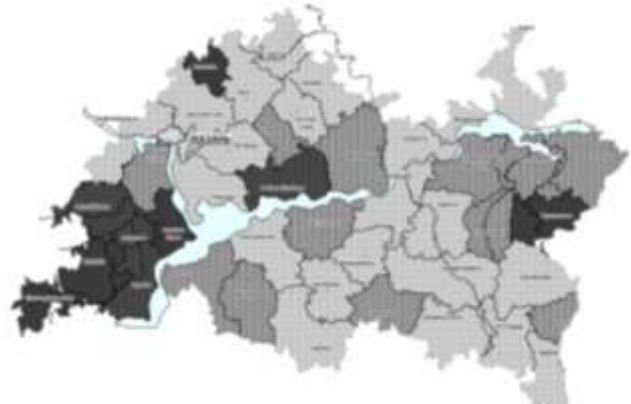
The problem of transport and logistics optimization consists in the formation of such a system, in which the level of healthcare and mortality will not depend on the spatial and time remoteness of the population from healthcare centers.

Figure 2
CURRENT AVERAGE ANNUAL DEATH RATE
FOR THE PERIOD FROM 2010 TO 2014 BY
AREAS OF TATARSTAN, ‰
(CURRENT RATE)



■ 17.16 -- 18.82 ■ 16.02 -- 17.16 ■ 14.84 -- 16.02 ■ 13.00 -- 14.84 ■ 09.06 -- 13.00

Figure 3
THEORETICAL DEATH RATE IF
LEVEL AND ACCESS TO HEALTH CARE WILL
BE MAXIMIZED IN ALL DISTRICTS, ‰
(NORMATIVE RATE)



For each of district centers of Tatarstan were calculated time expenditures and distances for achievement of attractors (Figure 4). It was determined the correlation coefficient, which allows to estimate how large the dependence of death rates from the time away (by road) to the main healthcare centers of regional importance.

Figure 4
TIME REMOTENESS FROM MEDICAL CENTERS (ATTRACTORS) OF REGIONAL VALUE IN THE
REPUBLIC OF TATARSTAN (LIGHTER AREA IS LESS REMOTENESS)



Thus, on the basis of data in Republic of Tatarstan it was obtained a result in which the time remoteness from Kazan actually no effect on mortality in districts of Tatarstan. At the same time in Kazan focused more number of institutions for providing diverse health care to the population throughout the region.

This is understandable, because in addition to Kazan, medical services can be delivered in other centers in the region and outside. In this case, it is significant role of the second major attractor: Naberezhnye Chelny - Nizhnekamsk, which covered areas of the eastern part of

Tatarstan. Given the time availability of Naberezhnye Chelny, correlation coefficient was 0.31, indicating a weak dependence. But taking into account the data on the availability of third major healthcare center – Almetyevsk, the correlation coefficient (C_{cor}) is close to 0.4.

At the same time there are some areas with unrepresentative values. In particular this applies to Verkhneuslonsky and Menzelinsky districts, the centers of which are located at a distance of 30 minutes from the attractors, but have abnormally high mortality rates. The opposite situation is observed in Baltasinsky and Nurlat districts that are removed from the attractors far enough, but the mortality rate in them is retained at a relatively low level. Rejection of extreme data increases the correlation coefficient till 0.55 (quality characteristic is salient).

The calculation of the integral distance to all attractors and its impact on the mortality rate indicates the presence of a significant influences ($C_{cor} = 0.55$).

Table 3
THE RESULT OF THE ANALYTICAL GROUPING

Groups	Number, n_j	$\sum X$	$X_{cp} = \sum X_j / n_j$	$\sum Y$	$Y_{cp} = \sum Y_j / n_j$
36 - 64.33	13	674	51.85	182.46	14.04
64.33 - 92.66	5	398	79.60	73.54	14.71
92.66 - 120.99	12	1277	106.42	186.26	15.52
120.99 - 149.32	8	1130	141.25	127.44	15.93
149.32 - 177.65	2	305	152.50	30.18	15.09
177.65 - 205.98	2	394	197.00	34.12	17.06
In total	42	4178	-	634.00	-

On the basis of the analytical grouping (table 3) also can be calculated the empirical correlation ratio, which determines what part of oscillation is influenced by investigated factor. It is calculated as the ratio of the factor dispersion to the total dispersion.

$\eta = \sqrt{\frac{\delta^2}{\sigma^2}}$	$\eta = \sqrt{\frac{0,73}{3,93}} = 0,43$	$\eta = \sqrt{\frac{1,00}{3,93}} = 0,50$
Formula of empirical correlation ratio	With the minimum distances to nearest attractor	With the integrated availability of all attractors

According the Chaddock scale the quality characteristic is moderate. The correlation coefficient in this case is statistically significant. Calculation of the determination coefficient showed that 18.69% of variation due to differences between the attributes and 81.31% – other factors.

In case using the aggregated accessibility to all three health centers, the determination coefficient increases to 0.25%.

$\eta^2 = \frac{\delta^2}{\sigma^2}$	$\eta^2 = \frac{0,73}{3,93} = 0,19$	$\eta^2 = \frac{1,00}{3,93} = 0,25$
Formula of determination coefficient	With the minimum distances to nearest attractor	With the integrated availability of all attractors

Thus, in the Republic of Tatarstan, the correlation between mortality rates in districts and their time remoteness from healthcare centers is present, but it is unexpressed. This may

indicate a good organization of transport and logistics processes in the health sector. In this case, the discrimination of the population in receiving of various healthcare services, depending on the place of residence, is noticeable, but not critical. In many areas, the differences between the current mortality and its normative value are quite significantly. In the healthcare centers, the level of the current mortality rate is close to the normative value.

Further, based on the data by the transport availability to attractors and gravity fields, was carried out zoning of the region. Three main areas of gravitation was obtained (table 4). Their number may be greater, if taking as attractors less significant centers. Their border is quite dynamic. On the one hand, the attraction will depend upon a variety of factors that influence the behavior of people when choosing where to receive services. On the other hand accessibility by road - one of the key aspects in the supply and distribution of material flows (pharmaceuticals, consumables, etc.) from transport and logistics centers of regional level.

Table 4
COMPARISON GRAVITY ZONES OF REGIONAL HEALTHCARE CENTERS IN TATARSTAN

	Metropolitan (Kazan)	Naberezhnye Chelny	Almetyevsk
Population, thousand people	1849.5	1140.3	632.9
incl. over 65 years, %	13.96	11.06	13.82
Physicians all categories, thousand	10.74	3.3	1.9
Doctor coverage (physicians per 10000 population)	58.1	28.9	30.0
Current average death rate, ‰	12.58	10.33	14.01
Normative average death rate, ‰	12.0	9.53	12.5

Metropolitan (Kazan) area of gravitation has appeared the most extensive (Figure 5). This zone is characterized by heterogeneity on the level of mortality (Figure 6). The districts, located in one-hour accessibility to Kazan, are exemplified by differences between the current mortality rates and normative values. South-western part is characterized by a high level of current mortality (due to more aged population), but the differences with a normative value are not great. In contrast, the south-eastern part has a high mortality rate, but there is an appreciable break with the normative values. This suggests the need for transport and logistics optimization of processes in the healthcare system for the population in these areas. Definitely, this part of the zone (Spassky, Alexeyevsky, Alkeyevsky districts) has not obvious healthcare attractor and distribution center. Districts in the northern part of the metropolitan zone have an average mortality rate and a slight difference with the normative indicators.

Figure 5
GRAVITY ZONES OF HEALTHCARE CENTERS
IN THE REPUBLIC OF TATARSTAN

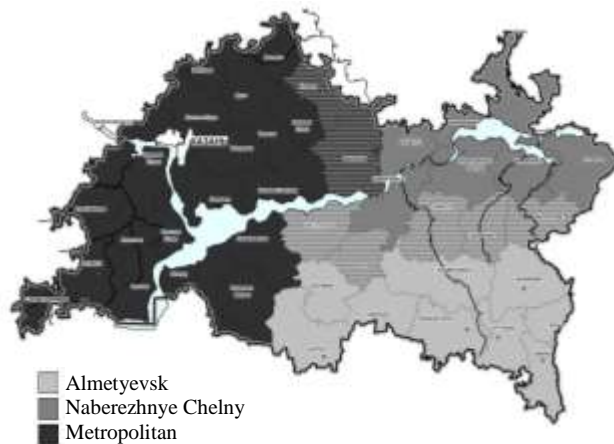
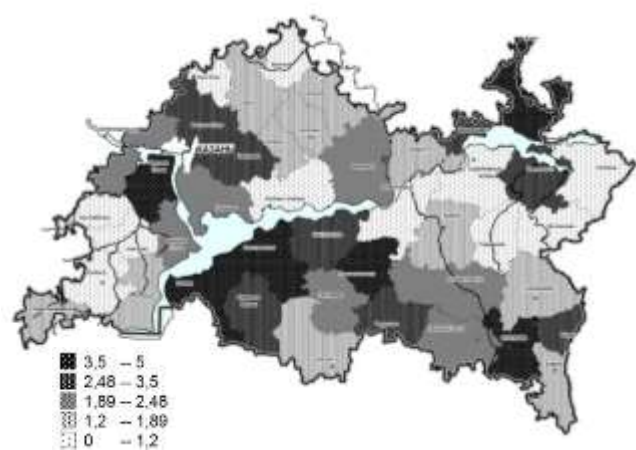


Figure 6
THE DEVIATION BETWEEN THE CURRENT
AND NORMATIVE LEVEL OF MORTALITY, ‰



Zone of Naberezhnye Chelny is small in size, while providing the lowest level of mortality among the three zones. Therefore this center may be regarded as the most effective in this sphere. In contrast to the metropolitan zone, in this area more remote districts have larger differences between current mortality rate and its normative value. The exception in this case is Menzelinsky district, which is located in one-hour accessibility to the zones center. Certainly, some difficulties in access to healthcare facilities of regional level is experiencing the most remote area – Agryz district.

Almetyevsk zone includes parts of south-eastern and southern parts of Tatarstan. Almetyevsk less developed healthcare center than Naberezhnye Chelny, in this connection, its zone can be reduced during the weighing. In this area, a lot of attention should be paid to the attractor, mortality rate in which is higher than in the other two centers. Feature of zone is that the most remote districts (over 100 km), located on the border areas, show a lower deviation between the current and normative level of mortality.

CONCLUSION

The calculations show that there is a correlation between the life quality and districts remoteness from the main centers with concentration of social infrastructure regional value. As a rule people in more remote areas are disadvantaged in obtaining qualitative and operative services. In fact, one can speak of the spatial discrimination of people living in the areas, as compared with residents in the centers. Thus, the transport discrimination is a cause of discrimination in obtaining social and personal services. Besides the additional physical and time expenditure, people living in remote areas, also must spend their finances. So the inhabitants of areas lose more time, effort and money. In this situation, the residence in remote areas is less attractive to the public. Including in this regard there are significant disparities in the age structure of the districts.

Investigation, based on data for the Republic of Tatarstan have shown that the mortality rate have an average dependence on the distance to the main healthcare centers of regional level, which are a kind of attractors and distribution centers.

Identified gravity zones of attractors have their own characteristics. Naberezhnye Chelny can be considered as the most efficient center in terms of transport and logistics to optimize flows and processes occurring in the system. In Kazan zone of gravity differentiation between areas by level of mortality quite significant, but not always correlate with the remoteness. It may indicate systematic problems in improving the quality life in such areas. In Almetyevsk gravity zone there are many districts with a relatively high death rate. It is observed an increase of death rate depending on time remoteness to the center. At the same time Almetyevsk despite the available healthcare infrastructure can't provide the minimum difference between the current mortality rates and its normative value. In the southern part of Tatarstan there is an apparent lack of explicit attractor, since there is no clear attraction and a certain influence of one center.

Modern healthcare system of Tatarstan requires of transport and logistics optimization, in order to improve access to medical services for people in all areas, that allow to eliminate any spatial discrimination and social exclusion. There should be a new regional system of healthcare centers, with minimal time expenditure to achieve them.

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THE INTERNAL SPACE OF THE REGION: UNDERDEVELOPED AREAS

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ABSTRACT

The Republic of Tatarstan is one of the leading regions of the Russian Federation. As in most regions, the greatest role in the capacity building of regional development play major Metropolitan areas, concentrating more than 70% of the population and more than 90% of the industrial potential of the Republic. With the point of growth, the region has a territory, the course of social and economic development which slowed down for various reasons. This study focuses on one of the underdeveloped areas of Tatarstan– the pre-Volga region. The peak of the cultural and socio-economic development of the pre-Volga region was passed in the Middle Ages and was completed in the XIII century in connection with the fall of the Volga Bulgaria. In subsequent periods of history this territory has remained away from regional centers and developed very slowly. The most important problems are the outflow of population, specialization in the industries of the primary sector, the decline in social and economic development. The article discusses ways to overcome economic and social disparities through the development of new activities associated with the main agricultural specialization of the area. Such directions could be organic farming and agrotourism.

Keywords: *uneven spatial development, development of the territory, agrotourism.*

INTRODUCTION

The problems of depressed and underdeveloped territories are studied by specialists for a long time, mainly in connection with the need to develop programmes of territorial development and activities "revitalize" the local economy. Such programs should be based on deep research of the local issues, identifying the range of socio-economic problems first and other orders of magnitude, the definition of the general trends in the development area. The purpose of this article is to analyze the current socio-economic problems the pre-Volga subregion of Tatarstan. Depressed and undeveloped agricultural areas is a traditional object of study in socio-economic geography, regional Economics and other related Sciences. The problem of uneven territorial development is very relevant in the modern world. This is evidenced by the large number of publications (Salvati, L.A., and Carlucci, M.B.A., 2014; L.G. Horlingsand Y. Kanemasu, 2015; Theodoros, I. and P. Theodoros., 2015; Gardiner B., Martin R., Tyle P., 2012; Shtanchaeva M.R., O.V. Zjablova and R.R. Denmukhametov, 2015).

There are the concepts of typology problem areas, which are divided into depressive, i.e. well-developed in previous periods and no longer rapid growth, and in fact retarded, historically undeveloped (Safiullin R.G., Suleimanov A.B., 2006). A lot of problems is the basis of socio-economic disadvantage of these areas. Problems are combined in the following groups: economic, geopolitical, ethnic, environmental (Seliverstov In.E., Bandman M.K., Guzner S.S.,

1996). Tatarstan is one of the largest and most developed regions of Russia, with a strongly marked specialization of the economy, relatively high rates of economic growth. It has a special geopolitical position at the crossroads of European and Asian cultures (Gaysin I.T., Zjablova O.V., Denmukhametov R.R., 2013).

As with any large region, the uneven socio-economic development is relevant for the Republic of Tatarstan. Within the Republic decided to allocate 6 sub-regions: Northwest, Northeast, Southeast, pre- Kama region, the For Kama region and the pre-Volga region.

Studied the pre-Volga region lies to the West of the Republic. We studied the sub-region is in the west of the Tatarstan. Its geographical position is characterized by a considerable distance from the major cities – regional centers of production (growth points), lack of natural resources, located in an area of traditional agrarian economy.

METHODS AND RESOURCES

Materials for study is the official data of the statistical organizations of Russia – the Russian statistics Committee and the statistics Committee of the Republic of Tatarstan.

The study applied the methods of mathematical statistics used for calculating the indicators characterizing the level of socio-economic development the pre-Volga area of Tatarstan. We used the 12 indicators associated with the analysis of the population dynamics, demographic variables, industrial and agricultural production, infrastructure indicators.

RESULTS

The pre-Volga region of Tatarstan is a rural area with historically slow pace of economic development. This is a classic agricultural area with low polarization space and almost no organizing centers. The only city – Buinsk (20.4 thous. people) has limited function and can not extend its influence to the whole the pre-Volga territory. It is home to 4% of the population, it occupies 11% of its area. In the pre-Volga region is home to 16.4% of the total rural population of Tatarstan. It consists of 6 municipal districts.

Consider the possibilities and advantages possessed by the territory.

The pre-Volga region is the warmest area of the Republic of Tatarstan. The relief is flat with a weak partition between the rivers Volga and Sviyaga. There are reserves of therapeutic mineral waters. One of the treasures of the region are Chernozem soils.

Among the mental qualities of the area are the beauty of natural landscapes, the presence of large water bodies of the Volga river, the status of the traditional agricultural areas. One of the major advantages of Predvolzhye is relatively good environmental situation and the availability of diversified transport sector. Construction of high-quality roads, both regional and municipal status is a significant project in previous years.

Threats to socio-economic development is adverse geodemographic situation. This is reflected in the decrease of the total population (Denmukhametov, R.R., Zjablova, O.V., 2014; Gabdrakhmanov N.K. and Rozhko M.V., 2014; Rubtzov V.A., Rozhko M.V., Gabdrakhmanov N.K. and Gilmanova A.A., 2015). Thus, compared with the 1979 population of the pre-Volga region in 2014 decreased by 25.9%. This situation is accompanied by two interrelated processes: a negative natural population growth (-6,5 %) and stable outflow of the young population, especially women. Industrial production is connected mainly with the processing of agricultural raw materials by the food industry.

These include meat (Buinsk, Tetyushi city), breast (Buinsk, s. StaroeDrozhzhanoe), sugar (Buinsk), fish (Tetyushi city) industry. In urban settlements there are small enterprises of machine building, textile and construction industry.

Equipping the territory the infrastructure is an important factor in its development. The pre-Volga region concentrates only 1.2% of the basic production assets of regional economy and it remains virtually unchanged in the last 20 years. Its points to the limited capacity of the region in terms of material development activities (Komarova V.N., O.V. Zjablova and R.R. Denmukhametov, 2014).

General analysis of the status, opportunities and threats are presented in table 1.

Table 1
EVALUATION OF THE PRE-VOLGA REGION FOR THE DEVELOPMENT
OF AGROTOURISM AND ECOTOURISM

Strengths	Weaknesses
1) favorable transport and geographical location; 2) the presence of roads and Railways, river transport 3) favorable environmental conditions 4) high aesthetics of landscapes 5) fertile soil 6) social and ethnic peace 7) not much crime 8) the hospitality of the local population	1) remoteness from the capital and major agglomerations 2) the ageing of the population 3) negative population growth 4) the spread of alcoholism 5) a low standard of living of the population 6) a low standard of living of the population 7) historical economic underdevelopment of the territory
Opportunities in the external environment	Threats of external environment
1) Support the region through the national social-economic program 2) stable position of the region on external agricultural markets 3) the interest in natural systems of the region among potential tourists 4) possible investor interest in active recreation	1) the threat of further outflow of the young population in other regions 2) the threat of increasing dependence on grants, subsidies and subventions from the regional budget 3) the increase of depreciation of fixed assets of agriculture 4) the lack of competitive infrastructure of the tourism, leisure and entertainments

Thus, it can be argued that the pre-Volga region has unequal territorial, human and economic resources compared to other regions of Tatarstan.

Global experience suggests that sustainable development of such areas is possible in case of implementation of certain directions of development. Usually these opportunities there are two.

The first is the further development of the agricultural sectors, the production of environmentally friendly products. The second is the implementation of intangible activities, and

the most preferred tourism (Mulec I. and N.Wise, 2013).

Agro-tourism and ecotourism are very popular nowadays. They emerged as the result of meeting increased needs of residents of large urban areas in the rest associated with peace, a return to traditional rural environment.

Agro-tourism relies on the familiarity of the citizens with the daily life of rural people, the beauty of nature, the opportunity to spend time in a clean environment, to change their social role.

The studied area has a high chance to develop this area of tourism. The highest benefits are municipal areas with access to the Volga. Such a direction with some effort can affect two seasons – summer and winter.

Summer vacation is the traditional summer activities: picking mushrooms and berries, help the villagers in their everyday work, cooking in the traditional way, and also beach holidays on the Volga river.

The pre-Volga region inhabited by the population of the two ethnic groups – Tatars and Russians. With proper programming of agro-tourism potential promotion of traditional national life of these peoples. Program winter ecotourism can be associated with a traditional winter activities – skiing and skating, winter fishing.

Agro-tourism and ecotourism is a relatively new area of tourism in Russia. This type of vacation is only the beginning of its implementation. Considerable difficulties are also related to the fact that it affects the traditional consciousness of rural residents, shifting his feet up on the other activities, except for agriculture.

Therefore, the problem of the initial stage of development of agro-tourism program – to convince the villagers to develop this area, due to the change of stereotypes.

Implementation of programs of agro-tourism and eco-tourism also involves a significant capital investment in the creation of high-quality roads between the settlements, creation of beaches, recreation areas, skating rinks and winter trails.

SUMMARY

The uneven territorial development is an urgent problem in many countries. To overcome this problem definitively is almost impossible, but there are ways of leveling. Undeveloped agricultural area usually weakly involved in regional socio-economic processes, which is quite obvious. Such areas have a low density of infrastructure, including production assets. The lack of economic development is compounded by problems in the sphere of population reproduction.

Such areas have a low density of infrastructure, including production assets. The lack of economic development is compounded by problems in the sphere of population reproduction.

And the development of new activities is hampered by the ageing population and low standard of living, unemployment among the younger population.

However, there is the possibility of activities allowing to get additional benefits from agricultural specialization of the region.

CONCLUSION

The most promising economic activities in the pre-Volga region of Tatarstan could become the next. The first of these, agriculture, focused on getting organic crop and livestock production. Such products have high competitiveness and can be realized in foreign markets.

This requires the further development of private farms and individual farms. A new direction of socio-economic development has the potential to become agro-tourism and ecotourism. The pre-Volga region has all necessary resources for agro-tourism and ecotourism: the beauty of natural landscapes, favorable environmental conditions, a weak transformation of natural complexes. The traditional way of life of the rural population and the preservation of national traditions can be considered as an attractive factor. The implementation of these types of tourism involves the creation of local interest in new activities and infrastructure investment areas.

CONFLICT OF INTEREST

The author confirms that the data do not contain any conflict of interest.

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THE TECHNIQUE OF THE FACTORIAL ANALYSIS OF THE PROFITABILITY OF THE SEGMENTS IN WATER-BORN TRANSPORT COMPANIES

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ABSTRACT

The present article substantiates the need for carrying out a factor analysis of the profitability of the operations of the segments in water-born transport companies. The stages of the factor analysis of profitability have been defined with the factors affecting both the profitability of spending of one segment and the overall profitability of spending having been determined as well. In addition, the factors affecting the profitability of watercraft have been studied. The proposed method of performing the factor analysis of profitability is examined through the example of AltynYar, an organization engaged in water-borne transportation. The conclusions that were drawn following the completion of the factor analysis suggest that employing the analysis allows determining the impact of specific causes upon the results of the segments' activities and contributes to the identification and further elimination of negative trends.

Keywords: *profitability, expenses, assets, water-borne transportation, factor analysis, segment.*

INTRODUCTION

The factor analysis represents a significant stage of the segmental analysis allowing one to identify and assess the impact of the main factors on the resulting performance indicators. In order to perform a factor analysis of the key indicators of a segment, generalized reporting information will not suffice therefore analysts fall upon a specific list of additional data contained in the system of management accounting that constitutes a trade secret (Andreeva G., 2016, Hafid I., 2016).

One of the most striking indicators that reflect the efficiency of an organization as a whole as well as its individual areas of activity is the profitability of the segment's costs (Roy R., 2016).

Managers who are responsible for the activities of the segments not only need to know the trends of the indicator, but they also have to be aware of what factors have affected the positive or negative changes in the profitability of the segment (Huning, S., Naumann, M., Bens, O., Hüttl, R.F., 2011).

METHOD

A number of stages have been identified for the purpose of performing a profitability analysis of the costs in the segments in which companies engaged in water-borne businesses operate:

1. At the first stage, we propose to determine the cost (items) elements the impact of which must be determined in order to ensure more efficient management of the costs in the

segments. In general, we have defined a standard set of cost elements: physical costs (oil and lubricants, mostly), labor costs including social expenditures and free meals, depreciation, repair costs and others (Shan Y., 2015). What stands out from the combination of costs are repair costs which is due to the large chunk of space this cost item takes up in the overall combination of costs of shipping companies and the need to perform a special monitoring of these expenses.

2. The second stage is the transformation of the original segment profitability model into a factor one. One must perform calculations represented by Formula 1 to this end.

$$Rs_i = \frac{PR_i}{M\mathcal{B}_i + 3\Pi_i + A\mathcal{M}_i + P\mathcal{M}_i + \Pi p_i} \div \frac{V_i}{V_i} = \frac{Rn_i}{ME_i + 3E_i + A\mathcal{M}E_i + PE_i + \Pi E_i}, \quad (1)$$

PR_i - earnings of thesegment;

$M\mathcal{B}_i$ - material expenses of the segment;

$3\Pi_i$ - salaries in the segment taking into account all social expenditures;

$A\mathcal{M}_i$ - depreciation of the fixed assets of the segment;

Πp_i - other expenses of the segment minus the repairs costs;

$P\mathcal{M}_i$ - repair costs;

V_i - revenues of the segment;

Rn_i - sales profitability of the segment;

ME_i - materials consumption in the segment;

$3E_i$ - salary ratio;

$A\mathcal{M}E_i$ - depreciation ratio in the segment;

PE_i - repairs costs ratio in the segment;

ΠE_i - othercostsper one ruble of revenues in the segment.

3. Carrying out a factor analysis, identifyingthe specific impact of the factors on the profitability of the expenses in the segment, interpreting the results, formulating conclusions, identifying reserves to boost the profitability of the segment (Jeng D., 2016).

4. Devising a profitability model for the activities of all the segments, identifying the factors affecting this indicator. We propose to view the impact of these factors as the structure of activities and profitability of individual segments'cost. The factor model is represented by Formula 2.

$$Rs = \sum_{i=1}^n t_i \cdot Rs_i, \quad (2)$$

t_i -the costs of the first segment against the overall costs of sales;

Rs_i - the profitability of the costs in the first segment.

5. Identifyingthe impact of the factors on the profitability of the company, making conclusions and putting forward proposals on reducing the number of negative trends and

reinforcing positive ones.

RESULT

Let us examine the factor analysis technique of the profitability of segment costs through the example of LLC AltynYar. Sand extraction will serve as the segment under examination. The results of the previous analysis pointed to a dramatic decline in the activities in the segment which has to have affected the profitability of its business. The initial data for the factor analysis is presented in Table 1.

Table 1
THE INITIAL DATA FOR THE FACTOR ANALYSIS OF THE SAND EXTRACTION SEGMENT

№	Index				Deviation
1	Revenue from sales	thousandrubles	28205	12965	-15240
2	Materialcosts	thousandrubles	4387	1931	-2456
2.1	Fuelandlubricants	thousandrubles	3840	1834	-2006
3	Wageswithcharges	thousandrubles	5268	1793	-3475
4	Depreciation	thousandrubles	1205	1205	0
5	Repairs	thousandrubles	3456	4097	641
6	Othercosts	thousandrubles	2071	1272	-799
7	The total costitems	thousandrubles	16387	10298	-6089
8	Profit from sales	thousandrubles	11818	2667	-9151
9	The profitability of the segment costs	%	72,12	25,90	-46,22
10	Return on sales		41,90	20,57	-21,33
11	Materials consumption (items 2/1)	penny	15,55	14,89	-0,66
12	Salary ratio (items 3/1)	penny	18,68	13,83	-4,85
13	Depreciation ratio (items 4/1)	penny	4,27	9,29	5,02
14	Repairs costs ratio (items 5/1)	penny	12,25	31,60	19,35
15	Other costs per one ruble of revenues (items 6/1)	penny	7,34	9,81	2,47

The calculation of the impact of the changes in the factors on the profitability of sand extraction using the chain substitutions technique is shown in Table 2.

The data contained in Table 2 indicates that in 2014 the profitability of mining operations dropped by more than 46 percent. The calculations performed revealed that the decline in profitability was mostly due to the profitability of sales deteriorating which in turn was caused by low production volumes and considerable costs.

This dramatic decline in profitability of costs of the segment is attributable to the increase in repair costs.

The reduction in material costs and labor costs associated with the activities of the segment has had a favorable effect on the profitability of costs of the segment resulting in an increase in profitability by 0.73 and 6.78 percent respectively. However, the positive trends have not been able to offset the adverse effects of the negative factors.

Table 2
THE FACTOR ANALYSIS OF THE PROFITABILITY OF THE SAND EXTRACTION SEGMENT

Substitution	Factors						Rs_i , %	The deviation in the level of profitability of the segment	Affectfactor
	ME_i	$3\Pi_i$	AmE_i	PE_i	III_i	Rn_i			
2013	15,55	18,68	4,27	12,25	7,34	41,90	72,12	x	x
Substitution 1	14,89	18,68	4,27	12,25	7,34	41,90	72,95	0,83	Materials consumption
Substitution 2	14,89	13,83	4,27	12,25	7,34	41,90	79,67	6,72	Salary ratio
Substitution 3	14,89	13,83	9,29	12,25	7,34	41,90	72,73	-6,94	Depreciation ratio
Substitution 4	14,89	13,83	9,29	31,60	7,34	41,90	54,44	-18,28	Repairs costs ratio
Substitution 5	14,89	13,83	9,29	31,60	9,81	41,90	52,75	-1,69	The level of other expenses
2014	14,89	13,83	9,29	31,60	9,81	20,57	25,90	-26,85	Sales profitability
The balance of factors								-46,22	x

The efficiency level of a company functioning as a whole “organism” illustrates the overall profitability of its activities calculated as the revenues derived from sales against to the cost of sales (Panasyuk M.V., Pudovik E.M., Sabirova M.E., 2013).

For AltynYar, in 2013, this figure added up to 22.36% (the revenues to the tune of 22.843 thousand rubles divided by the prime cost of 102.171 thousand rubles), in 2014 - 16.47% (20.766 thousand rubles divided by 126.088 thousand rubles).

Let us look at how the profitability of individual segments affected the overall profitability of AltynYar. For this, we will use the initial data in Table 3.

Table 3
THE PROFITABILITY OF THE COSTS OF THE SEGMENTS OF LLC ALTINYAR

Segments	The structure of the cost of sales,%			Profitabilitysegment, %		
	2013r.	2014r.	Change	2013r.	2014r.	Change
Extraction	16,04	8,17	-7,87	72,12	25,90	-46,22
Cargohandling	21,70	14,01	-7,69	14,27	15,22	0,94
Cargotransportation	40,04	62,04	22,00	11,64	16,31	4,66
Renting ships without crew	4,14	5,60	1,47	11,78	12,97	1,19
Renting ships together with the crew	18,02	10,07	-7,94	14,09	13,62	-0,46
Repair work on the side	0,06	0,11	0,05	6,25	6,52	0,27
Total:	100,00	100,00	x	22,36	16,47	-5,89

According to Table 3, the overall profitability of the activities of the company decreased by 3.63 percent. Most segments indicate a slight uptick in profitability (within one percent). The overall negative trend of profitability is related to a dramatic decline in the profitability of sand extraction. The drop in the profitability of the activities of this segment added up to 21 percent. In addition, some decline in the profitability of renting ships together with the crew is observed.

In order to perform a factor analysis of the profitability of the activities of LLC AltinYar through the method of chain substitutions, Formula 3 will be used.

$$Rs_0 = \sum_{i=1}^n t_{i0} \cdot Rs_{i0}, \quad (3)$$

t_{i0} - the cost proportion of the first segment against the total cost of sales in 2013;

Rs_{i0} - the profitability of spending of the first segment in 2013.

$$Rs_0 = (16,04 \cdot 72,12 + 21,7 \cdot 14,28 + 40,04 \cdot 11,64 + 4,14 \cdot 11,78 + 18,02 \cdot 14,09 + 0,06 \cdot 6,25) \div 100\% = 22,36\%.$$

The conditional indicator of profitability calculated using the 2014 structure and the 2013 level of segment spending profitability shall be determined through Formula 4.

$$Rs_{ycn} = \sum_{i=1}^n t_{i1} \cdot Rs_{i0}, \quad (4)$$

t_{i1} - the cost proportion of the first segment against the total cost of sales in 2014.

$$Rs_{ycn} = (8,17 \cdot 72,12 + 14,01 \cdot 14,28 + 62,04 \cdot 11,64 + 5,6 \cdot 11,78 + 10,07 \cdot 14,09 + 0,11 \cdot 6,25) \div 100\% = 17,2\%.$$

The profitability of activities of LLC AltinYar in 2014 can be calculated from Formula 5.

$$Rs_1 = \sum_{i=1}^n t_{i1} \cdot Rs_{i1}, \quad (5)$$

Rs_{i1} -the profitability of spending of the first segment in 2014.

$$Rs_1 = (8,17 \cdot 25,9 + 14,01 \cdot 15,22 + 62,04 \cdot 16,31 + 5,6 \cdot 12,97 + 10,07 \cdot 13,62 + 0,11 \cdot 6,52) \div 100\% = 16,47\%.$$

The impact of structural changes on the profitability of the water-borne transportation company will be determined by the following formula (6):

$$\Delta Rs(t) = Rs_{ycl} - Rs_0, \quad (6)$$

$$\Delta Rs(t) = 17,2 - 22,36 = -5,16 \text{ percent.}$$

Changes in favor of increasing the share of less lucrative activities have led to a decline in the profitability of the company's activities by 5.16 percent.

The changes in the profitability of the activities of LLC AltynYardue to the spending profitability level of individual segments will be defined by Formula 7.

$$\Delta Rs(Rs_i) = Rs_1 - Rs_{ycl}, \quad (7)$$

$$\Delta Rs(Rs_i) = 16,47 - 17,2 = -0,73 \text{ percent.}$$

The decline in the overall spending profitability level of the segments led to the profitability of the activities of AltynYar going down by 0.73 percent in 2014.

The reduction in the profitability of the activities of the company as a whole is mainly due to a sharp decline in the profitability of sand extraction. As mentioned above, the main reason behind the deterioration of the performance of this segment is the breakdown of a dredge ship for navigation in 2014.

It should be mentioned that a key role in the performance of shipping companies is played by fixed assets that include cargo and passenger vessels (Ivanova, G., Rolfe, J., 2011), dredge ships, floating cranes and so on. The effectiveness of the activities of a segment is determined in large part by how effectively these fixed assets are used. In order to make a comprehensive evaluation of the effectiveness of the use of vessels by inland water-borne transportation companies, we propose to introduce a boat profitability indicator (Huning, S., Naumann, M., Bens, O., Hüttl, R.F., 2011). The indicator can be calculated for an enterprise as a whole, an individual segment of activity and a specific boat.

The profitability of watercraft is calculated as the ratio of revenues raked in by the company (segment, boat) and calculated at comparable prices against the average annual value of the watercraft of a company (segment) or a separate vessel (Singh S., 2016). This model does not make it possible to make a factor analysis of the profitability of watercraft therefore we will transform it by dividing the numerator and denominator by the revenues generated by the sales of the company (segment, watercraft) at comparable prices. The use of comparable prices in this model is necessary in order to exclude the price factor which may give rise to distortions when calculating returns on assets and sales profitability figures. As a comparable price for water-borne transportation companies, we recommend that the prices of the previous year be used since the analysis of these indicators is generally carried out in cycles. The factor model for watercraft profitability is represented by Formula 8.

$$R_w = \frac{PRc \div Vc}{\overline{W} \div Vc} = R_n \cdot CR_w, \quad (8)$$

PRc - proceeds from sales;

Vc - revenues,

\overline{W} - the average annual cost of watercraft,

CR_w - the return on assets for watercraft.

The proposed factor model will consider the effects of two factors that is the sales profitability meaning the efficiency of the operational activities of the segment (company) and the return on assets for watercraft that is how fully and effectively the boat is used. The analysis of the factors that we have identified allows us to determine the trend of administrative influence be it the reduction in the costliness of the activities performed by the watercraft (segment, company) or a boost in the business activity, the demand for the services, a particular vessel (segment, company) (Hirsch S., 2016).

Let us examine the technique for performing a factor analysis to determine the profitability of watercraft through the example of the cargo handling services segment of AltynYar.

Two floating cranes worth 13.800 thousand rubles and 14.500 thousand rubles respectively perform the cargo handling activities of the company. In 2013, the revenue from cargo handling amounted to 25.341 thousand rubles, in 2014 – 20.352 thousand rubles. On average, the prices for this type of activity in 2014 increased by 1.0339 times (57.33 rub./ton ÷ 55.45 rub./ton). Let us make a recalculation of the revenues and earnings from the sales of 2014 into comparable prices.

Revenues calculation: $20\,352 \div 1,0339 = 19\,685$ thousand rubles;

Earning calculation: $2688 \div 1,0339 = 2\,600$ thousand rubles.

It must be noted that the recalculation of earnings into comparable prices gives an approximate result because apart from the impact of price changes on the services, the earnings are also affected by various trends in prime costs. However, taking these factors into consideration is quite a time-consuming process so we will assume that the prices of the floating cranes services grow in proportion to the costs.

The initial data for the factor analysis is represented in Table 4.

Table 4
THE INITIAL DATA FOR THE FACTOR ANALYSIS OF PROFITABILITY OF THE FLOATING CRANES

Index	Units	2013	2014	Deviation
Profit from sales	thousand rubles	3165	2600	-565
Revenue at comparable prices	thousand rubles	25341	19685	-5656
The average annual cost of floating cranes segment	thousand rubles	28300	28300	0
The profitability of boats	%	11,18	9,18	-2,00
Return on sales	%	12,49	13,21	0,72
Capital productivity boats	rub.	0,895	0,695	-0,20

The factor analysis method can be represented in tabular form (Table 5).

The results of the factor analysis lead to the conclusion that the profitability of floating cranes declined by 2 percent to 9.18% in 2014. This indicator was adversely affected by a decline in the return on assets for the floating cranes caused by a decrease in the business activity of the cargo handling segment of Allyn Yar.

Table 5
FACTOR ANALYSIS OF THE PROFITABILITY OF WATERCRAFT

Substitution	Factors		R_w	The deviation in the level of profitability of floating cranes	Affectfactor
	R_n	CR_w			
2013	12,49	0,895	11,18	x	x
Substitution 1	13,21	0,895	11,83	0,64	Returnsales
2014	13,21	0,695	9,19	-2,64	Return on assets for the floating cranes
Thebalanceoffactors				-2,00	x

Thus, while the value of fixed assets remained constant, there was a decrease in revenues in comparable prices. Notwithstanding the decline in the business activity in this segment, a slight uptick in the profitability of sales is observed (by almost 1 percent) which in turn led to the profitability of floating cranes going up by 0.64 percent.

CONCLUSION

To sum up the abovementioned, one can conclude that the application of the factor analysis to analyze the results of the activities of the segments of inland water-borne transportation organizations allows one to determine the impact of specific factors on the resulting performance indicators which contributes to the identification and further elimination of the negative trends.

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DIVERSIFICATION OF SOURCES OF EXTERNAL FINANCING THE REAL ECONOMY IN TERMS OF INSTITUTIONAL TRANSFORMATION

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ABSTRACT

In the context of institutional transformation of the Russian economy, accompanied by the fragility of economic development, depreciation of fixed assets of most enterprises, the high risks in the real and financial sectors, sharply delineated the need to find effective mechanisms to mobilize investment resources to finance the restructuring of the national economy. Particularly important problem of diversification of sources of financing the real sector gains on the background to show signs of stabilization, which are yet unstable. The article describes the features of the stock market in Russia. The analysis of the sources of financing of the economy during the economic boom, the recession and normal growth. The evaluation of the degree of use of loan funds by Russian enterprises. The authors determined the trend of reducing the number of issuers whose shares are traded on the domestic stock market. The analysis results allow to draw conclusions about the economic slowdown of the Russian enterprises and the economy as a whole.

Keywords: stock market, external financing, the real sector, capitalization, volatility, a public company, non-public company.

INTRODUCTION

The functioning of the Russian stock market is in permanent institutional structures, as it does not fully meet the requirements put forward by the global financial architecture.

Various aspects of the problem of investment financing of the real sector are widely regarded in the works of RA Braley, J. Brigham, JK Van Horn, LJ Gitman, S. Myers, FJ Fabotstsi, JI Finnerty, William Sharpe and others. There is still the controversial issue of the identification of factors that determine the choice of investment financing tools, as there are no generally accepted methods of developing deterministic parameters of external financing (Ajupov A.A., Mishina M.S., Ivanov M.E., 2014).

As a particular scientific interest there are some works of such researchers as a Vice-President of the World Bank Group Stephanou C.; Noyer Chr., who considers the stability of the financial system as a whole; International Monetary Fund experts Vinals J., Fiechter J., Pazarbasioglu C., Kodres L., Narain A., Moretti M.; Princeton University Professor Blinder AS and etc. (Gallyamova D.Kh., 2014; Ajupov, A.A., Kurilova, A.A., Kurilov, K.Y., Bogatirev, V.D., 2015; Galeeva G.M., R.I. Zinurova, 2016).

The stock market is one of the major sources of funding for enterprises of all kinds of different sectors of the economy, state and international cooperation. The basis of the stock is securities of Russian issuers. Through the mechanism of issue, placement, purchase and sale of

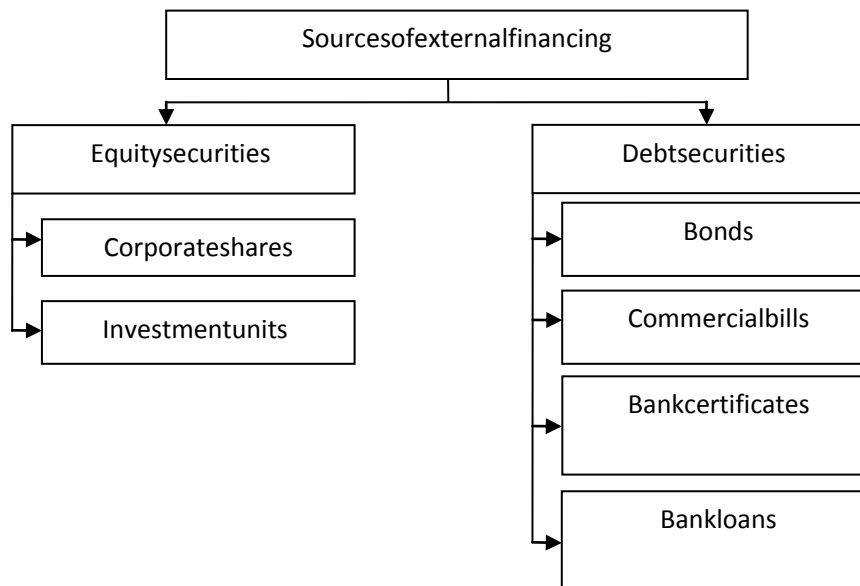
stocks, bonds, promissory notes and other financial instruments form the necessary investment resources to modernize and expand all areas of reproduction.

METHODOLOGY

According to the active legislation, securities are documents relevant statutory requirements and certify contracts and other rights, the exercise or transfer shall be possible only upon presentation of documents (certificated securities). Securities are recognized as contracts and other rights enshrined in the decision to issue or another act of the person who issued the securities in accordance with the requirements of the law and the implementation and transfer shall be possible only in compliance with accounting rules these rights (uncertificated securities).

Speaking about the financing of investment companies, it should be noted that the cheapest and most available source is self-financing, but it is limited and cannot fully meet the demand, so the market conditions, enterprises are forced to resort to external financing (Fig. 1).

Figure 1
SOURCES OF EXTERNAL FINANCING OF ENTERPRISES
(Bagautdinova N.G., Galeeva G.M., Fazlieva E.P., 2014)



The market capitalization of the company can be denoted as the financial index which determines the market value of the enterprise, based on the current value of the shares on the stock market. Market capitalization is calculated as the product of the number of outstanding shares of the company at their value prevailing at the moment:

$$\text{capitalization of the issuer} = \text{number of shares outstanding} * \text{stock quote}$$

However, it should be taken into account that the issuer's market capitalization is the conditional indicator which can affect both the company itself and its competitors so investors are interested in its dynamics and trends.

RESULTS

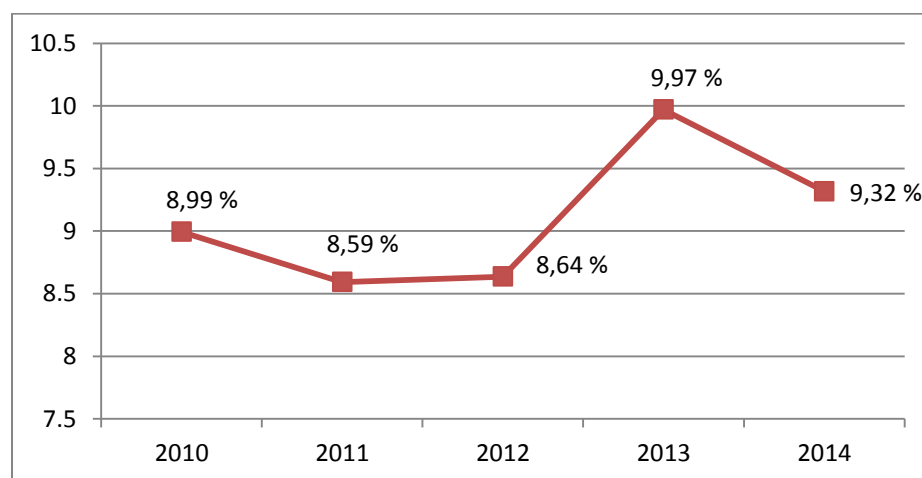
In modern conditions the role of the stock market in the capital accumulation increases, respectively, changing the balance between internal and external sources of funding (Galeeva G.M., E.P. Fazlieva, R.Kh. Mingazova & R.I. Zinurova, 2016; Treisman D., 2010). And in any market fluctuations enterprises cannot do without the issuance of securities. The ratio of sources of financing of the economy is presented in Table 1.

Table 1
THE RATIO OF SOURCES OF FINANCING OF THE ECONOMY, %

Sources of financing	Normal economic growth	economic recession	economic boom, the rise	stagflation
Domestic (total):	70	80	60	50
Retained earnings	40	30	35	20
Depreciation	30	50	25	30
Attracted (total):	30	20	40	50
bank credit	10	5	10	15
issue of securities	20	15	30	35
corporate shares	5	5	10	10
Bonds	15	15	20	25
Budget	-	-	-	-
Total	100	100	100	100

Analysis shows (fig.1), the share of bank loans as a source of financing for investment is about 9%. This index in 2014 decreased in comparison with 2013 year (Fortescue S., 2009).

Figure 1
THE SHARE OF BANK LOANS AS A SOURCE OF FINANCING FOR INVESTMENTS (%)



In the domestic economy, equity financing of business dates back to the 1850s with the establishment of joint-stock companies of railways. Shares of the Warsaw-Vienna railway issued in 1859 and 1870., Moscow-Ryazan - in 1863, Novotorzhskaya - in 1869, the Warsaw-Tiraspol - in 1880, the South-Eastern Railway - in 1893, etc. .d. First revival in modern Russian joint-stock companies became JSC "Kamaz", "Joint-Stock Commercial Bank for Social Development" and "Joint-Stock Commercial Agroindustrial Bank".Currently, there are 30 360 public companies (Table 2) (Muravyev A., 2009).

Table 2
DYNAMICS OF THE NUMBER OF LEGAL ENTITIES OPERATING IN THE 2010-2014

Years	Years Number of operating entities	including	
		JSC	CJSC
2010	2 779 026	40 290	222 030
2011	4 019 603	37 755	155 434
2012	3 822 886	32 982	137 538
2013	3 855 077	31 405	127 397
2014	3 931 038	30 360	112 600

In recent years, there is a reducing tendency of the total number of legal entities and the organized markets represented less than 1%.It should be noted that the Law of the Russian Federation №99-FZ of 05.05.2014from September 1, 2014 came into force and introduced amendments to the Civil Code. According to the innovation, to replace the open and closed joint stock company came public and non-public companies. Thus, for public companies include organizations whose shares are publicly traded or placed, while others joint stock companies and limited liability company is considered to be non-public companies.In 2014, reduction in the number of issuers in the domestic organized market continued (Table 3).

Table 3
CHARACTERISTICS OF THE ORGANIZED MARKET SHARE FROM 2005-2014

Years	Thestockexchange MICEX		RTS	
	Number of issuers	Number of issues of shares in quotation lists	Number of Issuers	Number of issues of shares in quotation lists
2005	163	50	261	59
2006	190	60	281	76
2007	208	87	302	103
2008	231	101	275	110
2009	234	103	279	92
2010	249	113	278	91
Group "MoscowExchange"				
Years	Number of issuers		Number of issues of shares in quotation lists	
2011	320		119	

2012	275	118
2013	273	110
2014	254	106

On the results of 2014, the number of issuers whose shares were traded on the domestic stock market decreased by 7% to 254 companies. This trend was evident during past three years. Since 2011, the domestic stock market shares of 66 companies left. Number of issues of shares included in quotation lists of the domestic stock market is more stable although it also tends to decrease.

The market capitalization of shares fell by 8.6% - to 23.2 trillion rubles and amounted to 32.6% of GDP (Table 4).

Table 4
THE MARKET CAPITALIZATION OF RUSSIAN ISSUERS FROM 2005-2014

Years	Group "Moscow Exchange" bln. rubles	GDP bn. rubles	Capitalization / GDP%
2005	9 304,0	21 609,8	43,1
2006	25 482,0	26 917,2	94,7
2007	32 740,0	33 247,5	98,5
2008	11 017,3	41 276,8	26,7
2009	23 090,9	38 807,2	59,5
2010	29 253,2	46 321,8	63,2
2011	25 708,0	55 798,7	46,1
2012	25 212,5	62 356,9	40,4
2013	25 323,8	66 689,1	38,0
2014	23 155,6	70 975,8	32,6

Structural imbalances capitalization did not change - the share of the ten most capitalized companies in the 2010-2014. It is at 61% (Table 5).

Table 5
LIST OF THE MOST HIGHLY CAPITALIZED RUSSIAN ISSUERS (AT THE END OF 2014)

№	Issuer	Number issuer's capitalization, bln. rub.	Share of total capitalization, %
1	JSC "Gazprom"	3 112,6	13,4
2	JSC "NK" Rosneft "	2 071,4	8,9
3	JSC "Oil Company" LUKOIL "	1 886,1	8,1
4	JSC "NOVATEK"	1 323,8	5,7
5	JSC "MMC" Norilsk Nickel "	1 291,6	5,6
6	JSC "Sberbank of Russia"	1 163,8	5,0
7	PJS "Magnet"	931,8	4,0
8	JSC "VTB Bank"	856,0	3,7
9	JSC "Gazpromneft"	850,6	3,7
10	JSC "Gazpromneft"	668,0	2,9
Total		14 155,8	61,1

In 2014 the list of the most capitalized issuers did not change significantly; there was a transition of "Sberbank of Russia" from third place to sixth and return to the list of the top ten

most capitalized issuers of "VTB Bank". The share of the ten most capitalized issuers in the total capitalization of the stock market in the 2010-2014 ceased to decline and it was at a stable level of about 61.5%. "Gazprom" took the first place in terms of capitalization and continued to lead by a significant margin the second one, since 2012 its share of the issuer's ceased to decline and remained at 13.3%.

In 2014, the market shares of Russian companies turned out to be extremely volatile and stock prices showed a large spread. Tables 6 and 7 are lists of ten shares for the year showed the highest profitability / loss.

Table 6
LIST OF SHARES SHOWN IN THE STOCK MARKET OF THE "MOSCOW EXCHANGE" THE GREATEST YIELD (BASED ON 2014)

№	Number Issuer shares	Yield, %
1	JSC"Rusal"	303,92
2	JSC"Dagestan Energy Retail Company"	205,43
3	JSC"Chelyabinsk Zinc Plant"	186,96
4	JSC"Group of companies" PIC	161,79
5	JSC"Organic Synthesis"	126,95
6	JSC"DEK"	122,10
7	JSC"ALROSA"	112,60
8	JSCPolymetalInternational	109,93
9	JSC"FosAgro"	88,06
10	JSC"Severstal"	86,43

Table 6
LIST OF SHARES SHOWN IN THE STOCK MARKET OF THE "MOSCOW EXCHANGE" LARGEST LOSS (AT THE END OF 2014)

№	Number Issuer shares	Yield, %
1	JSC «GlavTorgProdukt»	-94,30
2	JSC «Sofrinsky Experimental Mechanical Plant»	-87,04
3	JSC «Plazmek»	-79,38
4	JSC «Armada»	-77,10
5	JSCGTL	-77,01
6	JSC «Media Holding»	-71,65
7	JSC «Sistema»	-71,50
8	JSC «Russian Navigation Technologies»	-66,90
9	JSC «UTair»	-64,22
10	JSC «Kubanenergobyt»	-63,01

Thus, against the background of greatly devalued shares for the year, there were the stocks which prices increased by 2-4 times.

CONCLUSIONS

The use of financial market instruments for strategic tasks for several reasons. These reasons are perceived as responses to emergent constraints on development connected with market entry (the competitiveness barrier) or shortage of resources. Leading indicators of business activity, as well as analysis of the actions and comments from the heads of the leading

central banks showed the slowdown of economic dynamics in the world. Therefore the issue indicated in this article will not lose its relevance in the medium term (Muravyev A., 2015).

Our conclusion is confirmed by the International Monetary Fund. Having published the report on the prospects for the global economy (World Economic Outlook) it lowered the forecast of world economic growth from 3.8 to 3.6% in 2016 (Wójcik, D., Burger, C., 2010). The IMF also pointed out the risk of further slowing of economic growth in developing countries markets and developing countries.

ACKNOWLEDGEMENTS

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MODELING THE RELATIONSHIP OF PUBLIC SECTOR FINANCIAL FLOWS

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ABSTRACT

*The main purpose of the public financial policy is a complete software revenue sources of the production process of public goods. Accordingly, it is necessary to talk about the process of production and distribution of public goods and the emergence in connection with this public commitment. With respect to the public sector and public finances, we consider the savings, mainly as a compulsory social insurance, although within the model *obschefinansovoy* savings are understood in a broader sense.*

The fact that modern economists tools base on an interdisciplinary disintegration, that generates a variety of instruments used obstructs breaking of the vicious circle. As a result, "white noise" exists - the imaginary simulated stochastic processes, which superimposes on the unpredictability of the human factor (corruption, opportunistic behavior, information asymmetry, etc.). The natural result - the growth of the standard error.

Conflicts between traditional methods of governance and modern reality suggest the need for the new approaches to these issues. Thus, in our opinion, it is necessary to make a clarification of the definition of "public good" in order to establish a more complete investigation of compliance terminological subject base.

Keywords: *public goods, financial policy, the state budget, public finance efficiency; economic theory; macroeconomics.*

INTRODUCTION

Modern economic reality dictates new rules of engagement. If we consider the paradigm of development of society, it is easy to note that the socio-economic changes of recent decades base on the transformation of the financial allocation. Understanding of the financial allocation process can solve not only the social responsibility question, but also an optimization technical issue. You can generally assume that the essence of all disciplinary investigations is to find an effective mechanism for the financial resources allocation.

From this point of view, heterogeneity of approaches is particularly important for the subject matter determination. While considering the distribution of financial resources question in an interdisciplinary context, serious contradictions between the various components of the Theory of Finance subject research for the definitions become evident, but even more – the contradiction in logic of the research.

LITERATURE REVIEW

Theoretical and methodological basis of the study was the meritorian Theory of Finance theory, that benefits from conceptual provisions, contained in the legislation and regulations (russian and foreign) in the process of distribution of public (social) finances. In the development of the main provisions of the theoretical basis of the research were fundamental works and articles by both foreign and domestic authors and experts: W. J. Baumol (Baumol W.J., Bowen W.G., 1966), R.A.Musgrave and P.B.Musgrave (Musgrave R.A., 1959; Musgrave R.A., 1987), Dzh.Stiglitz (Stiglitz J., Weis A., 1981) and others (Gray P.H., 1999; Miller M.H. and K. Rock., 2007; Sabitova N.M., 2014; Sabitova N.M., Tukhbatullin R.M., 2015).

Factual and statistical basis amounted the evidence on public law obligations of the Russian Federation and foreign countries, materials research institutions and publications on the development of the theory of finance, existing legislation of the Russian Federation in terms of the emergence of public law obligations, and the data published in the media by various agencies.

The scientific novelty of the research is to develop a methodological apparatus for analysis of public finances, as well as the impact of changes in the scope of performing public-legal obligations on the dynamics of the distribution of financial resources.

OBJECT

The object of study - public finances and the process of their distribution in relation to other social and economic phenomena and processes in the transformation economy. Subject of research - the organizational, economic and theoretical aspects of the distribution of public finances.

The purpose of the study is to develop a methodological apparatus for analyzing the behavior of public finance and the relationship of interdependence with the modern trends of development of the process of distribution of financial resources.

In accordance with that purpose in the work we were set and solved the following tasks:

- a comparison of the existing conceptual approaches to the process of distribution of financial resources within the framework of public finance;
- to analyze the practice of state participation in the distribution of public funds;
- identify institutional barriers to the development of the mechanism of distribution of financial resources within the framework of public finance, to determine the possible role of the state in their decline.

METHODOLOGY

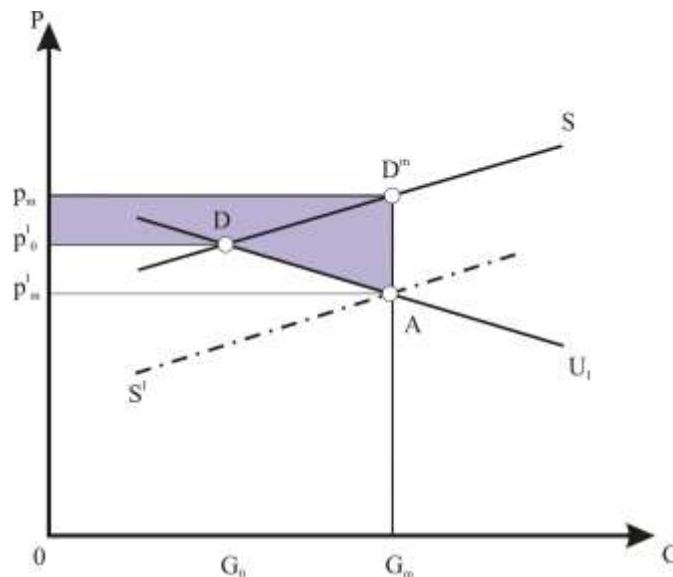
We consider every aspect from the public finances point of view. We are talking about the product "Baumol economy" suffering from a "disease of the price". Its essence lies in the fact that in certain situations and at certain stages of the production, costs are steadily grow more rapidly than the prices of the final product. We can find an analogue of the same problem in the case where the marginal cost fall slower than prices. As an example, cultural goods, innovative products with high risk development, and many goods and services in the field of knowledge, for the initial stage of production are characterized by increased costs and reduced income from the realization of their market. In all such cases, State makes these goods and services publically protected (Baumol W.J., Bowen W.G., 1966).

Apart voiced categories, a some scientists isolate different public goods and services into subgroup of meritorian goods. Those, according to R. Musgrave, are such goods and services, for which demand by individuals is different from the standard units of society. Musgrave himself and other meritorian researchers, as a supporters of methodological individualism, identify these attitudes with some "correct" preferences of individuals that are not revealed by market mechanisms (Musgrave R.A., 1959).

Meritorian version of "patronized goods" provides an answer to the question of the motivation of social care. In accordance with this concept in the three cases, the motivation of custody generates irrational behavior of individuals, due to shortage of information, will and resources. In the fourth case, it is associated with the ability of certain goods meet the collective needs, not revealed in private preferences. This goal of social guardianship of meritorian good is to create conditions for the correction of the behavior of individuals towards regulatory "right" choice.

As the analysis of this concept, its basic economic decisions related to the subsidies to manufacturers' "patronized goods", stimulating lower prices and increased meritorian goods consumption. In an effort to correct the behavior of individuals, the State encourages them to consume the G_m amount of goods (Fig. 1).

Figure 1
MERITORIAN BALANCE



It is the p_m^I price, that individual are willing to pay for such an amount of the good (according to the U_I curve). The amount of needed good (in accordance with the curve S) sells at the p_m price. It follows, that meritorian interventions that bring down the price from p_0^I to p_m^I and encourage individuals to increase consumption from G_0 to G_m , should include subsidies and / or tax incentives in the amount of area of a rectangle $S^I(p_m^I A D^m p_m)$, leading to a shift in the supply curve S down to self parallel (S^I) to the intersection with the curve U_I at point A .

Talking about the decisions taken to solve meritorian goods problems we should say about the limitations for such decisions. According to some researchers, the main problem of

Meritorian Theory are the subsidies to public goods. It is typical for that decision to receive critics from the traditional neoclassic theory supporters. At the same presuppositions of the concept does not provide opportunities for improvement through the use of neo-classical recipes: replacing subsidies to producers on transfers to consumers of the “patronized goods”.

In contrast to the formal characteristics of public goods, belonging to meritorian goods is purely evaluative in nature, resulting the risk of an excessively broad interpretation of this kind of “patronized goods”. Many meritorian researchers pay attention to this problem. So, agreeing on the bonus on the reasons for the expansion of state participation in the economy, Miller wrote: “there is good reason to believe that an ever-growing share of the state is a consequence of technically private goods “meritorisation” (Ramazanov A.V., Grigoryan K.A., 2014).

The existence of a contradiction between the findings of the fundamental theorems of social welfare, that do not allow any other form of modification of the market mechanism, in addition to taxes and transfers to consumers, and economic solutions based on subsidies to producers, devalue public protection toolkit universalism. If we add the subsidies to producers negative effect of “net loss” to this, it becomes obvious that the problem of the institute of social guardianship instruments is still waiting for the solution.

RESULTS

Public goods are a specific group of goods and service, uniform production and distribution of which is associated with the public law obligations emergence. A specific feature of this group is contrary to the fundamental theorems of welfare theory attempts to market their distribution.

With respect to the public sector and public finances, we consider the savings mainly as a compulsory social insurance. This parameter is closely related to government obligations.

Practice shows, that the adoption of specific decisions for the variety of instruments regulating the production and distribution of public goods is reduced to a uniform set of some of these methods, forming financial policy that allows us to speak of a homogeneous population. It should be noted that the public finances, expressed through the institution of public law entities, play an important role in the financial system as a whole. Thus, modeling the relationship of the public sector financial flows and volume of public law entities is turning to the role of public finance in the financial sources social reproduction process (Ramazanov A.V., Grigoryan K.A., 2014).

Consider the collection of financial flows of the public sector and volume of public law obligations. The dynamics of the model is shown as an example of correlation integral variables and intuitive graphical component (Warkentin M., R. Bapna, V. Sugumaran ,2000). We compute parameters (Table 1).

Table 1
VARIABLES CORRELATION ANALYSIS

	TRA	TAX	BIN	SAF	INV	STP	OBL	PAY
TRA	1.0000							
TAX	-0.7522	1.0000						
BIN	-0.3260	0.5257	1.0000					
SAF	-0.2300	0.0482	0.4579	1.0000				
INV	0.1548	0.5473	-0.2505	0.0232	1.0000			
STP	0.0126	-0.0596	-0.1310	0.1153	0.3567	1.0000		
OBL	-0.2148	-0.0903	0.6124	0.6721	-0.1719	-0.0945	1.0000	

PAY	-0.0131	0.1305	-0.5431	0.0733	-0.0412	-0.0317	0.0261	1.0000
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TRA - transfers; TAX - tax revenues; BIN - public law obligations; SAF - savings in the form of compulsory social insurance; INV - investments; STP - government procurement; OBL - government obligations; PAY - the costs of civil and municipal employees.

Based on the results of the correlation analysis, we can talk about the close connection between model parameters. Thus, there may be between the average and strong interconnection. The next step will be to establish and analyze dependencies between related variables. Produced regression implies that with respect to each pair of variables are analyzed BIN (public law obligations) act as the result variable, and each element of the model as the regressant (Kundukchyan R.M., 2014, P. 59; Kundukchyan R.M., 2014, P. 69). So we will be able to check the extent and form of influence of each cash flow relative to public commitments. It should be noted that, despite the conductivity and the validity of the analysis, it is impossible to talk about it unbiased and consistent, so that for the above regressions were performed individual tests (Table 2).

Table 2
CONSOLIDATED VARIABLES REGRESSION ANALYSIS

Source	SS	df	MS	Prob> F	0.0000
Model	93.124756	1	93.124756	R-squared	0.2913
Residual	168.22037	22	3.03014239	Adj R-squared	0.2982
Total	265,32593	23	4.34271071	Root MSE	2.0075

F(1, 22) = 23.72

S	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
TRA	1363602	.0089905	15.17	0.000	.1186994 .154021
_cons	-5.716382	.466558	14.40	0.000	5.799883 7.632881

Source	SS	df	MS	Prob> F	0.0000
Model	97.105553	1	97.105553	R-squared	0.2854
Residual	231.41051	22	4.01014667	Adj R-squared	0.2903
Total	328,44604	23	5.30171982	Root MSE	2.0065

F(1, 22) = 21.04

S	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
TAX	1363602	.0089905	15.17	0.000	.1186994 .154021
_cons	4.328351	.466558	14.40	0.000	5.799883 7.632881

Source	SS	df	MS	Prob> F	0.0000
Model	96.710131	1	96.710131	R-squared	0.2893
Residual	257.32140	22	4.04715509	Adj R-squared	0.2962
Total	X	23	5.19711463	Root MSE	2.0075

F(1, 22) = 22.45

S	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
SAF	1363602	.0089905	15.17	0.000	.1186994 .154021
_cons	6.716382	.466558	14.40	0.000	5.799883 7.632881

Source	SS	df	MS	Prob> F	0.0000
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Model	97.392788	1	97.392788	R-squared	0.2995
Residual	268.11463	22	3.03014239	Adj R-squared	0.2982
Total	X	23	4.34271071	Root MSE	2.0075

F(1, 22) = 27.01

S	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
INV	1363602	.0089905	15.17	0.000	.1186994 .154021
_cons	6.716382	.466558	14.40	0.000	5.799883 7.632881

Source	SS	df	MS	Prob> F	0.0000
Model	97.105553	1	97.105553	R-squared	0.2995
Residual	268.22037	22	3.03014239	Adj R-squared	0.2982
Total		23	4.34271071	Root MSE	2.0075

F(1, 22) = 23.52

S	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
STP	1363602	.0089905	15.17	0.000	.1186994 .154021
_cons	6.716382	.466558	14.40	0.000	5.799883 7.632881

Source	SS	df	MS	Prob> F	0.0000
Model	92.114239	1	92.114239	R-squared	0.2995
Residual	104.69440	22	3.03014239	Adj R-squared	0.2982
Total		23	4.34271071	Root MSE	2.0075

F(1, 22) = 23.04

S	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
OBL	1363602	.0089905	15.17	0.000	.1186994 .154021
_cons	6.716382	.466558	14.40	0.000	5.799883 7.632881

Source	SS	df	MS	Prob> F	0.0000
Model	97.105553	1	97.105553	R-squared	0.2995
Residual	218.28411	22	3.03014239	Adj R-squared	0.2982
Total	X	23	4.34271071	Root MSE	2.0075

F(1, 22) = 25.13

S	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
PAY	1363602	.0089905	15.17	0.000	.1186994 .154021
_cons	-7.014239	.466558	14.40	0.000	5.799883 7.632881

As in the case of the correlation analysis, the results of the regression analysis are noticeable close and the average density of the relationship between cash flow and volume of public obligations. In general, the larger the amount of projected cash flows, the higher the probability of increased public obligations (Kundakchyan R.M., Garifova L.F, 2014; Kundakchyan R.M., Zulfakarova L.F. , 2014). Parameters are significant in all cases and have a fairly high R2, which indicates the high quality of the model; adoption of a narrow range, the probability of error is small.

Examining each case individually, we can note that:

1) public commitment to a lesser extent to respond to the increase in financial flows, rather than on the growth of expenditures related to wages of civil and municipal employees;

2) in regard to the relationship of public commitments to investment and public procurement is true that every additional unit volume of the cash flow is more likely result in growth of public liabilities associated with investments. At the same time direct government orders are marginalized;

3) With respect to the impact of rising government borrowing on the growth of public commitments – the impact is limited. Most likely, this is due to the fact that this tool is used for pension insurance and partly correlates with the parameter household savings (in the form of pension savings), which is much more affected by a change in the volume of public obligations.

Thus, we should conduct a study of multiple regression in order to test the hypothesis that the parameter SAF takes into account the effect of government obligations (Table 3).

Table 3
MULTIPLE REGRESSION ANALYSIS FOR “INSURANCE” AND “GOVERNMENT OBLIGATIONS”
REGRESSANTS

Source	SS	df	MS	N(obs)	24	
Model	22035.6895	2	11017.8447	F(2, 21)	46.58	
Residual	77261.2544	21	143.875706	Prob> F	0.0000	
Total	99296.9438	23	184.224386	R-squared	0.2219	
				Adj R-squared	0.2190	
				Root MSE	11.995	
BIN	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
SAF	2.130297	.2575977	8.27	0.000	1.624274	2.63632
OBL	.2040857	.0641827	3.18	0.002	.0780057	.3301657
_cons	-19.87542	3.280906	-6.06	0.000	-26.3204	-13.43043

This analysis showed that the parameters have not lost significance and reliability, but held multiple correlations confirmed the assumption that the parameter of state obligations largely accounted by “Social insurance” regressant compulsory (KundukchyanR.M., GaizatullinR.R., ZappartovaZ.N.,2014).

CONCLUSION

We conducted an econometric study of the relationship of volumes carried out public liability and financial flows. The analysis addresses the following research objectives: first, the dynamic model of illustrating the relationship between the amount of running public obligations and financial flows of the public sector; secondly, establish relationships with a set of dependencies found the priorities of state financial policy.

As the model explains the relationship between the financial flows and the amount of public commitments, we can move on to the formulation of priorities for government financial policy. The system should explain the impact of the predicted values for the formation of priorities and link them into coherent sentences. Thus, we turn to the practical question of the application of this model for the management of the public sector.

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AN EVALUATION OF THE REGIONAL RESOURCE POTENTIAL AS A PART OF CLUSTER SYSTEM ANALYSIS

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ABSTRACT

In recent years, an amount of researches concerning cluster development studies increasingly raises in scientific and business environment. However, the role of the regional resource potential in the development of cluster system and its evaluation still remains underinvestigated.

This article aims to evaluate the regional resource potential within the framework of cluster system analysis. Using the author's approach, it becomes possible to predict future development of industrial cluster in these conditions.

The evaluation methodology of the regional resource potential combines both analysis and synthesis to conduct the component decomposition of the regional resource potential that helps to analyze and evaluate each particular part. The results are intended to help decision-makers and scientists to determine the level of the regional resource potential and create preventive cluster strategies. The publication was prepared within the framework of a research project supported by RFBR № 16-06-00062.

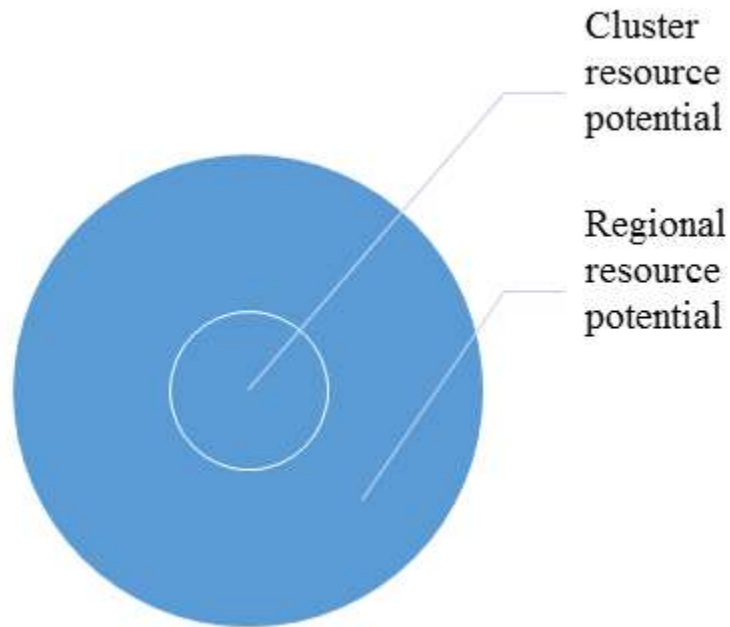
Keywords: *regional resource potential, industrial cluster, environmental potential, social potential, economic potential, water resources, air resources, forest resources, demographic potential, migration, social infrastructure, production potential, financial potential of the region, investment potential; innovative potential.*

INTRODUCTION

In recent years, amount of researches concerning cluster development studies increasingly raises in scientific and business environment. Nowadays, there are two dominating scientific schools of cluster development concept: the American (M. Porter, 1990) and the Scandinavian (O. Solvell, G. Lindqvist, C. Ketels, 2003) schools. However, the role of the regional resource potential in the development of cluster system and its evaluation still remains underinvestigated.

As we can see from the figure 1, the cluster system analysis supposes to study the regional and cluster resources potentials. This article aims to evaluate only the regional resource potential within the framework of cluster system analysis.

Figure 1
THE CLUSTER SYSTEM ANALYSIS OF A REGION



It is worthwhile to say that the regional resource potential can also make a contribution to the heritage development process in industrial clusters. The heritage development process pays attention to development of such main elements as people, infrastructure, innovations, knowledge in industrial clusters.

The regional resource potential is the collection of all kinds of resources emerging on the territory, which can be used in the process of production. It can be divided into three related blocks: environmental, social and economic potentials (Figure 2).

Figure 2
RELATED BLOCKS OF THE REGIONAL RESOURCE POTENTIAL



Further, let us examine each block in more detail.

The environmental potential of the region includes natural resources, which can be theoretically available for use at a given level of technology development and socio-economic relations, taking into account appropriate (maximum) of anthropogenic load on the territory.

The social potential of the region represents a set of capabilities available to the territorial unit (region) to achieve the main objective of development - ensuring the most favorable conditions of life of the population. The social potential of the region is largely determined by the development of the social complex in the area, which includes, above all, social infrastructure (housing, education, health care, culture, etc.) and demographic situation in the region.

The economic potential of the region is largely determined by its social and environmental components and reflects the level of the region's productive forces development, its ability to produce goods, perform work and provide services.

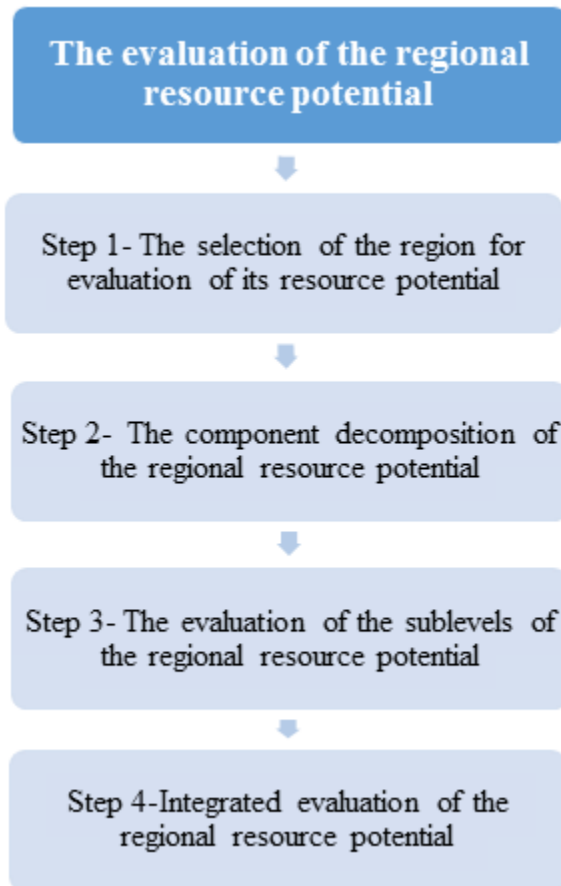
1. Methodological support

The author's evaluation methodology of the regional resource potential combines both analysis and synthesis to conduct the component decomposition of the regional resource potential that helps to analyze and evaluate each particular part.

When developing this evaluation methodology, it was highlighted as the main objectives following criteria: maximum objectivity, relevance, universality, simplicity and clarity in the methodological application. The results are intended to help decision-makers and scientists to determine the level of the regional resource potential and create preventive cluster strategies.

On the figure 3 we can see the procedure narrative of the evaluation of the regional resource potential.

Figure 3
THE EVALUATION ALGORITHM OF THE REGIONAL RESOURCE POTENTIAL



Since the category of the regional resource potential includes elements of different nature, in author's opinion, there is a need to evaluate it, as well as each individual element, using suggested formula 1.

$$H_j = \sum_{i=1}^n a_i H_{ij} \quad , \quad (1)$$

where H_j – estimated potential;
 a_i – the weight of i -th potential term;
 H_{ij} – i -th term of j -th potential.

By selecting a specific region for the study, it is necessary to decompose the resource potential of the region into its component parts, depending on the level of the hierarchy.

At first, aggregated level of the resource potential evaluation, the regional resource potential can be represented as a function, expressed by formula 2.

$$H = f(H_{econ}, H_{env}, H_s), \quad (2)$$

where H – regional resource potential;
 H_{econ} – economic potential;
 H_{ecol} – environmental potential;
 H_s – social potential.

At the second level, environmental potential can be represented as formula 3.

$$H_{env} = f(H_{lr}, H_{vr}, H_{vb}) \quad (3)$$

where H_{lr} – potential of forest resources;
 H_{vr} – potential of water resources,
 H_{vb} – potential of air resources.

In turn, the social potential can be represented as formula 4.

$$H_s = f(H_d, H_{si}), \quad (4)$$

where H_d – demographic potential of the region;
 H_{si} – potential of the social infrastructure.

Finally, the evaluation of the economic potential is reflected in the function of the industrial, financial, investment and innovative potential (formula 5).

$$H_{econ} = f(H_p, H_f, H_{inv}, H_{inn}), \quad (5)$$

where H_p – production potential of the region;
 H_f – financial potential of the region;
 H_{inv} – investment potential of the region;
 H_{inn} – innovative potential of the region.

After carrying out the decomposition and evaluation of the sublevels of the regional resource potential, it is needed to turn to the integrated evaluation of the regional resource potential. To do this, we need the current results and formula 6 for evaluating the regional resource potential.

$$H = a_1 H_{econ} + a_2 H_{env} + a_3 H_s, \quad (6)$$

where H – regional resource potential;
 H_{econ} – economic potential;
 H_{ecol} – environmental potential;
 H_s – social potential.
 a_1, a_2, a_3 - weights of potential's terms.

It is worth noting that the purpose of this article is introducing the author's technique for evaluation, its basic principles and algorithm. Therefore, an approbation of results was performed by dividing into three large levels and evaluation of selected level indicators only. This list of

indicators is not strict. It is possible to make changes in the list of indicators depending on specific case.

DISCUSSION ON RESULTS

In order to get particular results and draw conclusions, it was decided to try out the author's evaluation methodology of the regional resource potential. The Republic of Tatarstan has been chosen as an example. The evaluation of resource potential is following specific procedure steps:

Step 1- The selection of the region for evaluation of its resource potential

The Republic of Tatarstan is a federal subject of Russia located in the Volga Federal District. The area of the republic is 68,000 square kilometres.

Tatarstan is one of the most economically developed regions of Russia.

The region's main source of wealth is oil. Tatarstan produces 32 million tons of crude oil per year and has estimated oil reserves of more than 1 billion tons. The most developed manufacturing industries are petrochemical industry and machine building (Safiullin M. R., Elshin L. A., Prygunova M. I., 2015).

Tatarstan consists of three distinguished industrial regions. The northwestern part is an old industrial region where engineering, chemical and light industry dominate. In the new industrial Northeast region with its core in the Naberezhnye Chelny-Nizhnekamsk agglomeration, major industries are automobile construction, chemical industry, and power engineering. The Southeast region has oil production with engineering under development. The North, Central, South, and Southwest parts of the Republic are rural regions.

Step 2- The component decomposition of the regional resource potential

As it follows from the methodology above, we should analyze the resource potential of the Republic of Tatarstan based on evaluation of three sublevels: environmental, social and economic potentials. Further, there is a detailed decomposition of each sublevel:

1. The environmental potential of the Republic of Tatarstan
 - 1.1. The statement and potential of water resources in the Republic of Tatarstan
 - 1.1.1. The level of fresh water intake from natural water sources
 - 1.1.2. The level of water consumption
 - 1.1.3. The level of water disposal
 - 1.1.4. The level of water flow in the system of recycled and re-successive water use
 - 1.1.5. The pollutant level of wastewater contamination
 - 1.2. The statement and potential of air resources in the Republic of Tatarstan
 - 1.2.1. The level of impurity, outgoing from all stationary sources of waste
 - 1.2.2. The level of the neutralized impurity
 - 1.3. The statement and potential of forest resources in the Republic of Tatarstan
 - 1.3.1. The level of forest reproduction;
 - 1.3.2. The level of forest planting and seeding
 - 1.3.3. The level of assistance to natural regeneration of forest
 - 1.3.4. The amount of conservation afforestation on the agricultural lands
 - 1.3.5. The number of the young stands going into the category of the valuable forest vegetation
 - 1.3.6. The area of intermediate felling and selective forest sanitation
 - 1.3.7. The number of forest fires
2. The social potential of the Republic of Tatarstan
 - 2.1. The statement and potential of demography in the Republic of Tatarstan

- 2.1.1. An average annual population
- 2.1.2. The age composition
- 2.1.3. The balance of men and women
- 2.1.4. The balance in ethnic composition
- 2.1.5. The urban-rural differential ratio
- 2.1.6. The level of population movement
- 2.1.7. The level of migration
- 2.1.8. The number of able-bodied population of active working age
- 2.1.9. The number of foreign migrant workers
- 2.1.10. The number of people older than active working age, employed in the economy
- 2.1.11. The number of teenagers, involved in the economy
- 2.2. The statement and potential of the social infrastructure in the Republic of Tatarstan
 - 2.2.1. An average total space of a housing unit per person
 - 2.2.2. The quality of housing
 - 2.2.3. The number of educational organizations of higher professional education
 - 2.2.4. The level of provision of educational services by higher professional education
 - 2.2.5. The number of hospital organizations
 - 2.2.6. The number of medical organizations
 - 2.2.7. The level of the provision of medical and preventive care
 - 2.2.8. The number of professional theaters
 - 2.2.9. The number of museums
 - 2.2.10. The number of cultural and leisure centres
 - 2.2.11. The number of public libraries
 - 2.2.12. The number of cinemas
 - 2.2.13. The number of stadiums with stands at 1.5 thousands seats and more
 - 2.2.14. The number of sanitary institutions for children
 - 2.2.15. The number of sanatorium-resorts and recreation organizations
 - 2.2.16. The number of tourist firms
 - 2.2.17. The level of entertainment services provision
- 3. The economic potential of the Republic of Tatarstan
 - 3.1. The production potential of the Republic of Tatarstan
 - 3.1.1. The statement and potential of manufacturing industry in the Republic of Tatarstan
 - 3.1.1.1. The level of mineral production
 - 3.1.1.2. The development level of manufacturing activity
 - 3.1.1.3. The development level of production and distribution of electricity, gas and water
 - 3.1.2. The statement and potential of agriculture in the Republic of Tatarstan
 - 3.1.2.1. The development level of crop growing
 - 3.1.2.2. The development level of animal agriculture
 - 3.1.3. The statement and potential of building sector in the Republic of Tatarstan
 - 3.1.3.1. The number of operating building organizations
 - 3.1.3.2. The volume of work performed by the building sector
 - 3.1.3.3. An average number of employees in building sector
 - 3.1.3.4. An average monthly salary of employees in building sector
 - 3.2. The financial potential of the Republic of Tatarstan
 - 3.2.1. The income and expenses of consolidated budget of the Republic of Tatarstan
 - 3.2.2. The balanced financial result of the companies' activity in the Republic of Tatarstan

- 3.2.3. The level of solvency and financial stability of enterprises and organizations in the Republic of Tatarstan
- 3.2.4. The ratio of profitable and unprofitable organizations
- 3.3. The investment potential of the Republic of Tatarstan
 - 3.3.1. The level of investment use according to forms of ownership in the Republic of Tatarstan
 - 3.3.2. The level of fixed investment by economic activities in the Republic of Tatarstan
- 3.4. The innovative potential of the Republic of Tatarstan
 - 3.4.1. The number of organizations involved in innovation activities
 - 3.4.2. The share of innovatively active organizations in the total number of examined companies
 - 3.4.3. The share of innovative products and services in the total volume of shipped goods and services by innovatively active enterprises
 - 3.4.4. The level of costs for technological innovations
 - 3.4.5. The share of costs for technological innovations in the total volume of shipped goods and services of innovatively active enterprises
 - 3.4.6. The level of innovation costs by economic activities
 - 3.4.7. The level of financing costs for the innovative activities of large and medium-sized organizations.

Step 3- The evaluation of the sublevels of the regional resource potential

This step suggests the analysis and evaluation of each level of the resource potential in the Republic of Tatarstan apart. For more exact evaluation of resource potential we will use a seven-grade scale.

During the marking of points a combined approach was used. It was made by analysis of statistical data in the Republic of Tatarstan of 2014-2015 years. Also, a survey of respondents was conducted. The respondents were representatives of science and business.

The first block included the evaluation of the environmental potential of the Republic of Tatarstan. The formula of evaluation 7 and tables of rates 1-3 were used.

$$H_{env} = 0,2H_{lr} + 0,5H_{vr} + 0,3H_{vb} \quad (7)$$

where H_{lr} – potential of forest resources of the Republic of Tatarstan;

H_{vr} – potential of water resources of the Republic of Tatarstan,

H_{vb} – potential of air resources of the Republic of Tatarstan.

The environmental potential is the main and the most problematic part of the regional resource potential. From the tables 1-3, we can conclude that the environmental potential of the Republic of Tatarstan is in satisfactory condition. The most serious problems that require special attention are water and air pollution. It is useful to note that the Republic of Tatarstan has the territory abounding in water in the Volga River Basin, which makes environmental problems more important. The most polluted cities of the Republic of Tatarstan are Kazan, Naberezhnye Chelny, Nizhnekamsk, Almetyevsk, Bugulma, Zainsk. The main pollution reasons are urbanization, oil, chemical and machine-building production industries, automotive transport increase.

Table 1
THE EVALUATION OF THE STATEMENT AND POTENTIAL OF WATER RESOURCES IN THE
REPUBLIC OF TATARSTAN

N	Factor	Rate
1	The level of fresh water intake from natural water sources	3
2	The level of water consumption	2
3	The level of water disposal	3
4	The level of water flow in the system of recycled and re-successive water use	7
5	The pollutant level of wastewater contamination	7

Table 2
THE EVALUATION OF THE STATEMENT AND POTENTIAL OF AIR RESOURCES IN THE
REPUBLIC OF TATARSTAN

N	Factor	Rate
1	The level of impurity, outgoing from all stationary sources of waste	4
2	The level of the neutralized impurity	4

Table 3
THE EVALUATION OF THE STATEMENT AND POTENTIAL OF FOREST RESOURCES IN THE
REPUBLIC OF TATARSTAN

N	Factor	Rate
1	The level of the forest reproduction;	7
2	The level of forest planting and seeding	7
3	The level of assistance to natural regeneration of forest	3
4	The amount of conservation afforestation on the agricultural lands	4
5	The number of the young stands going into the category of the value forest vegetation	1
6	The area of intermediate felling and selective forest sanitation	1
7	The number of forest fires	7

After the environmental study of the Republic of Tatarstan, it is essential to move to analysis and evaluation of the socio-economic development.

The dynamics of the socio-economic development of the Republic of Tatarstan was formed in 2015, in the face of increasing geopolitical tensions, destabilization of the stock markets, volatility in the oil and currency markets. External factors had a significant impact on the economy of the Republic of Tatarstan. Along with this, due to the implementation of investment projects, the support tools development of innovations, small and medium business, as well as the implementation of anti-crisis measures, gross regional product of the Republic of Tatarstan in 2015 recovered to the level of 2014 in comparable prices (100%) and was estimated to be 1825 milliard rubles.

The social potential of the Republic of Tatarstan was evaluated by using formula 8 and tables 4-5.

$$H_s = 0,5H_d + 0,5H_{si}, \quad (8)$$

where H_d – demographic potential of the the Republic of Tatarstan;
 H_{si} –social infrastructure potential of the Republic of Tatarstan.

Table 4
THE EVALUATION OF THE STATEMENT AND POTENTIAL OF DEMOGRAPHY IN THE REPUBLIC OF TATARSTAN

N	Factor	Rate
1	An average annual population	7
2	The age composition	5
3	The balance of men and women	6
4	The balance in ethnic composition	7
5	The urban-rural differential ratio	3
6	The level of population movement	7
7	The level of migration	5
8	The number of able-bodied population of active working age	1
9	The number of foreign migrant workers	2
10	The number of people older than active working age, employed in the economy	3
11	The number of teenagers, involved in the economy	1
12	The rate of unemployment	7

Table 5
THE EVALUATION OF THE STATEMENT AND POTENTIAL OF THE SOCIAL INFRASTRUCTURE IN THE REPUBLIC OF TATARSTAN

N	Factor	Rate
1	An average total space of a housing unit per person	7
2	The quality of housing	7
3	The number of educational organizations of higher professional education	7
4	The level of provision of educational services by higher professional education	7
5	The number of hospital organizations	3
6	The number of medical organizations	7
7	The level of the provision of medical and preventive care	4
8	The number of professional theaters	7
9	The number of museums	7
10	The number of cultural and leisure centres	4
11	The number of public libraries	4
12	The number of cinemas	3
13	The number of stadiums with stands at 1.5 thousands seats and more	7
14	The number of sanitary institutions for children	7
15	The number of sanatorium-resorts and recreation organizations	5
16	The number of tourist firms	7
17	The level of entertainment services provision	6

The evaluation of the economic potential of the Republic of Tatarstan is represented in tables 6-11 and formula of evaluation 9.

It stands to mention that the evaluation of production potential of the Republic of Tatarstan in this paper includes the evaluation of the statement and potential of such important branches as manufacturing industry, agriculture, the building sector.

$$H_{econ}=0,25H_p+0,25H_f+0,25H_{inv}+0,25H_{inn}, \quad (9)$$

where H_p – production potential of the Republic of Tatarstan;
 H_f – financial potential of the Republic of Tatarstan;
 H_{inv} – investment potential of the Republic of Tatarstan;
 H_{inn} – innovative potential of the Republic of Tatarstan.

Table 6
THE EVALUATION OF THE STATEMENT AND POTENTIAL OF MANUFACTURING INDUSTRY IN THE REPUBLIC OF TATARSTAN

N	Factor	Rate
1	The level of mineral production	4
2	The development level of manufacturing activity	4
3	The development level of production and distribution of electricity, gas and water	4

Table 7
THE EVALUATION OF THE STATEMENT AND POTENTIAL OF AGRICULTURE IN THE REPUBLIC OF TATARSTAN

N	Factor	Rate
1	The development level of crop growing	7
2	The development level of animal agriculture	7

Table 8
THE EVALUATION OF THE STATEMENT AND POTENTIAL OF BUILDING SECTOR IN THE REPUBLIC OF TATARSTAN

N	Factor	Rate
1	The number of operating building organizations	7
2	The volume of work performed by the building sector	7
3	An average number of employees in building sector	4
4	An average monthly salary of employees in building sector	6

Table 9
THE EVALUATION OF THE FINANCIAL POTENTIAL OF THE REPUBLIC OF TATARSTAN

N	Factor	Rate
1	The income and expenses of consolidated budget of the Republic of Tatarstan	4
2	The balanced financial result of the companies' activity in the Republic of Tatarstan	2
3	The level of solvency and financial stability of enterprises and organizations in the Republic of Tatarstan	3

4	The ratio of profitable and unprofitable organizations	6
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Table 10
THE EVALUATION OF THE INVESTMENT POTENTIAL OF THE REPUBLIC OF TATARSTAN

N	Factor	Rate
1	The level of investment use according to forms of ownership in the Republic of Tatarstan	7
2	The level of fixed investment by economic activities in the Republic of Tatarstan	7

Table 11
THE EVALUATION OF THE INNOVATIVE POTENTIAL OF THE REPUBLIC OF TATARSTAN

N	Factor	Rate
1	The number of organizations involved in innovation activities	5
2	The share of innovatively active organizations in the total number of examined companies	6
3	The share of innovative products and services in the total volume of shipped goods and services by innovatively active enterprises	5
4	The level of costs for technological innovations	7
5	The share of costs for technological innovations in the total volume of shipped goods and services of innovatively active enterprises	7
6	The level of innovation costs by economic activities	7
7	The level of financing costs for the innovative activities of large and medium-sized organizations.	7

Step 4-Integrated evaluation of the regional resource potential

On the last final stage of this methodology, it is necessary to evaluate the regional resource potential by synthesis of the previously calculated data (formula 10).

$$H = 0,2H_{econ} + 0,5H_{env} + 0,3H_s, \quad (10)$$

where H – regional resource potential;
 H_{econ} – economic potential;
 H_{env} – environmental potential;
 H_s – social potential.

On the table 12 we can see that a parameter of the regional resource potential of Republic of Tatarstan is 68,95%.

Table 12
THE EVALUATION OF THE REGIONAL RESOURCE POTENTIAL OF REPUBLIC OF TATARSTAN

Factor	Evaluation, %	Factor	Evaluation, %
H_{lr}	61, 22	H_{env}	60, 82
H_{vr}	62, 86		
H_{vb}	57, 14		
H_d	64,29	H_s	75, 29
H_{si}	86,29		

H_p	75, 71	H_{econ}	79,77
H_f	53, 57		
H_{inv}	100		
H_{inn}	89,8		

CONCLUSIONS AND FUTURE RESEARCHES

Thereby, the results of this study show that the resource potential of the Republic of Tatarstan is above average. The best statement and potential is in the economic sphere, and the worst situation is in the environmental sector. Since the regional resource potential is the basis for cluster development, providing that now we know the main strong and weak points, it becomes possible to take them into account during the cluster strategy development. It is worth noting that the evaluation of the regional resource potential is only a part of the cluster analysis. Further author's work suggests the resource potential evaluation of the particular cluster, and study of its relationship with the resource potential of the Republic of Tatarstan.

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PROBLEMS OF FORMATION AND DEVELOPMENT OF THE LAWMAKING INSTITUTE

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ABSTRACT

In article the legislative process mechanism through legal institution of lawmaking is researched. The purpose of article is to determine elements of lawmaking which at the same time are impact factors on legislative process. The research of the main system components of lawmaking allowed to formulate the main components of lawmaking, to determine unity of understanding the legislative process, the lawmaking subjects status. It is offered to provide institute of lawmaking with a legal regulation. Insufficiency of legal regulation of the legislative process mechanism generates ambiguity of the argumentation of the lawmaking subjects status, legal technology, the nature of an origin of laws. So, the technique of a bill statement is deprived of the due legal basis; the lawmaking mechanism by consideration of the bill (especially proceeding in subjects of the Russian Federation) isn't provided with the legal base in proper amount; to number of requirements, shown to lawmaking subjects: it is offered to add requirements for qualification.

Keywords: *lawmaking, legislative process, mechanism, lawmaking subjects, legal equipment.*

INTRODUCTION

Quality of laws influences quality of life therefore a main goal and a problem of lawmaking is improvement of quality of legislative activities. On the initial way of formation of institute of lawmaking in Russia were put to the decision economic, political, social, ethnic and so forth primary tasks of the Russian state through institute of legislative regulation of the public relations. At this stage the question of need of a humanization, socialization and politicization of the legislation, scientific and organizational support of legislative activities was considered (Polenina, S.V., 1996).

At the present stage of development of institute of lawmaking theoretical researches expand the purposes and tasks of institute of lawmaking, new problems appear. Efficiency of legislative procedures depends on a set of factors. An important factor on providing the high-quality legislation call the effective public lawmaking relying on broad public support which provides transparency (Voermans, W. and Napel, H.-M. and Passchier, R., 2015).

Still important is a question of technological development of a lawmaking which will eliminate need to carrying out plurality of examinations (Granström, G., 2009). The question of politicization of legislative process is in details researched (Sally, A., 1989); need of disaggregation of the mechanism of lawmaking for legal regulation (Bar-Siman-Tov, I., 2015); and many other directions of a research of problems of institute of lawmaking.

Lack of disaggregation of the mechanism of legal regulation of legislative process causes the necessity of scientific development of this subject. Questions of a research of lawmaking

gain recognition of the idea on entering of the new doctrine which is offered to borrowing for other social sciences in world practice; entering of a new industry (subindustry) in system of the right is offered (Xanthaki, H., 2013). Legislative activities cover a wide range of participants, level of sense of justice and which cultures is important social and political factor in the lawmaking mechanism.

DATA AND METHODS

Use of general scientific methods of a research of the analysis, synthesis allows to differentiate the concepts "legislative process" and "legislative process" and to formulate a conclusion about unity of understanding of the factors influencing lawmaking. Legal methods of a research provide an opportunity to estimate practice of legal regulation of lawmaking and legislative process. In particular, use of a comparative and legal method allows to compare the legislative process mechanism in subjects of the Russian Federation.

RESULTS

Legislative process is joint activities of public authorities: consideration of bills is performed by parliament, signing and publication by the President of the Russian Federation, a power to initiate legislation belongs to various public authorities. Such nature of an origin of the law is caused by the constitutional principle of unity of the power. Are allocated with legislative powers on consideration and adoption of the bill legislature. The concepts "legislative process" and "legislative process" have no uniform method of a regulation, as well as accurate differentiation in practice of legal regulation and in science of constitutional right.

The concept "lawmaking" reveals through labor-intensive process which shall end with adoption of the new law in a statement of the idea of the author (Yagmussova, A. and Baymakhanova, D., 2016). The idea of the author is the legislative idea which not always generates legislative process. To realize the legislative idea, it is necessary not only to initiate formally legislative process by introduction of the legislative initiative, but also in details to work the bill according to requirements of the legislative equipment.

The power to initiate legislation is exercised in compliance constitutionally by statutory rules. The legislative initiative is preceded by the idea of the bill: as the beginning of legislative process inducing development of the bill with the subsequent implementation of the legislative initiative through the State Duma by subjects of such right. The idea of the bill shall be approved and proved by need of its implementation precisely through the law.

The procedure of development of the bill for the general rule is assigned to the author of the bill. In regulations of Russian law there is no mechanism of a regulation of process of development of bills. It is noted that authors of bills seldom are initiators of bills (Trofimova, G. A., 2015). Origin of the idea of the bill and study of the idea often don't match on subject author's structure. The mechanism of a bill statement requires special skills whereas the idea of the bill can arise at the population (the Russian public initiative), in solutions of the Constitutional Court (where the legislator "should" eliminate contradictions in the right), from authors of scientific research. Such subjects seldom draft bills within required rules of the legal equipment.

Rules of the legal equipment are the most important element in system of lawmaking. It is necessary to agree with opinion that authors of laws shall exclude in bills of ambiguity, a vagueness, absurdity (Krabbe, V., 2010). Legislative activities shall be directed to adoption of

clear and useful laws. The important factorial component of legislative activities is purchased by the arguments gaining popularity that the developer of the bill shall have profound knowledge of the right and legal principles (Nampoothirya, N.K., 2010).

Need of observance of difficult rules of the legal equipment in case of a bill statement generates serious reasoning concerning whether authors of the legislation shall be lawyers. Such hypothesis leads to arguments for benefit of need of specialization of lawmaking subjects for the sphere of knowledge of legal disciplines and acquaintance to the general principles and conventions which can be purchased by training and practice (Norismizan, H. I., 2013).

The constitutional court of the Russian Federation in the decisions provides the lawmaking mechanism with the explanations. So, in the Resolution of February 14, 2013 #4-P(On E. V. Savenko, 2013) the Constitutional court specifies that in the course of passing of cycles of consideration of bills search of the most adequate standard decisions and check of their textual compliance to the arranged content to authentic declaration of will of the legislator shall be performed. Really, difficult in understanding and the texts of bills which aren't corresponding to linguistics cause a complexity in the subsequent practical application of the legislation. Legislative texts which contain examples of a vagueness and ambiguity can cause various uncertainty in interpretation from the reader (Gotti, M., 2014). It is necessary to show consideration for these formulations when forming the legal base to the procedure to development of a technique of production of the legislation.

The institute of lawmaking includes the concept "legislative process", that is legal fixing of regulations on disaggregation of the mechanism of adoption of law. Legislative procedures contain in regulations of Regulations of chambers of Federal Assembly of Russia and in regulations of legislative (representative) public authorities of subjects of the Russian Federation and begin with the moment of receipt of the bill in the State Duma (regional parliament). To this stage legislative process as study of the legislative idea and a bill statement is performed.

Legislative process is regulated by stages, cycles, stages. The accurate regulation of such stages is absent: one stage of legislative process can incorporate several constituent elements. For example, the stage of consideration of the bill consists of several separate stages: readings, discussions of projects in committees, examinations of the bill, etc. Unities of understanding of stages of legislative process it isn't developed owing to the federal nature of the Russian state where legislative process is performed at two levels of public administration: federal and regional level of legislature. Legislative process of federal and regional parliaments have various legal regulation.

Traditionally legislative process undergoes two or three readings in subjects of the Russian Federation, but standard regulation of legislative process in practice has no accurate fixing of limits in implementation of stages of a cycle of consideration of the bill. The unique zero stage of consideration of the bill can be entered into a cycle of regional legislative process. In subjects of the Russian Federation consideration of the bill of a special order is looped. In some subjects of the Russian Federation, on the contrary, simplify the procedure of consideration of the bill. The residuary rule about consideration of the bill in two readings at one meeting is entered. Regional legislative process can be complicated by the procedure providing adoption of law at least in two readings. The illegibility in a regulation of stages of consideration of the bill encumbers the procedure of legislative process, sometimes leads to tightening of a cycle of consideration of the bill. Cycle of consideration of the bill increase to several readings which limits aren't limited.

The procedure of consideration of the bill is followed by legislative process which is shown in variable behavior of participants of legislative process. Legislative process is the cogitative activities of the individual participant (or groups of participants) legislative process promoting change of the bill. Such legislative process takes place at all stages of legislative process. Process of lawmaking is provided by set of activities of a wide range of participants and includes all complex of actions for adoption of laws. At the same time legislative activities are dictated by the formulated theses of policy of law of the country.

Legislative process is the legally arranged actions of parliamentarians for the procedure of adoption of the bill, performed in state body (parliament) by the state officials (deputies). Legislative process goes beyond walls of parliament, is performed also in other bodies and the organizations. So, at a stage of origin of the legislative idea legislative process can take place in any bodies and public structures any initiator. At a stage of public discussion of the bill the unique participant is involved in legislative process: people.

It is reasonable to address arguments that legislative process is a mechanism, technical process, destiny of professionals (Gligich-Zolotareva, M.V. and Kiryukhin, K.S., 2011). The main loading on legal and linguistic treatment of bills is assigned to Legal department of State Duma administration which activities "accompany" passing of the bill and exerts impact on legislative process. The expert opinion is opinion of the qualified specialist, scientist. In the Russian parliaments (parliamentary associations) advisory councils are structured. The core legislative business in the sphere of consideration of the bill is concentrated in the profile and responsible State Duma Committees. Thus, legislative process is followed by scientific research.

CONCLUSIONS

The institute of lawmaking includes a complex of actions which leads to adoption of law. It is offered to allocate elements of institute of lawmaking:

- the law origin nature which includes humanistic, social, economic, and other factors as necessary of emergence of a prerequisite to lawmaking;
- the legislative idea including the idea from the author and the mechanism of development of the bill;
- the lawmaking mechanism including legislative process as a legal stage of consideration and adoption of law of the rule of the legal equipment, policy of law of the country;
- lawmaking subjects, the including skill level, cultures, sense of justice, and other signs of the persons involved in legislative activities.

This list isn't exhaustive. It shall be supplemented and reviewed constantly within the research of institute of lawmaking. Each element of lawmaking requires disaggregation in science and practice of legal regulation. Insufficiency of legal support of the mechanism of lawmaking is followed by negative consequences in procedures of adoption of the legislation.

SUMMARY

The structure and content of legislative and legislative processes don't match, but are the main element of system of lawmaking. Legislative process the independent process acting in interrelation with legislative process: in case of an exception of the first, the meaning of the second is lost. Legislative process is legally arranged operations procedure. Legislative process

unlike legislative process surely correlates with thought process. The wide range of subjects is involved in legislative process: authors of the idea of the bill, authors of the bill, specialists experts, society. The persons determined by rules of law, generally - parliamentarians participate in legislative process. Legislative process is a set of the coordinated actions made by competent persons on forming of the text of the bill at a certain stage of legislative process or out of it (development of the legislative idea). Need of to determine general regularities, the principles, rules of the legal equipment for legislative process causes prospects of favorable development of legislative process for providing the mechanism of adoption of law.

CONFLICT OF INTEREST

Authors confirm that the submitted data don't contain the conflict of interests.

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