

The Effect of the American with Disabilities Act on Public Education Expenditures

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Abstract: Section 504 of the Rehabilitation Act of 1973 and the American with Disabilities Act (ADA) of 1990 were enacted in order to protect the rights of individuals with disabilities. These two laws have had a major impact on public schools, their offerings of services and their budgets. The purpose of the present study was to determine if passage of the ADA in 1990 has resulted in a statistically-significant increase in per student public education expenditures at the state level. Although numerous studies have estimated educational cost functions, no prior study has examined the impact of the ADA on per capita educational spending. Results of the present study indicate that the ADA did not have a statistically-significant effect on public educational spending at the state level. Several of the leading drivers of per student educational spending included population density, per capita income and percentage of the state that is over the age of 65, all variables that school administrators and policymakers have little control over. The only two variables that policymakers have control over and that have a significant impact on spending are student-teacher ratios and the overall educational tax rate. Hence, if states want to cut public school spending, the only two avenues open to them are cutting taxes or increasing class sizes.

Key words: Disabilities act, public education expenditures, educational cost functions

INTRODUCTION

Section 504 of the Rehabilitation Act of 1973 and the American with Disabilities Act (ADA) of 1990 were enacted to protect the rights of individuals with disabilities. Section 504 applies to only organizations that receive federal funding, while the ADA applies to all organizations, except churches and private clubs^[1].

These two laws have had a major impact on public schools, their offerings of services and their budgets. When Section 504 was first enacted into law, it had little effect on education; then, in 1975, the Education for All Handicapped Children Act, now called the Individuals with Disabilities Education Act (IDEA), was passed and the way in which public schools served students with disabilities was altered dramatically. IDEA, which was accompanied by federal funds, was the primary impetus for school districts initiating and expanding services for disabled students; Section 504 and the ADA were considered less important, at least initially, primarily because they provided no federal funding^[1].

Recently, however, Section 504 and the ADA became more important for school districts, especially in the way in which schools served students with disabilities. The primary reason for this shift in importance is due to the way in which disability is defined and the way in which eligibility for program services is determined by the ADA and Section 504 as in comparison to IDEA. Under IDEA, children must fit into one of the specific categories of disabilities that is

recognized by the law in order to obtain services. Section 504 and the ADA, however, define disability much more broadly; all that these laws require is that students have a physical or mental impairment that substantially limits one or more of the student's major life activities. For most students that are qualified to receive services under these acts, learning is the major life activity that is most affected; however, any restricted life activity would allow these students to be eligible for services under Section 504 and the ADA^[1].

Given this shift in focus, more and more parents began requesting services under the ADA and Section 504, thus putting additional pressure on already strained educational budgets and assets. Although the vast majority of disabled students who qualify for services under these acts require nothing more than minor accommodations, such as testing modifications or the use of readers, some disabled students require much more extensive accommodations, including home-schooling, special transportation, or publicly-provided educations at private schools that are more able to provide the necessary accommodations. The reason for these potentially costly accommodations is that schools must provide non-discriminatory and free public education for all students. Disabled students must be allowed to participate in all activities that are available for students without disabilities, including extracurricular activities^[1].

The purpose of the present study is to determine if passage of the ADA in 1990 has resulted in a statistically-significant increase in per student public

education expenditures at the state level. Although numerous studies have estimated educational cost functions, no prior study has examined the impact of the ADA on per capita educational spending. In addition, this study is unique in that it uses a panel data set consisting of all 50 states for the years 1987-2000. The use of panel data should control for the potentially important but unobserved heterogeneity among the states in the data. Results of the present study indicate that the ADA does not have a statistically-significant impact on per student education expenditures at the state level.

Literature review: Although numerous studies have examined various aspects of education budgets and educational cost functions, no prior studies have examined the impact of the ADA on per student educational expenditures. One of the first substantive works in this area was Bergstrom *et al.*^[2]. In this article, the authors attempt to estimate demand functions for a local public good, namely education. Using survey data, they estimate individual demand functions for public schooling. Some of their results are quite interesting; they find that, on average, a person who is black, Jewish, a renter, a college graduate, a school employee, somebody who has children in public schools and somebody who is 65 or older is more likely to desire higher expenditures on public education. In addition, they find that people with children in private schools and people who are disabled, retired, or unemployed are less likely to support greater spending on public education. They find no statistically significant relationship between public school expenditures and sex, political party affiliation, lack of a high school education and Catholicism. Finally, the authors find that income and price elasticities are similar to those found in studies using aggregate data.

In Rubinfeld and Shapiro^[3], the authors expand on their 1982 work, this time incorporating survey data from Massachusetts. Once again the authors estimate elasticities and find that they are somewhat similar to those found by researchers using much more aggregate data. In addition, Rubinfeld and Shapiro attempt to determine if income and price elasticities are more likely to be biased when spending instead of output demand functions are estimated. Their results indicate that the demand for education is not affected by race, but black voters desire much greater spending on average than whites.

In Reid^[4], the primary focus is to determine if estimation of local education demand functions may result in biased parameter estimates. Using a combination of macro and micro data, individual demand functions were estimated using a conventional log-linear format with income, tax share, teacher wages, a student quality index and various household characteristic variables. Results indicate that there is

substantial bias present in the estimation of income elasticities and that households sort themselves across communities on the basis of their demand for public services.

The present study improves upon this prior research in several important ways. First, all of the above research uses micro level data and estimates individual demand functions.

The present study use state-level data. The prior research only looks at one year of data. The present study examines 14 years of data. Prior studies typically looked at only one state or even only one district in a state; the present study looks at all 50 states. Finally, the present study is the only study known that looks at the effect of a major legislative initiative, namely the ADA, on public school spending. Although the prior research offers limited assistance in the construction of a demand equation for education at the state-level, they do provide a starting point for the derivation of a state-level equation that will capture many of the same phenomenon that were examined in these earlier works.

EMPIRICAL TECHNIQUE

Prior research has indicated that the explanatory variables that are most likely to affect school spending are as follows: income^[2-4]; taxes^[2-4]; college-educated populace^[2-4] and elderly population^[2-4].

The following equation was estimated in the present study:

$$\begin{aligned} \ln(\text{PSE}) = & a_0 + a_1\ln(\text{TAX}) + a_2\text{ADA} + a_3\ln(\text{INC}) \\ & + a_4\ln(\text{POP}) + a_5\ln(\text{STR}) \\ & + a_6\ln(\text{COLLEGE}) + a_7\ln(\text{AGE65}) + u. \end{aligned} \quad (1)$$

where PSE is per student public school expenditures, ADA is a dummy variable with a value of 1 for the years 1991-2000 and 0 otherwise indicating the years in which the ADA was in effect, TAX is the estimated total tax rate for education, INC is per capita income, POP is population density, STR is the student-teacher ratio, COLLEGE is the percentage of the state's population is college educated, AGE65 is the percentage of the state's population that is 65 or older and u is a normally-distributed, random error term. Theory and anecdotal evidence suggest that, for the state-level data used in the present study, the following will result: TAX will have a positive effect on PSE, indicating that those states with higher tax rates spend more on education; ADA will have a positive effect, indicating that ADA increases PSE; INC has a positive effect on PSE, suggesting that states with higher per capita incomes will spend more on education; POP will have a positive effect, indicating that urban states will have higher costs in providing education; STR will have a negative effect on PSE, suggesting that bigger classrooms will result in lower costs; COLLEGE will have a positive effect, suggesting that states with higher

percentages of college-educated person will support greater spending on education; and AGE65 will have a negative effect on educational spending, indicating that elderly persons who have no direct interest in public schools will not support greater educational spending. A log-log functional form is used, which is the standard in this type of research.

DATA AND RESULTS

The data used in the present study covers all 50 states for the period 1987-2000. The education variables, PSE, TAX and STR were estimated from data obtained from two sources published by the US Department of Education: the State Non-fiscal Public Elementary/Secondary Education Survey and the National Public Education Financial Survey Data. From the Non-fiscal Survey, two variables were used: Total FTE of Teachers and Total Students. From the Fiscal Survey, two variables were also used: Total Revenue from All Sources and Total Expenditures for Education. All other variables were obtained from the Census Bureau. All dollar values are expressed in terms of real dollars, base year 1982-84.

TAX, the tax rate variable, was calculated as follows: Total Revenue was divided by total population of the state in order to obtain education revenue per capita in each state; then, that variable was divided by per capita income in order to obtain an implied tax rate. Although all revenue sources were included in the estimate, most of the state-level revenue comes from the residents of that state; hence the tax rate used is a relatively good measure of the education tax rate imposed on the citizens of that state. PSE was calculated by dividing Total Expenditures by Total Students. STR was calculated by dividing Total Students by Total FTE of Teachers.

Descriptive statistics for the data are presented on Table 1. During the time period studied, the average student-teacher ratio was 16.7, the average expenditure per student was \$3515 and the average tax rate was 4.7%.

Panel data estimation techniques were used to estimate Equation (1). The Lagrange Multiplier Test indicated that panel data was more statistically appropriate than OLS and the Hausman Test indicated that random, instead of fixed effects, should be used. Results are presented on Table 2. These results indicate that the ADA did not have a statistically-significant impact on PSE. In fact, only two variables were statistically insignificant: ADA and the college variable.

All others were significant. The tax rate variable was positive, suggesting that those states with higher tax rates spent more on education. The income variable was positive, suggesting that those states with higher per capita incomes spent more on education. States with higher population densities, primarily urban states, also spent more on education.

Table 1: Descriptive statistics

Variable	Mean	S. D.	Min.	Max.
COLLEGE	0.21	0.52	0.11	0.39
INC	21060.00	5291.00	10301.00	40702.00
STR	16.70	2.24	12.10	24.90
PSE	3515.00	826.00	1911.000	6334.00
AGE65	0.12	0.02	0.036	0.186
POP	172.00	238.00	0.94	1137.00
TAX	0.046	0.0087	0.0045	0.099

Table 2: Regression results

Variable	Coefficient	Test Statistic
Constant	5.104	17.465
LNTAX	0.537	23.352
ADA	0.0018	0.447
LNINC	0.634	25.599
LNPOP	0.056	8.59
LNSTR	-0.469	-13.45
LNCOLLEGE	0.011	1.512
LNAGE65	-0.134	-4.37

Notes: R² = .981
Lagrange Multiplier Test = 1638.03
Hausman Test = 72.11

States with higher student-teacher ratios spent less on education, while states with larger percentages of elderly also spent less on education. These results are interesting since they suggest that a major legislative initiative did not substantially increase educational spending and that, of all the variables examined, the only two that had any significant effect of spending that school administrators and state-level officials can directly alter are the student-teacher ratio and the tax rate. This means that if a state wants to cut spending on education, they should let class sizes increase and cut taxes. The R² for this regression was 98%, much higher than most other studies in this area of research.

CONCLUSION

The purpose of the present study was to determine if the American with Disabilities Act of 1990 had a statistically significant impact on public school spending at the state-level. Using state-level data obtained from the US Department of Education for the years 1987-2000, the results of the present study suggest that anecdotal evidence is not an accurate portrayal of the impact of the ADA on educational spending. In fact, with a regression that has a 98% R², it was found that the ADA did not have a statistically significant effect on public educational spending at the state level. Several of the leading drivers of per student educational spending included population density, per capita income and percentage of the state that is over the age of 65, all variables that school administrators and policymakers have little control over. The only two variables that policymakers have control over and that have a significant impact on spending are student-teacher ratios and the overall educational tax rate. Hence, if states want to cut public school spending, the

only two avenues open to them are cutting taxes or increasing class sizes.

An important point that must be stressed, however, is that the present study, in no way whatsoever, makes any assumption regarding the link between school spending and school quality. The only variables examined in this study were fiscal and demographic variables in order to obtain a more macro or societal view of what variables, at the state level, affect spending on public schools. It may be the case that those states that have higher per student expenditures actually do have higher levels of student achievement. That line of research was not pursued in the present study, but remains open to future research.

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