THE PURSUIT OF EQUALITY THROUGH EDUCATION FINANCE REFORM

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Sarah A. Hill

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To my grandmother, Antoinette

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Abstract

Previous research on how court-ordered equalization affects public school expenditures has not yielded a clear pattern of results. While the literature agrees that court-ordered reform improves equality, there is disagreement over the impact of reform on education expenditures. One of the most comprehensive studies to date is that of Murray et al. (1998), but their results are quite sensitive to specification. Once court-ordered reform is treated as an endogenous variable, two-stage regression analyses show that reform achieves its direct aim of leading to a more equal distribution of expenditures across school districts, but it does not increase average per-pupil expenditures.

A consideration of the history of education finance in the United States helps determine why court-ordered reform does not bring about dramatic changes. Contrary to what much of the literature suggests, state governments have had a role in education finance since the 19th Century, and they assumed a large responsibility for education finance during the Great Depression. Since that time there has been a steady increase in the state government share of education revenue, but without sudden changes during the period of court-ordered reform. Regression analysis shows that the state share of education revenue typically increases on the order of 10% after court-ordered reform, with some states having much larger increases. In addition, a case study of education finance reform in Texas shows a state with political actors who do not wish to reform but who are being forced by the courts to consider changes to their system of education finance.

I argue that large changes were never to be expected as state governments have a long history of involvement in education finance, and to greatly increase that substantial

role would prove quite difficult. In addition, these cases feature political actors being forced to reform a system that was already in equilibrium, and as has been shown in the literature, state legislatures are able to find ways of circumventing such limitations. Finally, these results also support the idea that court cases often reinforce a current trend in public policy rather than serving as a catalyst to begin a new movement.

Table of Contents

List of Figures

List of Tables

Chapter 1

Introduction

Elementary and secondary education in the United States has traditionally been seen as primarily the responsibility of local government. Administered by local school districts, the most important source of revenue for public schools has historically been the local property tax. Because of differences in property values, local financing of public schools generates large disparities in per-pupil spending across school districts. In 1971, the California Supreme Court ruled in its landmark *Serrano v. Priest* decision that, because of these disparities, the educational finance system then in place in California was unconstitutional.

The example of funding disparities that is cited in the *Serrano* ruling involves school districts within Los Angeles County. During the 1968-1969 school year, Baldwin Park Unified School District spent $577.49 per student, while Beverly Hills Unified School District spent $1231.72 per student. The justices noted that this more than 1 to 2 ratio in spending reflected the 1 to 13 ratio of per student assessed property values in these two school districts. What was even more disturbing to the justices in the *Serrano* decision was that Baldwin Park had a school property tax rate that was more than twice the rate of Beverly Hills, and yet this great tax effort was producing less than half the amount of expenditures. The California Supreme Court thus found the system of education finance in California to violate the equal protection clause of the Fourteenth Amendment of the United States Constitution, as its structure made the quality of a child's education unfairly dependent upon the wealth of the school district in which that child lived (*Serrano v. Priest* 1971).

After *Serrano* and other related court rulings, the California legislature was compelled to reform the state's education finance system in order to make per-pupil spending much more equitable. In a 1976 court decision, *Serrano II*, the legislature was told that differences in per-pupil expenditures across school districts were not to exceed $100 (this figure has been adjusted for inflation since that time), which meant quite stringent equalization would have to be implemented. Eventually the legislature settled on a plan which almost completely centralized spending on public education. For all but the wealthiest districts, the state government supplements local revenue up to the point that all school districts spend the same amount per-pupil, resulting in a substantial decline in the level of inequality in the California education finance system (Gerber et al. 2000).

As activists in other states realized the potential of such court cases, these lawsuits continued to be filed. In 1973, the United States Supreme Court issued a ruling in the case of *San Antonio School District v. Rodriguez*. The Texas education finance system also relied heavily upon local property taxes to fund its school districts, and just as in California, disparities in property values led to differences in expenditures across Texas school districts. The District Court had ruled that education is a fundamental right under the Fourteenth Amendment and that the Texas system was therefore in violation of equal protection. The Supreme Court disagreed, however, and found that the inequalities in the Texas education finance system did serve a legitimate state purpose as they allowed for control of education at the local level (*San Antonio School District v. Rodriguez* 1973).

The important implication of the *San Antonio School District* case was that inequalities in state education finance systems were not a violation of the United States Constitution and were therefore not a matter for federal courts. Those who hoped for

change in their states' education finance system thus had to appeal to state courts for relief. Since *Serrano* and *San Antonio School District,* similar law suits have been filed in most states, and the courts have, in many cases, ruled to overturn existing systems of education finance. Table 1.1 provides a list of the states which have had their system of education finance overturned by the courts, along with the cases and years of those rulings.[1] This table shows that these cases have happened in every region of the country over a period of more than three decades.

[1] Information on the sources of the list of court rulings can be found in Appendix A: Data Sources.

Table 1.1 — State Supreme Court Rulings
Ordering Education Finance Reform

State	Year of Decision	Court Case
California	1971	*Serrano v. Priest*
Kansas	1972	*Caldwell v. State*
New Jersey	1973	*Robinson v. Cahill*
Connecticut	1977	*Horton v. Meskill*
Washington	1978	*Seattle School District No. 1 of King County v. State*
West Virginia	1979	*Pauley v. Kelly*
Wyoming	1980	*Washakie v. Herschler*
Arkansas	1983	*Dupree v. Alma School District No. 30*
Kentucky	1989	*Rose v. The Council for Better Education, Inc.*
Montana	1989	*Helena Elementary School District No. 1 v. State of Montana*
Texas	1989	*Edgewood Independent School District v. Kirby*
Massachusetts	1993	*McDuffy v. Secretary of the Executive Office of Education*
Missouri	1993	*Committee for Educational Equality v. State*
New Hampshire	1993	*Claremont New Hampshire v. Gregg*
Tennessee	1993	*Tennessee Small School Systems v. McWheter*
Arizona	1994	*Roosevelt v. Bishop*
North Carolina	1997	*Leandro v. State*
Ohio	1997	*DeRolph v. State*
Vermont	1997	*Brigham v. State*
Alaska	1999	*Kasayulie v. State*
New Mexico	1999	*Zuni School District v. State*
Maryland	2000	*Bradford v. Maryland State Board of Education*
South Carolina	2005	*Abbeville County School District v. State*
New York	2006	*Campaign for Fiscal Equality v. State*

Disparities in education spending have been ruled unacceptable by state courts for a variety of reasons. In some cases, as in *Serrano*, the court based its decision upon an equal protection argument. That is, they find that the state constitution requires equal educational opportunity, and thus the spending disparities in the system must be eliminated. Often such a determination means that education is a fundamental right, and so courts can be hesitant to make such a strong declaration. Other rulings have depended upon a standards basis. In these decisions the court finds that the state constitution guarantees students a minimum standard of education that is currently not being met in some of the state's school districts. In both cases the state legislature is forced to reform their education finance system to improve equality either for its own sake or in order to ensure that minimum standards are being met in all school districts (McUsic 1991).

Once the state court has ruled that a finance system is unconstitutional, the state legislature must design new funding mechanisms to ameliorate the inequities that the court has found objectionable. In understanding these reforms it is important to realize that the changes which a legislature makes to the education finance system may in fact improve equality, but they may also have quite perverse effects. When considering how a state might reform its education finance system, it is natural to suppose that the state government will in some way provide additional revenue to the poorest school districts in order to bring them up to a certain level of spending. But even with good intentions, this is not always the case.

As will be shown in later chapters, the state governments did provide a large percentage of the funding for public education from as early as 1945. The intent behind this support was to enable all school districts to provide some minimal quality of

education. But in their seminal book, Coons et al. (1970) argue that at the time of their writing, in the United States a student's quality of education was still a function of the wealth of the school district in which that student lived. They explain that even though state governments are involved in supporting public education, in most cases the mechanisms that state governments use to allocate their funds only reinforced the disparities in wealth that existed across school districts.

For example, one standard form of state aid is the flat grant. Under such a system the state government gives the same amount of money per unit (perhaps for every student or teacher) to every school district without any consideration for the need of the district. These systems have the unfortunate consequence of poor districts being forced to tax themselves at a very high rate in order to be able to provide an education for their students that is still well below what wealthy districts can provide at much lower tax rates. The authors explain that the other common systems of state aid for education reinforce inequalities in similar ways. Coons et al. then propose that education finance be changed to match the idea that, "The quality of public education may not be a function of wealth other than the wealth of the state as a whole" (2). Their work serves as a foundation to explain the reasons behind the movement for education finance reform.

Research on court-ordered education finance reforms typically focuses on the end result of the reforms — has finance reform reduced inequality in spending across school districts? How has it changed average education expenditures? How are the states seeking to satisfy the court mandates for more equal spending?

Chapter 2 provides an in-depth review of the previous work on the impact of court-ordered education finance reform. The literature presents three primary

hypotheses. The first is that states respond to the courts by "leveling up," that is, supplementing local property tax revenue with state funds in order to bring poor school districts closer to the expenditure levels of wealthier districts. Equalization reforms would consequently increase total expenditures on education. Alternatively, court-ordered reform could be revenue neutral, and simply redistribute education money across districts without changing overall expenditures. That is, by taking funds from the wealthy school districts and giving that money to the more disadvantaged school districts, the legislatures could improve equality without changing average expenditures. The third possibility is that this type of reform discourages spending on education and that equalization is thus achieved by "leveling down." Preventing or discouraging wealthier districts from spending as much as they want on local schools might weaken support for spending on public education, thereby leading to lower total expenditures.

Chapter 3 begins with an initial investigation of major trends in education finance. Regression analysis is then used to estimate the true impact of court-ordered reform on equalization and on per-pupil expenditures in order to examine which of these hypotheses is supported by the data. The first step in the regression analysis is to replicate the findings of Murray et al. (1998) with two additional panels of data and sensitivity to the specification. With the addition of these panels, the effects of court-ordered reform decrease dramatically for both inequality and expenditures.

An important addition to the research on education finance reform is to model court-ordered reform as an endogenous variable rather than as a decision that is arbitrarily imposed coming from outside of the education finance system. One reason why court-ordered reform should be considered endogenous is because the court is

embedded in the state's political process, as are the decisions that the legislature then makes to implement reform. Once the endogenous nature of reform is included in the analysis, court-ordered reform is still found to decrease inequality, but the impact upon education expenditures disappears. The results of this chapter thus show that court-ordered reform does reduce inequality within a state's education finance system, but that the level of expenditures increases only slightly, if at all.

Why is there such a small effect on the level of education expenditures after reform? Chapters 4 and 5 argue that it would have been unrealistic to expect a large impact from reform. Chapter 4 provides a history of education finance in the United States and shows that, contrary to what is often presented in the literature, state governments have been a source of revenue for public education since at least the Common School Movement, and this role continued with the High School Movement and into the Great Depression.

Chapter 5 shows that it was at the time of the Great Depression that state governments took upon themselves the responsibility of a major role in financing primary and secondary education. With state governments playing such a vital role in education finance well before *Serrano*, it could hardly be expected that with reform they would be able to allocate large amounts of additional funding to the public schools. What they are able to do, however, is reform the education finance systems which are already in place in order to make the distribution of funds more equitable. This chapter looks at how the state government share of education revenue has changed since *Serrano* (in comparison to the share of revenue coming from local sources). The analysis shows that there has generally been only a slight increase in the share of revenue from state governments after

reform, which goes against the hypothesis that legislatures reform by providing a large increase in their support for public education.

Chapter 6 is a case study of the state of Texas. Since the *Edgewood* decision mandated change in the system in 1989, the state has continued to work to reform its system of education finance. What is particularly intriguing about this case is the apparent inability of the state to reach any agreement over just what those reforms should be. Within the last year the state legislature has battled over demands from the courts to once again reform change education finance, and more struggles are expected in the future. Interviews with state legislators and their staff members reveal the turmoil and controversy that occur in a state that is being forced to reform by the courts when the natural equilibrium is strongly resistant to equalization. In such a case, where legislators have goals that do not align with the court's decision, it is expected that reform will not have the desired impact of equalization and increased education expenditures.

Chapter 7 concludes with a discussion of the findings and some thoughts about useful directions for future research. The findings fit within a larger view of public policy that is rarely considered in the literature on education finance reform. From the beginning there was reason to suspect that these changes would not have the impact that many reformers sought. First, these reforms involve tradeoffs between equality in spending and efficiency in spending, an idea presented by Okun (1975). Okun discusses how in the realm of public policy, societies must decide between policies that strongly redistribute wealth versus policies that do more to preserve efficiency within a given system. Thus when reformers sought equality in education finance, they likewise should have considered that such changes in the level of equality would not necessarily lead to a

more efficient system, and therefore additional education expenditures should not have been anticipated. Rae et al. (1981) present another view of equality which should have likewise given reformers pause. These authors discuss the many different possible meanings of equality and how they differ from one another. Therefore, when undertaking to improve of the level of equality in education finance, reformers should also realize that different players in this process will have varying definitions of equality, which in turn means that some stakeholders are sure to be disappointed with the eventual outcome. Thus the goal of equality in and of itself is difficult to achieve and will have repercussions for the level of expenditures within the education finance system.

Second, state policymakers perennially exhibit great creativity in circumventing constitutional spending and borrowing restrictions (Kiewiet and Szakaly 1996) and in blunting the impact of ballot initiatives (Gerber et al. 2000) or even court rulings (Rosenberg 1991). When legislators are reluctant to make changes which are being forced upon them, they are often able to find ways around those limitations. And as Rosenberg's book demonstrates, court cases in the field of public policy are often simply part of a movement which has already begun, and so rather than serving as a catalyst, these rulings may simply reinforce a current trend. Given the evidence, this theory is the best fit for the impact of court-ordered reform. States have long been involved in education finance, and what these court cases have done is serve as an incentive for state legislators to continue to increase their support for education and to continue to make educational opportunity more equitable, but they have not led to the dramatic changes for which many reformers had hoped. This story begins in the next chapter, which provides an in-depth literature review of studies on the impact of education finance reform.

Chapter 2

Previous Research on Education Finance Reform

There has been considerable theoretical and empirical work that examines how court-ordered school finance reform might impact education expenditures. These efforts have yielded a great deal of insight into the major factors affecting educational expenditures, but they have also yielded very different predictions as to the consequence of court-ordered equalization, both on the distribution of expenditures and on the overall level of per-pupil expenditures. This chapter provides a review of the major work on the effects of education finance reform.

California

Much previous empirical work on the question of how school finance reform impacts expenditures has focused on a particular state — California. This state is often the object of analysis because court-ordered school finance reform began with the *Serrano* decision of 1971, and subsequent political developments have made it a particularly interesting case. Silva and Sonstelie (1995) note that California's spending per pupil fell, relative to other states, between the years 1970 and 1990, and they seek to determine whether the *Serrano* decision was responsible for this decrease. They begin with a local public finance model in which families sort into local school districts according to their preference for education spending, just as in Tiebout (1956). Silva and Sonstelie next combine all of these school districts into one statewide district. Now the level of spending for the whole state is determined by the voter with the median income, which is less than the average income. Thus in their model of school finance, when there

is a move from local to state financing (and thus presumably toward equalization), there is a price effect that essentially lowers the tax price for the median voter in the state. This effect therefore tends to increase government expenditures as the median voter is willing to spend more for education. A corresponding income effect arises due to centralization, however, in that the income of the median voter in the state is less than the average income level, which means the level of spending for the state decreases. This income effect then leads to lower expenditures. Because the price and income effects work in opposite directions, the net effect of reform must be determined empirically. Silva and Sonstelie use data from all other states to estimate a model of school expenditures and find that California's per pupil spending in 1969–70 is within one standard error of the predicted value, but that per pupil spending in 1989–1990 is well below the predicted value. They conclude that *Serrano*, along with disproportionately large enrollment growth, led to a decrease, relative to other states, in per-pupil spending in California.

Gerber et al. (2000) include a case study of the California *Serrano* decision, considered along with the enactment of the celebrated tax and spending limitation initiatives, Proposition 13 and Proposition 4. Proposition 13, approved by the voters in 1978, significantly rolled back property taxes and limited their future growth. Proposition 4, passed in 1979, was intended to constrain real per capita increases in state spending by imposing a cap set by the combination of population growth and inflation. They conclude that Propositions 4 and 13 did impact education spending by limiting state spending in general, but that this effect only lasted until the mid-1980s. They also report that, "…all indicators are that the *Serrano* decisions actually led to a larger share of total spending being allocated to elementary and secondary education" (107). They believe

that the decline in spending on education is due to California's declining wealth relative to other states, and that California has always spent a relatively smaller part of its budget on public education than other states. Thus there is conflicting empirical evidence on the effect of the *Serrano* decision on per-pupil expenditures in California.

Fernández and Rogerson (1999) also model the effects of reform on the distribution and level of funding in California. They note that before *Serrano*, California did not have a system of pure local funding. Rather, as in most states, the state supported a "foundation" system in which districts were guaranteed a certain level of state funding, provided that they levied a minimum property tax rate. Districts were then free to use additional taxes to spend above foundation levels. The state of California, like almost all other states, was thus making some effort to equalize expenditures even before *Serrano*. As they note, however, California nonetheless had a very high level of inequality across school districts. Using a political economy model, Fernández and Rogerson estimate that the move from the foundation system to the centralized funding system post-*Serrano* reduced total spending on public primary education by about 10%. They conclude that, "…while the reform greatly increased equity in educational expenditures across students, it did so largely by decreasing spending in wealthy districts, with increases only for students in extremely poor districts" (348). Thus in this model the authors assume that equalization does occur and then find that it results in leveling down.

Earlier work by Fernández and Rogerson (1998) develops a dynamic equilibrium model to determine the impact of school finance reforms on income distribution and overall welfare. Their overlapping generations model looks specifically at the changes that would occur in a move from a purely local school finance system to a purely

centralized school finance system. Once their model is calibrated so that the variables which characterize their model match those of the United States, Fernández and Rogerson find that state financing would result in a higher level of education expenditures than local financing, as well as a higher average income. The authors also note that a foundation system, which is a combination of the two pure systems, would lead to higher education expenditures than either a local or state system. Because they say that California moved from a foundation system to a state system, this matches with the findings in their other work that the *Serrano* reform in California led to a decrease in expenditures. Thus the work by Fernández and Rogerson says that in California court-ordered reform led to equalization with a resulting decrease in expenditures.

Other State-Specific Studies

Scholars have also studied the impact of reform in other states. For example, Goetz and Debertin (1992) consider the early impact of court-ordered reform on the Kentucky education finance system. The Kentucky General Assembly was quick to respond to the 1989 *Rose v. Council for Better Education, Inc.*, decision which found the state's education finance system unconstitutional. Kentucky's Educational Reform Act (KERA) increased taxes and appropriated additional funds for education in order to ensure a minimum level of funding for each school district, and also adjusted state funding based upon a district's ability to raise local revenue. The authors find that KERA increased education revenue for all school districts in the state, and particularly for those districts with special-needs students. They additionally find that while per-pupil spending and income are positively correlated, this correlation did decrease after KERA.

An interesting finding of Goetz and Debertin is that while spending inequality (as measured by the standard deviation of spending across school districts) decreased for the state as a whole, there was not as much improvement in the measure of inequality when the state is broken down by regions. Thus in Kentucky the initial impact of court-ordered reform was an increase in spending and a decrease in inequality, although complete equalization was certainly not attained.

Thompson et al. (1993) conduct a similar study of Kansas education finance reform. With the School District Equalization Act of 1973 (SDEA), the Kansas Legislature responded to the 1972 court case *Caldwell v. State* which found education to be a fundamental right in the state, and again the goal of the act was to provide additional state aid to the most disadvantaged school districts. In order to determine the impact of this legislation, the authors use Pearson correlation coefficients to measure the relationship between measures of district wealth (such as taxable income) and per-pupil spending. Because these correlations decreased from the 1983–84 time period to the 1988–89 period, the legislation at first seems to be reducing inequality in education expenditures in the state. The problem is that one large category of school districts, those with enrollment of between 1800 and 10,000 students, moved in the opposite direction, with increases in the correlation between wealth measure and per-pupil spending. Thompson et al. conclude that while some improvements have been made, the move toward equality has not gone far enough in Kansas, with some districts even moving in the direction of increasing inequality.

Meyers et al. (1995) consider some very preliminary results from the 1993 court-order for reform in Tennessee, *Tennessee Small School Systems v. McWheter*, but they

believe the data are promising. The Tennessee legislature responded with a reform called the Basic Education Program (BEP). The goal of equalization is accounted for in this program with a formula that considers each school district's fiscal capacity in order to set the level of state funding. For the one year of data available to the authors after the passage of BEP, they find that the poorest school districts received $269 per pupil from this program, whereas the most advantaged school districts received just $128 per pupil. Because the money available from BEP was expected to greatly increase in future years, the authors find these figures promising as they indicate that the state was in fact working toward equalization of education spending with particular regard for disadvantaged schools districts.

Multi-State Studies

The studies discussed above constitute only a small sample of the work that has been done to understand the impact of reform in individual states. Other researchers have examined equalization reform more generally across the United States. Dayton (1996) reviews the work of scholars who have considered whether court-ordered reforms reduce inequality in education finance. While Dayton does not look directly at work on how court-ordered reform affects education expenditures, he does consider the efficacy of the courts in making any change in education finance. Dayton is careful to note the factors which affect a state court's ability to induce any real change. For instance, compared to federal judges, state judges are more sensitive to their state's political climate as they are often subject to either election or review. Additionally, the economic health of a state is likely to affect a legislature's ability to respond to a court mandate. Dayton notes that the

courts may not be the great catalyst for change that many reformers have hoped, because ultimately the funding systems must be changed by the state legislatures, which are far from being under the control of the judiciary. Alternatively, if these court cases were completely ineffective in promoting change, it is unlikely that so many plaintiffs in so many states would continue to spend time and energy pursuing this litigation. Thus Dayton believes that the joint action of all of these factors makes it difficult to reach a clear conclusion about how litigation will impact the level of inequality or expenditures in the education finance systems.

Manwaring and Sheffrin (1997), using panel data of states from 1970 to 1990, disaggregate the potential effects of education finance reform on education expenditures into four classes. The first is a state effect which is a measure of how much of the responsibility of education funding transfers from the local district to the state level after reform. The next is the income effect, which is per capita income, in order to control for the same income effect discussed by Silva and Sonstelie (1995). The third class is the budget status effect which is a measure of whether there is a surplus of state government revenues, which would be likely to increase spending on education. The final class is the base effect which is a dummy variable to capture any other effects of reform.

Manwaring and Sheffrin then estimate the impact of reform on each of these categories. They find that in states like California, where reform converted a foundation system into a centralized state system, overall expenditures decreased. Interestingly, their analysis also suggests that education spending in states with court-ordered reform is more closely tied to the condition of the state budget (that is, whether the state budget has a surplus or is facing more economic pressure). In their view, it is also possible that reform

will lead to an increase in spending. Education finance systems that are not centralized but instead rely upon a power-equalization or foundation system will spend relatively more on education. As an example, in an in-depth look at the process of equalization reform in Wisconsin, Manwaring and Sheffrin demonstrate how in that case reform would have had the effect of increasing per student expenditures. The authors conclude that equalization through centralization will tend to lead to lower education expenditures. But because of the options that states have in implementing reform, it will not always be the case that there will be a decrease in education spending. Ultimately they estimate that in the long run, the average court-ordered reform results in an increase in per-pupil expenditures of $106 in 1990 dollars.

Wood and Theobald (2003) analyze state funding to unified school districts with at least 500 students from 1992 to 1996. In their regression analysis they find that low local revenue, low per capita income, and low property values are the primary reasons that state governments provide additional money to school districts — presumably to equalize spending. Secondary considerations for the allocation of state funds are providing education revenue for the areas that are most likely to benefit from the additional money (for example, money for education might help to lower an exceptionally high unemployment rate), as well as what the authors call "distributive politics," meaning simple political concerns of legislators (such as pleasing their constituents). They also find that more-liberal states are more likely to equalize education expenditures than conservative states, and that court rulings for equalization tend to have a larger effect in more-liberal states. These effects include both reductions in inequality and a larger increase in school funding. Ultimately Wood and Theobald

believe that the inequalities in education finance are not likely to disappear after reform due to the many political considerations which factor into the state's allocation to school districts and because court rulings do not appear to always be effective.

Downes and Shah (2006) model education expenditures through a reduced-form equation which combines the demand for education with the costs of providing public education. Using state-level data, they interact each of their explanatory variables with a dummy variable for legislative education finance reform, as a well as a dummy variable for court-ordered reform. Their aim is to show not just how reform impacts per-pupil expenditures, but the way in which reform affects the structure of the education finance system. For example, after court-ordered reform, they find that the relationship between per capita income and education expenditures decreases because these reforms tend to limit the discretion of school districts in setting their own education spending. Downes and Shah also find that legislative reforms can have different effects than court-ordered reforms, and that court-ordered reforms tend to be more restrictive. They conclude that the true effects of reform on expenditures should be determined on an individual basis, and that the changes in the process by which education expenditures are set should also be taken into account to understand the full impact of reform. Some authors have suggested that reform will cause increases in education expenditures because of the attention that a lawsuit brings to deficiencies in the education finance system. However, Downes and Shah note that their results provide more support for the case that reform can erode support for public education in wealthy school districts that are restricted in their spending.

One shortcoming of the Downes and Shah study is that they use panel data for all

50 states from only 1970 to 1990, and so they omit analysis of the many important reforms that took place during the 1990s. They do note that the reforms after 1990 were primarily motivated to attain "adequacy," and so may have had a different impact than the earlier reforms which were based upon equality arguments. Still, there were so many cases of court-ordered education finance reform during the 1990s that they should be taken into consideration. Additionally, by limiting their data set, Downes and Shah are not considering the long-term impact of education finance reform which can now be studied in states that experienced the earliest reforms, such as California. It is also true that the early cases which focused on equality arguments may have had a slightly different impact than the more recent cases which focused on issues of educational adequacy. However, in both types of cases reformers ultimately hoped for additional money for public education, particularly for the poorest school districts, thereby making it necessary to understand the impact of both types of rulings.

Hoxby Makes the Leveling Down Case

Hoxby (2001) characterizes school finance equalizations through "(1) the foundation tax rate, (2) the school finance-related income or sales tax rate, (3) the flat/foundation grant, and (4) the tax price," (1205) in order to explain the observed effects of these changes to school finance systems throughout the United States (the author considers all equalizations, not just those implemented after court-ordered reform). Hoxby is particularly careful to account for the endogenous nature of school finance equalization. In her model changes to the system are capitalized into housing prices. School revenues are in turn dependent upon property values, which determine education

expenditures. As Hoxby explains, "... a number of [school finance equalization] schemes have built-in feedback loops that exaggerate the initial tendency toward leveling down" (1205).

Hoxby then estimates the effect of school finance equalizations on per-pupil spending using school district-level data. Because of the argument that those variables which characterize school finance equalizations are in fact affected by that equalization plan, Hoxby uses a method of instrumental variables to account for this endogeneity problem. In this approach the instrument is the predicted value of the school district's characteristics, had equalization not occurred. The author's regressions show that the effect of equalization on per-pupil expenditures is dependent upon the equalization scheme which is implemented. Those states that imposed the strictest equalization schemes tended to level-down in their per-pupil expenditures, in that after reform they spent less per-pupil than they had before reform. Those states that did not impose such stringent schemes were those that were able to level-up, or spend more per-pupil after reform. Hoxby additionally finds that those states with extreme equalization have also tended to lower their property values through the use of these schemes.

Hoxby and Kuziemko (2004) use these ideas to consider how equalization has affected property values in Texas. Their main argument is that the system of education finance in Texas does not account for the fact that school districts will respond to the scheme that is imposed upon them. The authors explain that property values in a property-rich school district will fall as consumers respond to what is essentially a greater tax burden, and this result will in turn decrease the amount of revenue for schools that can be raised through property taxes. Hoxby and Kuziemko use an approach that is

similar to that of Hoxby (2001) in order to estimate the effect of the Texas equalization plan on the levels of per-pupil spending in each school district. The predicted variables that characterize the finance situation in each school district are used as instruments to control for the endogenous response to the state's equalization plan. Their regression results show that while the property-poorest and intermediate school districts faced little to no capitalization due to equalization, the wealthiest districts show large negative capitalization. Hoxby and Kuziemko thus claim that equalization in Texas cost the state approximately $27,000 per student in property values. They also find that equalization did occur; that is, the plan did decrease the amount of inequality in per-pupil spending across school districts in Texas.

Thus Hoxby has argued that under certain specifications, equalization plans will result in a leveling-down of per-pupil expenditures, and that this has in fact been the consequence of reform in several states. One reason for this leveling-down is that states are actually destroying property values because of the capitalization of the new tax schemes which school districts face. Alternatively, other equalization plans can and do lead to leveling-up, and these schemes are typically found in those states which do not implement the most extreme equalizations.

Murray et al. Make the Leveling Up Case

Evans et. al (1999), a group whose work is some of the most comprehensive in the field of education finance reform, take issue with Hoxby's findings. In their work Evans et al. find that reform typically raises education expenditures, and so their results raise concerns about Hoxby's findings of negative capitalization in several states. But

Evans et al. also raise concerns about Hoxby's framework. They find that after court-ordered reform, state governments increase their funding support for local school districts, and these grants increase education spending more than economic theory predicts (a result known in the public finance literature as the flypaper effect), a result which is not accounted for in Hoxby's analysis. Evans et al. also disagree with the decision to treat a school district's tax base as endogenous, since school districts themselves are likely to take their tax base as given in deciding on a taxing scheme rather than attempting to select a tax plan that will in some way alter their property values.

Support for these arguments can be found in their work on education finance reform, which includes their most comprehensive work in Murray et al. (1998), supplemented by a previous study (Evans et al. 1997), and two follow-up studies (Evans et al. 1999 and Corcoran et al. 2003). The main concerns of this team of researchers have been to consider the effect of education reform on the level of inequality in spending and on the level of total education expenditures. Murray et al. weight expenditures by student enrollment in each school district and calculate four measures of inequality across school districts for each state in their sample: the Gini coefficient, the Theil index, the natural logarithm of the ratio of spending at the 95^{th} percentile to the 5^{th} percentile, and the coefficient of variation, which all have different sensitivities to changes in the distribution of expenditures.

They then create an indicator variable, *Reform*, that takes the value of 1 for each year after court-ordered reform occurs within a state, and is 0 otherwise. Using a state and year fixed-effects model to estimate its impact on the different measures of inequality, they find that the coefficient of *Reform* is negative and significant, implying

that reform reduces inequality. Their results change very little with the addition of other covariates. They then estimate a similar model in which the dependent variable is a measure of total state and local per-pupil revenues. Here they find that the coefficient of the *Reform* dummy is positive and significant, indicating that court-ordered reform increases per-pupil revenues, and, presumably, per-pupil expenditures. Their estimate is that court-ordered reform increases education revenue by $442 per-pupil (in 1992 dollars). By decomposing school district expenditures into the 95^{th}, 50^{th}, and 5^{th} percentiles, they also find that *Reform* increases spending in the 50^{th} and 5^{th} percentiles, while leaving spending in the 95^{th} percentile unchanged, which leads to the authors' claim that states increase expenditures by helping the poorest school districts and not altering spending in the wealthiest districts. Murray et al. then consider whether *Reform* has an impact on areas of state spending other than education, such as welfare or corrections, and they find that no other areas of state spending are affected by this increase in education expenditures.

In subsequent work, (Evans et. al 1999), the authors investigate further how court-ordered reform changed the distribution of education expenditures. They divide school districts in each state into quartiles according to their per-pupil revenues and again use regression analysis to determine the coefficient of *Reform* for each quartile. Evans et al. additionally split the school district revenues into local and state funding so as to determine how *Reform* impacts each of these sources. The authors find no evidence that in the poorest quartile of school districts the total increase in revenues due to *Reform* is significantly different from the overall average increase in revenues after *Reform*. They do, however, find that in the poorest quartile revenues from the state government do

significantly increase after *Reform*, with some indication that revenue from the local governments slightly decreases in turn. This evidence thus supports their argument that court-ordered reform causes state governments to play a larger role in education finance, primarily by providing additional revenue for the poorest school districts.

Continuing this work, Corcoran et al. (2003), consider similar questions, now adding the 1997 data panel to their analysis. They again find that *Reform* significantly decreases inequality in education expenditures. Using a specification that is the same as that used in their previous work, Corcoran et al. find that with education revenue, the regression coefficient for court-ordered reform is positive and significant, and that most of this increase is the result of additional money from state sources and not from local sources of revenue. In 1992 dollars, they estimate that court-ordered reform increases education revenues by approximately $726 per student. In short, the body of work by Murray et al. indicates that court-ordered reform decreases inequality and increases per-pupil expenditures as state governments spend more on education.

Summary

There is considerable controversy as to the impact of court-ordered education finance reform. Table 2.1 provides a synopsis of the impact that the authors reviewed here predict court-ordered reform will have on inequality across school districts within a state. This table shows the general agreement that reform will in fact decrease inequality, although there is a great deal of debate over the extent of the improvement which will result. Table 2.2 provides a summary of the predicted impact of court-ordered reform on education expenditures. There is clearly much less agreement in this area, as some

authors assert that reform increases expenditures, others contend that reform decreases education spending, and still others believe that the effect is indeterminate.

Table 2.1 — Summary of Predicted Impact of Court-Ordered Reform on Inequality

Authors	**Predicted Impact of Court-Ordered Reform on Inequality**	**Notes**
Dayton (1996)	Indeterminate	The complexity of factors makes a clear conclusion difficult, but many scholars are pessimistic about large changes.
Downes and Shah (2006)	Decrease	Court-ordered reforms will be more restrictive than just legislative reforms.
Fernández and Rogerson (1999)	Decrease	Happened primarily by decreasing spending in wealthy districts.
Gerber et al. (2000)	Decrease	Assumes almost perfect equalization occurred in California due to strict court ruling.
Hoxby (2001)	Decrease	The degree of equalization depends upon the reforms that are implemented.
Hoxby and Kuziemko (2004)	Decrease	Considers only Texas; inequality did decrease, but full equality was not achieved.
Murray et al. (1998), and later work	Decrease	Consistent results for a decrease in inequality after reform.
Silva and Sonstelie (1995)	Decrease	Assumes perfect equalization occurred in California due to strict court ruling.
Wood and Theobald (2003)	Decrease	Inequalities will remain because of the politics behind education finance.

Table 2.2 — Summary of Predicted Impact of Court-Ordered Reform on Per-Pupil Expenditures

Authors	Predicted Impact of Court-Ordered Reform on Per-Pupil Expenditures	Notes
Dayton (1996)	Indeterminate	The complexity of factors makes a clear conclusion difficult, but many scholars are pessimistic about large changes.
Downes and Shah (2006)	Indeterminate	Effect should be determined on an individual basis by looking at the changes in the structure of the school finance system.
Fernández and Rogerson (1999)	Decrease	Assumes a move from a mixed foundation system to a purely centralized system.
Fernández and Rogerson (1998)	Decrease	Calibrated to United States data and assumes a move from a foundation system to a purely centralized system, as in California; moving from purely local to a state system would alternatively increase expenditures.
Gerber et al. (2000)	Indeterminate	California is a special case and has always spent a relatively smaller part of its budget on public education than other states.
Hoxby (2001)	Indeterminate	States with extreme equalization plans level-down; moderate schemes allow for leveling-up.
Hoxby and Kuziemko (2004)	Decrease	Discusses Texas equalization only.
Manwaring and Sheffrin (1997)	Indeterminate	Centralization leads to lower education expenditures but other options are possible.
Murray et al. (1998), and later work	Increase	There is particularly an increase in state revenues to the poorest school districts.
Silva and Sonstelie (1995)	Indeterminate	Net impact of price and income effects must be determined empirically.
Wood and Theobald (2003)	Increase	The size of the increase is dependent upon the state's political climate.

The differences in these arguments are particularly highlighted by the work of Hoxby and Murray et al. Some authors, led by the work of Murray et al., assert that court-ordered reform will bring attention to the cause of education finance, and that the state legislatures will allocate additional funding for education, which will in turn lead to an overall increase in education expenditures. The particular claim of Murray et al. is that legislatures will provide additional support for education, and that this increase in funding will have no impact on the other areas of state government spending. The alternative argument offered by Hoxby and others is that court-ordered education finance reform leads to greater centralization of the education system. Because in a centralized system increases in local taxes will not be appreciated in the local school district, the incentives of such a system will discourage education spending and thus lead to a decrease in expenditures. Hoxby also makes the case that these centralizations can even destroy property values, which will further decrease the revenues available for public education.

Which argument is correct? What are the mechanisms by which court-ordered reform operates? In order to determine the impact of court-ordered reform on education inequality and education, careful analysis must be employed, and this is the topic of the next chapter.

Chapter 3

The Effects of Court-Ordered Education Finance Reform

As shown in the previous chapter, scholars who study education finance reform have reached divergent conclusions as to its consequences. While most agree that court-ordered reform decreases inequality within a state's education finance system, there is sharp disagreement over the impact of reform on overall expenditures. Some authors assert that states generally "level up," others believe that they "level down," and others believe that the effects are not readily determined.

In this chapter, analysis of the effects of court-ordered finance reform begins by seeking to replicate the findings of the comprehensive and highly influential work by Murray et al. (1998). Some desirable econometric improvements are made, and the data is augmented with two additional panels of data (1997 and 2002) that have become available since their study. Their basic model is then modified by treating court-ordered school finance reform as a matter of choice, and thus as an endogenous variable. There are a number of reasons to do so. Whether or not to bring such litigation forward is a choice that potential plaintiffs have to make. Whether or not to hear such a case and how to decide it are choices that state courts must make. Responding to a court decision holding that an existing system of educational finance is unconstitutional presents a whole battery of choices that state legislators and state governors must to consider. All these choices are likely influenced by factors that are not fully accounted for in the regression analyses that Murray and others have performed (Angrist and Krueger 2001).

Murray et al. Reconsidered

I start the examination of the Murray et al. study by reviewing their coding of cases of court-ordered reform. The main concern of this team of researchers was to consider the effect of education reform on the level of inequality in spending and on the level of total expenditures. Their primary source of data is the School System Finance (F-33) File from the Census of Governments, U. S. Bureau of the Census, which reports data on school districts at five-year intervals, beginning in school year 1972. They confine their analysis to unified school districts, and drop Alaska, Hawaii, Montana, and Vermont from the sample because of the unusual structure of their school district systems.

Murray et al. then weight expenditures by student enrollment in each district and calculate four measures of inequality across school districts for each state in their sample: the Gini coefficient, the Theil index, the natural logarithm of the ratio of spending at the 95^{th} percentile to the 5^{th} percentile, and the coefficient of variation. As the authors explain, the Gini coefficient is relatively sensitive to changes around the middle of the distribution. The Theil index is more sensitive to relative changes among very unequal school districts, and the natural logarithm of the ratio of spending at the 95^{th} percentile to the 5^{th} percentile is not sensitive to more extreme values. The coefficient of variation is more responsive to extreme values as it changes by the same amount for all transfers between districts regardless of the level of expenditures of those districts.

Murray et al. create an indicator variable, *Reform*, that takes on the value of 1 for each year after court-ordered reform occurs within a state, and 0 otherwise. Using a state and year fixed-effects model to estimate its impact, they find that the coefficient of

Reform is negative and significant, implying that reform reduces inequality. Their results change very little with the addition of other covariates and do not depend upon the particular measure of inequality that they use. They then estimate a similar model in which the dependent variable is a measure of total state and local per-pupil revenues. Here they find that the coefficient of the *Reform* dummy is positive and significant, indicating that court-ordered reform increases per-pupil revenues, and, presumably, per-pupil expenditures. Thus Murray et al. conclude that court-ordered education finance reform leads to leveling-up.

Their coding scheme needed to be updated in order to bring to bear the 1997 and 2002 panels of data that have become available since their study. The sources that were used to decide whether each state has had court-ordered reform, as well as when the reform occurred, can be found in Appendix A: Data Sources. As previously shown in Table 1.1, of the 46 states in the sample, 19 had experienced court-ordered educational reform by 2002.

My assessment of whether or not such reform had occurred in some cases differed slightly from Murray et al., who had noted that some cases were not clean-cut.[2] Note that all of these decisions about court-ordered reform are as of 2002, and do not reflect subsequent developments. My updates and disagreements over coding are as follows:

1. Murray et al. list Alabama as a state with a pending lawsuit. In 1993 a trial court in

[2] Murray et al. do note some problems with the Kansas and Wisconsin court cases and drop them as reform states in a check of the robustness of their analysis. They find that this change in does not alter their results.

Alabama ruled that extensive inequities in the state's education finance system violated the state constitution on both equality and adequacy grounds. The legislature was given time to institute a remedy, but the Alabama Supreme Court vacated the remedy order in 1997, and then, in an unusual occurrence, dismissed the case in 2002. Alabama is thus still coded as having no court reform as its system was upheld by the courts.

2. Murray et al. list Idaho as a state in which the education finance system had been previously upheld. By 2002, a new case was pending in Idaho in a trial court that had appointed a special master to assess the schools and to report back to the court. As no decision in the case had been rendered by 2002, Idaho is still coded as having no court reform.

3. Murray et al. code Kansas as having court-ordered reform after a 1976 case, but the state legislature actually responded to a 1972 decision by creating a new foundation-based system of education finance. Kansas is therefore considered to have had court-ordered reform in 1972 and not 1976. Because of the panel nature of the data and the method for constructing *Reform*, as explained below, this does not actually change how Kansas is coded for the 1972 or 1977 panels.

4. Murray et al. list Missouri with pending court cases. A trial court overturned the state's funding system in 1993, and the state legislature responded by increasing school funding. This was a trial court decision, but because there was action by the state legislature, Missouri is coded as having reform after 1993, which is a change from the

Murray et al. coding.

5. Murray et al. list New York as a state in which the education finance system has been upheld by the courts several times. The case of *Campaign for Fiscal Equity (CFE) v. State* has actually been working through the New York court system for several years, but, as of 2002, there had not been a conclusive decision. New York is therefore still coded as having no reform.

6. South Carolina is listed by Murray et al. as a state in which the education finance system had been upheld by the courts. In 2002, a case was still pending in trial court, so the state is still coded as having no court reform.

7. Murray et al. code Wisconsin as a state having reform following a court case in 1976. In this case, however, the court actually overturned a new system of funding equalization that the state legislature had just implemented. The ruling thus actually worked *against* equalization. Since that time the courts have not again overturned the system of funding in Wisconsin, so the coding for Wisconsin is changed to a state with no court reform.

I constructed the *Reform* variable for my analysis with a one-year lag under the assumption that it would take at least one year for a state legislature to implement any reform. For example, I stated above that Kansas had court-ordered reform in 1972. Since I am concerned with fiscal years because of the nature of school year budgets, and because of the one-year lag, *Reform* would be "1" for Kansas for fiscal year 1974 (school

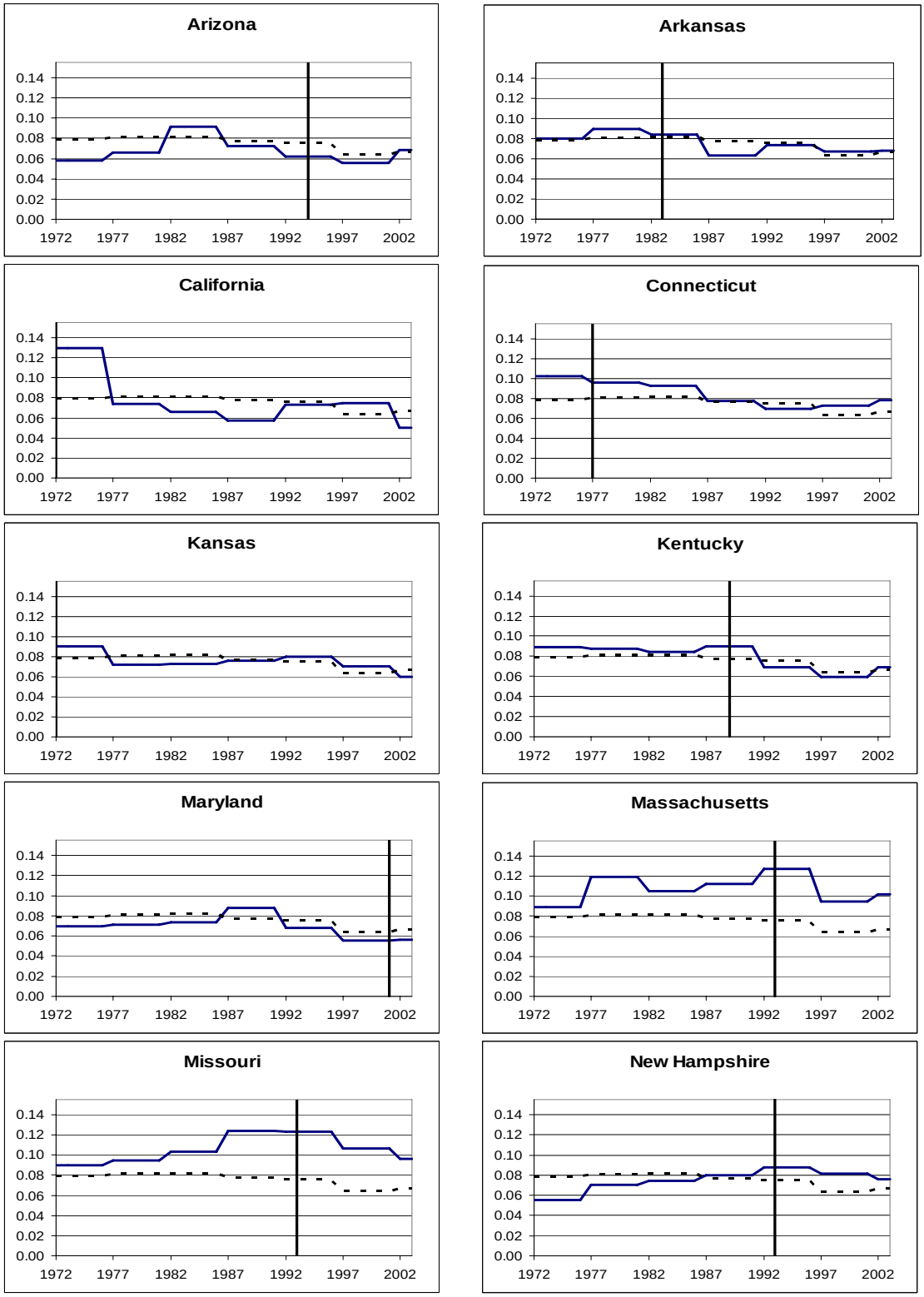
year 1973-1974) and each year thereafter. Due to the panel nature of the data set, the first panel in which Kansas would be "1" would then be 1977.

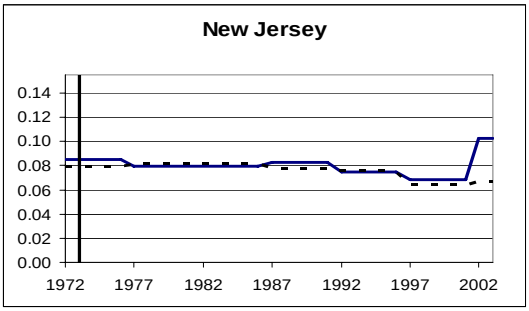
The next step in the analysis is to simply graph the measure of inequality in each state for each panel over fiscal (or academic) years 1972 to 2002. These graphs are shown in Figure 3.1 below, with solid lines representing the inequality measure for the individual state and the dotted lines representing the average inequality taken as an average of the 46 states at each point in time for the United States as a whole. The first group includes all 19 of the states that experienced court-ordered education finance reform during the 1972–2002 time period. The year of reform is indicated by the dark vertical line. The second group includes a sample of those states that have experienced reform lawsuits but in which the court decided to uphold the current system of finance. The years of the decisions are again indicated by vertical lines. The third group represents those states that have not experienced significant education reform litigation.

Based upon the data plotted in Figure 3.1, court-ordered finance reform does appear to drive down the level of cross-district inequality in expenditures. Only the Gini coefficient is shown in these graphs, but the other measures of inequality are highly correlated with the Gini coefficient, and so the graphs are essentially the same.[3] For those states that did have court-ordered reform, it appears that the level of inequality tended to decrease shortly after the ruling.

[3] The correlation between the Gini coefficient and Theil index is 0.96, between the Gini coefficient and $\ln(95^{th}/5^{th})$ is 0.92, and between the Theil index and $\ln(95^{th}/5^{th})$ is 0.91.

Figure 3.1 — Inequality Measured by Gini Coefficient:
States with Court-Ordered Reform

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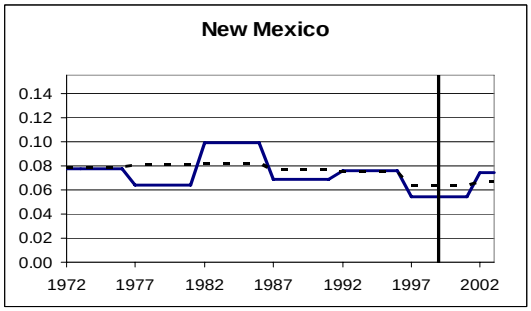
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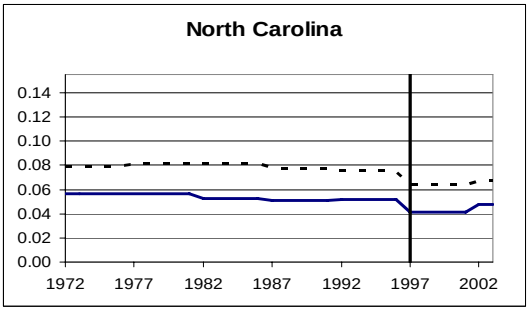
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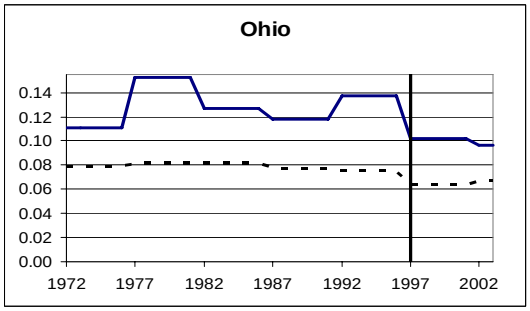
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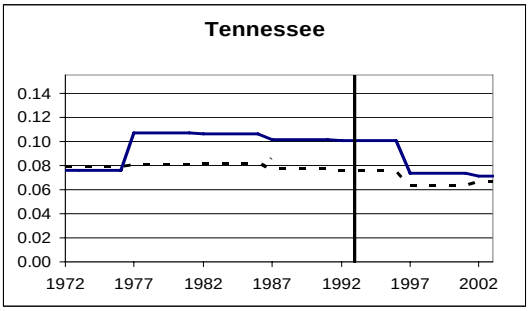
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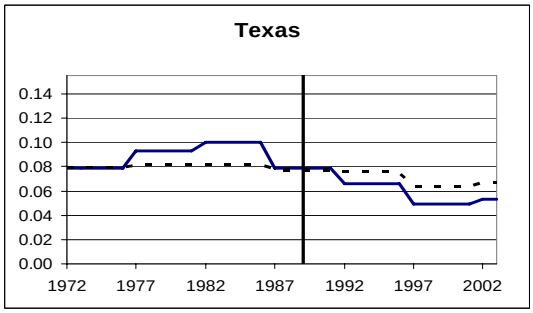
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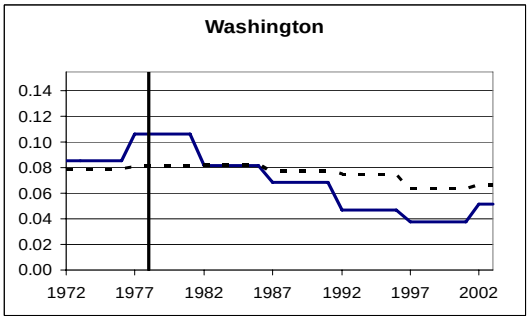
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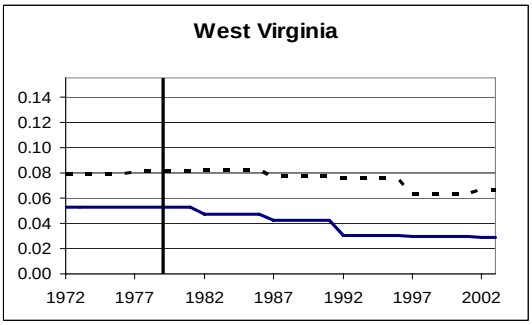
West Virginia
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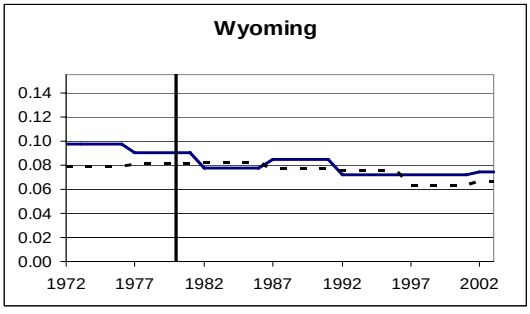
Wyoming
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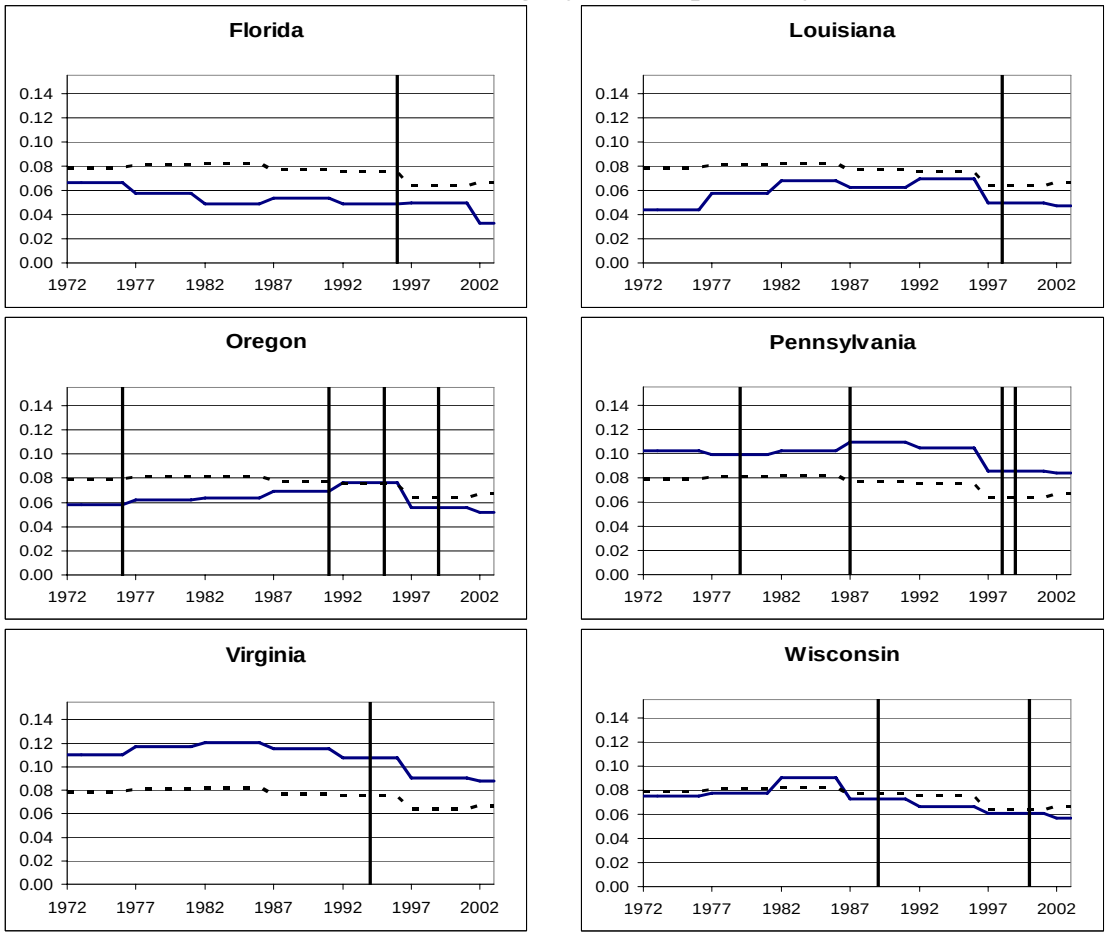
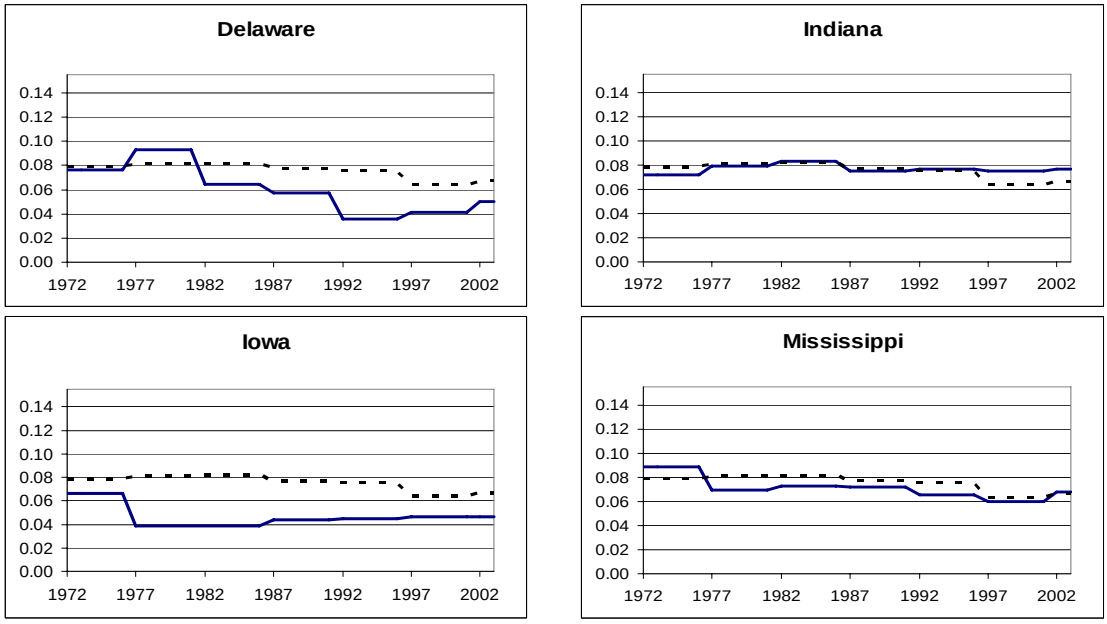
1972 1977 1982 1987 1992 1997 2002

States with Funding System Upheld by Court



States with No Reform Litigation



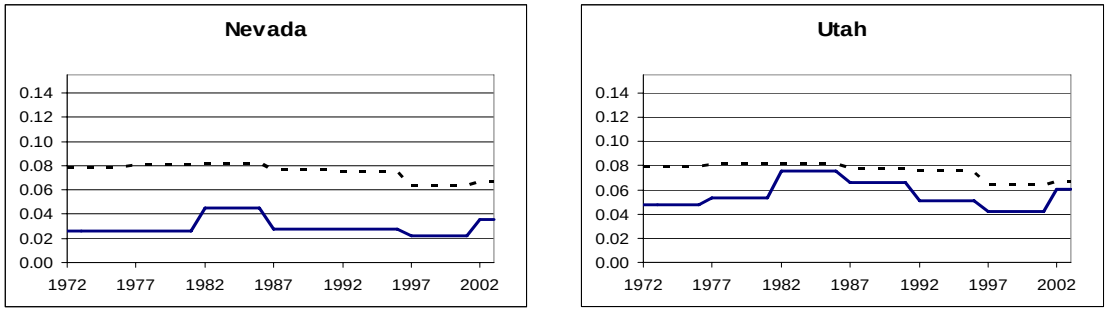


Table 3.1 reports how many of the 19 states included in the data set which had court-ordered reform between 1972 and 2002 fall into each range of percent change in the Gini coefficient immediately after court-ordered reform.

Table 3.1 – Percent Change in Gini Coefficient Immediately after Court-Ordered Reform

Range of Percent Change in Gini Immediately after Court-Ordered Reform	**Number of States**
Decrease greater than 40 %	1
Decrease between 20 and 30 %	4
Decrease between 10 and 20 %	4
Decrease between 0 and 10%	6
Increase between 0 and 15 %	3
Increase greater than 30 %	1

15 of the states had a decrease in the Gini coefficient, and of the four states that had an increase, three of these were relatively small (New Mexico is the exception with an increase in the Gini coefficient of almost 37%). Of those states with decreases, California has the largest with a decrease of over 43%, indicating that the legislature

implemented quite stringent reforms.[4] It also appears that those states which had earlier court-ordered reform had larger immediate drops in inequality. There are no similar changes occurring in those states where the system of school finance was upheld by the courts, or in those states that have had no cases of school finance litigation. Instead, after a few years of increasing inequality in the 1970s and early 1980s, more recently these states have seen a decline in inequality, as shown in Table 3.2.

Table 3.2 – Average Gini Coefficient in States Without Court-Ordered Reform

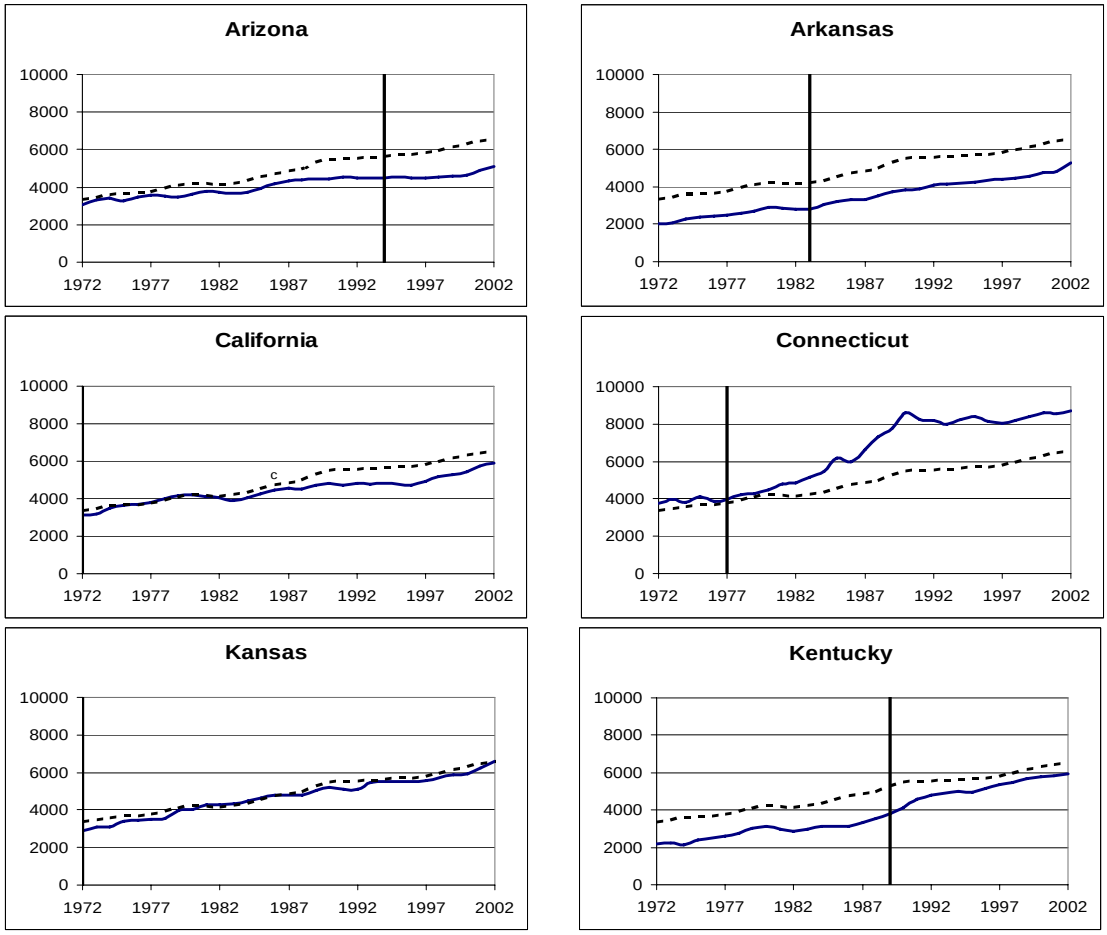
Year	Average Gini Coefficient
1972	.0786
1977	.0815
1982	.0827
1987	.0787
1992	.0779
1997	.0615
2002	.0644

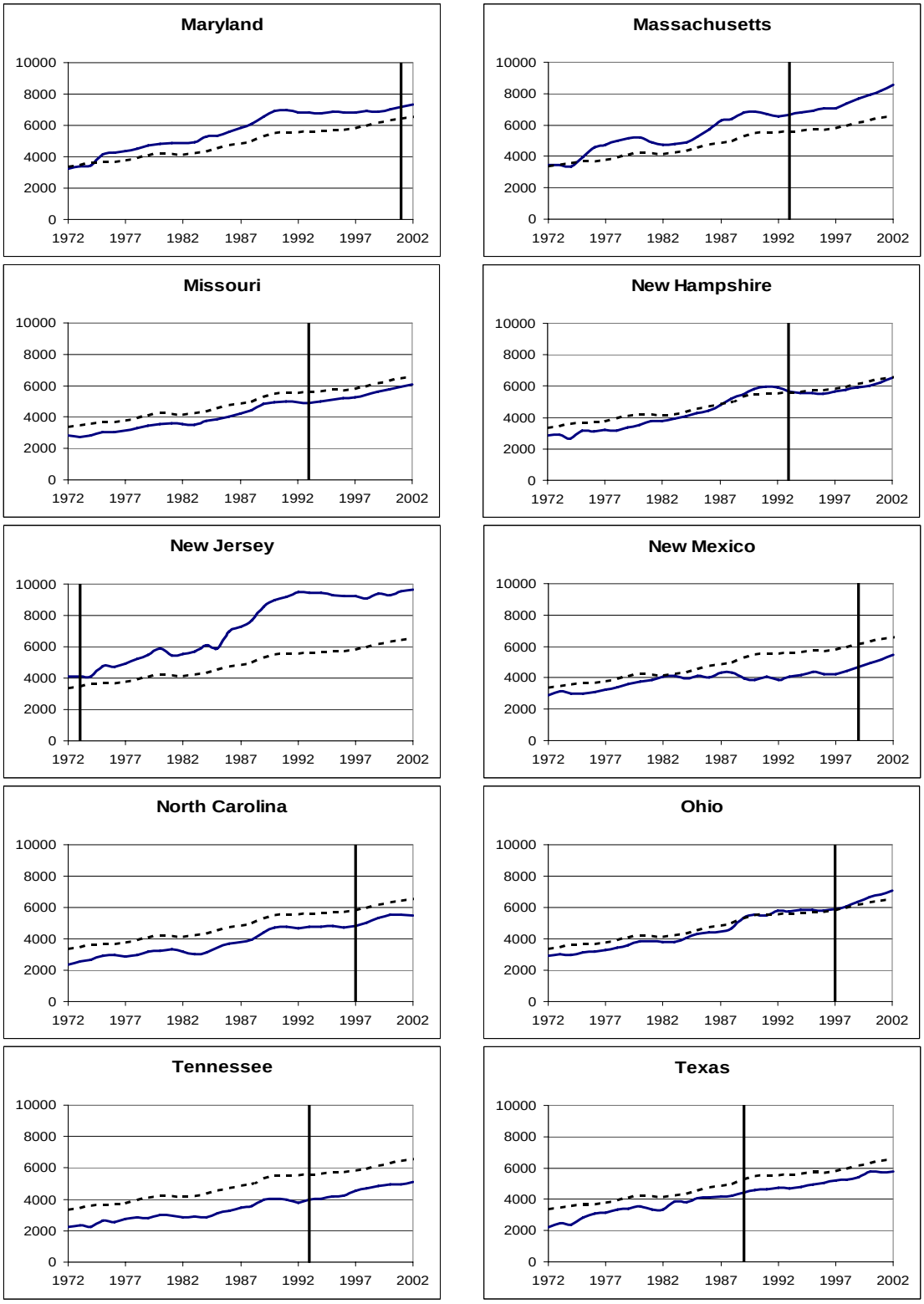
I next charted the real per-pupil (on an average daily attendance, or ADA, basis) expenditures for each state over fiscal years 1972 to 2002, where again the solid lines represent expenditures for the state and the dotted lines represent per-pupil expenditures for the entire United States. Expenditures are reported in 1992 dollars. The primary

[4] The stringency of these reforms is due in large part to *Serrano II*, the 1976 ruling which followed *Serrano*, which demanded that spending disparities across school districts in California not exceed $100 per-pupil (this number can be adjusted for inflation over time) (Gerber et al. 2000). Such a strict limitation from the court forced the legislature to implement an education finance system which was highly equitable.

feature that is apparent in all of the graphs displayed in Figure 3.2 (which includes the same states as Figure 3.1) is the long-term secular increase in real per-pupil expenditures in all states, regardless of what the state courts have or have not done. In contrast to the inequality data displayed in Figure 3.1, there do not appear to be any systematic changes in overall funding levels after reform is ordered or after the constitutionality of an existing funding system is upheld. The graphs of states that have experienced no education finance litigation look essentially like the other states that are shown.

Figure 3.2 – Per-Pupil Expenditures (1992 Dollars):
States with Court-Ordered Reform




Maryland
Massachusetts
Missouri
New Hampshire
New Jersey
New Mexico
North Carolina
Ohio
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8000
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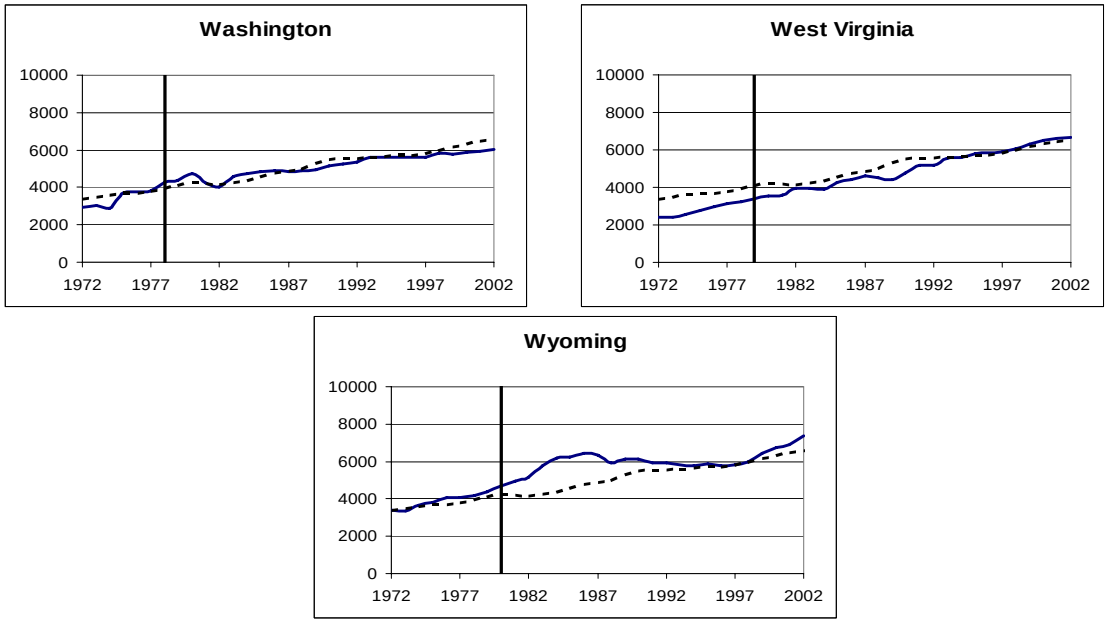
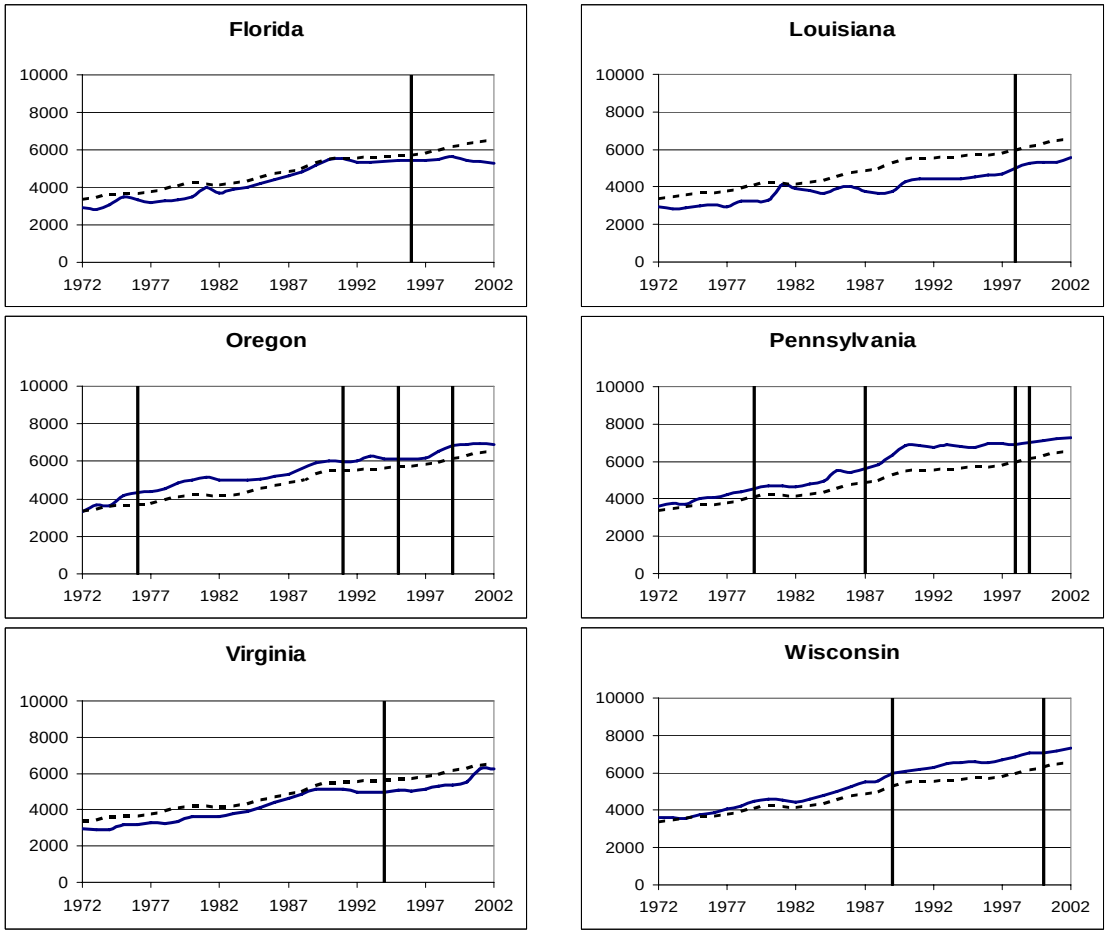
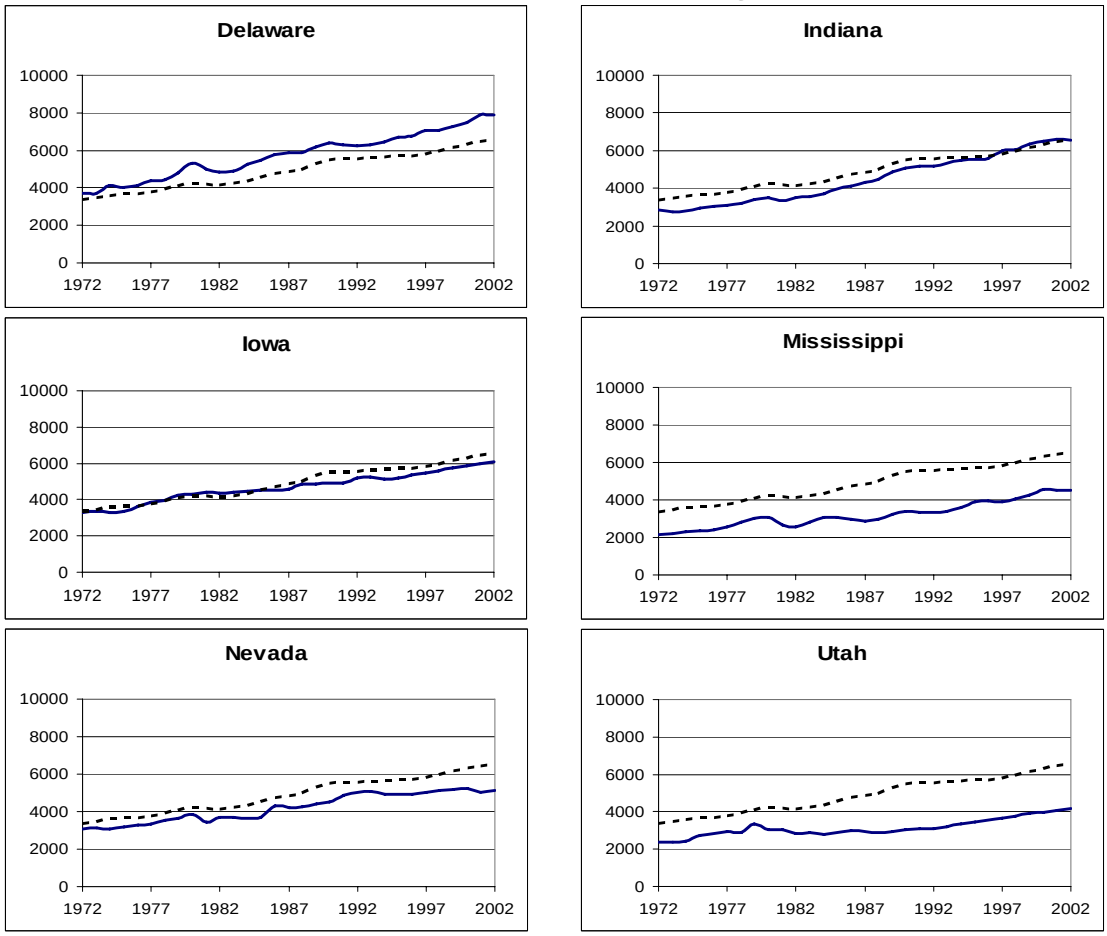


States with Funding System Upheld by Court



States with No Reform Litigation



While these graphs appear to support the claims of Murray et al. that court-ordered reform decreases the level of inequality within a state, they do not suggest that reform encourages higher expenditures. Expenditures appear to be going up over time in all states, but there are no obvious jumps in spending after reform is ordered. While these graphs represent only a rough first cut at the data, they do not support the proposition that expenditures increase after reform.

Considering the changes in expenditures that occur in a state after court-ordered reform takes a little more care than the Gini coefficient as there is a secular increase in real education expenditures over time. Table 3.3 reports how the percentage increase in

real expenditures in a state for the panel immediately after court-ordered reform differs from the average percentage increase in those states without reform over that same period of time.

Table 3.3 – Percent Change in Real Expenditures Immediately after Court-Ordered Reform

Percent Change in Real Expenditures Immediately after Court-Ordered Reform, Compared to States without Reform	**Number of States**
No change or decrease of up to 16 %	6
Increase between 0 and 10 %	7
Increase between 10 and 16 %	5
Increase greater than 30 %	1

Six of the states had a change in real expenditures immediately after reform that was actually less than that of those states without court-ordered reform. Twelve states had an increase that was on the order of 0 to 20%, accounting for the average change in states without reform. Kentucky had the largest relative increase in expenditures at 30.1% As a point of reference, real expenditures in states without court-ordered reform on average increased by 13.4% between each data panel. Thus more of these states have an increase in expenditures that is greater than the average in states without reform, but it is by no means a guarantee that expenditures increase.

Murray et al.'s model includes state and year fixed effects, as well as the *Reform* indicator variable. The coefficient on *Reform* is negative and statistically significant in the Gini (inequality) regression. They also find that their results persist after a set of demographic variables are included, namely "the within-state, between-district standard deviations of the following variables: log household income, log school enrollment, the proportion of the population that is black, the fraction of households with children of school age, the fraction of adults without a high school degree, the fraction of adults with

a high school degree, and the fraction of the population in poverty" (802). Their results with state and year effects, as well as with other explanatory variables, can be found in Table 3.4 below (standard errors are reported in parentheses below the coefficients). Only results with the Gini coefficient are reported as the results from the other inequality measures are so similar. It should be noted that when Murray et al. exclude state fixed effects from their equation, the *Reform* coefficient drops dramatically, which they say indicates that those states with the most inequality were the ones who were most likely to have court-ordered reform.

Table 3.4 — Results from Murray et al.
Effect of Reform on Gini Coefficient

	State and Year Fixed Effects	**State and Year Fixed Effects, and other Explanatory Variables**	**State Effects**
Court-Ordered Refrom	-0.0161 ** (0.0040)	-0.0167 ** (0.0055)	-0.007 † (0.004)
R^2	0.787	0.795	N/A

** Significant at the 0.01 level
* Significant at the 0.05 level
† Significant at the 0.10 level

I start with the Murray et al. fixed effects model, including explanatory variables, and then add the two additional panels of data for 1997 and 2002. As above, I report only regressions on the Gini coefficient because the results with other inequality measures are so similar. The formula for the Gini coefficient is, "the average difference in resources between any pair of school districts relative to the average resources for all districts in a state" (Murray et al., 797). One potential disadvantage of the Gini coefficient is that it is

normally used as a measure of income inequality, and so it gives a somewhat compressed measure of inequality of education expenditures as they do not vary as much as income. However, my results are consistent across the different measures of inequality, and so it is appropriate to use the Gini coefficient here. The control variables which I include are similar to those of Murray et al., but they have been selected to provide a better explanation of education expenditures. They are as follows:

- A measure of citizen ideology for each state and for each year produced by Berry et al. (1998, 2004). The Berry et al. measure of ideology is on a scale from 0 to 100 with lower values indicating a more conservative state. I hypothesize that more-liberal states place higher importance on both equality and adequacy in public education and so will have more equality in education finance as indicated by a positive coefficient.
- Real per capita income. My hypothesis is that states with higher per capita income have very wealthy school districts that are able to spend a great deal on public education, thereby increasing the level of inequality in the state's education finance system.
- The percent of the state's public school teachers covered under a collective bargaining agreement (teacher unionization). States with more of their teachers under a collective bargaining agreement are hypothesized to have more equality in their education expenditures as the unions will most likely have negotiated fairly uniform contracts, thereby equalizing school district spending on teacher salaries (a large component of school expenditures).
- An indicator variable for those states that, under Section 5 of the 1965 Voting

Rights Act, must obtain preclearance from the United States Department of Justice before any changes in their voting regulations because of a history of voting discrimination. The concept for this indicator is taken from Ueda (2005). Ueda shows that because these states experienced increased minority representation due to the elimination of multimember districts and creation of majority-minority districts, they also had a corresponding increase in equality in education spending across black and white school districts. Therefore it is predicted that these states will have more spending equality. Ueda included Alabama, Georgia, Louisiana, Mississippi, South Carolina, and Virginia, and in addition to these, Arizona and Texas are also included as preclearance states after 1975, when they were also covered under the law (United States Department of Justice 2007).

- Many authors, including Murray et al., also include an explanatory variable which in some way measures the percent of the population in a state that belongs to a racial or ethnic minority. Such a variable was considered for inclusion in these regressions. The percent of the population that is black was considered as a possible measure. The difficulty is that this measure is highly correlated with the states that are under federal preclearance, as explained above (the correlation is 0.64). Because of this high correlation, it is not appropriate to include both variables in the same regression. The percent of the population that is of Hispanic origin was also considered, but a measure that is consistent over time is not available. In particular, the United States Census Bureau did not code for ethnic origin before 1990, and so there is not a reliable measure. But as explained, the

preclearance indicator is highly correlated with these percentages and so does account for race or ethnic variance across the states. While the preclearance indicator and percent black have similar effects in the regression results, I decided to use the preclearance indicator because of the theoretical foundation for its inclusion as explained by Ueda.

I was also concerned that specifying state fixed effects might be problematic with so few panels of data and thus such a small number of observations. There is also the standard concern with fixed effects in that using this method will to some degree eliminate the variability between states as measured by the included explanatory variables, and so the impact of those explanatory variables will not be fully realized in a fixed effects model. Of course the reason for including fixed effects is that they account for any variation across states that has not been measured by the explanatory variables. Given the costs and benefits of including fixed effects in the regression model, regressions in which just fixed year effects were specified along with the reform indicator and explanatory variables are also included.

My results are quite similar to those of Murray et al., as shown below in Table 3.5, as the coefficient of *Reform* is negative and significant for each inequality measure. The size of the coefficient, however, decreases as the new panels of data are added. I also find, as did they, that when state fixed effects are excluded, the size of the reform variable coefficient drops substantially.

Table 3.5 – Determinants of Inequality in Per-Pupil Expenditures

	1972 – 1992, State and Year Fixed Effects	**1972 – 1992, Year Fixed Effects Only**	**1972 – 2002, State and Year Fixed Effects**	**1972 – 2002, Year Fixed Effects Only**
Court-Ordered Reform	-0.0235 ** (0.0037)	-0.0154 ** (0.0046)	-0.0115 ** (0.0026)	-0.0067 * (0.0033)
Ideology	-0.000323 * (0.000144)	0.000176 (0.000123)	-0.000220 * (0.000106)	0.000082 (0.000099)
Real Per Capita Income (thousands of dollars)	-0.00017 (0.00103)	0.00289 ** (0.00081)	0.000049 (0.007074)	0.00229 ** (0.00059)
Teacher Unionization	-0.00947 (0.00603)	-0.0135 * (0.00600)	-0.00616 (0.00538)	-0.0093 † (0.0050)
Federal Supervision	N/A	-0.0014 (0.0051)	N/A	-0.0024 (0.0043)
Constant	0.105 ** (0.021)	0.0236 † (0.0136)	0.0851 ** (0.0174)	0.0187 (0.0118)
R^2	0.813	0.110	0.791	0.148
N	230	230	322	322

** Significant at the 0.01 level
* Significant at the 0.05 level
† Significant at the 0.10 level

When state effects are included, the coefficient of the Berry et al. ideology measure is negative and significant, indicating that the more-liberal states have more equality in their education finance systems. Per capita income is positive and significant when state effects are excluded, which supports the hypothesis that wealthier states tend to have more inequality. Teacher unionization is negative and significant when state effects are excluded, as predicted. The coefficient of the federal supervision indicator is

negative, which matches the hypothesis that these states have more equality in education expenditures due to increased minority representation, but it is not significant.

The strength of these results generally decreases with the addition of more panels, but all in all it appears that state policymakers are positively responsive to the courts. The funding systems that replace those found unconstitutional result in more equality in expenditures across school districts.

I next turn to Murray et al.'s results concerning per-pupil revenues. In a regression model that includes state and year effects (with no other explanatory variables), their results indicate that court-ordered reform increases per-pupil education revenues by $442 (in 1992 dollars), with a standard error of 152 (Evans et al. 1997). In another regression on per-capita spending on K-12 education which includes the explanatory variables as well as state and year effects, they still find that the coefficient of *Reform* is positive and significant. Here court-ordered reform increases per-capita spending on education by $88, with a standard error of 21. Unlike in their regression analysis of measures of inequality, in this case they do not consider how their results change when state effects are excluded.

My regressions are based on per-pupil (based on average daily attendance) education expenditures, also in 1992 dollars. Revenue and expenditure figures are of course quite similar, but the controversy over educational funding is primarily concerned with expenditures. Again I start with regressions that include data through the 1992 panel, and then expand the data through the 2002 panel. Regressions with both state and year effects and just year effects are also included to match the analysis on inequality. The explanatory variables which are included are similar to those above, with a couple of

additions, as listed below:

- The Berry et al. measure of citizen ideology for each state and for each year. More-liberal states are hypothesized to place higher importance on public education and so have higher education expenditures.
- Real per capita income (in thousands of dollars). I hypothesize that states with higher per capita income are able to spend more on public education and thus will have higher education expenditures.
- The percent of the state's public school teachers covered under a collective bargaining agreement (teacher unionization). I predict that states with more of their teachers under a collective bargaining agreement will spend more on education as the teachers' unions negotiate higher salaries (which compose a large part of education expenditures).
- An indicator variable for those states under preclearance from the United States Department of Justice before any changes can be made in voting regulations. I believe that these states will have higher education expenditures as they have increased minority representation who will have worked not just for equality in education spending, but also for an increase in spending.
- The percent of the population that is school age (5 to 17). When a state has a relatively large percent of the population that is school age, it places an extra strain on the public education system. If there are sudden increases in the number of children, the school system may not be able to quickly adjust to these changes. Therefore it is expected that the percent of the population that is school age will have a negative effect on per-pupil expenditures.

- The percent of the population that is over age 65. Having a relatively large proportion of the population that is over age 65 also places strains on a state's finance system as this is a demographic that typically has large demands for social services. It is my hypothesis that having a large percentage of the population that is over 65 will drive down education expenditures.

Results from these regressions are shown below in Table 3.6.

Table 3.6 – Determinants of Per-Pupil Expenditures

	1972 – 1992, State and Year Fixed Effects	**1972 – 1992, Year Fixed Effects Only**	**1972 – 2002, State and Year Fixed Effects**	**1972 – 2002, Year Fixed Effects Only**
Court-Ordered Reform	459 ** (113)	175 (117)	221 ** (85)	113 (97)
Ideology	-2.35 (4.37)	16.6 ** (3.2)	-6.08 † (3.50)	18.2 ** (3.1)
Real Per Capita Income (thousands of dollars)	256 ** (42)	278 ** (30)	210 ** (24)	233 ** (22)
Teacher Unionization	-9.1 (180.8)	147 (162)	33 (176)	227 (152)
Federal Supervision	N/A	229 † (130)	N/A	183 (126)
Percent of Population 5 – 17	-89.6 † (46.2)	37.5 (41.8)	-131 ** (33)	-27.4 (36.6)
Percent of Population Over 65	85.3 (61.4)	63.6 * (29.2)	90.1 * (45.4)	58.9 * (26.6)
Constant	1010 (2020)	-2510 † (1500)	3020 * (1280)	-368 (1262)
R^2	0.950	0.832	0.956	0.855
N	230	230	322	322

** Significant at the 0.01 level
* Significant at the 0.05 level
† Significant at the 0.10 level

As Table 3.6 shows, the regression with panels through 1992 which includes state and year fixed effects yield results that are remarkably similar to those of Murray et al. They found that court-ordered reform increases per-pupil revenue by $442, and I find that

court-ordered reform increases per-pupil expenditures by $459. The other regression models, however, raise concerns about the robustness of these results. When state effects are excluded, the impact of reform is still positive, but it is much smaller and no longer significant. Also, even with state effects, once the two additional panels of data are included in the regression, the effect of court-ordered reform is reduced by half and is only $221.

The other explanatory variables which are included in these regressions also affect per-pupil expenditures. The Berry et al. ideology measure provides mixed results in these regressions. When state effects are excluded, it is positive and significant, indicating that more-liberal states spend more on public education, again as expected. In the regression that includes state effects and panels through 2002, the Berry et al. ideology measure is actually negative and significant, a result which is difficult to understand. Per capita income is positive and significant regardless of the specification, supporting the hypothesis that wealthier states spend more on education.[5]

Teacher unionization has no significant impact on per-pupil expenditures. Federal intervention is positive and significant in the regression with panels through 1992 without state effects, matching the hypothesis that these states spend more on education because of an increase in minority representation. While the coefficient is still positive in the regression with panels through 2002, the effect is no longer significant. Those states with a large percentage of the population that is school age spend significantly less per-

[5] Property values, as reflected in housing prices, were also considered as a measure of a state's wealth, but they were found to be highly correlated with per capita income, and so were not included as an explanatory variable.

pupil in the regressions with state effects. This result is as predicted, as there may be more of a strain on the education finance system in these states because of the large number of children which they must educate or their inability to fully adjust to any surges in school enrollment. The coefficient of the percent of the population that is over 65 is positive and significant in three of the regression models. This result is somewhat surprising as it runs counter to the initial hypothesis, and this deserves further consideration in the future.

The regression results presented in Tables 3.5 and 3.6 provide some support for the work of Murray et al., but they also raise questions. Their findings that court-ordered reform decreases inequality within a state's education finance system are supported in all of the regressions on the Gini coefficient. The size of the improvement in the level of equality seems to have diminished over time, but it is still significant. The regression results on per-pupil expenditures tell a different story, however. Their result that court-ordered reform increases spending on education is not robust. The model is very sensitive to specification, with the effect on expenditures greatly decreasing with the addition of two panels of data and disappearing all together once state effects are excluded. An explanation for these findings is presented in the next section.

The Endogeneity of Reform

A major source of concern with the analysis in Murray et al. is that they do not allow for the possibility that reform is actually a matter of political choice, and thus endogenous. When making decisions to change the existing system of education finance, the courts are looking at current conditions in the state. The legislature may also have a

fair amount of discretion in choosing how they will respond. Often the court is itself part of the political process within the state. Unlike federal justices, justices for state courts are often elected or are subject to regular reviews. In that case, the state court justices would be more likely to consider the political atmosphere of a state than a federal justice who is isolated from politics.

Once a decision for reform has been issued by a state court, it is then up to the legislature to implement the changes in the education finance system. This is again a political process, and the legislators are almost certainly going to be swayed by their own ideological beliefs as well as those of their constituents. Work by Gerber et al. (2000) and Kiewiet and Szakaly (1996) shows that state legislatures often find ways around restrictions which have been imposed upon them, such as constitutional borrowing and spending limits and ballot initiatives. Imposing reforms on a legislature which was previously unwilling to improve equality of its own accord may not be an effective way to produce the large changes in education finance that had been hoped for by reformers. It is therefore appropriate to treat court-ordered reform as an endogenous variable rather than as an exogenous constraint that is being forced upon a system of education finance.

This approach differs from that of others who have used litigation to determine the impact of public policy reform. For example, Levitt (1996) notes that it is difficult to measure the effect of the size of the prison population on the crime rate because of the simultaneity of the two measures. In order to measure the true impact, Levitt uses court orders requiring reform in the prison system because of unacceptable levels of overcrowding as an instrument for a shift in the number of prisoners. Levitt treats these decisions as exogenous to the state's prison system, but a key concern is that the litigation

would not have been necessary had the prisons not already been overcrowded. Thus the concern with Levitt's use of the court cases as an exogenous variable parallels the concern over education finance court-orders being considered exogenous; even a court ruling is itself a function of a state's political system, as well as the conditions of the system which is being forced to change.

The question is then how to implement *Reform* as an endogenous variable econometrically. There are two primary concerns. The first is that in a two-stage regression in which *Reform* is predicted in the first stage using instruments, a binary variable is being predicted in order to be used in the second stage regression. Normally ordinary least squares would not be appropriate in such a case, but Angrist and Krueger (2001) provide an answer. Rather than using probit or a similar model to predict a binary variable, they recommend using linear regression for consistent estimates, as this will produce consistent second-stage estimates, even though the endogenous variable is binary. Trying to use probit or another such model in the first stage would actually be likely to produce inconsistent estimates, and therefore this method is not preferable. Thus two-stage least squares will be the approach used in the regression analysis below.

The second question is, what instruments should be used to predict reform? Several potential variables were considered. The first was the level of inequality within a state. As indicated by Murray et al., it seems probable that those states with high levels of inequality in their education finance systems would be the ones more likely to have court-ordered reform. In order to test the level of inequality as a potential instrument, Table 3.7 shows *Reform* regressed on the Gini coefficient, along with other explanatory variables. Again while OLS would normally not be correct, because I am considering

potential instruments in two-stage regressions where the first stage will be OLS, it is appropriate to consider it here.

Table 3.7 – Gini Coefficient as a Potential Instrument for *Reform*
Year Effects Only Model

Variable	Regression Coefficient
Gini coefficient	-2.26 * (0.97)
Ideology	0.00012 (0.00179)
Deflated Per Capita Income (thousands of dollars)	0.0737 ** (0.0126)
Teacher Unionization	-0.530 ** (0.084)
Federal Supervision	-0.318 ** (0.071)
Percent of Population 5 – 17	0.0461 * (0.0213)
Percent of Population Over 65	0.0217 (0.0155)
Constant	-1.88 * (0.73)
R^2	0.257
N	322

** Significant at the 0.01 level
* Significant at the 0.05 level
† Significant at the 0.10 level

As shown in Table 3.7, the Gini coefficient does not have the predicted effect on *Reform*. Instead of the expected positive coefficient which would indicate that the most unequal states are likely to have reform, the coefficient is negative and significant. However, this does match with the regression results from above which indicate that court-ordered reform decreases the level of inequality within a state's education finance

system. What the regression in Table 3.7 is then showing is that the states that have had reform imposed by the courts have a lower Gini coefficient, rather than showing that the Gini coefficient was higher in these states before they had reform. Because this regression is not able to provide a prediction for *Reform*, it would therefore be inappropriate to use the Gini coefficient as an instrument for *Reform*.

The next likely candidate for an instrument looks to the political system of each state. Every state constitution has a section or clause that refers to the provision of public education. When a court orders education finance reform, it is looking at how the current education finance system matches against the requirements for the provision of public education as described in the state constitution. It therefore seems appropriate to consider how these state constitution education clauses might influence the likelihood of a state to have court-ordered reform.

There is great variety in the education clauses that are found in the state constitutions. For instance, in 1998 Florida passed a constitutional amendment which makes their clause one of the most demanding in the nation:

> *The education of children is a fundamental value of the people of the State of Florida. It is, therefore, a paramount duty of the state to make adequate provision for the education of all children residing within its borders. Adequate provision shall be made by law for a uniform, efficient, safe, secure, and high quality system of free public schools that allows students to obtain a high quality education and for the establishment, maintenance, and operation of institutions of higher learning and other public education programs that the needs of the people may require. (Florida Constitution,*

Article IX, § 1)

The Maine constitution represents the other extreme in that it requires no monetary effort from the state government for the provision of public education:

> *A general diffusion of the advantages of education being essential to the preservation of the rights and liberties of the people; to promote this important object, the Legislature are authorized, and it shall be their duty to require, the several towns to make suitable provision, at their own expense, for the support and maintenance of public schools ... (Maine Constitution, Article VIII, § 1)*

These differences in the strength of the education clauses allows for their categorization according to the demands they place upon the state government. A full list of these clauses, along with how they are categorized, can be found in Appendix B: State Constitution Education Clauses. States were coded as having weak clauses if they only require the establishment of a system of public education without any other qualifications. Others were coded as having strong clauses if they include words such as an "efficient" or "uniform" education system, with the belief that clauses with these phrases indicate that some level of equality in expenditures is required. All other states were coded as having constitutional clauses of intermediate strength as they include phrases which suggest that some minimal level of financial involvement from the state government is required, with words such as "maintain" or "support." The belief is that stronger constitutional clauses will make court-ordered reform more likely as the court will have grounds to demand a certain level of equality or adequacy from the state

legislature based upon the state's education clause.[6] To test the strength of state constitution clauses as an instrument for *Reform*, Table 3.8 below shows *Reform* regressed on the indicators for education clause strength, along with other explanatory variables. The indicator for weak clauses is the omitted dummy variable.

[6] McUsic (1991) also codes the strength of state constitution education clauses and considers their use in education finance litigation. Her article was before many of the important cases of the 1990s took place and so focused more on the potential of these clauses in supporting the cause of court-ordered education finance reform. I created my own coding system in order to test for the usefulness of these clauses as an instrument for *Reform*.

Table 3.8 – Strength of State Constitution Education Clauses as Potential Instrument for *Reform*: Year Effects Only Model

Variable	Regression Coefficient
Strong Clause	-0.082 (0.067)
Intermediate Clause	0.023 (0.042)
Ideology	-0.0024 (0.0018)
Real Per Capita Income (thousands of dollars)	0.069 ** (0.012)
Teacher Unionization	-0.526 ** (0.085)
Federal Supervision	-0.322 ** (0.072)
Percent of Population 5 – 17	0.039 † (0.021)
Percent of Population Over 65	0.018 (0.016)
Constant	-1.71 * (0.74)
R^2	0.250
N	322

** Significant at the 0.01 level
* Significant at the 0.05 level
† Significant at the 0.10 level

Once again the regression does not have the predicted results. The coefficient of the indicator for strong clauses is negative and insignificant rather than positive. The coefficient for the intermediate clause is positive, but also insignificant. Thus stronger education clauses apparently do not make court-ordered reform more likely. What may instead be the case is that legislatures in those states with strict education clauses are

more likely to already be following the strict guidelines which they are given in the constitution, and so court-ordered reform may not be as necessary. In any case, because the mechanism at work here is not understood, it would also be inappropriate to use the strength of the education clause as an instrumental variable for *Reform*.

The third candidate for an instrument also falls within the political system. In this case I consider the justices who are making the decision to order reform. The state court justices are in fact part of the political system which they are affecting. In many states justices are elected, sometimes in partisan elections. In other states justices are appointed by the legislature or governor, another process which certainly has partisan overtones. The justices also bring their own ideology to their judgments, either more conservative or more liberal, and this is of course expected to play a role in their decision-making.

There are several variables which can be used as instruments in order to account for the politics of the judiciary. The first is a measure of the ideology of the state court justices. Langer (2006) has created a data set which includes the ideology of every justice on each state supreme court (or court of last resort) from 1970 to 2005, based on a scale of 0 to 100 (like that of Berry et al.), with 0 being the most conservative, and 100 the most liberal. The Langer data set also includes the ideology of the median justice in each year in each state. Given that the median is typically considered to be the pivotal justice, this variable seems the most appropriate to use to measure the attitude of the court toward ordering education finance reform. The expectation is that more-liberal courts will look more favorably upon reform.

The next variable is the method by which justices are selected for the court. The various ways in which justices are chosen are partisan and nonpartisan elections,

gubernatorial appointment, legislative appointment, and merit selection through a nonpartisan nominating commission (American Judicature Society 2006). Clearly some of these methods will involve partisan politics, while others are structured so as to purposely exclude such politicking. It is predicted that those justices that are protected from partisan politics in the method of their selection will be more likely to overturn a state's system as they are not concerned with pleasing the political actors or citizens within their state. Thus another instrument for *Reform* is an indicator for those methods of judicial selection which are part partisan in nature, namely partisan elections, gubernatorial appointment, and legislative appointment. It is expected that these states will be less likely to have court-ordered reform.

Given the inclusion of variables for judicial ideology and method of selection, it is also natural to consider the interaction of these two variables. Perhaps there is a combination of these two effects which also impacts the likelihood of *Reform*. For instance, it is possible that liberal justices who were appointed through a partisan process feel pressure to order reform because such a change to the education finance system matches with the ideological beliefs of those actors who placed them in the judiciary. For this reason an interaction between the median justice ideology and indicator for a partisan method of judicial selection will also be included.

Finally, it is also the case that in some states a vote by a supermajority of justices is needed in order to overturn the state's system of education finance. Such a barrier to reform would make court-ordered reform less likely. Therefore, an indicator variable for those states which require a supermajority of justices to overturn the education finance

system is included, and those states are Nebraska, North Dakota, and South Carolina (Caminker 2003).

To test the strength of these four variables as instruments for *Reform*, Table 3.9 below shows *Reform* regressed on the variables which represent the politics of the judiciary and income inequality, along with the other explanatory variables.

Table 3.9 – Judiciary Variables and Income Inequality as Potential Instruments for *Reform*: Year Effects Only Model

Variable	**Regression Coefficient**
Median Justice Ideology	0.00089 (0.00185)
Partisan Judicial Selection	-0.170 (0.111)
Median Justice Ideology * Partisan Selection	0.0061 ** (0.0022)
Supermajority Requirement	-0.115 (0.079)
Ideology	-0.0036 (0.0024)
Real Per Capita Income (thousands of dollars)	0.0524 ** (0.0098)
Teacher Unionization	-0.434 ** (0.082)
Federal Supervision	-0.303 ** (0.071)
Constant	-0.345 † (0.200)
R^2	0.281
N	322

** Significant at the 0.01 level
* Significant at the 0.05 level
† Significant at the 0.10 level

The table shows that in this regression the variables do have the predicted effect on *Reform*. While not significant, the median justice ideology has the predicted positive coefficient, as it is expected that more-liberal justices are more likely to order reform. The indicator for a partisan judicial selection method, while not significant, has a negative coefficient, which most likely indicates that justices selected through a partisan process will be less willing to rule against an education system that is also a result of the current political atmosphere within the state, especially as they may fear reprisal for an unpopular decision. The interaction term between median justice ideology and partisan selection is positive and significant. This result indicates that when liberal justices are the product of a partisan selection method, they may feel they have more freedom to act on their inclination to order education finance reform. Finally, the coefficient of the requirement for a supermajority of justices is not significant, but it is negative, which matches the belief that ordering reform will be more difficult in these states. Thus this set of variables matches the theory behind what will make court-ordered reform more likely, and they will therefore be used as the instruments in two-stage regressions which consider the impact of reform upon education inequality and expenditures.

The effect upon *Reform* of the other explanatory variables in Table 3.9 should also be noted. The ideology of the state has no significant impact on the likelihood of reform, but wealthier states are more likely to have had court-ordered reform. The level of teacher unionization makes reform less likely, perhaps because strong teacher unions in some way level the playing field so that the courts are not forced to intervene. States that are under federal supervision under the Voting Rights Act are also less likely to have had court-ordered reform, perhaps because they have already developed education policy

that takes into consideration concerns about perceptions of any inequality within the state.

In considering the fit of this model for predicting court-ordered reform, it is also helpful to consider those data points for which the model is not a good fit. A residual analysis gives some insight into the weaknesses of this model. The largest residuals from this analysis fall into two categories: those states that were predicted to have reform but did not (large negative residuals), and those state that were not predicted to have reform but did (large positive residuals). The first category includes California in 1972. According to the regression model, California was strongly predicted to have court-ordered reform in this year. This prediction is largely due to California having an extremely liberal median justice on a court that is selected through a partisan method. Since California is not coded as having court-ordered reform in 1972, this results in a large negative residual for this year. Because California is coded as having reform in all other panels in the data set, the model provides a much better fit in all other years.

In 2002 Colorado also has a high prediction for court-ordered reform, which results in a high residual since it has not had a court case. In this instance it is the combination of a state that is relatively conservative, wealthy, and has a low percentage of teachers under collective bargaining agreements that work together to give a large prediction for reform. In fact, a high level of per capita income is a strong predictor of whether a state has had court-ordered reform, and as income is increasing over time, this effect is stronger in later years. Also of particular importance are those states that select their justices through a partisan process. The coefficient of the interaction between the

median justice ideology and the partisan selection process is an important indicator and drives up the model's prediction of whether a state has had court-ordered reform.

On the other hand, Kansas and Washington are two states that have large positive residuals for several years in the model. In this case these states have a very low level of predicted reform, and yet Kansas had court-ordered reform by the 1977 panel, and Washington had reform by the 1982 panel. These are both states which are not particularly wealthy or partisan, nor do they have a partisan judicial selection method, and so they do not have any particular indicators for reform. Thus the early reform in these two states leads to large residuals.

The model does well at predicting reform in states such as California and New Jersey, which had extremely liberal courts selected through partisan methods in 1972 and were also two of the earliest states to have court-ordered education finance reform. States such as Kansas and Washington, which do not have such strong indicators, do not fit as well. The overall model fits well enough that these results from the regression in Table 3.9 will next be used to analyze the effect of court-ordered reform on inequality and expenditures.

A Second Look at the Impact of Court-Ordered Reform

In the previous section I carefully considered the endogenous nature of court-ordered reform and determined that variables for the political nature of the judiciary, as well as a measure of the income inequality within a state, make appropriate instruments for predicting *Reform*. I will now use these instruments in two-stage regressions on the level of inequality and expenditures in state education finance systems in order to

determine the impact of court-ordered reform on these measures. As explained above, as recommended by Angrist and Krueger, linear regression will be used in both stages of these estimates. The explanatory variables included in each regression will be the same as those used above in the regressions that expanded the work of Murray et al. The first regression is on the Gini coefficient, which again measures the level of inequality within a state's education finance system. The results for the first stage are the same as those presented in Table 3.9, and so only the second stage is reported in Table 3.10 below.

Table 3.10 – Two-Stage Regression on Gini Coefficient: Year Effects Only Model

Second Stage

Variable	Regression Coefficient
Court-Ordered Reform	-0.0261 † (0.0142)
Ideology	0.000071 (0.000105)
Real Per Capita Income (thousands of dollars)	0.0033 ** (0.0010)
Teacher Unionization	-0.0183 * (0.0083)
Federal Supervision	-0.0086 (0.0063)
Constant	0.0102 (0.0138)
R^2	0.054
N	322

** Significant at the 0.01 level
* Significant at the 0.05 level
† Significant at the 0.10 level

The results from this two-stage regression on the Gini coefficient support the previous findings on the effect of court-ordered reform on the level of inequality in education finance. That is, court-ordered reform significantly decreases the level of inequality within an education finance system. In fact, the coefficient of *Reform* is now larger than it was in the previous regressions that did not account for the endogenous nature of court-ordered reform. The results presented in Table 3.10 show that court-ordered reform decreases the Gini coefficient by about 0.0261, while the regression results in Table 3.5, which include state and year fixed effects and panels through 2002, show that reform decreases the Gini coefficient by only 0.0115. In order to understand the magnitude of these figures, it is helpful to consider that in 2002, the average Gini coefficient in those states that had not had court-ordered reform was about 0.0644. Thus a change in the Gini coefficient of 0.0261 would represent an almost 41% decrease in inequality, while a change of 0.0115 would represent only an 18% decrease in inequality. Accounting for the endogenous nature of court-ordered reform therefore not only supports the findings that reform decreases the level of inequality in education expenditures, but it has also strengthened the degree of the impact.

The other explanatory variables included in the two-stage regression also have the expected effects. Ideology does not have a significant impact on inequality, but again wealthier states tend to have higher inequality. Teacher unionization again has a negative and significant effect on the Gini coefficient, as would be predicted if the union agreements promote equality in spending. The indicator for federal supervision under the Voting Rights Act is not significant but does have a negative coefficient, providing some indication that increased minority representation improves equality in spending.

I next turn to the question of the impact of court-ordered reform on the level of education expenditures. Table 3.11 below shows the results of a two-stage linear regression on per-pupil expenditures.

Table 3.11 – Two-Stage Regression on Per-Pupil Expenditures: Year Effects Only Model

First Stage

Variable	Regression Coefficient
Median Justice Ideology	0.00089 (0.00185)
Partisan Judicial Selection	-0.159 (0.111)
Median Justice Ideology * Partisan Selection	0.0061 ** (0.0022)
Supermajority Requirement	-0.118 (0.079)
Ideology	-0.0031 (0.0024)
Real Per Capita Income (thousands of dollars)	0.0682 ** (0.0121)
Teacher Unionization	-0.481 ** (0.085)
Federal Supervision	-0.304 ** (0.072)
Percent of Population 5 – 17	0.0475 * (0.0208)
Percent of Population Over 65	0.0211 (0.0152)
Constant	-1.86 ** (0.72)
R^2	0.293
N	322

** Significant at the 0.01 level
* Significant at the 0.05 level
† Significant at the 0.10 level

Second Stage

Variable	Regression Coefficient
Court-Ordered Reform	80 (381)
Ideology	18.2 ** (3.1)
Real Per Capita Income (thousands of dollars)	235 ** (33)
Teacher Unionization	210 (241)
Federal Supervision	173 (173)
Percent of Population 5 – 17	-26.1 (39.3)
Percent of Population Over 65	59.5 * (27.3)
Constant	-425 (1406)
R^2	0.855
N	322

** Significant at the 0.01 level
* Significant at the 0.05 level
† Significant at the 0.10 level

The results from this two-stage regression on per-pupil expenditures indicate that that court-ordered reform has no significant impact on the level of expenditures. The coefficient of *Reform* is positive, but it is smaller than in any previous regression on per-pupil expenditures, and it is certainly not significant. The results presented in Table 3.11 show that court-ordered reform at best might increase per-pupil expenditures by about $80 a year. In 2002 average per-pupil expenditures in those states that have not had court-ordered reform were about $6310 (in 1992 dollars). A generous assumption that reform would increase spending by $80 would therefore represent an increase in

expenditures of about 1.3%. Accounting for the endogenous nature of court-ordered reform has therefore eliminated any impact that this reform might have on per-pupil expenditures.

The other explanatory variables included in the two-stage regression generally have the expected effects. More-liberal states are again shown to spend significantly more on education, as are wealthier states. The level of teacher unionization once more has no impact on the level of expenditures, and the same is true for those states under federal supervision. The percent of the population that is school age has no significant impact on expenditures, but states with a larger percentage of the population that is over 65 are again shown to spend more on education.

Summary

This chapter began with a consideration of the data on inequality and per-pupil expenditures across the 46 states in my sample. Simple graphs of the data show that court-ordered reform does decrease the level of inequality in education expenditures within a state, but they do not reveal a clear pattern of what happens to the level of expenditures after reform. Work by Murray et al. indicates that court-ordered reform decreases inequality and increases education spending. However, their results are very sensitive to specification (specifically the inclusion of state effects), and the impact of reform decreases with the addition of two panels of data.

Another concern with the work by Murray et al. is that they do not account for the endogenous nature of court-ordered reform. Much of the literature treats these court decisions as a change that has come from entirely outside the education finance system.

However, state court justices are often themselves appointed through a political process, and then the implementation of the reform is carried out by the state legislature, a body which is certainly not immune from political pressure. In order to take into account the endogenous nature of reform, several potential instruments for the indicator variable *Reform* were considered. Ultimately a combination of variables which account for the political nature of the judiciary were determined to be the appropriate instruments.

I then employed two-stage regressions with these instruments for *Reform*. The regression on the Gini coefficient, which measures inequality within a state's education finance system, showed that not only does court-ordered reform have a significant impact on equality, but that the size of this effect was larger than in previous regressions. Court-ordered reform might decrease the level of inequality by as much as 41%. The results from the two-stage regression on per-pupil expenditures were quite different. This regression showed that court-ordered reform has no significant impact on the level of per-pupil expenditures. A generous assumption would indicate that reform increases expenditures by about 1%, but even this result is not significant.

The analysis in this chapter has therefore shown that court-ordered reform does have an impact on a state's education finance system, but not the one that has often been suggested in the literature. Reform does improve equality, but it does not change the level of expenditures. Why would this be the case? Murray et al. say that after court-ordered reform the state governments increase their financial support for public education, thereby raising the level of expenditures. What would be the problem with this hypothesis? The next chapter begins to provide the answer as it explores the history of education finance in the United States.

Chapter 4

The Pre-*Serrano* History of Education Finance in the United States

The analysis in Chapter 3 showed that court-ordered education finance reform decreases inequality in education expenditures, but that it does not change the level of education spending. Much of the literature on education finance reform has suggested, however, that the level of expenditures should increase after reform, as state governments allocate additional money for the support of public education. This chapter provides a history of education finance in the United States so as to begin to explain why a significant increase in education expenditures was not forthcoming. The story begins with the United States colonies.

Education from Colonial Times to the Early Republic

Public education in the United States originates, not surprisingly, in the Protestant New England colonies. The Puritans placed great value upon the ability of their children to be able to read the Bible. This belief was so important that the Massachusetts Colony passed a law in 1642 requiring parents to ensure that their children were able to read and understand the basic tenets of law and religion. The colonies of Connecticut, New York, and New Hampshire adopted similar laws (Cremin 1970).

While these laws required action from parents in order to educate their children, the towns of New England did little to actually provide schooling. In Massachusetts the solution to this lax response came in 1647, with passage of the Old-Deluder Satan Act. This law required that the townships of the colony provide schools for their children. Specifically, towns with fifty families were to have a schoolmaster to teach all children to

read and write, while towns with one hundred families were required to have a grammar schoolmaster who could prepare children to attend university (Cremin 1970). Compliance with the Old-Deluder Satan Act and similar laws in other colonies was also lax, however, so schools were still far from universal in the New England colonies.

The New England schools that did exist would on occasion receive some public support, but generally students were charged for their attendance. Often a town would publicly endow land or a building for a school, but parents who were able to pay tuition were required to do so. Some of the poorest students would receive public support and be allowed to attend for free (Noble 1954). This original model of expecting most parents to pay for education and providing a free education for only the most poverty-stricken students became the norm and would be used throughout the United States for many years to come. Over time the method of paying for town schools evolved, and in some areas parents whose children attended the local school began to be charged assessments, called rates. Eventually a few towns even moved to supporting schools with a general property tax (Noble 1954, 128).

The New England towns were more than simply a governing arrangement — they were communities that were defined by religious and social ties. This closeness and interdependence gave the townships the structure that was needed to overcome the collective action problem inherent in forming schools. The settlers of the other American colonies did not have this same Puritan social capital, and for them education remained almost entirely a private affair. In some cases the middle colonies were able to establish parochial schools, but the population of the southern colonies was generally so dispersed, as well as resistant to the idea of providing public goods, that few, if any, were publicly

provided (Meyer 1967).

By the beginning of the 18th Century, the strength of the New England communities began to fade. With new immigrants came new Christian denominations, and they diluted the hold that the Puritan faith held over New England. With the Enlightenment came interest in topics other than religion, but with the Great Awakening came a desire to return to the basics of faith (Noble 1954). The district school was the result of the desire for change in the old system. As Meyer (1967) says, "By this scheme a township arranged itself into districts, each with its own school, taught and patrolled by its own master, and each kept going by the disbursement the district made to the town treasurer" (50–51). For the most part, though, wherever schools could be found, they were under the control of the churches. As people no longer believed that it was the government's role to mandate a certain religious education for children, parents would turn to their own private schools. The children of poor parents were forced to rely upon charitable schools that were generally operated by church-based philanthropic organizations (Butts 1978).

During the Revolutionary War, the expense of fighting meant that there were fewer funds to support education (Meyer 1967). However, the ideas of the Revolution would eventually support the idea of education for all children (Goldin and Katz 2003). If the people of the United States were going to govern themselves rather than be under the rule of a king, then they must be educated in order to perform this duty. It is then an easy extension of this idea to say that the state should be responsible for this necessary education of its citizens (Noble 1954). While education was not considered to be the job of the federal government, many of the new state constitutions did address the subject

and suggested the hope that education would become important in the new country.

Some federal government support for public education was evident with the Ordinance of 1785, which required that a section of each new township in the Northwest Territory be reserved for the use of public schools (Butts 1978). These are all indicators that a more general support for public education was forming. By 1800, each New England state had passed laws mandating some form of education, generally by requiring towns to provide for schools (Meyer 1967, 129).

Once communities became more involved in funding public education, they employed several different mechanisms for raising revenue. In general, though, they did not draw upon a property tax. Instead, states allowed local governments to use special sources, such as licenses, taxes on liquor and billiard halls, and even lotteries. Some states tried to create permanent school funds, but these were often mismanaged and rarely raised enough money to be of any use. Seldom did a local community have a general tax to support public education (Meyer 1967 and Noble 1954).

These small efforts at funding public schools continued for a few decades, but the nation was preparing to turn its sentiment in favor of public education into action. In previous years while the colonial or state governments may have given aid to help or promote education, they never actually accepted the responsibility for public education (Hazlett 1971). The United States then experienced an extraordinary transformation from 1830 to 1860. Thanks to trains, steamboats, and telegraphs, the infrastructure of the country improved dramatically. The nation also grew in size due to immigration, and the country's population continued to move west. All of these changes meant that commerce and trade were able to expand tremendously. (Meyer 1967 and Noble 1954).

This transformation brought about another new feature for the country — a large middle class. This group of citizens quickly realized that education was necessary for success in modern America. They were willing to work to ensure that an education would be provided to all children, whether poor, wealthy, or even somewhere in-between, and their efforts came to be known as the Common School Movement (Meyer 1967 and Noble 1954).

In many cases changes in the funding of public schools came about thanks to the work of a few dedicated individuals. As was often the case, Massachusetts was once again a leader in education, thanks primarily to the dedicated labor of two men, James G. Carter and Horace Mann. The two worked together to persuade the state legislature to form the state board of education. Carter also helped to create an effective state school fund. As the secretary of the state board of education, Mann then continued the work that had been started by Carter (Noble 1954). Mann's tireless efforts to persuade the state that its educational system was entirely inadequate are well-known. By the time he was finished, funding for schools had greatly increased, and he had significantly improved the quality of education that students received (Meyer 1967). Connecticut again followed the example set by Massachusetts thanks to the work of Thomas H. Gallaudet and Henry Barnard (Noble 1954).

As men like these continued their fight for public education, change did happen as the country more and more saw the value of education. Eventually general taxes were established, and they typically came about in the following sequence:

> (1) Permission granted to communities so desiring to organize a school taxing district, and to tax for school support the property of those consenting and

> residing therein. (2) General taxation of all property in the taxing district permitted by vote, regardless of individual consent. (3) State aid to taxing districts, from the income from permanent school funds or from the proceeds of a small state tax or appropriation. (4) Compulsory local taxation to supplement the state aid received. (5) Often township or county taxation added, to supplement state and district sources. (E. P. Cubberly, as quoted by Noble 1954, 186)

As a matter of course, the major cities were often the leaders in establishing a system of schools. They had the wealth and ability to institute property taxes to support public education, and over time the state government gave aid to encourage these efforts (Hazlett 1971).

Thus it is clear that state aid became a major component of education finance during the Common School Movement. State aid was often used as an incentive to encourage local communities to establish public schools. As the states became more involved in financing the schools, they also gained more control over the system of education. State government sought to ensure that its money was being spent wisely, and state superintendents were given the power of supervision (Meyer 1967). It was also typical for states to mandate a local tax in order to be eligible to receive state aid, as well as for the state governments to require a certain minimum quality of education (Hazlett 1971). It should be noted that the South lagged behind the rest of the country in these developments, mainly because of their strong conservative beliefs, as well as a fear of educating slaves (Meyer 1967).

The Civil War slowed the advances that had been made in education up to 1860

(Noble 1954). After the war, though, the demand for education continued to increase, and the system of public education continued to grow (Meyer 1967). Public high schools became increasingly common. While the quality of schools was often low, they were universal enough to produce a fairly literate citizenry, especially in the North and West (Noble 1954). Thus by the end of the 19th Century, education in the United States had made great advances, and the country was now prepared to carry this momentum forward into the next chapter of educational progress.

The High School Movement and Beyond

The turn of the 20th Century witnessed rapid growth in public education. The High School Movement was especially key in the growth of education during the early 1900s, and it became particularly strong after World War I. Much like the Common School Movement the century before, the High School Movement was a push for the establishment of high schools throughout the country so that all students would have the opportunity to receive a secondary education. The demand was similarly based on a realization of the importance and value of a high school degree in a society that was becoming more and more advanced (Goldin and Katz 2000). High school degrees meant an opportunity for real advancement in the obtainment of a white-collar job. The economy was now rewarding a knowledge of basic science, and businesses were interested in hiring workers with strong clerical abilities. The nation was rapidly becoming less agrarian and more industrialized. As communities wanted to build high schools in response to these dramatic changes, there was of course a need for increases in education funding. Once again, while state aid was not a primary source of funding, it

did often serve as an incentive for communities to establish high schools (Goldin 2001, Goldin and Katz 2003).

What this chapter has then shown is that state governments have had a role in supporting public education for quite some time. From the time of the Common School Movement forward, state governments have provided funding for the promotion of public education so that communities would build public schools. State governments had not yet assumed a primary role in the provision of public education, but they had a real presence, a fact which is all too often ignored in the literature on education finance. It is now at this point, around the start of the 20th Century, that data on education finance become available, and the next chapter will continue the story of education finance in the United States through the analysis of this data.

Chapter 5

The State Share of Education Revenue

Chapter 4 recounted the early history of education finance in the United States. At the end of the 20th Century the federal government began collecting data on education finance, and this chapter will explore that data in order to complete the rest of the historical record. After considering long-term national trends in education finance, the focus will then turn to what has happened since the 1971 *Serrano* decision, and, more specifically, to how the state government share of education funding has changed over time.

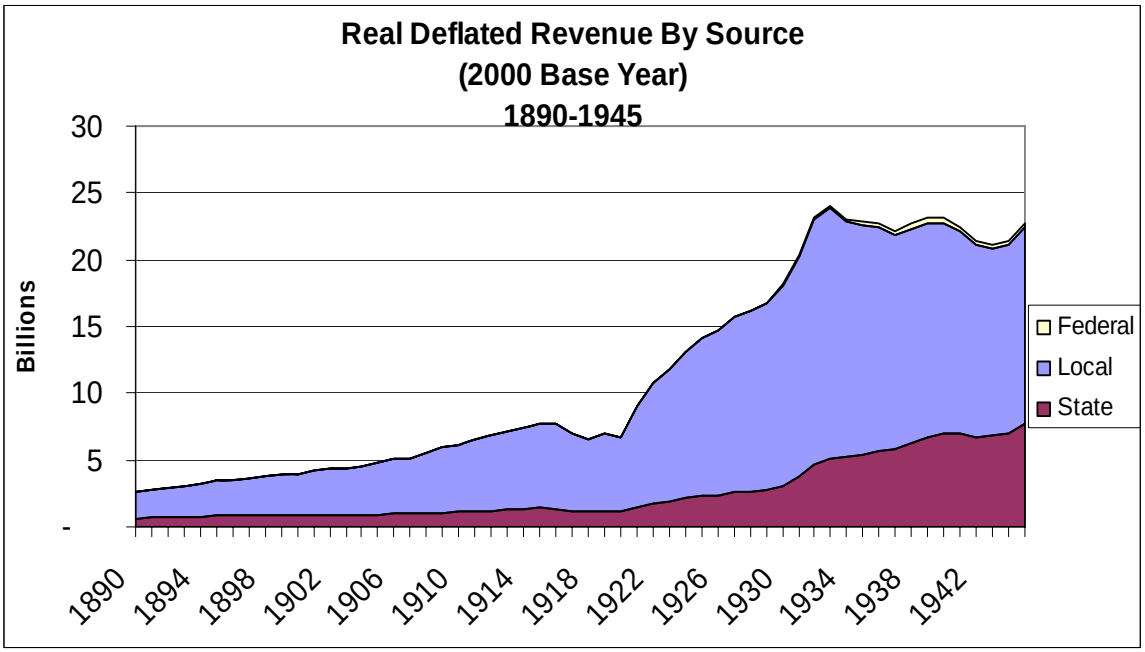
Education Finance During the 20th Century

Beginning in 1890, data on United States education finance become available courtesy of the United States Office of Education in the Department of the Interior (Mort 1933). Documentation on the data sources on education revenues which generated the figures below is in Appendix A: Data Sources. Missing years of data were interpolated. While it would perhaps be preferable to have data on expenditures, revenues and expenditures for education are so closely tied together that these data provide the same picture of the role of the state government in education finance.

Because the scale of spending in education finance has changed so dramatically over the years being studied, it is helpful to look at the graphs of education spending over shorter time spans in order to see more detail. Figure 5.1 displays the real revenues for public education, by source, from 1890 to 1945. From 1890 to 1930 federal and state revenues are combined, but federal revenues were so small during this time that their

effect is negligible. Figure 5.1 shows a steady increase in local revenues until about 1920, with state revenues remaining fairly constant. Because local revenues increased between 1890 and 1920 while state revenues did not keep pace, the state share of education revenues actually decreased from about 24 percent to about 17 percent during that time. Between 1920 and 1930 there is then a large increase in both local and state revenues so that the level of education revenues increased dramatically while the shares from the two sources remained almost unchanged. This increase in spending during the 1920s coincides with the new importance of education after World War I and the investments made during the High School Movement, but again the state share of education revenues remained fairly constant at just below 17 percent.

Figure 5.1



The next significant change occurred during the Great Depression. Until this time, the local revenues that were paying for most of public education were derived primarily from property taxes. Once the Great Depression hit the United States, property

values fell and defaults on property taxes increased, leading to a substantial decline in revenue. Thus those who advocated more state involvement in education finance were able to achieve significant increases in the state's share of revenues during the 1930s in order to alleviate the burden of local property taxes (Johns 1969). During this time total education revenues did not change much, but the shares from state and local governments did. In 1930 the state share of education revenue was just below 17 percent, but by 1940 it had increased to over 30 percent. By 1945 it had reached about 34 percent.

Figure 5.2 displays real revenues for public education by source from 1945 to 1970. The pattern that emerges here is a steady increase in all sources of education revenue over these years. The federal government's role in education finance increased, but it still constituted a small share of total revenues. Between 1945 and 1970 the state share of education revenue grew from about 34 percent to almost 40 percent. Thus the overall change in the allocation of education revenues from state and local governments in the 25 years from 1945 to 1970 was an additional 6 percent, on top of the 13 percent change in the decade of the 1930s.

Figure 5.2

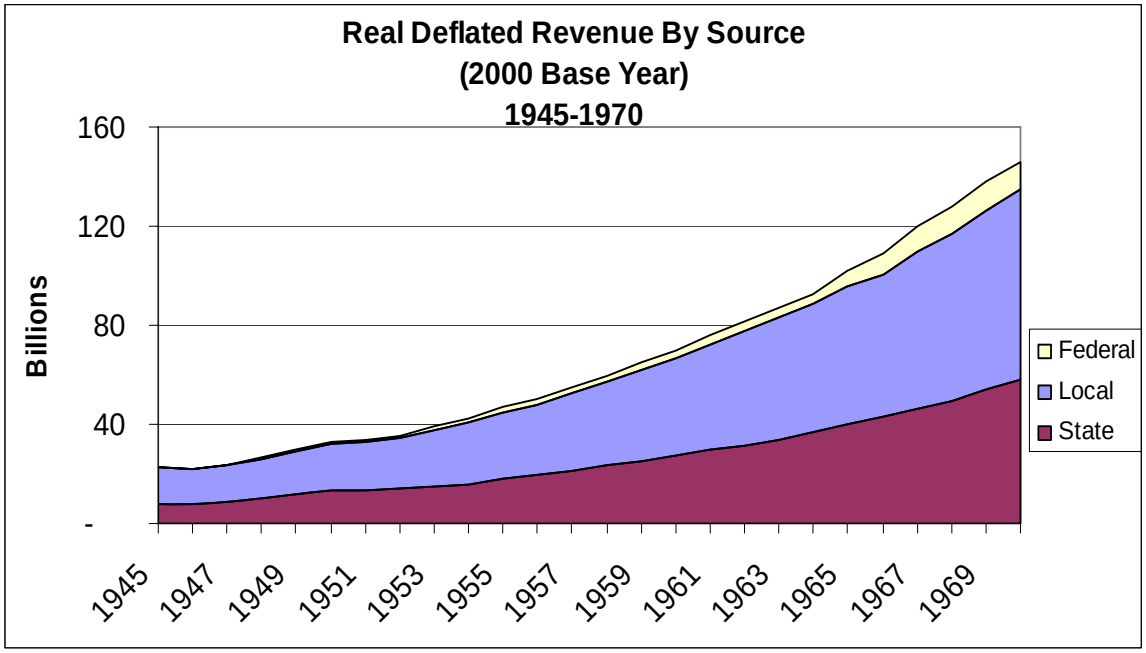


Figure 5.3 shows real revenue for public education by source from 1970 to 2003. This graph highlights the data from the time period of court-ordered education finance reform, which began with the *Serrano* case in 1971. If, as implied by the research on education finance reform, the state share of spending on education spending has increased as a result of these court cases, then Figure 5.3 should show a dramatic increase in the state share of revenues. However, the pattern that emerges from the graph is that all revenue sources continued to increase while shares remained fairly constant. In fact, in the 33 years from 1970 to 2003, the period in which 22 states became subject to court-ordered equalization mandates, the state share of education revenues went from just under 40 percent to about 49 percent. Figure 5.4 shows the actual share of education revenue by source from 1970 to 2003, and it reveals that most of the increase in state share happened during the 1970s, which was before most of the court cases had been decided. By about 1980, the shares had reached a level that remained fairly constant,

except perhaps for another slight increase in the late 1990s.

Figure 5.3

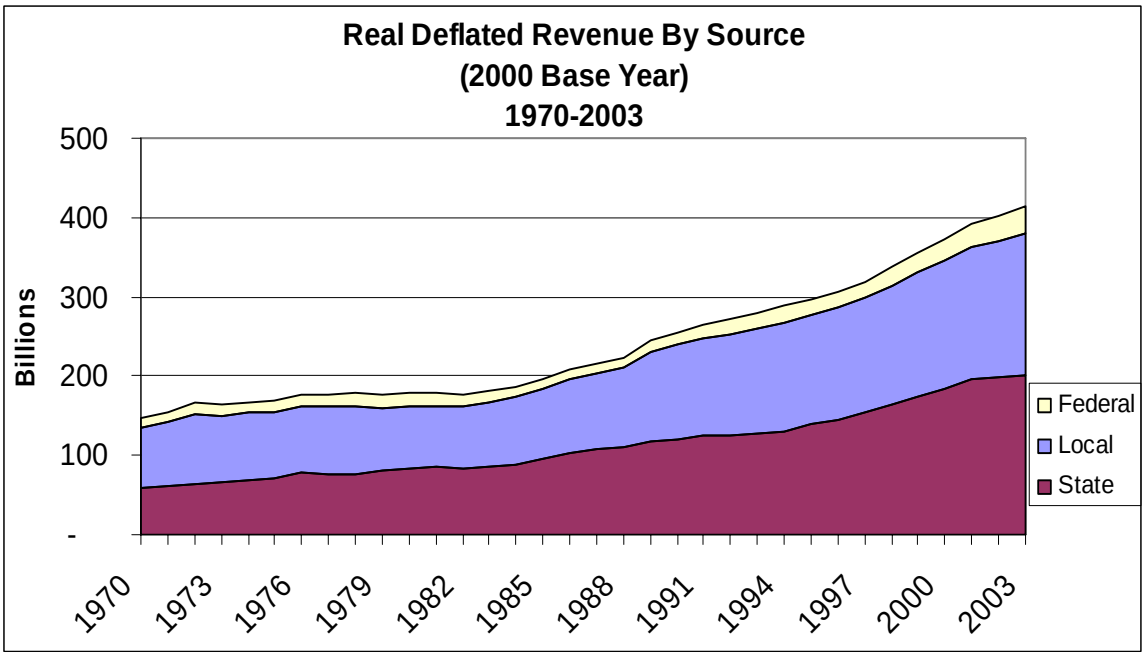
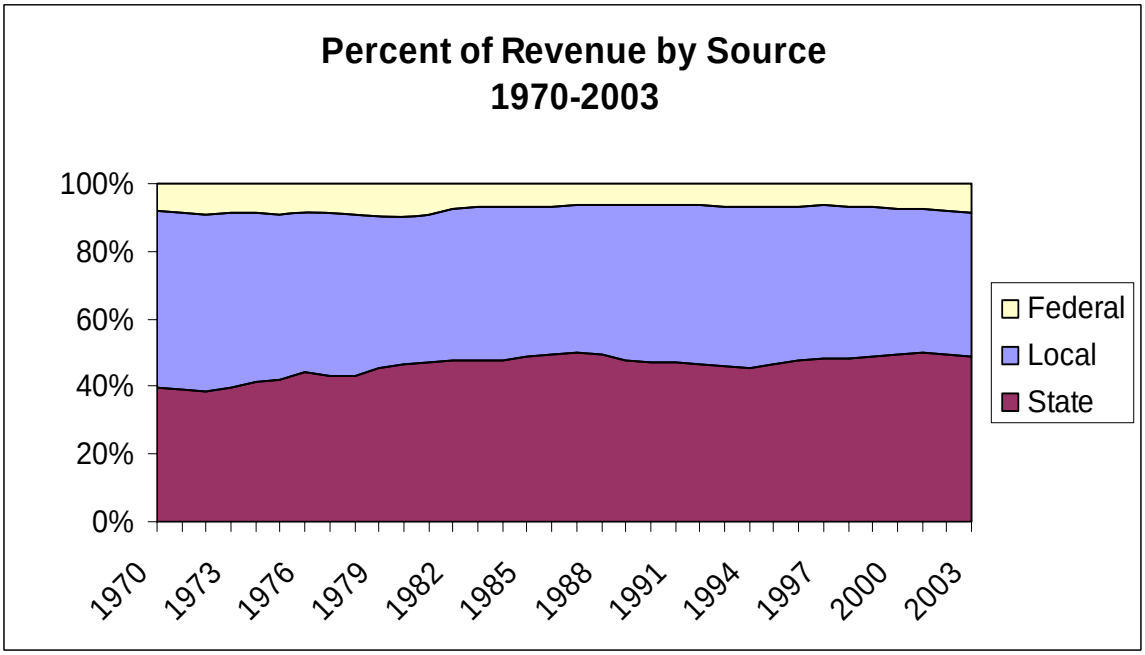


Figure 5.4



Thus these data show that at the beginning of the 20th Century local governments certainly were primarily responsible for education finance. Responsibility has gradually shifted, however, so that it is now almost equally shared by state and local governments. The most significant increase in the involvement of state governments came as a result of the Great Depression. Since that time, all education revenues have increased dramatically, but the actual share of state governments has increased only gradually. The next section explores what actually happened to the state share of education finance in those states which experienced court-ordered equalization reform.

After *Serrano*

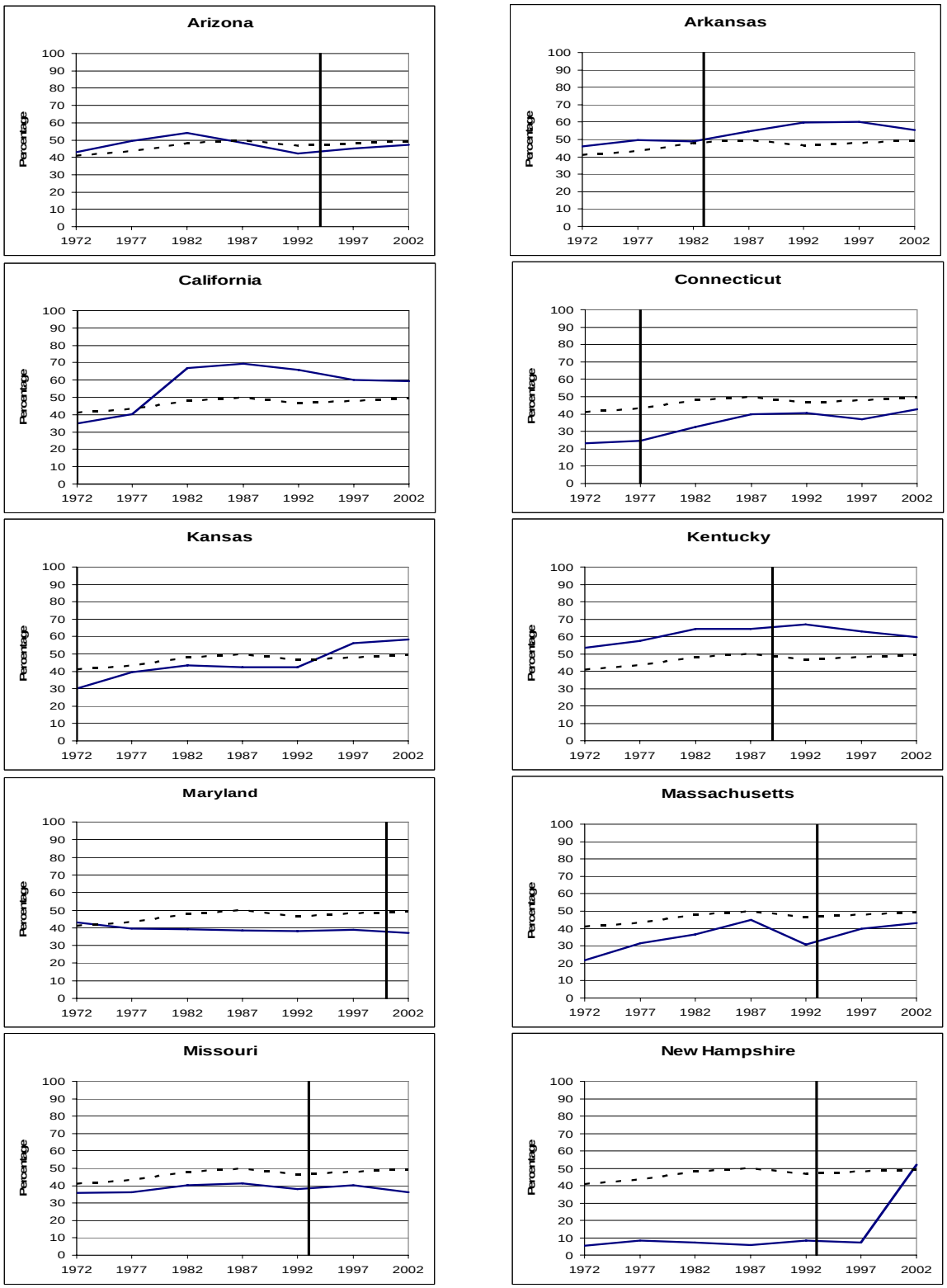
Previous research on education finance reform typically suggests that court-ordered equalization requires state governments to become much more involved in supporting public education. For example, Murray et al. (1998) assert that "the distribution of revenues changed substantially over [the time period 1972–1992]" (798). They indicate that the state share of education spending, as opposed to the local district share, rose very quickly during the years of their study. These assertions match with their findings that court-mandated reform improves equality in education expenditures within a state and also increases education expenditures. The implication is that the state governments that have implemented education finance reforms have increased the share of the state contribution to education in order to make spending more equitable.

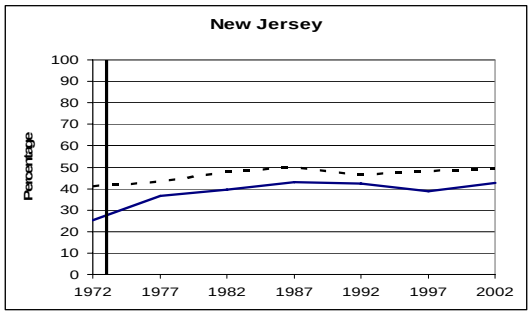
Theobald and Picus (1991) also argue that each state with court-ordered reform has had "a substantial increase in the state's role in funding public schools" (4). In their study on the impact of reform on education funding, Manwaring and Sheffrin (1997)

note that, “One of the general tenets of the reform movement was to transfer more of the funding responsibility to the state level” (108). Wood and Theobald (2003) consider how political leanings influence a state’s tendency to work toward education finance equality, and they also assert that with court-ordered reform there follows “a larger state allocation to local school districts” (723). Fernández and Rogerson (1998) use a general equilibrium model to study the impact of moving from a locally financed education system to an entirely state-financed system, and again the authors state that with court-ordered reform, the government works to “increase the role of the state and decrease that of local provision” (813). Thus, while all of these authors are considering different aspects of education finance reform, they all base their arguments on the assumption that reform means the state government will play a larger role in financing public education.

At this point it is useful to examine the revenue data for individual states during the recent period of court-ordered education finance reform. Figure 5.5 shows graphs for several states of the percent of education revenues from the state government for each five-year panel from 1972 to 2002. The solid lines represent the percent of revenue for the state government for the particular state, and the dotted lines represent the state government percentage of education revenue for the United States as a whole. The first group includes all those states that experienced court-ordered education finance reform, with the year of reform indicated by a dark vertical line. The second group includes a sample of those states that have experienced reform lawsuits where the court decided to uphold the current system of finance, with the years of those court cases again indicated by vertical lines. The third group represents those states that have not experienced significant education reform litigation.

Figure 5.5 – State Government Percentage of Education Revenue: States with Court-Ordered Reform




New Jersey
Percentage
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1972
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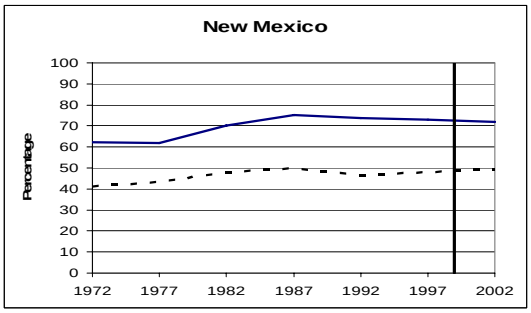
New Mexico
Percentage
100
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80
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20
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1972
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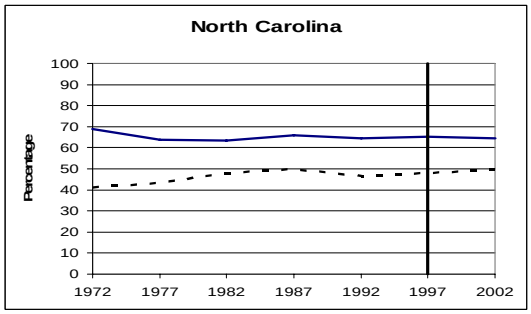
North Carolina
Percentage
100
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80
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40
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0
1972
1977
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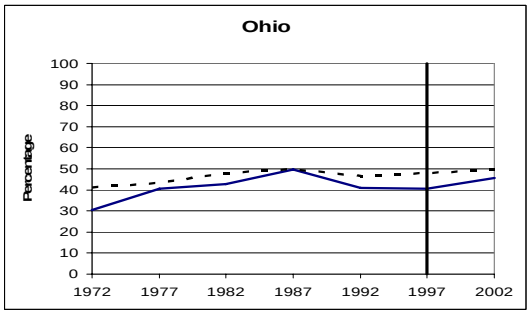
Ohio
Percentage
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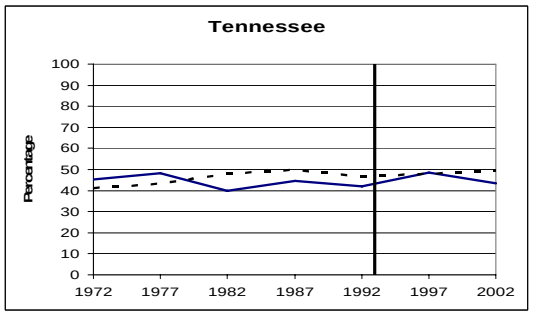
Tennessee
Percentage
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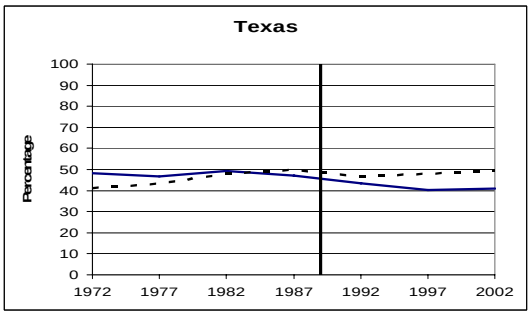
Texas
Percentage
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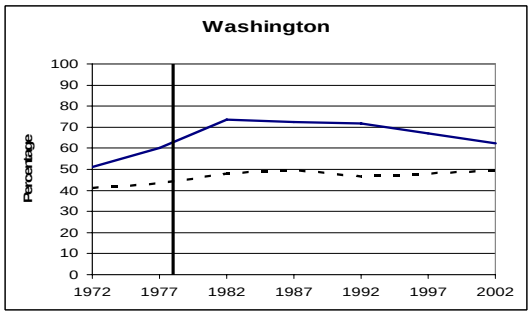
Washington
Percentage
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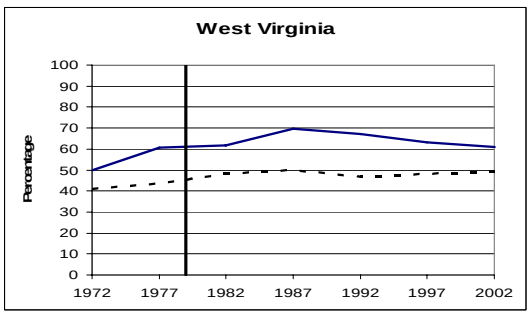
West Virginia
Percentage
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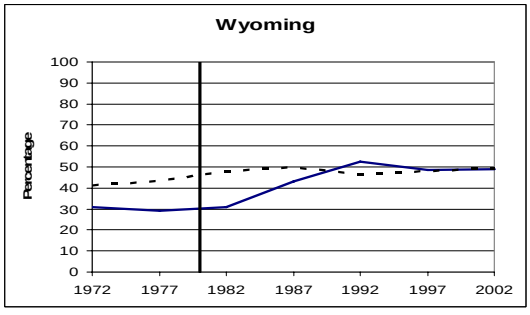
Wyoming
Percentage
100
90
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1972
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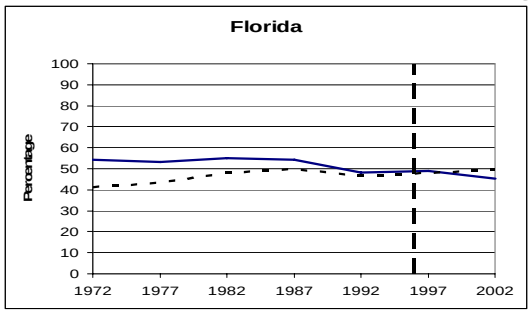
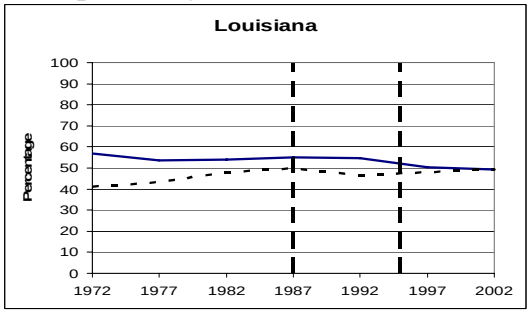
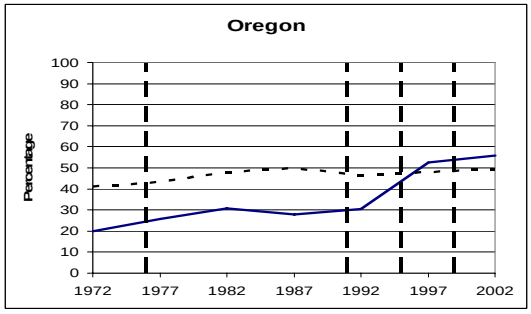
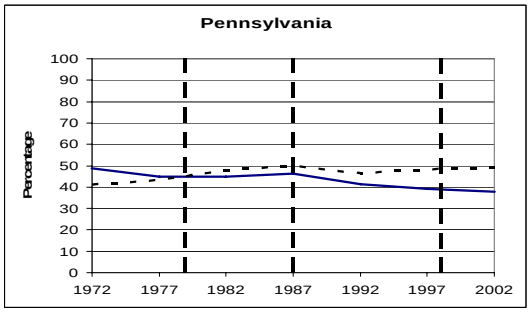
1997
2002

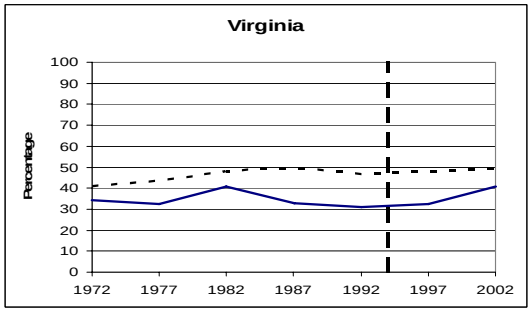
States with Funding System Upheld by Court

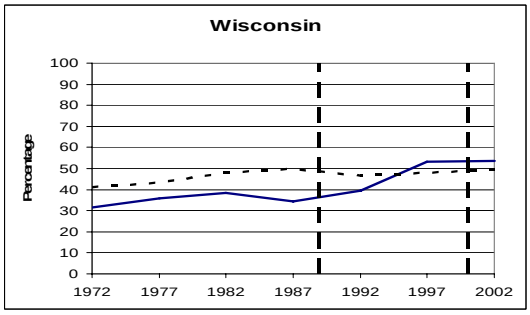




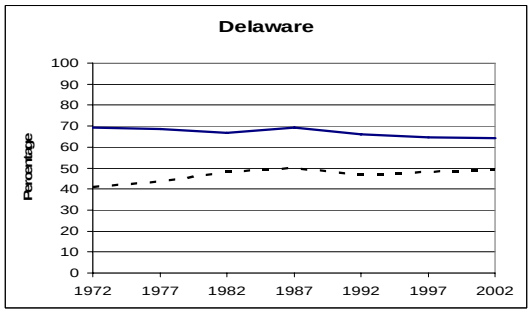


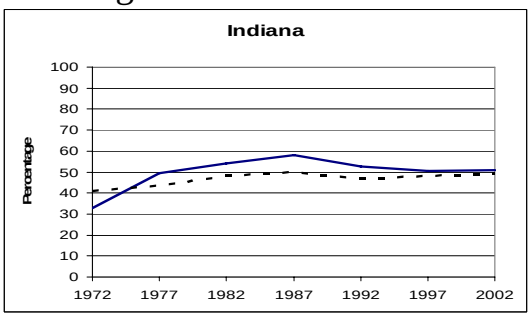


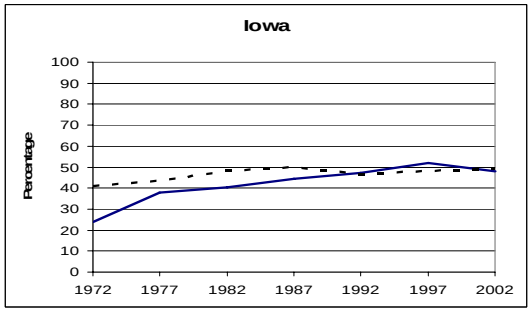


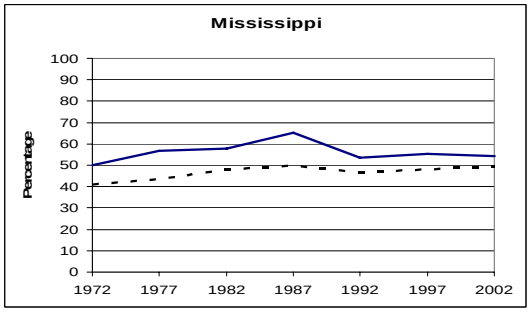


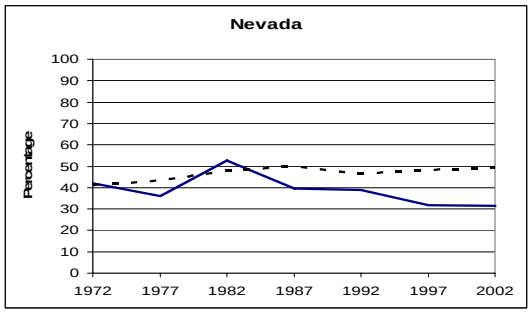
States with No Reform Litigation

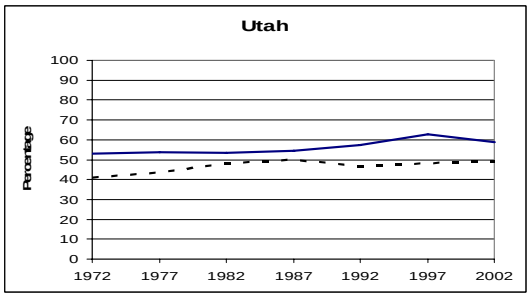












Based upon the data plotted in Figure 5.5, court-ordered finance reform does appear to increase the percent of education revenue provided by the state government, especially immediately after reform. In many of these states, however, the state share of revenue appears to decrease slightly after the initial increase from reform. The pattern is not as clear in those states that have had their education finance systems upheld or have not had reform at all; these states have a state share of revenue that goes up and down or even remains fairly constant over time.

In order to more vigorously test the hypothesis that court-ordered reforms lead to larger state shares, I employ regression analysis. The initial model will be the same as the first ones used in Chapter 3 to test the impact of court-ordered reform on inequality and expenditures:

$$S_{it} = D_{it}\alpha + \boldsymbol{X}_{it}\beta + \mu_i + \eta_t + \varepsilon_{it}$$

where i stands for each state, t is for each panel year, S_{it} is the share of education revenue coming from the state government, D_{it} is the indicator variable *Reform* representing court-ordered reform, $\boldsymbol{X}_{it}$ is a vector of explanatory variables, μ_i is state fixed effects, η_t is year fixed effects, and ε_{it} is a random error term. The indicator variable *Reform* takes on the value of 1 for each year after court-ordered reform occurs within a state, and 0 otherwise.

The data are again in panels of five-year intervals, from 1972 to 2002, with the same explanatory variables that were used in the regressions in Chapter 3, as listed below:

- The Berry et al. measure of citizen ideology for each state and for each year. My hypothesis is that more-liberal states will tend to have more centralized systems of public education and so will have a larger share of revenue from the state government.
- Real per capita income (in thousands of dollars). My hypothesis is that states with higher per capita income will generally have wealthier school districts that will not be as dependent upon the state government for revenue. Therefore, states with higher per capita income will have a smaller share of revenue from the state government.
- The percent of the state's public school teachers covered under a collective bargaining agreement (teacher unionization). I believe that large teachers' unions will have a great deal of lobbying power and so will advocate for more support from the state government. Therefore I expect that states with a larger percentage of the teachers covered under a collective bargaining agreement will have a larger state government share of education revenue.
- An indicator variable for those states under preclearance from the United States Department of Justice before any changes can be made in voting regulations. I believe that these states will have a higher state share of education revenue as they have increased minority representation who will have worked for increased education funding from the state government.

- The percent of the population that is school age (5 to 17). Again, when a state has a relatively large percent of the population that is school age, it places an extra strain on the public education system, and it is likely that the school system will not be able to fully adjust to these changes. Therefore it is expected that the percent of the population that is school age will have a negative effect on the state share of education revenue.
- The percent of the population that is over age 65. Having a relatively large proportion of the population that is over age 65 also places strains on a state's finance system as this is a demographic that typically has large demands for social services. It is my hypothesis that having a large percentage of the population that is over 65 will drive down the state share of education revenue.

Results are sensitive to model specification, so there are two regressions shown in Table 5.1 — one with state and year fixed effects, and one with year effects only.

Table 5.1 – Determinants of State Share of Education Revenue

Variable	State and Year Effects	Year Effects
Court-Ordered Reform	2.50 † (1.46)	6.37 ** (1.93)
Ideology	-0.162 ** (0.060)	-0.0032 (0.0609)
Real Per Capita Income (thousands of dollars)	0.408 (0.421)	-2.59 ** (0.44)
Teacher Unionization	7.55 * (3.04)	2.39 (3.01)
Federal Supervision	N/A	-0.81 (2.50)
Percent of Population 5 – 17	1.13 * (0.57)	-1.10 (0.72)
Percent of Population Over 65	-0.930 (0.785)	-2.10 ** (0.53)
Constant	33.1 (22.1)	153 ** (25)
R^2	0.828	0.254
N	322	322

** Significant at the 0.01 level
* Significant at the 0.05 level
† Significant at the 0.10 level

In both regression models there is evidence that court-ordered reform increases the state share of education revenues. In the regression with state and year fixed effects the coefficient indicates that a state with court-ordered reform has a state share of revenues that is about 2.5% higher than a state without reform. The regression with year effects only indicates that a state with court-ordered reform has a state share of revenues that is about 6.4% higher. In either case, these results indicate that court-ordered reform does increase the state share of education revenue, but not to the dramatic extent that is suggested in the literature. In 2002 the average state share of education revenue for

states without court-ordered reform was 48.7%. Compared to this already large percentage of education revenue coming from state governments, the best case of about 6.4% is not such a large increase in revenue share after reform.

The other explanatory variables also influence the share of revenue provided by the state government. When state effects are included, the coefficient of ideology is negative and significant, a result which is somewhat unexpected as it goes against the hypothesis that more-liberal states have less of their education revenue coming from the state government. The coefficient of income is negative and significant when state effects are excluded, as predicted. As expected, the level of teacher unionization is positive and significant when state effects are included. There is no significant effect for those states under federal supervision. The coefficient of the percent of the population ages 5 to 17 is unexpectedly positive and significant when state effects are included. This result may be due to the legislature responding to a higher demand for public education when there is a large school-age population. The coefficient of the percent of the population that is over age 65 is negative and significant when state effects are excluded, as was expected. Thus on the whole, most of these results matched my hypotheses.

Chapter 3 stressed the importance of treating court-ordered reform as an endogenous variable, and that is an important consideration here as well. Table 5.2 shows the two-stage regression on the state share of education revenue which treats *Reform* as an endogenous variable, just as in Chapter 3.

Table 5.2 – Two-Stage Regression on State Share of Education Revenue: Year Effects Only Model

First Stage

Variable	Regression Coefficient
Median Justice Ideology	0.00089 (0.00185)
Partisan Judicial Selection	-0.159 (0.111)
Median Justice Ideology * Partisan Selection	0.0061 ** (0.0022)
Supermajority Requirement	-0.118 (0.079)
Ideology	-0.0031 (0.0024)
Real Per Capita Income (thousands of dollars)	0.0682 ** (0.0121)
Teacher Unionization	-0.481 ** (0.085)
Federal Supervision	-0.304 ** (0.072)
Percent of Population 5 – 17	0.0478 * (0.0208)
Percent of Population Over 65	0.0211 (0.0152)
Constant	-1.86 ** (0.72)
R^2	0.293
N	322

** Significant at the 0.01 level
* Significant at the 0.05 level
† Significant at the 0.10 level

Second Stage

Variable	Regression Coefficient
Court-Ordered Reform	20.1 * (8.0)
Ideology	-0.0018 (0.0657)
Real Per Capita Income (thousands of dollars)	-3.50 ** (0.71)
Teacher Unionization	9.36 † (5.15)
Federal Supervision	3.55 (3.69)
Percent of Population 5 – 17	-1.63 † (0.84)
Percent of Population Over 65	-2.34 ** (0.58)
Constant	176 ** (30)
R^2	0.132
N	322

** Significant at the 0.01 level
* Significant at the 0.05 level
† Significant at the 0.10 level

The results from this two-stage regression are somewhat troubling. They indicate that those states which have had court-ordered education finance reform have a state share of education revenue that is 20% higher than states that have not had court-ordered reform. Intuitively this coefficient seems much too large. As stated above, in 2002 the average state share of education revenue for states without court-ordered reform was 48.7%, and so if one of these states were to be ordered to reform, its state share would increase to about 68.7%, a number which is higher than the actual state share of revenue for any state in 2002 other than New Mexico.

Table 5.3 provides another way to consider the data. For each panel in the data set, it shows the average state share of education revenue for those states that have had reform and those that have not, along with the difference in these values. While looking at simple averages does not account for the other explanatory variables which affect the state share of education revenue, they do give some indication of the overall trends. As Table 5.3 shows, there does not appear to be a large increase in the state share of education revenue once a state has had court-ordered reform. Instead, there seems to be a long-term secular trend of an increase in state share for all states included in the sample.

Table 5.3 – Average State Share of Education Revenue for States with and without Court-Ordered Reform

Year	Non-Reform Average	Reform Average	Difference
1972	40.4 %	N/A	N/A
1977	43.9 %	38.9 %	-5.0 %
1982	46.7 %	49.9 %	3.2 %
1987	47.9 %	54.4 %	6.5 %
1992	44.5 %	55.3 %	10.8 %
1997	49.5 %	47.7 %	-1.8 %
2002	48.7 %	51.2 %	2.5 %

What is driving these unexpected results? That is difficult to answer. One point to recognize is that after court-ordered reform, some states do in fact have quite large increases in the share of education revenue from the state government. Two states stand out in particular. One is California, where it is generally acknowledged that after reform the legislature changed the state's education finance system into one that is highly centralized, so that in 1972 (before reform had been implemented) the state share was about 35% and by 1982 it had reached almost 67%, a dramatic change of more than 30%.

The other state is New Hampshire. For years New Hampshire had a noticeably small share of revenue from the state government. In 1997, before reform, the state share of education revenue was only 7.4%, and in 2002, after reform, it had climbed to 51.8%, another dramatic change of 44.4%. Acknowledging that these were two quite significant changes in the share of revenue coming from the state government, is it possible that these two states are behind the unexpected regression results in Table 5.2? In order to test this hypothesis, Table 5.4 shows the same regression that was presented in Table 5.2, but with California and New Hampshire omitted.

Table 5.4 – Two-Stage Regression on State Share of Education Revenue, California and New Hampshire Omitted: Year Effects Only Model

First Stage

Variable	Regression Coefficient
Median Justice Ideology	0.0011 (0.0018)
Partisan Judicial Selection	-0.211 † (0.122)
Median Justice Ideology * Partisan Selection	0.0059 * (0.0024)
Supermajority Requirement	-0.116 (0.077)
Ideology	-0.0023 (0.0024)
Deflated Per Capita Income (thousands of dollars)	0.0662 ** (0.0120)
Teacher Unionization	-0.557 ** (0.085)
Federal Supervision	-0.294 ** (0.071)
Percent of Population 5 – 17	0.0484 * (0.0205)
Percent of Population Over 65	0.0277 † (0.0150)
Constant	-1.91 ** (0.70)
R^2	0.280
N	308

** Significant at the 0.01 level
* Significant at the 0.05 level
† Significant at the 0.10 level

Second Stage

Variable	Regression Coefficient
Reform	13.3 (9.5)
Ideology	-0.063 (0.058)
Deflated Per Capita Income (thousands of dollars)	-2.90 ** 0.72
Teacher Unionization	6.18 (5.88)
Federal Supervision	0.25 (3.77)
Percent of Population 5 – 17	-1.55 † (0.81)
Percent of Population Over 65	-2.23 ** (0.56)
Constant	167 ** (29)
R^2	0.230
N	308

** Significant at the 0.01 level
* Significant at the 0.05 level
† Significant at the 0.10 level

In the second stage of the regression reported in Table 5.4, the coefficient of *Reform* is much smaller than the result from Table 5.2 (13.3% versus 20.1%), and it is now insignificant. The other explanatory variables which were significant in Table 5.2 have also dropped some in size and in the strength of their significance, but there is no change in sign. The coefficient of the percent of teachers under a collective bargaining agreement is no longer significant, but it is still positive. All of the other variables retain their significance. Therefore while acknowledging that California and New Hampshire certainly did have large increases in the state share of education revenue after court-

ordered reform, it is also possible to say that this is most likely the exception rather than the norm. According to the regressions in Tables 5.2 and 5.4, any significant increase in the share of education revenue from the state after court-ordered reform is most typically on the order of about 10%, with some states having much larger changes.

The Flypaper Effect

To fully understand the impact of greater state share in response to court-ordered equalization, I next correlate the results of the state share equations with those of the per-pupil expenditures equations. In 2002 the average state share of education revenues in those states that had not had court-ordered reform was 48.7% and average expenditures were $6307. Table 5.5 shows the shares and levels of funding from the state government as well as the combined figures for the local and federal governments. It also shows how these figures change under the different results found in the various regression models used to determine the impact of *Reform* in this chapter, as well as Chapter 3.

Table 5.5 – How Reform Impacts Per-Pupil Expenditures: Average State in 2002

	Before Reform	
	Share	**Amount**
State	48.7%	$3072
Local & Federal	51.3%	$3235
Total	100%	$6307

	After Reform, OLS Estimates with State and Year Effects 2.5% State Share Increase, $221 Expenditure Increase		
	Share	**Amount**	**Change**
State	51.2%	$3342	$270
Local & Federal	48.8%	$3186	-$49
Total	100%	$6528	+$221
			$1 from the state leads to $0.82 increase in expenditures

	After Reform, OLS Estimates with Year Effects 6.4% State Share Increase, $113 Expenditure Increase		
	Share	**Amount**	**Change**
State	55.1%	$3537	+$465
Local & Federal	44.9%	$2883	-$352
Total	100%	$6420	+$113
			$1 from the state leads to $0.24 increase in expenditures

	After Reform, Instrumental Variable Estimates 13.3% State Share Increase, $80 Expenditure Increase		
	Share	**Amount**	**Change**
State	62%	$3960	$888
Local & Federal	38%	$2427	-$808
Total	100%	$6387	+$80
			$1 from the state leads to $0.09 increase in expenditures

What this table illustrates is that if total expenditures increase by $221 per-pupil, and state share increases by 2.5%, then the amount of funding from the state increases by $270, while the combined local and federal amount of funding decreases by $49. On the whole, though, education spending is increased by about 82cents for each dollar added by the state government. Alternatively, if the state share increases by 6.4%, with an increase in total expenditures of $113, then education spending increases by about 24 cents for each dollar added by the state government. The final example is based upon a 13.3% increase in state share and a total increase in expenditures of $80, indicating that education spending increases about 9 cents for each dollar added by the state government.

While these estimates certainly differ, what is apparently happening in the states with reform is that local levels of revenue are decreasing in response to the increase in revenue from the state, as economic theory would predict, but not by an amount that is equal to the increase in revenue from the state. This phenomenon is known in the public finance literature as the "flypaper effect" (Hines and Thaler, 1995). When a state or local jurisdiction receives a lump-sum grant from higher level of government, economic theory says that the grant ought to be treated as an increase in income, and so public spending would be expected increase by anywhere from about 5 to 10 cents per dollar. What is this data is indicating, however, is that spending probably increases by a much larger percentage, anywhere up to almost 82 cents. Thus the money "sticks where it hits," as Table 5.5 demonstrates.

Summary

Chapter 4 showed that when public education began in the United States, it was universally considered to be the responsibility of local governments to support schools, perhaps with some small aid from state governments. As this chapter has demonstrated, it was the Great Depression that served as the catalyst for state governments to bear a much larger burden of education costs. From 1930 to 1945 alone, the state share of education revenues doubled from about 17 percent to 34 percent. But from 1945 to 2003, the state share of education increased from 34 percent to about 49 percent, a change of only 15 percent. Thus since World War II there has been an increasing role for states in supporting public education, but it has been a gradual change. Looking at the time of education finance reform from 1970 to the present also does not reveal a significant change like the one seen during the Great Depression. Instead we see the same gradual increase in the state share of education revenues that has been taking place since 1945. Regression analysis shows that the increase in state share due to court-ordered reform has in fact been small – somewhere between 2.5% to 13.3% when states are already providing over 48% of the funds for public education. These do represent increases in the state role, although almost certainly they are not as large as reformers would have hoped. Using the effects estimated through the above regression analysis shows that these gains represent a return of up to 82 cents on the dollar for the additional money being provided by the state.

With such heavy involvement by state governments before education reforms even began to take place, it could hardly be expected that with reform they would be able to allocate much additional funding to the public schools. In fact, when states began to

increase their share of education revenues during the Great Depression, it was to alleviate the difficulty of paying local property taxes. Thus state governments had already assumed the role of trying to ease the burden of costly local taxes and would be hard-pressed to suddenly take on more of this responsibility. What they are able to do, though, is to reallocate their share of education finance in order to make expenditures within a state more equitable. State governments have continued to gradually increase their share of the public education burden, but at the steady rate that has been seen since World War II rather than through sudden changes.

In sum, the findings to this point have shown that after court-ordered reform, the level of inequality within a state decreases, there is perhaps some increase in per-pupil expenditures, and the state share of education revenue does increase. Given the effects estimated through regression analysis, the increase in education revenue from state governments is then offset to some degree by a decrease in local and federal revenues.[7] However, the return to the increase from the state governments is somewhere on the order of 9 to 82 cents on the dollar, which still leads to an overall increase in education expenditures. The next chapter provides further insight into how these changes take place by providing a case study of court-ordered reform in Texas.

[7] Most likely this is almost entirely due to a decrease in local revenues because the federal government seems to have been unaffected by these reforms occurring in state education finance systems.

Chapter 6

Texas and Taxes

"School finance in Texas is beginning to resemble a 19th century Russian novel. The story line runs across generations, the plot is complex, the prose is tedious, and everybody dies in the end." (Hobby and Yudof 1991)

The state of Texas has a long and complicated history of school finance reform. It involves many years of lawsuits, court rulings, and attempts by the legislature to implement changes to the system of education finance. This chapter provides a case study of what has happened in Texas education finance reform in order to provide further evidence as to why large policy changes may not be forthcoming after court-ordered reform. Texas has a large public education system with over 1,000 school districts, and it currently serves over four million students. Any changes to this vast system are complex and full of politics. In what follows I begin with a history of how events have unfolded in the state and then turn to look at more recent developments.

The History of Education Finance Reform in Texas

The Texas story begins with the creation of the state's public education system.[8] The 1875 state constitution says that, "A general diffusion of knowledge being essential to the preservation of the liberties and rights of the people, it shall be the duty of the Legislature of the State to establish and make suitable provision for the support and maintenance of an efficient system of public free schools" (Texas Constitution, Article

[8] Unless otherwise noted, the information in this section is taken from Bosworth (2001) and Imazeki and Reschovsky (2004).

VII, § 1). This clause was implemented by the Legislature in 1909 when it established school districts which were supported by local property taxes. Over time additional funding came from the state government in the form of specific aid for textbooks or transportation.

As in most other states, the Great Depression and World War II left local districts in great need of revenue. And again as in other states, it was at this point that the state government stepped in to accept a greater responsibility for supporting public education. The Texas legislature responded by adopting a foundation plan to guarantee a certain level of per-pupil spending for each school district. As discussed by Coons et al. (1970), the difficulty with a foundation plan is that it does not directly lead to more equality within an education finance system, as each district receives a specific amount of funding per student, regardless of need. Another problem that plagued the Texas system was that the foundation plan which the legislature adopted did not keep up with the changes in education costs or the increasing enrollments that occur over time. Thus the inequalities inherent in a system of local education finance were far from alleviated by the state government's foundation plan.

These circumstances set the stage for a lawsuit against the Texas system of public education. In 1968 Demetrio Rodriguez filed a lawsuit against his children's school district, San Antonio Independent School District. The suit claimed that the school finance system was a violation of the Equal Protection Clause of the Fourteenth Amendment, as its dependence upon local property taxes meant that it discriminated on the basis of the wealth of the school district. After working its way through the federal court system, in 1973 the United States Supreme Court, in a 5-4 decision, ruled that

education is not a fundamental right guaranteed by the U.S. Constitution, and therefore inequalities in the system are not a violation of the equal protection clause. The Court also found that local control of education is a compelling reason for the state to establish an education finance system like the one in Texas. Thus after the *Rodriguez* case, plaintiffs who wished to see change in their state's education finance system were forced to appeal to state, and not federal, courts.

The *Rodriguez* case was enough to give the Texas Legislature a scare. In the years immediately following the ruling, the legislature increased the minimum foundation level and also offered additional aid to the poorest school districts. But once again these changes did not significantly equalize spending across Texas school districts. Texas also experienced economic difficulties in the early 1980s because of a large drop in the price of oil. This recession reduced state revenues, which in turn meant cutbacks in state education spending.

It was at this point that poor school districts decided to take action. In 1984, the Mexican American Legal Defense and Education Fund (MALDEF) filed suit against the state Commission of Education in Texas district court. The plaintiffs claimed that the education system violated the equal protection clause of the Texas constitution, as the disparities in spending were based upon wealth and race. They also claimed that the system violated the education clause's requirement for an "efficient" system of schools.

The *Edgewood Independent School District et al. v. Kirby* case was briefly put on hold as the legislature responded to the recommendations of a special commission on education reform. But the bill enacted by the legislature once again did not change the basic foundation plan, but simply added some more money to the system. The plaintiffs

went ahead with the lawsuit. After working its way through lower courts, in 1989 the Texas Supreme Court ruled, in a 9-0 decision, that the state's education finance system was unconstitutional. Their findings were based upon the fact that poor school districts could tax themselves at a very high rate and still not obtain the amount of revenue that wealthy school districts could raise from much lower tax rates, which was a violation of the "efficiency" requirement. In fact, at the time of the *Edgewood* decision, there was a 700:1 ratio between the per-pupil property wealth of the state's wealthiest school district and the poorest school district. The court thus ordered the Legislature to find a remedy for the system and improve the relationship between a district's level of tax effort and the financial resources which were available to it.

Special sessions of the Legislature were called in 1990 to make the needed education finance reforms. Because the court had not been specific about what sort of a plan would be acceptable, the legislators were uncertain as to just how far they should go in the changes they were making to the system. It took many months of wrangling between the Legislature, the governor, and even the district court to achieve some sort of a solution. Ultimately they decided to cause as little disturbance to the system as possible, and the law they passed increased support for education through increases in the sales tax and sin taxes. The poor districts were still unhappy with this remedy because they did not believe the state would stick to this promise of more money, and so the case was brought back to the courts.

In the 1991 *Edgewood II* case, in another 9-0 decision, the Texas Supreme Court ruled that the system itself needed to be reformed, and that funding increases were not a true fix of the fundamental problems. The Legislature had to go back to the drawing

board, and this time they took a different approach. The new plan created by the Legislature took the state's more than 1,000 school districts and consolidated them into almost 200 superdistricts, known as county education districts (or CEDs), for tax purposes only. Taxes would be levied and distributed on an equal per-pupil basis within each of these districts. It was during this period that the term "Robin Hood" began to be used to describe the new Texas education finance plan to describe how money was being redistributed from wealthy school districts to the poorer districts.

This time it was the wealthy school districts who took the state to court because the state was taking their money. In 1992 the State Supreme Court ruled in *Edgewood III* that the latest school finance system was also unconstitutional. In this case the fault lay in the fact that the system was, in effect, a statewide property tax which, is not allowed under the Texas constitution. Another problem was that there had been no voter approval of these local school property taxes, which is required by the state constitution. The Legislature would have to try yet again.

At first the Legislature tried to put the CED plan to the voters. If the people of Texas approved the plan through a ballot proposition, the Court could no longer object. Unfortunately for the Legislature, the people of Texas turned down the plan by a 63-37% vote. So the Legislature once again created a new plan, and this time their hope was that fiscal neutrality would be achieved; that is, that revenue would not be correlated with district wealth. There were three main parts to the new plan. Tier I was a foundation formula that guaranteed each school district a certain amount of money per-pupil as long as they levied property taxes at a specified minimum rate. Tier II ensured school districts a certain amount of revenue for any higher property taxes that they levied upon

themselves. The most controversial piece was the third part, which was the recapture provision that capped school district property wealth. Any school district that had per-pupil property wealth above $280,000 had to select from one of five options the state provided to redistribute that wealth to other school districts. When this three-part system went before the Texas Supreme Court in 1995, they ruled in *Edgewood IV* that it was constitutional. The court warned, however, that it was concerned about the lack of equality in funding when it came to capital facilities. The legislature responded to this note of caution by increasing funding for facilities and debt financing.

How far did these changes go toward improving equality in the Texas education finance system? Table 6.1 shows the Gini coefficient for Texas in each of the panels of data from 1972 to 2002.

Table 6.1 – Texas Gini Coefficient

Year	**Average Gini Coefficient**
1972	0.0786
1977	0.0928
1982	0.1003
1987	0.0784
1992	0.0658
1997	0.0491
2002	0.0534

Inequality increased in Texas through the 1970s and into the early 1980s, reaching a high in 1982. The situation improved some by 1987, but it is after the initial *Edgewood* ruling in 1989 that a dramatic drop in inequality can be seen. By the late 1990s and into 2002,

the Gini coefficient had dropped to a level of about 0.05. In fact, in 1972 Texas was the 25th most equitable state of the 46 states in my sample, and by 2002, had climbed to the 13th most equitable state. Thus real improvements were made within the system during this time. But what about all of the wrangling among the branches of government that it took to get to this place? Was everyone finally happy with the education finance system that had been established? And in particular, were the wealthy districts happy with this "Robin Hood plan"? As the next section explains, the answer is that Texas still had not reached an equilibrium in its education finance system, and so the search for a politically acceptable education finance system continued.

The Recent Battles over Education Finance in Texas

As indicated above, residents of wealthy school districts in Texas were unhappy with the system of education finance that had eventually been determined to be constitutional by the state Supreme Court. What particularly rankled them was the recapture provision.

This continuing controversy led to one of the most unusual events in education finance reform. In 2001, wealthy school districts came together to file a new case against the state, *West Orange-Cove v. Alanis*, and once again the claim was that the education finance system was unconstitutional. Their argument was based upon the property tax cap in the finance system. In order to participate in Tier I of the system, or the foundation plan, a school district must levy property taxes of $0.86 per $100 of property wealth. Each penny of taxes that a school district levied above $0.86 falls under Tier II, and the state guarantees a certain amount of revenue for that additional effort. The

problem is that the state prohibits any taxes above $1.50 per $100 of property value. The plaintiffs argued that this amounts to a state property tax, which is prohibited under the Texas constitution. So many school districts in Texas had reached this cap that they claimed any "meaningful discretion" in deciding their tax rates had been lost. The state Supreme Court remanded the case for trial, and in 2004, a trial court ruled that the system was still not adequately funded and that the $1.50 cap had become a state property tax (ACCESS 2005).

Thus the Legislature once again faced the prospect of implementing education finance reforms. It proved to be quite a difficult task this time around. At first the trial court set a deadline of October 1, 2005, for the Legislature to make the necessary changes in policy. Thus when the Texas Legislature convened for its regular session in January 2005, they believed that they were under pressure to reform the system. However, the Legislature also knew that the case was under appeal to the Texas Supreme Court, which meant there was the possibility that the ruling would be overturned (Elliott 2005a).

But the politics for this legislative session were complicated by another set of odd circumstances. Many legislators did want education finance reform, and Governor Rick Perry supported this idea. The Robin Hood system of recapturing revenue from the wealthiest districts was unpopular among Republicans representing suburban districts, and many wanted to replace local revenue with state revenue in order to reform this system. The catch was that many leaders were also committed to lowering property taxes (Elliott 2005b). These opposing goals meant that the state would have to find revenue through alternative forms of taxation, but in a state that prohibits an income tax or statewide property tax, that proves to be a challenge.

At first the Senate proposed a statewide property tax plan that would require approval by Texas voters, but this plan was set aside in order to be able to implement other state taxes so that property tax cuts could be achieved (Robison 2005a). Eventually legislators adjourned the regular session without having passed any changes to the school finance or tax systems. A major problem was that the Senate and House were unable to agree upon how to split the state tax burden between businesses and consumers (through an increase in the sales tax), and this debate resulted in unresolved gridlock (Robison and Ratcliffe 2005). In the end, analysts believed that House Speaker Tom Craddick wanted to wait to hear how the Texas Supreme Court would rule before deciding upon a plan, and without the agreement of the Speaker of the House, the Legislature was stuck and unable to pass any reforms (Robison 2005b).

On June 21, the Legislature reconvened in a special session called by the governor. Once again most legislators wanted to lower property taxes, and the question was what combination of other state taxes should be used to replace the lost revenue (Associated Press 2005). As the session started, the differences of opinion between Governor Rick Perry, Lieutenant Governor David Dewhurst, and House Speaker Tom Craddick were once again evident. They disagreed over business and sales taxes, the two primary ways for the state to raise revenue (Elliott and Robison 2005a). Adding to the mix were legislators who felt like they were being forced to stay in Austin for a hopeless cause, or at least a cause that was primarily about the governor starting his reelection campaign on a platform of lower property taxes (Ratcliffe 2005a). Once again the debate between the two houses turned into the House wanting higher consumer taxes and the Senate opposing such measures. The Senate hoped to increase business taxes by closing

loopholes in the already existent franchise tax and also broadening the business tax base by taxing previously excluded partnerships (Elliott and Ratcliffe 2005a). Democrats provided additional opposition as they wanted increases in school funding and not just revenue to replace cuts in property taxes. Not to be left out, the oil and gas industry also opposed closing loopholes in the business tax. In a state that is so dependent upon these industries, the oil and gas lobby have a great deal of influence, and many legislators listened (Robison and Elliott 2005a). As all of these negotiations were taking place in the Legislature, the Texas Supreme Court was also listening to an appeal of the district court's decision in the *West Orange Cove* case, and everyone anticipated it would be weeks before there would be a ruling (Ratcliffe and Elliott 2005).

As the first special session of the summer of 2005 came to a close, it became clear that no compromise would be reached. The House and the Senate both supported reducing the unpopular recapture provision, but they still disagreed over how to raise that money through additional state taxes while reducing property taxes (Elliott and Robison 2005b). Once the first session was over, Governor Perry immediately called a second special session to continue to try to negotiate reforms to the education finance system (Elliott and Robison 2005c). Their efforts quickly went downhill as the House overwhelmingly voted against its own tax and education funding bills. Because any tax bill must originate in the House under Texas law, unless the House was willing to act on another bill, no progress could be made during the session (Robison and Mack 2005). Eventually House Speaker Craddick called for the Legislature to just end the special session and wait to hear the ruling on the education finance system from the Texas Supreme Court (Robison and Elliott 2005b). For a short time it looked like two similar

tax and education bills might be revived in the House (Elliott 2005c), but ultimately the effort was to no avail as yet another session ended with no reform (Ratcliffe 2005b). For the time being, Governor Perry declined to call another special session (Elliott and Ratcliffe 2005b).

Heading into the fall of 2005, the Legislature and Governor were waiting to hear from the Texas Supreme Court. During this apparent intermission, hurricanes Katrina and Rita struck the Gulf Coast, causing serious damage to the Texas economy. In addition, many Texas schools enrolled evacuees from Louisiana, which meant a large unexpected cost for those school districts. While the federal government promised to reimburse Texas for these students, the added strain on the education finance system once again highlighted the problems that still had not been fixed by the Legislature (Elliott 2005d). At this time Governor Perry also appointed a commission to make recommendations on a new tax plan for the state, with the hope that it would have an impact on how the Legislature would reform the education finance system (Robison 2005d).

Then, on Tuesday, November 22, the Texas Supreme Court finally issued its ruling. The Court disagreed with the trial court's ruling in that it found that the state was meeting its obligation of providing an adequate education. It did warn, however, that in the future the state may fail to satisfy this requirement, as various measures of student achievement in the state were revealing increasing deficiencies. But the Court did agree with the trial court that the tax system had in essence become a statewide property tax. 67% of the districts in the state were at or close to the cap of $1.50 per $100 in valuation, meaning that there was no real local discretion. Thus the Legislature did not have to

increase funding for education, but it did have to reform the funding system, and the court set a deadline of June 1, 2006 (Elliott and Robison 2005d).

Because the legislators were facing party primaries in March of 2006, Governor Perry decided to wait until after those elections to call the next special session (Elliott and Ratcliffe 2005c). The rhetoric on education finance reform still continued through the campaigns (Associated Press 2006), and Governor Perry called the special session to begin on April 17, with the June 1 deadline looming (Ratcliffe and Robison 2006). Shortly before the session started, Governor Perry's special tax commission recommended that the Legislature cut property taxes and replace them with a new broad-based business tax and an increased tax on cigarettes. The response from politicians was mixed, indicating that this session would see a replay of many of the same debates from previous sessions (Robison 2006).

The special session began on April 17, and from the beginning the differences of opinion were clear. One of the first pieces of legislation considered by the House was a plan that was very different from the one supported by Governor Perry. This alternate plan would make use of the state's budget surplus to cut property taxes, but the concern was that this plan would not be sustainable in the long-run (Elliott and Robison 2006). Many different plans were considered by the House, and these included a cigarette tax increase, as well as smaller items such as a requirement that used car buyers pay sales tax based upon the car's blue book value. Some also raised the question of whether a proposed tax on partnerships would fall under the forbidden category of an income tax.

On May 2, the Senate approved a House bill that changed the state's business tax, marking a watershed agreement. The Senate also agreed to bills that replaced property

taxes with the revenue from the new business tax, as well as the tax that requires used cars be taxed at their blue book value (Elliott 2006a, and Elliott and Ratcliffe 2006). At long last, the two houses of the Texas Legislature agreed upon five bills to restructure the system:

- House Bill 1 - The state budget surplus would be used to lower property taxes and support a teacher pay raise.
- House Bill 2 - Most of the new revenue from the revamped business tax would go toward lowering property taxes.
- House Bill 3 – The new business tax was enacted.
- House Bill 4 – The sales tax on used cars must be paid on the blue book value.
- House Bill 5 – The cigarette tax was increased (Elliott 2006b).

It appeared that Texas had an answer to the funding crisis, but many in the state were left with questions. Was it really over? Businesses were unhappy with their new taxes, and property owners were concerned that their taxes would soon increase. Could the politicians ignore these complaints from their constituents? And then there were the courts to consider. The Texas Supreme Court had indicated that the state was dangerously close to an unconstitutional system in that the education that many children were receiving was almost inadequate. And yet, the Legislature had not attempted to significantly increase spending on education, but rather had been concerned about finding new state taxes to simply replace property taxes. In order to better understand what had happened in Texas, I decided to speak with some of the people who had been involved in this process.

Interviews with Texas Legislators and Staff Members

I contacted Senate committee staff members[9], House Representatives, and a Senator who had been involved in the recent education finance battles in Texas and requested interviews with them that would take place during July 2006. They generally requested that their names not be used, and so their names will not be included here. I had many questions for this group, but mainly I wanted to understand what was the root of the difficulty that Texas has had in deciding how to reform its education finance system? Why would this battle not go away? Is there something in the structure of the Legislature that made the problem more difficult? Were constituents really so concerned about education finance or taxes that their preferences were creating problems?

The first Senate committee staff member with whom I spoke pointed to the great diversity of school districts in Texas as a major problem. I had wondered why the Republicans, who are a majority in both houses of the Texas Legislature and hold the governor's seat, could not push through a bill on party support alone. What this staff member said is that education finance reform is an issue that does not fall along party lines. Rather, education finance in Texas tends to be an issue that breaks down along the lines of rural Republicans and urban Democrats versus suburban Republicans. I also questioned her about what alternatives had been considered. For example, does anyone ever dare to suggest that the idea of an income tax be placed on the table? The answer was that an income tax has never been seriously considered. The staff member noted that the taxing options for the Legislature were quite limited, and that this lack of options did

[9] Because the Texas Senate is controlled by Republicans, these committee staff members work for Republican Senators.

not help in solving the problem. She also noted that discussing the consolidation of school districts is an unpopular idea that is rarely discussed. As to why reform finally did happen, she noted that the June 1 deadline was a strong incentive to make changes, and that in previous sessions the Legislature had been hesitant to act as it wanted to see how the Texas Supreme Court would rule.

Another Senate committee staff member echoed the sentiment that a court mandate was necessary for reform to happen. He also mentioned the diversity of the over 1,000 school districts in Texas and how difficult it was to negotiate a plan that would be appropriate for all of them, especially as the issue did not fall along Republican/Democratic lines. One interesting point he made was that the Republicans were relatively new to legislative leadership in Texas, as the state had been controlled by Democrats for such a long time, and so they were still learning the art of leadership. This staff member discussed how a great deal of the debate amounted to semantics. If the government is collecting a tax from you, how much does the average person care whether it is the state or local government that is taking their money?

When asked about what options were considered, he told me that they do not spend time on items like an income tax because they wanted to focus on what could actually pass the Legislature. An important note from this interview was that it is essential to understand how spending on education has evolved over time. Education spending has increased without a corresponding increase in student performance because of all the additional demands on public education, such as providing food and healthcare for students, and these services were not traditionally part of the system's mission. As public schools continue to play more of a social service role, the cost of education will

continue to increase. This staff member ended the discussion by explaining one of the paradoxes of education finance. The people of Texas were frustrated with the school system and these battles, but they almost always view their own schools and school districts favorably, which limits how much reform they will support.

I began my interviews with legislators by speaking with a Republican Senator from a suburban district. He started by explaining that the problem under the Robin Hood education finance system had been a decreasing state share of education revenue, and that the recently passed legislation was designed to increase the state share. His hope is that the state share will reach about 65%, at which point he believes equality will no longer be a major issue.

When asked why it has been so difficult to find an answer to education finance in Texas, the Senator had several answers. First he thinks that the education community always wants more money, no matter how much the state gives, and so you will always have the education lobby asking for more. He also discussed the diversity of school districts in Texas and the difficulties in particular with urban districts. In rural areas, the school district is often the largest employer with some of the best jobs (particularly because of good benefits). Thus while consolidation of these small districts might lead to savings on spending, the resulting job loss would be unpopular. A side note which cannot be ignored in Texas is that consolidation would alter football teams, and that such changes are another political minefield. The third concern that the Senator expressed was the rising cost of social services. As demands for these services are increasing at 12 to 18% a year, traditional state spending in areas such as education is likely to be “squeezed out.” He also believes that honest discussions about these difficulties are not taking place

so that solutions for them can be found. Like others, he did not believe that discussion of an income tax was likely to go anywhere.

The Senator concluded by expressing how much is expected of public schools today and how it is difficult to meet all of those demands. Much like the Senate committee staff member, he stated how the schools must feed children, provide healthcare for them, and also support extracurricular activities. The expectations for students continue to rise, and so all of these requirements are costly, and it will take time for the system to adapt to these requirements.

My next interview was with a Republican Representative to the House, also from a suburban district. He began by stating that he believes Texas is a conservative state that generally does not want to spend as much as others on education. The Representative believes that a more centralized source of revenue would solve the problem of voter dissatisfaction with property taxes but that an income tax would not be approved. The Representative supports a sales tax but realizes that Democrats in the state would not be supportive of such a measure. He would particularly like to see education funding follow the child and for education matters to be primarily under local control. As in my other interviews, he stated that education finance is not a partisan issue, but rather a rural/urban versus suburban issue and a poor versus rich issue.

My final interview was with a Democratic Representative from an urban district, and he presented a very different perspective on the issues in Texas education finance reform. From his point of view, the majority of the legislators do not believe that there is an issue of adequacy in the education finance system, and so their only priority was to decrease property taxes. One of the main reasons for all of the wrangling in the multiple

legislative sessions was that House Speaker Craddick had a specific plan that he wanted, and he was reluctant to compromise. Ultimately he believes that the Legislature does not want to do any more than the courts order them to do, and when the Texas Supreme Court is reluctant to spell out specific requirements, you witness many rounds of rulings and partial, half-hearted reform. When asked about the possibility of a state income tax, the word the Representative used to describe the reactions when it had been briefly proposed was "thud."

The Representative had a different take on the situation when I asked him about the division among school districts in Texas. He disagreed that the divide is rural/urban versus suburban. Instead, he said that the leadership is able to keep rural Republicans in line with their agenda by threatening consolidation of their school districts. Beyond economic concerns, he stated that school district consolidation in Texas is controversial because it would mean desegregation and it would affect football. Another key point is that he believes the issue will soon be back as the Legislature did not address adequacy of education in poorer districts.

There were some common themes, as well as some disagreement, in these interviews, and so the next section provides an analysis of the difficulty of education finance reform in Texas.

Analysis

Why has it been so difficult to reform education finance in the state of Texas? Why have there been so many rounds between the Legislature and the courts? The events and interviews described above provide several insights.

The primary problem appears to be that this is a state in which a large majority of citizens are not clamoring for reform. The Court has ordered reform many times, and the most common response of the Legislature has been to make minimal changes and then wait to see how the courts respond. Their initial response to the *Edgewood* decision was to cause as little disturbance as possible. In the summer of 2005 the Governor called special sessions to work on the problem, but rather than find solutions, the Legislature decided to wait and see what the Texas Supreme Court would do next. Once the Court issued its ruling in the fall of 2005, it all but stated that the education finance system in Texas was inadequate, and yet the Legislature chose to ignore the issue of adequacy in its reforms. The Republican Representative I spoke with said that Texas is a conservative state that does not like to spend a great deal on education, and the Democratic Representative also said that the Legislature does not view adequacy as an issue. Given this evidence, one conclusion is that the Legislature does not view reform as necessary or even desirable. Thus even when the court does issue a ruling demanding reform, it is to be expected that the legislators will not make any substantial changes to the education finance system.

Another complicating matter is the Court's reluctance to explicitly state the remedies it expects to be implemented. State courts in the United States have historically been reluctant to intervene in what they view as legislative matters, and when they do intercede, they are also hesitant to outline specific solutions (Lopeman 1999). The same has been true of education finance reform in Texas; the Court rules that the current system is unconstitutional, but it does not state what reforms would be permissible. This leaves the Legislature uncertain as to just what changes must be made, and as stated

above, this results in the Legislature making as few reforms as it deems necessary. At times the Legislature has even asked for clarification without receiving a definite answer from the Court. As Gerber et al. (2000) discuss, when true reform is desired, the more specific the guidelines a legislature is given, the more constrained they are to implement the intended changes. In California, for instance, once the state court specified that per-pupil expenditures had to be within a certain range, the Legislature was forced to make very specific reforms to improve equality. As the Texas Supreme Court continues to say what is unconstitutional without specifying what plans would be allowable, it is likely that these rounds of rulings and reforms will continue indefinitely.

There is another classic public policy problem at work here as well. Everyone supports more spending on education, and yet no one wants to pay more taxes (Sears and Citrin 1982). For example, in an August-September 2005 poll of Texans, 45% of respondents were in favor of a state income tax while 47% were against, and 65% of respondents believed that their property taxes were too high (Robison 2005c). As the former chairman of the Senate Education committee, Bill Ratliff, noted in an interview, in order to increase the state share of education as would be needed to achieve equality, the Legislature must pass a significant tax bill, but so many representatives and senators are opposed to any tax increases that such a reform becomes impossible (*Houston Chronicle* 2005).

In summary, it has been a long road for Texas education finance reform, and this journey is likely to continue. The Texas Supreme Court has warned the Legislature that it must provide an adequate education for the state's students, and it is almost certainly only a matter of time before another lawsuit is filed requesting further changes based on

just such an argument. But Texas is not a state that supports any significant reforms to its education finance system, and unless the courts are more specific in their requirements, it is unlikely that these cycles of ruling and reforms will disappear in the near future.

Chapter 7

Conclusion

Summary

Since the landmark *Serrano v. Priest* decision in California in 1971, education finance reform has been on the political agenda. Lawsuits continue to be filed and appealed, legislatures continue to debate various methods of implementing reform, and scholars continue to seek to understand the implications of these changes to education finance systems.

Chapter 2 discussed the previous work on the effects of court-ordered education finance reform. In this review of the literature it was apparent that most scholars believe that reform results in an improvement in the level of spending equality within a state, but there was a notable lack of agreement on the impact of reform on the level of education expenditures. Of particular interest were the findings by Murray et al. (1998) and Hoxby (2001) which highlight the different theories in the literature. Murray et al. claim the court-ordered reform brings attention to the education finance system and that legislatures respond by increasing state funding for public schools. This is the theory that equalization reform results in leveling-up, or an increase in the overall level of expenditures. Hoxby, on the other hand, asserts that reform leads to centralization of the education finance system, and that the incentives of increased centralization tend to promote a decrease in education expenditures, or leveling-down. Because of the wide differences in the findings in the literature on education finance reform, it is necessary to employ careful analysis in order to determine the true impact of court-ordered reform.

Chapter 3 begins this analysis with a look at what the data reveal about trends in

education finance. Graphs of the data appear to show that court-ordered reform does decrease the level of inequality within a state, but no similar pattern is apparent with per-pupil expenditures. I then employed linear regression analysis to replicate and extend the work of Murray et al. I found that their results that reform decreases the level of inequality were robust to model specification, as well as the addition of two panels of data, although the effect decreased over time. When it came to per-pupil expenditures, I found that the results were quite sensitive to the exclusion of state effects, as well as the addition of two panels of data, with the effect of reform becoming smaller in both cases. This result made me question their findings on the impact of court-ordered reform on education expenditures.

Another concern about previous work on education finance reform is that court orders have been treated as exogenous events. However, I argue that these rulings are themselves a result of the education finance and political systems, and should therefore be considered endogenous events. State courts are not immune to politics, and they also consider the current conditions of the education finance system in making their decisions. Another important consideration is that even when ordered to make reforms, state legislatures have a great deal of discretion in how they choose to implement these changes. After considering several potential instrumental variables to predict court-ordered reform, I determined that the appropriate instrumental variables were a measure of the ideology of the state court justices, the method of judicial selection (partisan versus nonpartisan), the interaction of these two variables, and a supermajority requirement for finding a law unconstitutional. Once two-stage regression is employed using these instrumental variables, the effect of reform is still found to significantly decrease the

level of inequality within a state, but its impact on per-pupil expenditures is no longer significant.

In order to understand why large changes in the level of education expenditures should not have followed from court-ordered reform, in Chapter 4 I consider the history of education finance in the United States. Much of the literature on education finance suggests that state governments have long had a minimal role in supporting public schools and that it has been the recent court rulings which have served as the catalyst for promoting a larger role for state governments. A look at history tells a different story. Since the time of the Common School Movement of about 1820 to 1860, the state governments have played a role in education finance. Initially their primary role was providing some financial aid in order to encourage communities to build public schools, but most education revenue did come from local sources. At the time of the High School Movement at the beginning of the 20th Century, state governments continued in this role by giving money to communities as an incentive to build high schools. Thus state governments have long had a place in public education, even if it was not always the large role that it is today.

Chapter 5 considered the state government share of education revenue since 1890. The data clearly show a large increase in the state share of education revenue during the Great Depression when local governments were having great difficulty raising revenue. By 1945 the state share of education revenue in the United States had reached 34%, and that number has only continued to climb. Once the period of court-ordered education finance reform began in the 1970s, the steady increase in the state share persisted, but without a sudden increase or jump, as would be indicated by those who promote the idea

that state governments greatly increase their role in education finance after reform.

Linear regression analysis indicated that court-ordered reform increases the state share of education revenue by only about 2.5 to 6.4%. Once reform is treated as an endogenous variable in a two-stage regression, this number jumps to 20%, but this finding is probably the result of a couple of outlier states that are driving the results. It is most likely that court-ordered reform increases the state share by an order of about 10% in the majority of states, with a few states in particular having much larger increases as their education finance systems become quite centralized. These results also lend themselves to an analysis of the flypaper effect in education finance. That is, when the state government gives money for education to local governments, the funding from the local government decreases by an amount that is less than the amount of the transfer. This effect leads to an overall increase in expenditures that is smaller than the amount of additional funding from the state.

Chapter 6 provided a case study of education finance reform in Texas. This is a state that has had many court rulings, as well as several attempts by the Legislature to find a constitutional education finance system. A review of the history of events in Texas, as well as interviews with several legislators and staff members who have been involved in these debates, indicate that in general Texas is a state that does not want reform. The conservative legislature and citizens have made minimal attempts at reform when pressed by the Court. A complicating factor is that the Court is unwilling to spell out exactly what would be required in order to acheive a constitutional system. Until either of these factors change, it is likely that Texas will continue to face lawsuits and half-hearted attempts at reform.

What these chapters have shown is that court-ordered education finance reform does have an impact on a state's education finance system. The finding that the level of inequality in education spending decreases after reform is robust to model specification, as well as the addition of panels of data. What has not been supported is that reform increases the level of expenditures. Instead, regression analysis shows that per-pupil expenditures are not significantly affected by court-ordered reform. In addition, the state share of education revenue does increase after reform, but in most states it is an increase on the order of only about 10%. Because there is not a significant increase in expenditures, the amount of revenue coming from the local government must be decreasing in response to additional funding from the state government — although, as would be predicted by the flypaper effect, this exchange is not dollar for dollar.

I argue that large increases in state funding were not to be expected. As Okun (1975) points out, in many areas of public policy, societies have a choice between policies that are redistributive and those that are efficient. When a state moves to reform education finance in order to improve equality, it is therefore to be expected that new inefficiencies will be introduced into the system, thereby lowering education expenditures. Also, as Rae et al. (1981) contend, the definition of equality is itself not an easy question to answer, and so in the process of reform, there are certain to be some in the political realm who are unhappy with the eventual outcome. Even the definition of equality that is selected can impact the manner in which a legislature decides to implement reform, and this method will in turn have an impact on the level of education expenditures within the state. Therefore the correlation between equality and expenditures will not always be straightforward.

A second reason to doubt the efficacy of court-ordered reform for increasing education expenditures is that legislatures are known to be successful in finding their way around spending limits (Kiewiet and Szakaly 1996), restrictions imposed by ballot initiatives (Gerber et al. 2000), and even court decisions (Rosenberg 1991). State governments had long been involved in education finance, and there are many other demands on their limited resources; when ordered to reform it is to be anticipated that they will be unable to greatly increase their support for education spending and that in many cases they will find ways to change the education finance system with as little disruption as possible. Furthermore, as Rosenberg explains, court cases such as these education finance reform cases, are generally a way of reinforcing a public policy movement that is already under way rather than a catalyst to begin such change. As shown in Chapter 5, the state share of education revenue has been steadily increasing since the Great Depression. While these court cases have supported those continuing increases, it would not be correct to say that they began this trend in education finance. Thus this study supports the theory that education finance court cases have reinforced changes in these systems, but they have not led to the dramatic increases in spending for which many reformers had hoped.

Future Research

This analysis has answered several questions about the impact of court-ordered education finance reform, but there are also many avenues for future research. Even though it has been shown to be the case that these reforms improve equality without impacting the level of education expenditures, reformers in many states continue to file

lawsuits and work for education finance reform. Assuming these actors are rational, they must have the expectation that they will receive some benefit from these costly actions. Is it the case that the poor school districts which bring reform lawsuits are simply hoping for more money for their districts and not necessarily for the entire system? That is, are the poor districts receiving enough benefits from the redistribution of education funding that it is worthwhile for them to continue to pursue these lawsuits? Studying the changes in the distribution of education funding after reform would be one way to better understand the implications of reform and why reformers continue to pursue these court cases.

Of course as these reforms continue to take place, additional data will add to the understanding of changes in education finance. Once the 2007 Census of Governments is released by the United States Census Bureau, a new panel of data can be included in the analysis, and this is sure to shed additional light on the process of education finance reform. Additional lawsuits are currently pending in several states, including Colorado, Nebraska, and South Dakota (Starting at 3 2007a); studying the outcomes of any reforms in these states will certainly add to the understanding of education finance reform. Also of particular interest at this point is not just the initial impact of reform, but the long-term impact upon a state's education finance system. With this additional panel some states will have had reform for over 30 years, while others will have only recently implemented reform. Does the impact of court-ordered reform change over time? Graphs of the data in Chapter 3 indicate that perhaps the improvement in equality dissipates over time. If this is the case, then such trends will be more apparent with additional data.

The detailed case study of education finance reform in Texas proved to be

particularly instructive in this project, and so it is my hope that I will be able to conduct similar case studies of other states. Texas is an instance of a state that does not wish to pursue reform, and yet the courts continue to find the education finance system unconstitutional. In most cases the Legislature responds by making minor changes to the system rather than implementing significant reforms. Can these same patterns be found in other states or do they face a different set of circumstances? I found it quite interesting that under the Robin Hood plan in Texas, only about 10 percent of school districts fall under the recapture provision which requires that some of their property tax revenue be redistributed, and yet this small number group of voters is vocal enough that they are able to cause a great deal of turmoil in the Legislature. Why are the less wealthy in the state not able to force a redistribution from the wealthy to themselves, since they form a much larger bloc of voters? Does this same puzzle appear in other states? A better understanding of how legislatures respond to court-ordered reform will certainly help to explain why the data analysis shows a change in equality without a change in the level of education expenditures.

In any study that involves education, it is natural to ask how these reforms affect student achievement. The goal of these lawsuits is to receive additional funding in order to improve the quality of education; is this aim achieved? While it is difficult to measure student achievement, and even though many experts agree that additional money is not always the cure for schools with low performances, it does seem reasonable that any extra revenue for schools has the potential to raise student performance. A study of test scores before and after court-ordered reform, particularly in those schools districts that benefited the most from changes in the education finance system, might give some idea

of whether student achievement is affected by these lawsuits.

Certainly the hopes of those who bring these court cases is that they will bring benefits to the students of their school district and state. The changes resulting from the court orders are complex, and so understanding the full implications of the resulting reforms is a process which requires careful analysis. As the states continue to face these challenges and work to implement further changes, it will continue to be important to study the full implications of court-ordered education finance reform.

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Appendix A
Data Sources

The complete citation for all of the sources listed below can be found in the Bibliography.

The inequality measures for the panels from 1972 to 1997 were graciously provided by the authors of Murray et al. (1998). For the 2002 panel, the inequality measures were calculated using data from the *2002 Census of Governments* by the U.S. Census Bureau which can be found at their website on "State and Local Government Finances" (2004). In calculating the 2002 inequality measures, the techniques for editing and weighting data described by Murray et al. were followed, and the computation was done in Stata using a Stata Technical Bulletin for the analysis of income distributions written by Jenkins (2004).

Information on when education finance reform cases occurred in each state came primarily from the Murray et al. paper, as well as from the Advocacy Center for Children's Educational Success with Standards (ACCESS) website (2005) which provides excellent information on the history of education reform in each state. Other sources included the Education and Finance Accountability Program (2003), Hickrod et al. (1997), the National Center for Education Statistics (2003b), the National School Boards Association (2004), Starting at 3 (2007b), and Vinik (1996).

The state and local government price index that was used to deflate all money figures to 1992 dollars was from the *National Income and Product Accounts Tables* by the Bureau of Economic Analysis (2005). The data on education expenditures and average daily attendance (ADA) numbers in each state were found in the "Digest of Education Statistics" by the National Center for Education Statistics (2003a). Much of

the data on education expenditures, average daily attendance (ADA), and the size of age cohorts was collected by Gerber et al. (2000).

The dynamic ideology measure for each state is from Berry et al. (1998, 2004). The per capita income figures are from the Bureau of Economic Analysis, and can be found on their website under the section "Annual State Personal Income" (2004). The data on the percent of teachers under collective bargaining agreements were kindly provided by Hoxby (2001) for the years 1972 to 1987. For the years 1992 to 2002, the data were kindly provided by Terry Moe from the *1993-1994* and *1999-2000 School and Staffing Survey (SASS)* by the National Center for Education Statistics (2000, 1994). The states under federal preclearance supervision were taken from Ueda (2005) and the United States Department of Justice (2007). The population figures for each state broken down by age categories is from the U.S. Census Bureau and can be found on their website under the section *Population Estimates* (2005). Data on the percent of the population in each state this is black and Hispanic was also taken from the U.S. Census Bureau *Population Estimates*.

Cornell Law School Legal Information Institute (2006) and Starting at 3 (2007a) were used to locate state constitutions and their education clauses (a table presenting all of these is available in Appendix B: State Constitution Education Clauses). The data on justice ideology were kindly provided by Langer (2006). Information on the judicial selection method used by each state, in order to determine which use partisan methods, is from the American Judicature Society (2006). The indicator for those states which require a supermajority of justices to overturn the education finance system is from Caminker (2003).

The Chapter 5 data on unadjusted education revenue in the United States from 1890 to 1930 are from Mort (1933, Tables 1 and 2), and the data for all years after 1930 are taken from the *Digest of Education Statistics* by the United States Department of Education (2005, Table 152). The data from Mort combines state and federal revenues for education, so those figures are listed under state revenues for the years 1890 to 1930. Missing years of data were estimated using interpolation. The deflator used is the gross domestic product price index; the deflators from 1890 to 1925 are from EH.Net (2006), and the deflators for all years after 1925 are from the *National Income and Product Accounts Table* by the Bureau of Economic Analysis (2005).

The data on the share of education revenues by source (state, local, federal) by state are take from the *Digest of Education Statistics*, years 1972, 1979, 1983–84, 1985–86, 1989, 1994, 1999, and 2004. The revenue shares for 1982 were calculated by averaging the shares for 1981 and 1983 because the data was not available for 1982.

Appendix B
State Constitution Education Clauses

The table below lists the education clause in each state constitution, as well as its location in the document. There is also a column noting the key words in each phrase which were used in order to determine the coding for the strength of the education clause, as listed in the final column.

Table B.1 - State Constitution Education Clauses

State	Location of Education Clause	Education Clause	Keywords	Clause Strength
Alabama	Art. XIV, § 256	The legislature shall establish, organize, and maintain a liberal system of public schools throughout the state for the benefit of the children thereof between the ages of seven and twenty-one years.	establish, organize, maintain, a liberal system	Weak
Alabama	Amend. 111	It is the policy of the state of Alabama to foster and promote the education of its citizens in a manner and extent consistent with its available resources, and the willingness and ability of the individual student, but nothing in this Constitution shall be construed as creating or recognizing any right to education or training at public expense, nor as limiting the authority and duty of the legislature, in furthering or providing for education, to require or impose conditions or	no right to education at public expense	

		procedures deemed necessary to the preservation of peace and order.		
Alaska	Art. 7, § 1	The legislature shall by general law establish and maintain a system of public schools open to all children of the State, and may provide for other public educational institutions.	establish and maintain a system	Weak
Arizona	Art. 11, § 1A	The legislature shall enact such laws as shall provide for the establishment and maintenance of a general and uniform public school system ...	general and uniform	Intermediate
Arkansas	Art. 14, § 1	... the State shall ever maintain a general, suitable and efficient system of free public schools and shall adopt all suitable means to secure to the people the advantages and opportunities of education	general, suitable, and efficient; all suitable means	Intermediate
California	Art. 9, § 1	A general diffusion of knowledge and intelligence being essential to the preservation of the rights and liberties of the people, the Legislature shall encourage by all suitable means ...	encourage by all suitable means	Weak
California	Art. 9, § 5	The Legislature shall provide for a system of common schools by which a free school shall be kept up and supported in each district	system of common schools	

Colorado	Art. IX, § 2	The general assembly shall, as soon as practicable, provide for the establishment and maintenance of a thorough and uniform system of free public schools throughout the state ...	thorough and uniform	Intermediate
Connecticut	Art. 8, § 1	There shall always be free public elementary and secondary schools in the state. The general assembly shall implement this principle by appropriate legislation.	free	Weak
Delaware	Art. X, § 1	The General Assembly shall provide for the establishment and maintenance of a general and efficient system of free public schools, and may require by law that every child, not physically or mentally disabled, shall attend the public school, unless educated by other means.	general and efficient	Intermediate
Florida	old Art. IX, § 1	... adequate provision shall be made by law for a uniform system of free public schools..	uniform	Intermediate
Florida	new Art. IX, § 1 (passed 1998)	The education of children is a fundamental value of the people of the State of Florida. It is, therefore, a paramount duty of the state to make adequate provision for the education of all children residing within its borders. Adequate provision shall be made by law for a uniform, efficient, safe, secure, and high quality system of	uniform, efficient, safe, secure, and high quality	Strong

		free public schools that allows students to obtain a high quality education and for the establishment, maintenance, and operation of institutions of higher learning and other public education programs that the needs of the people may require.		
Georgia	old Art. VII, § 1	The provision of an adequate education for the citizens shall be a primary obligation of the State of Georgia, the expense of which shall be provided for by taxation.	adequate	Weak
Georgia	new Art. VII, § 1 (ratified 1983)	The provision of an adequate public education for the citizens shall be a primary obligation of the State of Georgia. Public education for the citizens prior to the college or postsecondary level shall be free and shall be provided for by taxation. The expense of other public education shall be provided for in such manner and in such amount as may be provided by law.	adequate	Weak
Hawaii	Art. X, § 1	The State shall provide for the establishment, support and control of a statewide system of public schools	establishment, support, and control of a statewide system	Weak
Idaho	Art. IX, § 1	... it shall be the duty of the legislature of Idaho, to establish and maintain a general, uniform and thorough system of public, free common schools.	general, uniform, and thorough	Intermediate

Illinois	Art. X, § 1	The State shall provide for an efficient system of high quality public educational institutions and services.	efficient, high quality	Strong
Indiana	Art 8, § 1	... provide, by law, for a general and uniform system of Common Schools, wherein tuition shall be without charge, and equally open to all.	general and uniform	Intermediate
Iowa	Art. IX, § 3	The general assembly shall encourage, by all suitable means, the promotion of intellectual, scientific, moral, and agricultural improvement.	encourage, by all suitable means	Weak
Kansas	Art. 6, § 1	The legislature shall provide for intellectual, educational, vocational and scientific improvement by establishing and maintaining public schools ...	shall establish and maintain	Weak
Kansas	Art. 6, § 6 (b)	The legislature shall make suitable provision for finance of the educational interests of the state.	suitable provision	
Kentucky	Section 183	The General Assembly shall, by appropriate legislation, provide for an efficient system of common schools throughout the State.	efficient	Intermediate
Louisiana	Art. VII, Preamble	The goal of the public educational system is to provide learning environments and experiences, at all stages of human development, that are humane, just, and designed to promote excellence in order that every individual may be	equal opportunity	Intermediate

		afforded an equal opportunity to develop to his full potential.		
Louisiana	Art. VII, § 1	The legislature shall provide for the education of the people of the state and shall establish and maintain a public educational system.	provide for, establish and maintain	
Louisiana	Art. VII, § 13 (B)	The legislature shall annually appropriate funds sufficient to fully fund the current cost to the state of such a program as determined by applying the approved formula in order to insure a minimum foundation of education in all public elementary and secondary schools.	minimum foundation of education	
Maine	Art. VIII, § 1	the Legislature are authorized, and it shall be their duty to require, the several towns to make suitable provision, at their own expense, for the support and maintenance of public schools	require the several towns to make suitable provision at their own expense	Weak
Maryland	Art. VIII, § 1	The General Assembly, at its First Session after the adoption of this Constitution, shall by Law establish throughout the State a thorough and efficient System of Free Public Schools; and shall provide by taxation, or otherwise, for their maintenance.	thorough and efficient	Intermediate

Massachusetts	Chapter V, Section II	...it shall be the duty of legislatures and magistrates, in all future periods of this commonwealth, to cherish the interests of literature and the sciences, and all seminaries of them; especially the university at Cambridge, public schools and grammar schools in the towns...	cherish	Weak
Michigan	Art. VIII, § 2	The legislature shall maintain and support a system of free public elementary and secondary schools as defined by law. Every school district shall provide for the education of its pupils without discrimination as to religion, creed, race, color or national origin.	maintain and support; without discrimination	Weak
Minnesota	Article VIII, § 1	...it is the duty of the legislature to establish a general and uniform system of public schools. The legislature shall make such provisions by taxation or otherwise as will secure a thorough and efficient system of public schools throughout the state.	general, uniform, thorough, and efficient	Intermediate
Mississippi	Article 8, Sec. 201	The Legislature shall, by general law, provide for the establishment, maintenance and support of free public schools upon such conditions and limitations as the Legislature may prescribe.	establishment, maintenance, and support	Weak

Missouri	Art. IX, § 1 (a)	A general diffusion of knowledge and intelligence being essential to the preservation of the rights and liberties of the people, the general assembly shall establish and maintain free public schools for the gratuitous instruction of all persons in this state within ages not in excess of twenty-one years as prescribed by law.	establish and maintain	Weak
Missouri	Art. III, § 36	All appropriations of money by successive general assemblies shall be made in the following order: First: For payment of sinking fund and interest on outstanding obligations of the state. Second: For the purpose of public education.	funds for public education appropriated second	
Montana	Art. X, § 1 (1)	It is the goal of the people to establish a system of education which will develop the full educational potential of each person. Equality of educational opportunity is guaranteed to each person of the state.	equality of educational opportunity guaranteed	Strong
Montana	Art. X, § 1 (3)	The legislature shall provide a basic system of free quality public elementary and secondary schools. The legislature may provide such other educational institutions, public libraries, and educational programs as it deems desirable. It shall fund and distribute in an equitable manner to the	basic system, quality, distribute in an equitable manner	

		school districts the state's share of the cost of the basic elementary and secondary school system.		
Nebraska	Art. VII, sec. 1	The Legislature shall provide for the free instruction in the common schools of this state of all persons between the ages of five and twenty-one years.	free instruction	Weak
Nevada	Art. 11, § 2	The legislature shall provide for a uniform system of common schools, by which a school shall be established and maintained in each school district ...	uniform	Intermediate
New Hampshire	Art. 83	...it shall be the duty of the legislators and magistrates, in all future periods of this government, to cherish the interest of literature and the sciences, and all seminaries and public schools...	cherish	Weak
New Jersey	Art. VIII, sec. IV	The Legislature shall provide for the maintenance and support of a thorough and efficient system of free public schools for the instruction of all the children in the State between the ages of five and eighteen years.	thorough and efficient	Intermediate
New Mexico	Art. XII, § 1	A uniform system of free public schools sufficient for the education of, and open to, all the children of school age in the state shall be established and maintained.	uniform	Intermediate

New York	Art. XI, § 1	The legislature shall provide for the maintenance and support of a system of free common schools, wherein all the children of this state may be educated.	maintenance and support	Weak
North Carolina	Art. IX, § 2 (1)	The people have a right to the privilege of education, and it is the duty of the State to guard and maintain that right.	right to the privilege of education	Strong
North Carolina		The General Assembly shall provide by taxation and otherwise for a general and uniform system of free public schools, which shall be maintained at least nine months in every year, and wherein equal opportunities shall be provided for all students.	general and uniform, equal opportunities shall be provided for all students	
North Dakota	Art. VII, § 1	..., the legislative assembly shall make provision for the establishment and maintenance of a system of public schools which shall be open to all children of the state of North Dakota...	establishment and maintenance	Weak
North Dakota	Art. VII, § 2	The legislative assembly shall provide for a uniform system of free public schools throughout the state ...	uniform	
Ohio	Art. 6, § 2	The General Assembly shall make such provisions, by taxation, or otherwise, as, with the income arising from the school trust fund, will secure a thorough and efficient system of common schools	thorough and efficient	Intermediate

		throughout the state ...		
Oklahoma	Art. XII, § 1	The Legislature shall establish and maintain a system of free public schools wherein all the children of the State may be educated.	establish and maintain	Weak
Oregon	Art. VIII, § 3	The Legislative Assembly shall provide by law for the establishment of a uniform, and general system of Common schools.	uniform and general	Intermediate
Pennsylvania	Art. III, B § 14	The General Assembly shall provide for the maintenance and support of a thorough and efficient system of public education to serve the needs of the Commonwealth.	thorough and efficient	Intermediate
Rhode Island	Art. XII, § 1	The diffusion of knowledge, as well as of virtue among the people, being essential to the preservation of their rights and liberties, it shall be the duty of the general assembly to promote public schools and public libraries, and to adopt all means which it may deem necessary and proper to secure to the people the advantages and opportunities of education and public library services.	promote, adopt all means ... to secure	Intermediate

South Carolina	Art. XI, § 3	The General Assembly shall provide for the maintenance and support of a system of free public schools open to all children in the State and shall establish, organize and support such other public institutions of learning, as may be desirable.	maintenance and support	Weak
South Dakota	Art. VIII, § 1	The stability of a republican form of government depending on the morality and intelligence of the people, it shall be the duty of the Legislature to establish and maintain a general and uniform system of public schools wherein tuition shall be without charge, and equally open to all; and to adopt all suitable means to secure to the people the advantages and opportunities of education	general and uniform; adopt all suitable means to secure ... the advantages and opportunities of education	Strong
South Dakota	Art. VIII, § 15	The Legislature shall make such provision by general taxation and by authorizing the school corporations to levy such additional taxes as with the income from the permanent school fund shall secure a thorough and efficient system of common schools throughout the state.	thorough and efficient	
Tennessee	Art. XI, § 12	The State of Tennessee recognizes the inherent value of education and encourages its support. The General Assembly shall provide for the	maintenance, support, and eligibility standards	Weak

		maintenance, support and eligibility standards of a system of free public schools.		
Texas	Art. 7, § 1	A general diffusion of knowledge being essential to the preservation of the liberties and rights of the people, it shall be the duty of the Legislature of the State to establish and make suitable provision for the support and maintenance of an efficient system of public free schools.	efficient	Intermediate
Utah	Art. X, § 1	The Legislature shall provide for the establishment and maintenance of the state's education systems including: (a) a public education system, which shall be open to all children of the state; and (b) a higher education system. Both systems shall be free from sectarian control.	establishment and maintenance	Weak
Vermont	Chap. II, § 68	Laws for the encouragement of virtue and prevention of vice and immorality ought to be constantly kept in force, and duly executed; and a competent number of schools ought to be maintained in each town unless the general assembly permits other provisions for the convenient instruction of youth.	competent number of schools ought to be maintained in each town	Weak

Virginia	Art. VII, § 1	The General Assembly shall provide for a system of free public elementary and secondary schools for all children of school age throughout the Commonwealth, and shall seek to ensure that an educational program of high quality is established and continually maintained.	high quality	Strong
Washington	Art. IX, § 1	It is the paramount duty of the state to make ample provision for the education of all children residing within its borders, without distinction or preference on account of race, color, caste, or sex.	paramount duty	Strong
Washington	Art. IX, § 2	The legislature shall provide for a general and uniform system of public schools.	general and uniform	
West Virginia	Art. XII, § 1	The Legislature shall provide, by general law, for a thorough and efficient system of free schools.	thorough and efficient	Intermediate
Wisconsin	Art. X, § 3	The legislature shall provide by law for the establishment of district schools, which shall be as nearly uniform as practicable;	as nearly uniform as practicable	Intermediate
Wyoming	97-1-023	The right of the citizens to opportunities for education should have practical recognition. The legislature shall suitably encourage means and agencies calculated to advance the sciences and liberal arts.	practical recognition, suitably encourage	Intermediate

Wyoming	97-7-001	The legislature shall provide for the establishment and maintenance of a complete and uniform system of public instruction, embracing free elementary schools of every needed kind and grade,	complete and uniform	
Wyoming	97-7-009	The legislature shall make such further provision by taxation or otherwise, as with the income arising from the general school fund will create and maintain a thorough and efficient system of public schools, adequate to the proper instruction of all youth of the state, between the ages of six and twenty-one years, free of charge;	thorough and efficient	
Wyoming	97-21-028	The legislature shall make laws for the establishment and maintenance of systems of public schools which shall be open to all the children of the state and free from sectarian control.	establishment and maintenance	