ECONOMIC EDUCATION AS PUBLIC POLICY: THE DETERMINANTS OF STATE-LEVEL MANDATES

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ABSTRACT

This paper presents an empirical examination of the factors that influence a state's decision to mandate the teaching of economics within the K-12 curriculum. 38 states currently require some form of economics instruction within their approved curriculum. A binary choice probit model was estimated to determine the relationship between a variety of socioeconomic, political and policy environment variables in the decision to implement and maintain an economic education mandate. The results indicate that the number of university-based centers for economic education and the number of parents belonging to state parent-teacher associations positively affect the mandate choice. The incidence of poverty was found to be negatively associated with a state's requirement to include economics within the curriculum. These and other results highlight the need for additional research into the aggregate effects of required investments in economic human capital.

INTRODUCTION

Most academic economists share the belief that formal training in the discipline and the "economic way of thinking" are valuable investments in human capital for the individual and for society. It is widely argued that economic literacy results in the ability of individuals to make better choices – whether in the marketplace or in the polling booth. More than 30 years

ago, Nobel laureate George Stigler (1970) reasoned that economically literate citizens are better able to make decisions about educational investments, job opportunities, personal finances, and politics, and that better individual decisions ultimately result in stronger societal outcomes. The National Council on Economic Education (NCEE) and its network of state councils and local centers have advocated arguments based on this theme since its conception in 1949.[1] Although the efforts of the NCEE and other advocacy groups have increased the degree and quality of economics education available in our nation's schools, recent studies indicate a startling degree of economic illiteracy still exists among the general public (Dahl, 1998). For example, the Federal Reserve Bank of Minneapolis conducted a national survey concerning basic economic concepts with respondents answering correctly only 45% of the time (Federal Reserve, 1998). Results such as this suggest that many schools may not yet provide an adequate degree of instruction in economics.

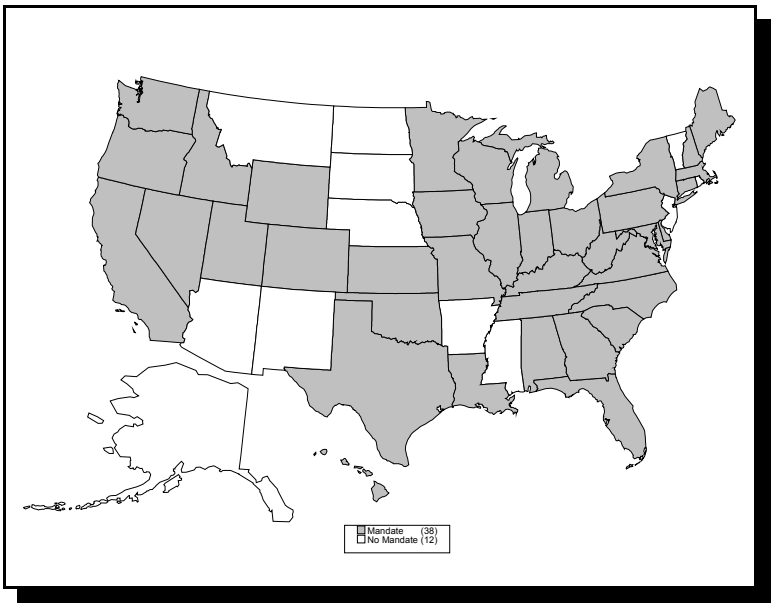
At any point in time, it is difficult to determine the overall extent of economics instruction within the curriculum of the nation's K-12 schools (Bragaw & Hartoonian, 1983; Walstad, 2001). In general, the states' central educational authority (usually a state Department of Education) constructs and issues an approved framework for the curriculum leaving local school boards and administrators only minor discretionary choices. Each state's central educational authority is held accountable by state legislators and other officials elected statewide; and local school boards are usually directly elected or appointed by locally elected office holders. Currently, 38 states mandate the teaching of economic concepts within their approved K-12 curriculum (up from only 28 states in 1991).[2] Only 13 of these states formally require a course in economics for high school graduation (Dempsey, 2000; Walstad, 2001). To date, economists have failed to evaluate the long-run effect of required economics instruction on individual outcomes such as income, educational attainment and employment. There is, however, some evidence to suggest that mandated economic education is important at the aggregate level. Grimes and Lee (2000) report that states with mandated economic education courses experienced significantly greater rates of growth in their gross state product than states without a mandate over the 1982-1997

time period. This observed association should be viewed with caution as the limitations of currently available data make it impossible to isolate and directly measure the effects of specific investments in economic education on aggregates of economic growth. However, given the documented degree of economic illiteracy and the potential benefits of economics instruction, it is important to understand why some states mandate economic education in their schools while others do not. The purpose of this paper is to examine the factors that influence the mandate choice.

STATE MANDATES

The 38 states that currently mandate the formal inclusion of economics within their K-12 curriculum are shown in Figure 1. Even between those with mandates, the degree to which school systems are required to provide economics instruction varies from state to state and school district to school district.

Figure 1
States With Mandated Economics Education in K-12 Curriculum



Some states specifically require a formal course in economics while others allow for economics content to be integrated within other social studies courses (e.g. history, government, etc.) or infused elsewhere within the curriculum. The grade levels at which economics instruction are to occur also vary with a few states requiring economics content throughout the K-12 curriculum while others restrict it to senior high school. It is also important to recognize that the degree to which school systems are held accountable for their instruction in economics vary across states. Some states require competency testing of students and others do not. In some states that do require testing, the outcomes are used in determining the allocation of resources between school districts, while in others, test scores are only used as benchmarks and for future goal-setting activities. Given the variety of potential mandate regimes, we use the broadest and most inclusive definition for our analysis.[3] A state is determined to have an economic education mandate if the state's department of education requires any type of formal instruction in economics within its approved K-12 curriculum.

Researchers in economic education have investigated the effect of state mandates on the effectiveness of economics instruction. The relationship between a state imposed mandate and student learning is complex. In states where a mandate exists, teachers are likely to have more training and experience in the subject and have greater access to resources to support their teaching, relative to teachers in non-mandate states. Additionally, state imposed curriculum requirements may also influence the attitudes of teachers toward the subject, and not always in a positive manner. An analysis by Marlin (1991) of the National Assessment of Economic Education (NAEE) database revealed that the degree of student learning in economics is strongly linked to teacher attitudes and that the existence of a state mandate diminished teacher attitudes, ceteris paribus. However, Marlin also found that additional training in economics improved teacher attitudes toward the subject and that teachers in mandate states had greater access to such training. This is consistent with an earlier study by Rhine (1989), which found that the factors that positively influence student learning in economics vary according to the mandate status of the student's home state. Rhine's results showed that performance was enhanced for students in mandate states

when their teachers had obtained additional formal training in economics, however, in non-mandate states, previous years of teaching experience in the subject proved to be a more important determinant of student performance. While studies such as these demonstrate that mandates result in observable and measurable outcomes that influence the formation of economic human capital, they do not attempt to explore the factors that result in the imposition of a state mandate.

THE EMPIRICAL MODEL

The underlying factors which determine the course of public policy have long been studied by economists and political scientists alike, and the resulting empirical literature suggests that a number of broad factors are potentially important determinants of state policies such as educational curriculum mandates. Some researchers have viewed the empirical state policy literature as a "contest" between political variables and socioeconomic and environmental variables as competing explanations for public policy choices (see for example, Wright, Erikson, and McIver, 1987). In many cases, socioeconomic factors are found to be better predictors of policy decisions than political factors. However, because of the inter-dependence between such factors in a representative democracy, most empirical models do not limit their scope to one set of explanatory variables. It is important to control for the existing policy environment as well as the major socioeconomic and political factors that may influence policy choice.

Our model is built upon the research tradition established by Crain (1979) and Benson and Engin (1988) who treat the enactment of legislation and public policy as the end result of a market process. Within the context of state educational mandates, a number of special interest groups can be identified as potential sources of demand for inclusion of economics in the state-approved school curriculum – parents, university centers for economic education, advocates for economic development, etc. The relative degree to which these demands are manifest is a function of the state's existing socioeconomic and public policy environments. The approval and retention of a state mandate by policy makers, held accountable by elected officials,

may be modeled as a response to this demand. Thus, in the spirit of the empirical state policy literature, the following functional relationship was posited:

$$MANDATE = f\ (R, P, S) \qquad [1]$$

where, MANDATE is a categorical variable reflecting the existence of a state imposed economic education mandate, R is a vector of environmental variables reflecting the availability of resources to support a mandate, P is a vector of variables reflecting the relevant policy environment, and S is a vector of variables representing the socioeconomic and political context. The specification of each variable included in the model can be found in Table 1 according to category.[4] The mean and standard deviation for each variable are reported in Table 2 according to state mandate status and in total. As specified, the model indicates that states face a simple binary choice – either to require school systems in the state to teach economics or to not require the teaching of economics. Thus, the model was estimated using standard probit analysis. (Note that we are not modeling the initial decision to mandate economics instruction – those decisions were made at different times across each state over the past 25 years – we are modeling the states' choice to maintain and enforce a statewide curriculum mandate during our sample year.[5])

EMPIRICAL RESULTS

Before turning to the probit results, it is interesting to note some of the obvious similarities and differences between the mandate and non-mandate state groups revealed in Table 2. First, there is no significant difference across mandate status in the mean per pupil public expenditure on K-12 education (EXPENDITURES), but this is not true for the other resource variable, CENTERS. States with a mandate have nearly three times the number of NCEE-affiliated university centers to train teachers. About two-thirds of all states use competency testing but mandate states report the use of high school exit exams twice as often as non-mandate states. The

mean incidence of childhood poverty appears to be slightly greater in non-mandate states while the degree of parental involvement in school activities, as measured by membership in state Parent Teacher Associations, is significantly higher in states which mandate economic education. The a priori expected sign for these and the other variables are also reported.

Table 1: Specification of Variables

Variable Label	Specification
Dependent Variable	
MANDATE	1 = State requires formal instruction in economics within K-12 curriculum;
	0 = otherwise.
R Variables	
EXPENDITURES	Per pupil public expenditure on K-12 state educational system. (1999 dollars)
CENTERS	Number of NCEE-affiliated economic education centers in state.
P Variables	
TESTING	1 = Minimum competency testing by state; 0 = otherwise.
EXIT EXAM	1 = High school exit exam required by state for graduation; 0 = otherwise.
S Variables	
POVERTY	% of state's children living in households with income below poverty threshold.
PARENTS	Number of parents belonging to the state Parent Teacher Association (PTA), in thousands.
REPUBLICAN	1 = Governor of state belongs to Republican Party; 0 = otherwise.
SOUTH	1 = State located in Southern census region; 0 = otherwise.
WEST	1 = State located in Western census region; 0 = otherwise.
MIDWEST	1 = State located in Midwestern census region; 0 = otherwise.
NORTHEAST	1 = State located in Northeastern census region; 0 = otherwise.
All data reflect 1999-2000, or closest academic year, values.	

Table 2: Mean and Standard Deviation for Variables by State Mandate Status			
Variable	Mandate States	Non-Mandate States	Total
MANDATE	1.0000	0.0000	0.7600
	(0.0000)	(0.0000)	(0.4314)
EXPENDITURES [+]	6304.1591	6291.3596	6301.0872
	(1187.8474)	(1788.6566)	(1335.5426)
CENTERS [+]	6.3158	2.0833	5.3000
	(4.9380)	(1.5643)	(4.7219)
TESTING [-]	0.6579	0.6667	0.6600
	(0.4808)	(0.4924)	(0.4785)
EXIT EXAM [+]	0.5263	0.2500	0.4600
	(0.5060)	(0.4523)	(0.5035)
POVERTY [-]	17.9763	19.2417	18.2800
	(4.1497)	(4.9963)	(4.3480)
PARENTS [+]	160.1515	18.8287	126.2341
	(221.3503)	(19.5177)	(201.9895)
REPUBLICAN [+]	0.6063	0.7500	0.6400
	(0.4954)	(0.4523)	(0.4849)
SOUTH [+/-]	0.3684	0.1666	0.3200
	(0.4889)	(0.3892)	(0.4712)
WEST [+/-]	0.2368	0.3333	0.2600
	(0.4309)	(0.4924)	(0.4431)
MIDWEST [+/-]	0.2368	0.2500	0.2400
	(0.4309)	(0.4523)	(0.4314)
NORTHEAST [+/-]	0.1579	0.2500	0.1800
	(0.3695)	(0.4523)	(0.3881)
N	38	12	50
[ ] - Expected sign			

The resulting probit equation from estimation of [1] is reported in Table 3. The model yielded a relatively good fit of the data with a significant log-likelihood statistic of -8.3639 and a Psuedo R^2 (percentage of correct predictions) of .9000. Most of the independent variables obtained coefficients of the expected sign and were significant using the appropriate

one-tailed test. Given the specification of the probit equation, the independent variable coefficients indicate the influence of the respective variable on the conditional probability that a state has enacted and maintained requirements for economic education within the approved K-12 curriculum.

Looking first at the resource variables, EXPENDITURES was included in the model to reflect the fact that curriculum mandates are costly. Additional resources may be necessary to produce and deliver instruction in an area that may not otherwise be part of a school's curriculum. However, the EXPENDITURES coefficient entered the model with a negative and insignificant sign. Thus, the degree of per pupil spending does not appear to be related to the mandate choice, and of the two resource variables, only CENTERS was found to positively and significantly affect the probability that a state has chosen to implement required economic education.

Table 3: Probit Estimates: Determinants of State-Level Economic Education Mandates

Variable	Coefficient	Standard Error
Constant	17.7946	10.9041
EXPENDITURES	-0.0006	0.0005
CENTERS	0.3475*	0.2526
TESTING	-3.8783**	2.3129
EXIT EXAM	2.4098*	1.7554
POVERTY	-0.9889**	0.6037
PARENTS	0.1078**	0.0664
REPUBLICAN	2.3292*	1.7538
SOUTH	2.8219	3.3852
WEST	2.5867	2.0635
MIDWEST	-4.6569*	3.0715
N	50	
Log-Likelihood	-8.3639	
Pseudo R^2	0.9000	

** Statistically significant at the .05 level, one-tailed test.
* Statistically significant at the .10 level, one-tailed test.

As seen in Table 3, the number of NCEE-affiliated university centers was found to be positively associated with the choice of imposing and maintaining an economic education mandate. Without the establishment of university-based centers and the valuable activities they perform, economic education mandates may have little chance for survival (MacDowell, 1986). Without a mechanism to train teachers and promote economic education, a state is less likely to support a mandate (Kourilsky & Bruno, 1992). Thus, the number of centers may be viewed as an important factor in implementing and maintaining a mandate.

The two policy measures included in the model were the categorical TESTING and EXIT EXAM variables. TESTING reflects the existence of required student competency testing. The type of testing and the grade levels at which it is performed vary across states. However, as specified here, the requirement of competency testing may be viewed as a substitute for curriculum mandates. Instead of mandating school districts to offer classes in specified subjects, some states simply require a test, or series of tests, and allow the individual school districts to devise curriculums that meet the desired goals. This relationship is reflected in the negative and significant coefficient obtained by the TESTING variable reported in Table 3. While a required exit exam for high school graduation provides some of the same functions, in practice it is more of a complement to mandated curriculum requirements. Whereas competency testing occurs at various points within the overall curriculum, high school exit exams occur only upon completion of the curriculum. Exit exams are therefore designed to capture student understanding within the broad range of subjects covered by the overall curriculum. Exit exams are used by states and school districts to determine if their requirements have been met upon completion of the curriculum by students. Thus, the positive and statistically significant EXIT EXAM coefficient reported in Table 3 was expected.

Turning to the socioeconomic variables, POVERTY was found to have a significant negative affect on the probability that a state mandates economic education, ceteris paribus. Thus, higher rates of childhood poverty within a state are associated with public schools that are less likely to offer required economics instruction. Given that economic growth is strongly

correlated with lower rates of poverty, this result is consistent with the previously discussed findings of Grimes and Lee (2000), which showed that mandate states demonstrated higher rates of economic growth during recent years. Findings such as this indicate the potential importance of economic literacy as proxied by requirements for economic education within the K-12 curriculum. In the war on poverty, economic education may be one weapon that is overlooked by many policymakers.

Another important socioeconomic variable that affects the probability that a state will mandate economics instruction is the number of parents actively involved in school activities. This was proxied by the PARENTS variable, which measures the number of parents belonging to local chapters of the Parent Teacher Association (PTA) within each state. As seen in Table 3, PARENTS was found to have a positive and significant coefficient. Thus, the results indicate that more parental involvement in the activities of the schools results in a greater likelihood that the state will mandate a curriculum which requires economics instruction.[6] This finding is consistent with the popular push by parental groups to strengthen the nation's schools by incorporating curriculums which prepare children for the demands of modern life.

The estimated coefficient on the variable designed to capture the prevailing state political environment, REPUBLICAN, indicates that states with a Republican governor are more likely to have an economic education mandate. This is consistent with the current Republican educational agenda which has called for schools to be more accountable and to prepare students for the world of work. A vector of regional dummy variables was also included in the model to capture any differences in the socioeconomic environment that may systematically vary across the nation. Table 3 indicates that only the MIDWEST variable's coefficient was found to be significant. The negative sign indicates that midwestern states are less likely to mandate economic education than those in the northeast (the omitted reference region), ceteris paribus. This is consistent with the observation that many midwestern states have a longstanding reputation for local, not state, control of schools.

CONCLUSIONS

A binary choice probit model was estimated to determine the relationship between a variety of socioeconomic, political and policy environment variables in the decision of states to implement and maintain an economic education mandate for K-12 education. The results revealed several interesting and important relationships. First, a statewide requirement for economics instruction is positively associated with the number of university-based centers for economic education that operate within the state. These centers, which are affiliated with the NCEE, provide the teacher training and curriculum development used to support the teaching of economics within a state's school systems. The results of the model suggest that these centers are a significant component of the infrastructure needed to maintain a mandate. States that are considering an economic education mandate should be aware of this important relationship. Additionally, this result may indicate that university-based centers are effective at creating a public demand for economics instruction in the schools of their state. Second, the state's decision to use either competency testing or high school exit exams appear to affect the choice of requiring economics instruction in the K-12 curriculum. The results suggest that competency testing may serve as a substitute for curriculum mandates while exit exams appear to be used as a complement to such requirements. Third, the economic conditions within a state were found to be associated with the mandate choice. Specifically, states with higher rates of poverty among children were less likely to mandate economic education than those states with relatively low rates of poverty. If economic education mandates do improve overall economic literacy (and this has yet to be determined), then this result suggests that states may be able to promote economic growth through investments in economic human capital. Much more work is needed to verify this possible aggregate relationship. Finally, parental involvement in the educational system was found to be a significant positive determinant of state mandates for economic education. Organizations, such as the PTA, which reflect the special interests of parents appear to stimulate the demand for inclusion of economic instruction in the public schools. Recent calls for

greater parental involvement within the nation's schools may have significant influence on the curriculum choices made by state departments of education.

Although economists have spilled much ink over the years trying to determine which factors influence student learning in their classrooms, very little work has been done on the consequences of that learning. The requirement of economic instruction in a majority of states' school systems indicates that there is a strong belief that positive benefits will flow from this policy choice. While this paper has tried to shed some light on the determinants of economic education mandates, much more work is needed to uncover the aggregate effects of such policies.

ENDNOTES

[1] Formerly known as the Joint Council on Economic Education, the NCEE is a non-profit organization that promotes economic literacy through curriculum materials development and teacher training programs conducted by more than 250 university-based centers nationwide.

[2] All information concerning state mandate status was taken from a survey maintained by the Center for Economic Education at James Madison University and published on their website. Retrieved July 20, 1999 from http://cob.jmu.edu/econed/mandates/

[3] The NCEE has extensively documented the various mandate regimes that exist across the states (Dempsey, 2000). Given the heterogeneity in state curriculum requirements and implementation at the local level, we define "mandate" based upon the survey, referenced above, of professional in-state educators who are most likely to be informed about actual practices within their state's school systems. Strict restriction of the mandate definition to include only those states which require a course in economics for high school graduation does not materially alter the empirical results presented later in this paper. (Specification tests of the model using this definition are available upon request of the authors.)

[4] The data sources for each of the independent variables in the probit model are as follows: EXPENDITURES – Digest of Education Statistics, 1999, Tables 164 and 40. Retrieved March 29, 2001 from http://www.nces.ed.gov/pubs2000/Digest99/

CENTERS – National Directory of Affiliated Councils and Centers, 1999, (New York: National Council on Economic Education). TESTING - Digest of Education

Statistics, 1999, Table 158. Retrieved March 29, 2001 from http://www.nces.ed.gov/pubs2000/Digest99/
EXIT EXAM – Digest of Education Statistics, 1999, Table 157. Retrieved March 29, 2001 from http://www.nces.ed.gov/pubs2000/Digest99/
POVERTY – State and County Quick Facts, U.S. Census Bureau. Retrieved May 25, 2001 from http://quickfacts.census.gov/qfd/index.html/
PARENTS – Membership numbers were collected via e-mail and telephone contact with individual state Parent Teacher Association offices. Observations for Connecticut and New Jersey were interpolated via regression analysis due to unavailable data.
REPUBLICAN – Provided by Republican Governors Association. Retrieved March 19, 2001 from http://rga.policy.net/
REGION – Bureau of the Census. Retrieved March 19, 2001 from http://census.gov/

[5] In this respect our analysis is analogous to the recent work by Mixon and Gibson (2001) that examines the retention of state level concealed handgun laws.

[6] Analysis of the data reveal that PARENTS is highly correlated with relevant measures of state population, therefore, it could be argued that PARENTS serves as a proxy for state size. Various specification tests were conducted which replaced the PARENTS variable with measures of the overall state population and more refined measures of the adult population by educational attainment. The results suggest that the relationships reported here are stable. Perhaps a more appropriate specification of the degree of parental involvement is the percentage of parents who are organized by the PTA or other special interest group organizations. Given the variations in age distributions, family size, birth rates, and school enrollment levels across states, a variable of this specification could not be reliably constructed given the data that is readily available.

REFERENCES

Benson, B. L. & Engin, E. M. (1988). The market for laws: An analysis of legislation. *Southern Economic Journal, 54*(3), 732-745.

Bragaw, D. & Hartoonian, M. (1983). Economic education in the U.S.– the state of the art. *Social Education, 47*(January), 36-39.

Crain, W. M. (1979). Cost and output in the legislative firm. *The Journal of Legal Studies, 8*(4), 607-621.

Dahl, D. S. (1998). Why Johnny can't choose. *The Region, 12*(December), 4-11.

Dempsey, J. R. (2000). *Findings of the national survey of economic education – 2000.* New York: National Council on Economic Education.

Dye, T. R. (1979). Politics vs. economics: the development of the literature on policy determinism. *Policy Studies Journal, 7*(4), 652-662

Federal Reserve Bank of Minneapolis. (1998). The Minneapolis Fed's national economic literacy survey. *The Region, 12*(December), 12-15.

Grimes, P. W. & Lee, D. O. (2000). Economic education and economic growth. *Atlantic Economic Journal, 28*(December), 490.

Kourilsky, M. & Bruno, J. E. (1992). Implementing mandates in economics: A model and diagnostic protocol for teacher training. *Journal of Education for Business, 67*, (January/February), 192-188.

MacDowell, M. A. (1986). Increasing the public's understanding of economics: What can we expect from the schools? *American Economic Review, 79*(May), 145-148.

Marlin, J. W. (1991). State-mandated economic education, teacher attitudes, and student learning. *Journal of Economic Education, 4*(Winter), 5-14.

Mixon, F. G. & Gibson, M. T. (2001). The retention of state level concealed handgun laws: Empirical evidence from interest group and legislative models. *Public Choice, 107*(1), 1-20.

Rhine, S. L. W. (1989). The effects of state mandates on student performance. *American Economic Review, 79*(May), 231-235.

Stigler, G. J. (1970). The case, if any, for economic literacy. *Journal of Economic Education, 1*(Fall), 77-84.

Walstad, W. B. (2001). Economic education in U.S. high schools. *Journal of Economic Perspectives, 15*(Summer), 195-210.

Wright, G. C., Erikson, R. S. & McIver, J. P. (1987). Public opinion and policy liberalism in the American states. *American Journal of Political Science, 31*(4), 980-1001.