

GEOGRAPHICAL DIFFERENCES IN POVERTY AND QUALITY-OF-LIFE RATINGS

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ABSTRACT

This paper employs the Spearman's rank correlation and Hotelling-Pabst tests to explore the relationship between poverty and quality-of-life rankings in the United States. The expectation is that the locality with the highest poverty rate would be rated at the bottom of the rankings based on the quality of life indicator. The results of both tests indicate no dependency between the two rankings. The justification for these results is based on the narrow measure of poverty that is currently being used. It is observed that poverty is defined very broadly, while its measurement is quite very restrictive.

INTRODUCTION

In a recent report of the activities of Devonport Action Against Poverty (DAP), a British organization, Van der Gaag (1999) notes the overwhelming clamor by members for respect for people in poverty. They say that poverty "is not about money, though it is what you can do with money." According to Van der Gaag, poverty is about money to the extent that it includes good housing, jobs, healthcare, education, leisure facilities, improved levels of benefit which don't penalize people for working, better transport, and an improved environment. Moreover, there are issues that don't involve money such as, more time, good relationships, privacy, community spirit and respect.

It is normal for workers, corporate executives, public officials to pay attention to ranking of localities across the country based on some traits that measure the quality-of-life. According to Gyourko (1991), a locality's quality of life depends on more than amenities. In an empirical analysis, Gyourko employed a battery of variables to compute the quality-of-life indexes for several localities across the country. These variables include precipitation, cooling degree days, average relative humidity, sunshine, cost-of-living index, hospital beds, property tax rate, population and crime rate. Given the broad coverage of this new measure of quality-of-life index, our objective in this paper is to determine the level of consistency between the quality-of-life and poverty level rankings across localities in the U.S. It is important to know if regional disparities in poverty rates reflect differences in economic well-being as measured by quality-of-life ratings.

POVERTY AND QUALITY-OF-LIFE

In 1974, Chenery et al directed attention of the international organizations to a devastating effect of poverty and need to adopt strategies that would eradicate this social ill from the face of the earth. According to Lipton (1995), the reason for researchers' interest in poverty measurement is to find out how serious this epidemic is for different people and to explore causal link between policy tools and other macroeconomic variables. Stevens (1994), recalls that policymakers generally are interested in the length of time individuals spend below poverty line because of its implications on management of public assistance programs. Triest (1997), notes that poverty rates in the U.S. vary from one region to the other just like the demographic characteristics of the poor. The author wonders why the depth of poverty varies as much as it does across different regions of the country.

Theoretically, the subject matter of poverty is based on the 'basic needs' approach. Fishlow (1995), notes that this approach emphasizes "the importance of separating generalized increases in income from the more significant attainment of the requirements for a permanent reduction of poverty - improvements in health, regular access to nutritional food, more

education, and better and affordable shelter." The arguments used to support this thesis include a fact that many people that are classified poor are not direct producers but part of the dependent population. It is not automatic that an increase in income of individuals is spent on essential services such as better medical care, housing and safe drinking water. Finally, individuals vary in their ability to spend disposable income effectively and wisely.

Based on the foregoing, it is not unlikely for income to increase without any appreciable increase in standard of living. More importantly, Fishlow (1995), notes that the negative correlation between income and poverty does not negate the relevance of public poverty strategies. However, any public policy directed at eliminating poverty should recognize the regional differences in poverty levels. Triest (1997), identifies the factors responsible for the regional differences in poverty rates in the U.S. These include, distribution of potential family earnings, number of weeks the family head was unemployed or whether or not the head of the family is a single woman. Burtless (1996), blames world trade for the inequality in earnings. According to him, even if trade is absolved of blame for trends in unearned income or changes in the composition of households, it is still a source of growing wage inequality.

Powers and Dupuy (1994), note that poverty is an eclectic concept that captures market conditions, demographic characteristics and fiscal policy. The authors, further posit, that it is difficult to accurately measure poverty because of complications created by interregional differences in cost of living and the quality of life. It is no surprise that Gyourko (1991), and Gyourko and Tracy (1991), develop a more comprehensive measure of a locality's quality of life. The value of a locality's quality-of-life (QOL) is defined by Gyourko (1991) as:

$$QOL_j = \sum_{k=1}^m FP_k * T_{kj} \quad (1)$$

where,

$$FP_k = LP_k - WP_k \quad (2)$$

QOL_j = Quality-of-life index for the j th locality.

FP_k = Full implicit price for trait k .

LP_k = The market price of land.

WP_k = The labor market price.

T_{kj} = The quantity of trait k in locality j .

In order to compute the index for a locality, Gyourko and Tracy use implicit prices by comparing each locality to a hypothetical locality having the average values of all locality traits. The logic is to obtain an index value in dollars, which reflects the premium individuals are willing to pay to live in a given locality relative to the hypothetical benchmark locality. The next logical question to explore is whether a locality with most people in poverty, ranks lowest on the quality-of-life scale.

EMPIRICAL ANALYSIS

As stated earlier, the objective of this paper is to determine the level of consistency between the quality-of-life and poverty level rankings across localities in the U.S. Moreover, it is important to know if geographical disparities in poverty rates are accounted for in the differences in economic well-being as measured by quality-of-life ratings. The data employed in this paper include the quality-of-life ratings for U.S. cities reported by Gyourko and Tracy (1991), 1990 U.S. census data of the number of households in poverty and the respective population numbers for U.S. cities and metropolitan statistical areas (MSA). For each city or MSA, the poverty number, is divided by the population number to obtain the proportion of the population that is in poverty. This proportion represents a rank measure of poverty for the respective city or MSA.

The Spearman's Rho and Hotelling-Pabst test are employed to analyze the data. These tests are the nonparametric equivalent of a test of correlation for matched pairs of data. Consider the following bivariate random sample of size n , $(X_1, Y_1), (X_2, Y_2), \dots, (X_n, Y_n)$. Let $R(X_i)$ be the rank of X_i

compared with the other values of X, for $i=1,2, \dots, n$. For example, $R(X_i)$ = 1 if X_i is the smallest number in the series. By the same token, let $R(Y_i)$ be the rank of Y_i for $i=1,2,3, \dots, n$. The Spearman's Rho (ρ), is defined as,

$$\rho = \frac{\sum_{i=1}^n \{[R(X_i) - \frac{n+1}{2}][R(Y_i) - \frac{n+1}{2}]\}}{\{n(n^2 - 1) / 12\}} \quad (3)$$

where,

- ρ = Spearman's correlation coefficient
- $R(X_i)$ = The rank of variable X_i
- $R(Y_i)$ = The rank of variable Y_i
- n = Sample size

An equivalent but computationally convenient form is given by:

$$\rho = 1 - \left\{ \frac{6 \sum [R(X_i) - R(Y_i)]^2}{n(n^2 - 1)} \right\} \quad (4)$$

As Conover (1980), notes, the Spearman's rho is insensitive to some types of dependence in the data; thus, a researcher is allowed to be specific as to the nature of the dependence that may be detected. Under this test, the null hypothesis is that variables X_i and Y_i are mutually independent. The alternative hypothesis is that there is a tendency for the smaller values of X to be paired with the larger values of Y, and vice versa. The null hypothesis, is rejected if computed D is less than its selected critical level.

The Hotelling-Pabst test is similar to the Spearman's Rho test. The Hotelling-Pabst T is defined as,

$$T = \sum_{i=1}^n [R(X_i) - R(Y_i)]^2 \quad (5)$$

The null hypothesis as stated above will be rejected if T exceeds its 1-quantile. It should be noted that T is large when ρ is small, and vice versa.

The aforementioned tests are applied to the city/MSA poverty and QOL rankings for 113 cities/MSAs selected from Gyourko and Tracy (1991). The null hypothesis tested is that the quality-of-life and poverty index rankings are mutually independent. Consequently, the alternative hypothesis is that there is a tendency for the smaller values of poverty index to be paired with the larger values of QOL index and vice, versa. The calculated Spearman's rho value of 0.022, is compared with the critical value of -0.155, which reflects a 5 percent level of significance. This result indicates that one cannot reject the null hypothesis of independence. By the same token, we obtained a Hotelling-Pabst T value of 235,098, which is compared to a critical value of 277,841.21. Again, this result is indicative of a non-rejection of the null hypothesis at the usual 5 percent level of significance.

CONCLUSION

Many economists and social scientists agree that GNP per capital is a crude and incomplete measure of quality of life but, several public policymakers still rely on this measure (Nussbaum & Sen, 1993). One approach to life is based on a combination of doings and beings, which are collectively referred to as functionings. According to Nussbaum & Sen (1993), these functionings, embrace such matters as being well-nourished and disease-free, self-respect, preserving human dignity and taking part in the life of the community. In a similar pattern of argument, Wingo and Evans (1977), observe that any economic policy directed at improving the quality of life must address health, education, urban economics and the economics of the environment.

The United Nations Development Program (UNDP), defines human poverty as "a denial of choices and opportunities for living a tolerable life." As noted earlier in this paper, poverty goes beyond money or lack of it and its impact varies from one place to another. Powers and Dupuy (1994), attribute poverty differences across geographic regions to demographic, economic, policy and cost-of-living factors. A discussion on poverty

resembles closely that of quality of life to the extent that one thinks poverty is a significant indicator of quality of life.

The approach in this paper has been to explore the level of consistency between geographical rankings of quality of life and poverty in the U.S. In doing this, the authors employed the Spearman's rank correlation and Hotelling-Pabst tests. The expectation is that the locality with the highest level of poverty, would be rated at the bottom of the rankings based on the quality of life indicator. The results of both tests indicate no dependency between the two rankings. The justification for these results, is based on the narrow measure of poverty that is currently being used. It is observed, that poverty is defined very broadly, while its measurement is quite very restrictive. Based on the foregoing, it is imperative for policy-makers to explore amore broadly-based measurement of poverty. This is the only logical effort needed in order to alleviate poverty and thus influence the quality of life of the people.

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