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Examining Education Aid Distribution Practices in the States:

What School Districts Receive Targeted Funding and Why?

Introduction and Research Questions

The education finance reform movement was spurred by numerous state supreme court cases challenging school funding systems and the alleged disparities in inter-district resources that they propagated. Since its inception, this movement has focused on improving educational quality for students. One practice that arose out of this movement's aim to address fiscal disparities is the policy of targeting state aid to districts on the basis of some type of demonstrated need. This practice is controversial because the redistributive practices that can coincide with targeting policies often face opposition in communities with both greater resources and more political capital. Arguments for and against targeting policies are also well-documented in the literature. What is not well-documented in the literature is the extent to which states actively do target their aid to school districts and what conditions, either locally or statewide, impact their tendency to do so.

This study will examine a number of questions. Are states targeting their funds to school districts? Do certain school district conditions or characteristics lead some states to grant more aid than others? Does the presence or absence of some statewide characteristics make a state more or less likely to engage in targeting practices? Some of these questions have been considered in the literature, but they were considered so long ago that the studies that addressed them have lost contemporary relevance. Other related issues have yet to be examined at all, and this study will investigate all of the above questions in an effort to determine the current status of targeting state education aid to school districts in the United States.

Previous Research

Most states' school districts fund their schools predominantly through the use of local property taxes. The considerable variation from district to district in terms of property value, and by extension, tax revenue, leads to the result that schools' resources reflect the relative wealth available in their communities. This system of funding, which creates a wide range of resources for schools in different

districts, has produced a movement to examine and reform the practice of property tax finance with the aim of equalizing school resources. This movement is notable for a few reasons. First, local responsibility for education funding is a standard that dates back to the earliest colonial schools; changing this system would represent a significant break from the fabric of the American educational system. Second, the movement to equalize school district resources is a tacit presumption that school funding and school quality are tied together; both sides of this issue will be examined later. Third, how states are distributing their money is important because nationwide, state education expenditures account for approximately 50% of the money dollars spent on education annually in the United States¹. Finally, one of the proposed mechanisms for equalizing school finance is targeting resources to disadvantaged districts; this in turn has raised questions about both the constitutionality of using property taxes to fund education and whether education is a constitutionally guaranteed right. The degree to which the practice of targeting resources to disadvantaged districts has been initiated by the states, and on what basis, is a focus of this study.

A wide body of literature exists that examines the myriad facets of education finance reform. Topics include the history of this movement, whether or not a school district's resources actually impact the education its students receive, and the effects of state intervention on the local level. Education finance issues are complex, interrelated, and continuously developing. While financial disparities between school districts are evident and commonplace throughout the United States, there is contradictory evidence in the literature that these disparities have any impact on student achievement or education quality. This contradiction makes it difficult to establish consensus on what course education finance reform should take.

Tiebout (1956), in his seminal work, "A Pure Theory of Local Expenditures," describes an

¹ The National Center for Educational Statistics reports that in FY2002, 49.3% of the average school district's funding came from state sources. In FY2002, approximately \$420 billion was spent on education nationwide.

economic model where every community provides services in accordance with its citizens' demands and also taxes them accordingly. Tiebout's model is often cited in research involving education finance as an explanation of inter-district resource disparities. However, his model assumes that citizens at the margin are fully mobile and can essentially vote with their feet and move to a community that satisfies their demands. The reality is that citizens in the poorest communities do not have the resources to meet the market conditions for obtaining better education. Left without options, many poor families and their children are forced to stay in areas where their educational needs may not be adequately met. This reality of inadequate schooling for some students was the impetus for the school finance reform movement. The legal claims and challenges that have driven and continue to drive this movement mostly push for state interventions in school finance to provide for more equal inter-district resources in order to combat achievement disparities. However, the effect of the equalization of districts' financial resources is a topic for which the literature provides contradictory evidence.

Inter-district Resource Inequalities and Possible Effects on Student Achievement

Production function research is an area that examines the connection between a school's resources, financial or otherwise, and the educational achievement of that school's students. The first systemic evidence on this conclusion was the 1966 Coleman Report "Equality of Educational Opportunity," which found that minority students in the United States both achieved less than their white peers and tended to be more affected by school quality. The Coleman Report also used wide-ranging data on race, achievement, and school resources to conclude that minority teachers and students were isolated into minority-majority enclaves, away from white students, within the educational system and relegated to schools and districts with fewer resources (Coleman et al, 1966).

The literature in the production function field since the Coleman Report has often been contradictory, and it can be divided into two sets of findings. The first and most common finding is that a school's resources positively affect student achievement. Card and Krueger (1992) and Payne and

Biddle (1999) are examples of this. They found that higher-quality education in the form of schools with adequate resources positively effected student achievement or economic returns later in life or both. Payne and Biddle succinctly summarize their conclusions by saying, “surely it is time to put to rest the absurd myth that level of funding does not matter for public schools in America” (Payne and Biddle, 1999, 12). The second finding in production function research is that a school's resources have very minimal or no impact on student achievement. Hanushek (1986, 1989) provides examples of this “no-connection” school. He writes, “detailed research...provides strong and consistent evidence that expenditures are not systematically related to student achievement” (Hanushek, 1989, 49). Instead, Hanushek (1986, 1989) and Wenglinsky (1998) argued that contextual factors like race, parents' education, and socioeconomic status are driving achievement disparity. Race, which is closely tied to socioeconomic status, has an impact both on where individuals are able to live and the quality of schools that they have access to. Additionally, historical racial achievement gaps create parental education disparities that are then passed on to these parents' children (Roscigno and Ainsworth-Darnell 1999, Duncan and Magnuson 2005). The idea that out-of-school contexts also impact student achievement is one that dates back to the Coleman Report, which indicated that minority students seemed to be more affected by the neighborhoods surrounding their schools than white students. Proponents of school-finance equalization have subscribed to the belief that a school's financial resources do affect the achievement of its students and that more money can overcome the consequences of poverty and racial disparities. This belief has led them to pursue redress through both legislative and judicial means.

State Legislative and Judicial Interventions in Education Finance

The 1971 *Serrano v. Priest* court case in California started the wave of school finance litigation that would change the face of American education expenditure. Litigants in these cases, charging that the education being offered in their schools was inadequate, unequal, or in violation of a state's

constitutional guarantees, sued their local school districts and, in some cases, the state education agency, for redress of the educational conditions. Twenty-six state supreme courts have ruled that their state education finance systems are unconstitutional. In these cases, changes in the state funding formulas were enacted. In the states where the finance system was not overturned by the court or where no judicial challenge has been raised, state legislatures have often taken up school finance issues. Evans, Murray, and Schwab (1997) and Murray, Evans, and Schwab (1998) examined school finance litigation's effects on both legislation implementation and per pupil expenditures. They found that when state courts ruled local tax revenue-based education finance policies unconstitutional, states ended up shouldering a larger percentage of school funding. After such a ruling, states were also more likely to redistribute funds from richer districts to poorer. They also found that states that tried solely to legislate toward increased expenditures or expenditure equity were less likely to achieve that end than states that had also had a court case mandating reform. This finding may be attributed to the fact that a judicial mandate acts as a grim trigger and forces a state legislature to act on an issue that it otherwise would not have to; without the backing of a judicial mandate, a legislature may be less politically willing to reform their school finance system. Additionally, a judicial mandate provides cover for politicians in state legislatures; by blaming the court, legislators can deflect responsibility for redistribution away from themselves.

Mintrom (1993) discusses an area of education finance reform that other authors have not. He examines the political obstacles that stall the implementation of targeting policies. He says that impoverished municipalities are faced with a tough choice: “tax their poor constituents at higher rates or devote fewer resources to education than rich districts” (Mintrom, 1993, 847). He also notes that the political economy in a state rarely makes targeting policies politically popular, which in turns reduces their viability. Mintrom also discusses two other local-level obstacles to targeting. The first is that parents are generally concerned with getting their children the best education possible; for parents in

wealthy districts, redistributing money to poorer schools, and thus away from their children, is not viewed favorably. The second is that because political control is predominantly held by communities and individuals with resources, districts with fewer resources lack the political clout to push for finance reforms. Kozol (1991) also writes extensively about this dilemma using case studies that reveal that parents, students, and administrators in wealthy districts are unwilling to see their funds go somewhere else. These discussions of the political obstructions that impede school finance reforms in state legislatures lend credence to the Murray, Evans, and Schwab studies that find that school finance reforms without judicial weight behind them are less successful than those that do.

The education finance reform movement, starting with the *Serrano* case in California, spread to a number of other states, and continues to be advocated for in still other states. Many legislators and courts see education finance reform as a means of addressing educational inequality. However, these targeting policies remain both controversial in the literature and, in many states, unrealized.

The Case for Targeting Policies

The redistributive targeting practices that sprang up in many states following the supreme court's calling for new education funding formulas are supported by various pieces of education finance literature. These practices generally involve taking a percentage of tax revenue from each relatively wealthy school district and then using it to offer supplements proportional to a district's financial need. de Bartolome (1997) and Murray, Evans, and Schwab (1998) found that targeting policies and state supreme court cases have led to an increase in overall state funding for education but that this additional financial support has been offset by increased taxes. de Bartolome, by controlling for other variables, found that between 1970 and 1990 state supreme court decisions accounted for 18% of state education aid increases. His findings lend support to Murray, Evans, and Schwab's research that supreme court cases can increase a state's overall level of education funding.

Fernandez and Rogerson (1996, 1997) are the leading voices in the “rising tide” school of thought

that supports targeting practices by the states. They found that “a reallocation of resources from resource-rich children to resource-poor children will mean greater future aggregate income for society as a whole” and counter criticism of redistribution by saying that “the increase in future earnings for the children who gain resources more than compensates for the lost future earnings from those children who lose resources” (Fernandez and Rogerson, 1997, 69). While Bourguignon and Rogers (2007) found this benefit as well, they add a call for more progressive taxation and the use of aid rather than tax revenues to supplement schools. This means that instead of funding schools with redistributed tax revenues from wealthier districts, states should instead issue grants from other sources to impoverished school districts. They argue that this is because policies paid for by increased taxation that will eventually benefit future generations of students can often hurt presently impoverished populations.

Supporters of targeting policies note the benefits to aggregate societal wealth that stem from changes in impoverished districts that allow them to better educate their students. While there is a body of literature showing support for targeting policies, there is an equally large body disparaging them.

The Case Against Targeting Policies: Promoting Equality at Efficiency's Expense

The evidence against targeting policies consists predominantly of findings that increased state intervention in local affairs causes apathy, inefficiency, and even decreases in achievement. Berger and Toma (1994) conducted a nationwide examination of SAT achievement data. They found that students in states that require master's degrees for teacher certification (used in this study as an indicator of increased state involvement in education regulations) generally perform worse on the SAT than their peers in states with fewer regulations for teacher certification. Husted and Kenny (2000) built from this research in their study that used 34 states' SAT achievement data as the dependent variable and the state's stake in education finance as the independent variable. Their findings are in the same vein as Berger and Toma's: increased state intervention in the form of share of education finance leads to inefficiency, indicated by lower SAT scores. The authors also found that state equalization of education

expenditures lead to decreases in overall educational achievement but did not change the distribution of achievement. Husted and Kenny found that overall, schools do worse, but poor school districts still perform lower. The authors note that “in the regressions with no fixed effects, a 1-point increase in test score equality is accompanied by a decrease of 4-7 points in average test scores” (Husted and Kenny, 2000, 306). However, in the “more believable fixed effects regressions” the state's percentage of education revenue caused 12-15 point decreases in SAT scores (Husted and Kenny, 2000, 302). This equality-efficiency tradeoff has profound implications for education policy initiatives in the future, according to Husted and Kenny, who also noted that an increased state role in local education leaves local constituents to concentrate less on accountability for achievement in their schools. This leads to a loss of efficiency that is also addressed in the literature.

Fischel (2002) offered a number of arguments against state involvement in the education system. First, he argues that Kozol's novel Savage Inequalities blames the problems of impoverished school districts on the local property tax system of education finance as an appeal to readers' compassion, rather than logic, through the examination of egregiously inadequate schools. Fischel then argues that redistributive policies can lead to “taxpayer revolts” like California's Proposition 13 in 1978; this is a hurdle to the implementation of targeting policies that Mintrom (1998) also mentions. Taxpayer revolts like Proposition 13 often find states and communities choosing to pay less for education overall in an effort to keep resources from being redistributed to more impoverished districts. Fischel notes that state intervention in local schooling can lead to apathy or revolts at the local level as citizens become increasingly disconnected from the funding process and feel powerless to influence it. On top of this, Fischel writes that “the measurable educational outcomes have either declined or not changed. No social science study persuasively connects the school finance litigation with better outcomes for children from disadvantaged homes (Fischel, 2002, 115).” In a particularly damning conclusion, Fischel summarizes by saying “at its worst, school finance litigation has engendered dog-in-a-manger

equality of low-quality education. At its best, it seems to have done little more than shift tax burdens and property values in ways that offer no systematic benefits to the poor” (Fischel, 2002, 115).

To What Extent are States Employing Targeting Practices?

While there is an abundance of literature drawing contradictory conclusions on whether or not the implementation of targeting practices is beneficial, there is a dearth of research about whether or not targeting by the states is actually occurring. Morgan and Pelissero (1989, 1992) are the leading scholars in this field and offer the most comprehensive research on targeting practices by states. The authors find in their studies that targeting, either by the federal government or the states, is tied most closely to school district enrollment and not to school district resources. They also find that states more effectively target funds to districts in need than the federal government does. According to their research, which examines school districts in 44 states, the non-enrollment educational aid allocations that occur are often targeted to districts in financial need. However, there is a lot of interstate variation in targeting practices. Morgan and Pelissero identify nine states that are “better targeters” but they admit that more research needs to be conducted to find out what policies and practices make these states more efficient at targeting, or willing to target, than their counterparts. Still, even their research leaves many questions unanswered. Some of these include whether a state's school finance formula or other state-level variables affect a state's targeting practices. Another weakness of these two studies is that they are both based on data from 1982. Because that data comes only a decade after the inception of the push for education finance reform. It is difficult to apply it to the contemporary state of targeting by the states.

Some Evidence of Impacts on School Targeting Practices

The literature on what factors affect targeting practices is overall dishearteningly scant. It appears that only Figlio, Husted and Kenny's (2004) research utilizes multivariate regression to see what variables impact the distribution of education expenditures. They find that, in accordance with the

Tiebout model, greater within-state wealth and a larger number of school districts lead to more disparity in school district wealth. They also find that Democratically controlled states have more spending equality because of their tendency to propose and support policies addressing the needs of the poor. They find significant evidence that a state supreme court ruling declaring a state's education finance system unconstitutional causes a decrease in school funding inequality. Finally, they find that more heterogeneous populations in a state contribute to school district financial inequality; this also supports the Tiebout-sorting model, which describes how diverse school districts cater to a wide spectrum of demands for school quality/level of taxation.

Other research in this area has been narrowly tailored. An example is Fletcher and Kenny's (2008) research on the impact the elderly have on school spending. They find that a drop in school funding in areas with large elderly populations is generally offset by a per student funding increase stemming from the decreased number of children in these same areas. de Bartolome (1997) finds in his research that state education aid increases are attributable to increasing amounts of wealth disparity within a state.

Evidence that the elderly impact school finance exists in the literature in a number of places. Poterba (1997) finds that increasing percentages of the elderly result in lower per-pupil spending, especially when the elderly and the students are from different racial groups. Harris, Evans, and Schwab (2001) find only a small but significant negative impact on funding at the district level that is caused by the elderly; this effect is larger at the state level. Ladd and Murray (2001) find that the direct impact on school spending caused by the elderly is indistinguishable from zero but that the elderly may have indirect impacts on school spending. Brunner and Balson (2004) find that the elderly are generally more supportive of local spending than state-wide spending on education. Finally, Fletcher and Kenny (2008) use the median voter model to find that the negative effect of the elderly on school spending is both negative and significant, but they do note that states and districts should not be fearful

of precipitous drops in funding because of an aging population.

The research in this area, especially Figlio, Husted, and Kenny's, is a significant contribution to understanding how and why states target. However, many questions remain unanswered about state education aid targeting practices. These questions, and why their answers are important, are discussed below.

The Need for a Contemporary and Comprehensive Look at Targeting Nationwide

This paper is partially based on Figlio, Husted, and Kenny's 2004 effort, which addressed some glaring gaps in the literature on education resource inequalities in the states. Redistributive targeting practices are used by the states to address these inequalities. More than 25 years after the period on which Morgan and Pelissero's research was based, to what degree are states targeting aid to school districts in need on a non-enrollment basis? What impacts states' capacities and tendencies to target or not target? For states that target, which district-level characteristics are more likely to receive targeted funds? What role does a state's type of aid formula have on the degree to which it targets its funds? This paper will attempt to address these questions using variables that have examined in the literature and others, like student poverty, that are absent. Many of these are questions that Morgan and Pelissero cited at the end of their 1989 study as remaining to be answered by their own work. By building on Morgan and Pelissero's research on targeting practices by the states and on Figlio, Husted, and Kenny's research on targeting impacts, this paper will offer insight into how far the education finance reform movement has come and, potentially, how much farther it has to go to deliver on its promises to students in impoverished districts nationwide.

Study Design

Theory and Explanations

As described in the literature review, education finance reforms that originated because of state supreme court decisions have been changing funding formulas and the way state aid is distributed to

school districts, while those that originated from legislative decisions have had less impact. This study will primarily consider the connection between school district enrollment and state aid per pupil in an attempt to determine if states are targeting at a greater or lesser rate than they were in 1982. In their 1989 and 1992 studies, Morgan and Pelissero found that states were primarily distributing aid to school districts on the basis of enrollment, not financial need or other district characteristics. All of these other characteristics being equal, however, we would anticipate that the districts with the most students would receive the most state aid; the fact that these other characteristics are not equal is what makes the question of states' redistributive targeting practices relevant. No other comprehensive study examining the connection between school district enrollment and per pupil state aid has been performed since these studies, which creates a gap in the literature and a need for a more contemporary examination of this topic. This study will provide that examination.

It is important to note that school district enrollment, in addition to being an important determinant of state aid, is politically important as well. Both legislative districts' boundaries and number of legislators are based on population. Legislative districts with a large number of representatives will have more political capital to push for funding for their school districts. Similarly, governors can exercise their veto power on measures that do not distribute funding to districts where their political base resides.

The secondary mission of this study will be to examine the determinants of state aid other than school district enrollment. Figlio, Husted, and Kenny (2004) examine a number of these determinants including the black population in a state, the number of school districts per student (where a low number indicates monopoly and the absence of Tiebout choice), the percentage of people living in metropolitan areas, state median and mean income, Democratic party control of a state's government, the presence of a state supreme court ruling overturning a state's education finance system, and the degree of a state constitution's mandate for equity, among other variables. While Morgan and

Pelissero's and Figlio, Husted, and Kenny's work describes how these factors affect the allocation of state educational resources from state to state, neither study provides evidence on whether or not targeting practices have shifted from primarily focusing on school district enrollment to focusing on a district's financial need. None of the studies include an examination of a state's funding formula as a determinant of state aid to school districts. Additionally, many of the variables utilized by Figlio, Husted, and Kenny (2004) are based at the state level of analysis; this study will incorporate both district and state level variables.

The hypothesis of this study is that when comparing school districts, enrollment, not need, continues to be the main determinant of state education spending. I will also seek to determine if targeting practices by the state have changed over time. The evidence will indicate whether Morgan and Pelissero's conclusion that enrollment is the predominant determinant of state aid to school districts is still true. If it is, this would indicate that states are not employing redistributive targeting practices that provide additional aid to school districts on the basis of financial need or in an attempt to close achievement gaps between different socioeconomic or ethnic groups. If Morgan and Pelissero's conclusion is still true, mechanisms for education finance reform may need to be reviewed as many of these mechanisms were intended to decrease inter-district funding disparities. If the findings show that a state's per student aid to school districts is significantly tied to those districts' levels of need or other social characteristics, like race, or some combination thereof, it would suggest that there has been a shift in targeting practices since 1982, which was the last year that targeting was examined nationally. It would also indicate that states are either taking into account district need or being influenced by state level conditions such as type of funding formula or both when deciding on aid allocations.

Operationalization and Measurement of Concepts

Because this study will examine how states target aid, school districts will be the primary unit of analysis. There are approximately 20,000 school districts in the United States according to the

National Center for Education Statistics. This study will delete school districts that have incomplete data. In order to capture any changes in targeting practices by the states, this study will primarily utilize data from three school years: 1995-96, 2000-01, and 2005-06. This will provide a longitudinal view that has not been previously examined in the literature.

Three variables will be the main focus of this study and appear in Table 1. School district enrollment (ENROLL) is the total number of students from pre-kindergarten to grade twelve in a given district, and this is one of two primary independent variables of this study. The second of these independent variables is the number of students in a school district who are eligible for free lunch (FREELUNCH) programs; if states are targeting their aid to districts on the basis of financial need, I would expect this variable to be positively tied to state aid because higher values of FREELUNCH indicate higher poverty in a district's students.

The dependent variable is per student state aid (STATEAID), operationalized as the total amount of aid given to a school district divided by the district's reported enrollment. These figures are obtained from the Core of Common Data from the National Center on Education Statistics. The NCES Core of Common Data also provides data for some of the other independent variables that this study will use as examples of school district characteristics to which state aid targeting may have shifted.

Two variables that this study will use that were also employed by Morgan and Pelissero are own-source revenue per pupil (OWNSOURCE) and district debt per pupil (DISTDEBT). The former of these is operationalized as the total amount of local education revenue divided by a district's enrollment. The latter is operationalized as a school district's outstanding debt at the beginning of a given fiscal year divided by the district's enrollment. OWNSOURCE is a measure of a district's effort, i.e. how much it invests in schools from local revenue. It is unclear how this variable will change in relation to the state aid a district receives; it could have a positive relationship with state aid if a state decides to reward districts for their local effort, or it could have a negative relationship if a state views

the capacity to raise local revenues as an indicator of a district not needing additional financial aid. If states are targeting their aid on the basis of financial need, DISTDEBT should vary positively with per student aid.

Two other variables will test whether or not states are directing funds to districts with high percentages of groups on the lower end of the achievement spectrum: Hispanic and black students. The percentage of black and Hispanic students in a district (BLACK and HISPANIC, respectively) will be calculated by taking the number of each group of students in a district and dividing it by total district enrollment. All of these variables will provide insight into various district-level characteristics upon which states may or may not be basing their targeting. If, after analysis, any or all of these characteristics have a significant impact on per student state aid, it will provide support for states targeting their aid on local conditions and needs rather than just school district enrollment.

This study will also examine five state level variables to see what impact they have, if any, on state aid targeting practices. The first of these will consider political party control (PARTY) as a determinant of targeting. This is a variable that Figlio, Husted, and Kenny (2004) examined; in their study they found that states with Democratic party control had more spending equality than Republican controlled states because Democrats tend to represent the poorer populations in a state. I will consider this variable again to replicate the authors' 2004 study and to see if Republican control at the state level has shifted toward reducing spending inequality. This study will examine this variable by assigning a value between 0-3 for each state. 0 will indicate that neither chamber of the legislature nor the governorship is controlled by the Democratic party. 1, 2, or 3 will correspond to that many of the aforementioned bodies being controlled by the Democratic party in a given state. These data will be obtained from the National Council of State Legislatures.

I will also consider, as Figlio, Husted, and Kenny (2004) did, the presence of a state Supreme Court (SUPREMECOURT) case overturning the state's school finance system. A 0 value will indicate

the absence of such a case, and a 1 value will indicate the presence of such a case, and these data will be obtained from the National Center for Education Statistics' education finance division. This variable will be incorporated to re-examine Evans, Murray, and Schwab's 1997 findings that after such a Supreme Court decision occurred, states were more likely to redistribute funds from richer districts to poorer.

Another state level variable will be the percentage of residents in the state over 65 (ELDERLY). I would anticipate that states with higher percentages in ELDERLY would target less due to a small, but general, decrease in school funding in areas with high proportions of elderly. Another state level variable that I will incorporate is a state's Gini coefficient for 1999 (GINI); the Gini coefficient is a measure of a state's wealth distribution, and I anticipate that states with a Gini coefficient closer to one (less equal distribution) will distribute aid based more on enrollment than other factors.

The final state level variable is one that has also not been examined in the literature. I will consider the impact or lack thereof that a state's usage of one of two funding formulas (FORMULA) has on its targeting practices. These data will be obtained from *Education Week's* EdCounts.org datasets, as well as information from the National Access Network, a project housed at Teachers College, Columbia University. For this variable, two different types of funding formulas will be examined. The foundation formula is described by EdCounts.org as “a set amount of funding that the state deems necessary for a basic education. [In this formula,] responsibility for providing this funding is shared between state and local districts.” Foundation formulas are the most prevalent nationally and are found in 33 states. I anticipate that the presence of this type of formula will increase the impact of enrollment on state aid because every additional pupil will yield additional funding under the foundation formula. The second formula is a foundation/local-effort equalization hybrid formula. Local-effort equalization “rewards districts for efforts to raise revenue through additional local taxes” by providing “an additional level of state aid” according to EdCounts.org. This hybrid formula is found

in eight states. Of the other types of formulas found in the remaining 15 states, none is found in more than two states. In this study, I will use a dummy variable and assign a value of 1 to each of the two formulas to determine if one type of funding formula corresponds to more aid targeted on a non-enrollment basis. Because no research has examined how the distribution mechanisms for a state's aid affect its targeting practices, this variable's incorporation here will look for a given formula's relative ability to getting state aid to districts on the basis of local characteristics.

Research Design

This study will primarily investigate the relationship between school district enrollment and free lunch eligibility, the two main independent variables, and per student state aid, the dependent variable. In order to examine the relative importance of these two variables, I will convert them into logarithms. This will help to linearize the data. Using a log-log model of analysis will allow me to see the relative importance of the independent variables on the dependent variable. This method of analysis will allow me to answer questions like “for every additional percent increase in enrollment in a school district, by what percent does per student state aid increase?” by creating log-log elasticities. Answering these kinds of questions will permit me to consider the variables to which state aid is most closely tied. For example, if a marginal increase in enrollment results in less subsequent per student aid than a marginal increase in another variable, like percentage of black students, this will provide evidence that a state is targeting its aid more toward districts with high percentages of black students than districts with high levels of overall enrollment.

The variables that will be controlled for in this study are own-source revenue per student, district debt per student, the percentages of black and Hispanic students in a district, the presence of one of two funding formulas in a state, the presence or absence of a state supreme court case overturning the state's education finance system, the political party in control in the state, the state's population percentage of people under the age of 18 or over the age of 65, and the Gini coefficient. I

will estimate a separate model for each of the three academic years and also investigate estimates with and without state fixed effects. All of these variables are included to test the hypothesis that states, as a result of the education finance reform movement, will have been moving away from using school district enrollment as a determinant of aid. If this is the case, the studies will identify whether states are now targeting aid to districts with financial need or targeting aid to districts with high populations of traditionally struggling groups of students.

Morgan and Pelissero's research (1989 and 1992) revealed school district enrollment as the predominant determinant of state aid. I expect that this study will find that enrollment will still be the main determinant of state aid but that it will be less influential than it was in Morgan and Pelissero's studies. If states have not shifted their targeting practices since their studies, I will find a strong relationship between enrollment and per student state aid. If, however, this relationship has weakened, I will find that other contextual characteristics in school districts, either financial or racial, have supplanted or begun to replace enrollment as the predominant determinant. If the former is found, this will be evidence that targeting practices are not being employed by the states. If the latter is found, there will be evidence that redistributive finance practices are doing what they were intended to do and reduce the financial disparities between districts. If neither the former nor the latter are found, it will mean that enrollment is no longer the predominant determinant of aid but neither are any of the other variables that this study tests for. Any of these three possibilities would raise important questions for education finance reform policies in the United States.

Table 1 – List of Variables Used

Variable	Shorthand	State or District Level	Logged ?	Independent/ Dependent	Operationalization/ Explanation
Per student State Aid	STATEAID	District	Y	Dependent	Amount of Gross State Aid/ENROLL
School District Enrollment	ENROLL	District	Y	Independent	Total number of students K-12 in a district
Number of Free Lunch Eligible Students	FREELUNCH	District	Y	Independent	Number of Free Lunch Eligible Students
District Debt Per Pupil	DISTDEBT	District	Y	Independent	District debt at beginning of given FY/ENROLL
Percentage of Black Students	BLACK	District	N	Independent	Number of Black Students in District/ENROLL
Percentage of Hispanic Students	HISPANIC	District	N	Independent	Number of Hispanic Students/ENROLL
Political Party Control	PARTY	State	N	Independent	Scale 0-3 based on party control of legislative chambers and governorship
Supreme Court Ruling Overturning State Finance System	SUPREMECOURT	State	N	Independent	Coded 0 if no ruling exists, 1 if ruling exists
Presence of Foundation Formula	FOUNDATION	State	N	Independent	1 if state has a foundation system, 0 otherwise
Presence of Foundation/Local-Effort Equalization Formula	FOUNDATIONL EE	State	N	Independent	1 if state has a foundation/local-effort equalization system, 0 otherwise
State's 1999 Gini Coefficient	GINI	State	N	Independent	State's 1999 Gini Coefficient

Findings

My research yields a number of interesting, and in some cases unexpected, results. Before these are discussed, however, a few points must be noted. First, though a district's per student debt had been

an intended variable, the data set from the NCES was incomplete and greatly limited the number of observations (from 8,000-11,000 to under 2,000). Because FREELUNCH is already an indicator of poverty in a district, DISTDEBT was dropped to allow for more observations. Second, I had intended to replicate Morgan and Pelissero's 1989 and 1992 work as a model in this study. Replication became impossible because I dropped DISTDEBT from my model. More importantly, their 1992 research did not incorporate enrollment and other factors (i.e. race, district poverty) into the same model but instead kept them separate. Additionally, their model examining enrollment used total state aid, not per student state aid, as the dependent variable. This makes it impossible to compare, on a one-to-one basis, the models in this study to those found in Morgan and Pelissero's 1992 study. Their 1989 study, however, provides a valuable regression, and it is with this regression that the examination of my study's results begins.

In order to see what the results of this study say about contemporary state aid targeting practices, a look at the state of targeting from an earlier period is in order. Pelissero and Morgan (1989) give us the following regression based on data from 1982:

$$\begin{aligned} \text{\$State aid per pupil} = & \$1,810 + \$0.01 \times \text{Enrollment} + -\$0.17 \times \text{per student Income} + \$0.41 \times \text{Own-} \\ & \text{Source Revenue Per Pupil} + \$0.66 \times \text{District Debt Per Pupil} \quad (R^2 = .11) (N=13,654)^2 \end{aligned}$$

This regression shows the expected and positive relationship between enrollment and state aid. The negative relationship between per student income (the authors' district wealth indicator) is also expected if states were disinclined to targeting money to wealthier districts. In 1982, it also appears that states were more apt to reward districts for effort based on the \$.41 coefficient. Lastly, district debt per pupil has the expected positive relationship that fits into the theoretical expectation of states targeting aid to impoverished districts likely to have more debt. This examination of Pelissero and Morgan's model will serve as a valuable contrast to the results derived from this study.

2 T-statistics are not reported here because Pelissero and Morgan (1989) does not report them.

Table 2 – Results Obtained – logENROLL (IV) and logSTATEAID (DV)

	1995	2000	2005
logENROLL	.03/7.36**	.03/7.77**	-.01/4.03**
R ²	.0045	.0048	.0012
N	11971	12651	13447

* - significant at p<.05, ** - significant at p<.01

Table 3 – Results Obtained – Full Model

	1995 w/o FE	1995 w/ FE	2000 w/o FE	2000 w/ FE	2005 w/o FE	2005 w/ FE
logENROLL	-.04/-4.55**	-.04/-4.21**	-.01/-1.44	-.02/-2.95**	-.05/-6.17**	-.06/-7.45**
logFREELUNCH	.03/2.81**	.02/1.85	-0.00/-0.35	.00/.08	.05/6.25**	.04/5.25**
BLACK	-.22/-5.20**	.05/0.97	-.08/-2.48**	.09/2.53**	-.09/-3.03**	-.00/-0.12
HISPANIC	.00/0.15	.13/2.92**	.02/0.54	.13/3.48**	-.09/-2.70**	.15/4.27**
logOWNSOURCE	-.14/-13.64**	-.07/-6.66**	-.05/-7.46**	-.01/-1.21	-.05/-9.56**	-.00/-0.78
PARTY	-.03/-3.90**	-.28/-11.10**	.02/3.10**	-.00/-0.01	.06/10.78**	.06/2.12*
SUP. COURT	-.25/-16.42**	-.56/-10.78**	-.04/-3.16**	.08/2.07*	.19/14.28**	.17/3.04**
FOUNDATION	-.18/-9.15**	.06/0.12	-.19/-11.72**	.46/4.37**	.05/1.55	.19/5.66**
FOUNDATION/LEE	-.01/-0.24	.01/0.02	-.17/-8.99**	.46/4.30**	-.05/-1.54	-.19/-3.16**
ELDERLY	.01/1.66	-.04/-4.34**	-.03/-7.88**	.04/3.09**	-.02/-3.69**	.08/5.80**
GINI ³	2.27/8.16	dropped	-.45/-1.69	dropped	-2.13/-7.59**	dropped
N	8284		9735		11391	
R ²	.0968	.2429	.0291	.1344	.0377	.1837

* - significant at p<.05, ** - significant at p<.01

Enrollment is arguably the most important variable in this study because state aid has been so closely tied to enrollment in the past. First, I examine the regression of the log of per student state aid on the log of district enrollment without any other independent variables.⁴ In both 1995 and 2000, the

³ GINI was dropped out of the regressions with fixed effects because of collinearity with the state dummy variables.

⁴ While I performed the regression with both the variables and their logs, only the results of the logged regressions are discussed here. This is because the unlogged regressions did not return significant results and were an inferior fit to the

regression returned positive coefficients (.025 and .031 respectively) that are in line with Morgan and Pelissero's results. However, in 2005, the coefficient changes to -.013. All of these values are significant at the $p < .01$ level.

Second, six different regressions were run involving the full model: one with and one without state fixed effects for each of the three academic years examined. Even more surprising than the coefficient change on enrollment found earlier was that in the full models, school district enrollment varied negatively with per student state aid in five out of six regressions. Only the coefficient in the non-fixed effects 2000-01 model returned insignificant results. The other five coefficients were significant at the $p < .01$ level. The implication of this unexpected finding is that enrollment is no longer driving state education aid.

If enrollment is not yielding additional state aid for school districts, it begs the question of what factors drive state aid. I hypothesized that states may be targeting funding to districts that are impoverished or have large populations of students from historically under-achieving groups. The results here are mostly supportive of those hypotheses. The free lunch eligibility variable, which I would expect to vary positively with aid, does so in five out of the six models examined. However, the coefficients are positive and significant in only three of the six models. This is an important result because it shows that states are targeting to factors other than district enrollment.

Results from the two variables measuring percentages of minority students in a district were mixed. Though percentage of black students should vary positively if states are targeting to districts with large African-American populations, it did so (and was statistically significant) only in 2000 with state fixed effects. percentage of black students varied negatively and significantly in the models without fixed effects from all three years; however, the results from models without fixed effects are unlikely to be as valid as the estimates that include fixed effects. However, percentage of Hispanic

students varied positively in five models (three of which were statistically significant and included fixed effects), but it also had a statistically significant negative coefficient in the 2005 model without fixed effects.

Results from the other control variables are contradictory. The signs and significance levels are not consistent as evidenced by Table 2.^{5,6}

Discussion

This study's results lend support to the hypothesis that states are targeting their education aid to districts that need it based on low income, a practice in line with the education finance reform movement. Though I anticipated that enrollment would be the predominant factor determining a district's level of per student state aid, regressions from the 1995-96, 2000-01, and 2005-06 show that enrollment, contrary to findings from previous years, varies negatively with aid. Conversely, the same regressions showed that per student state aid varies positively with both the indicator of district poverty, the number of students in the district eligible for free lunch programs, and the percentage of Hispanic students in the district.

At first glance, these results appear to represent a victory for advocates of redistributive policies across the country. These results bear some examination, however. First, though a shift away from

⁵ State level variables like FOUNDATION, FOUNDATIONLEE, SUPREMECOURT, and PARTY are unwieldy in analyses primarily conducted at the district level. Though a state may have a general type of funding formula, the way that that formula actually operates is often unique to an individual state. Supreme Court decisions are similarly unique, and their impacts are difficult to ascertain through binary variables. Lastly, state party politics are better measured through a system other than a 0-3 scale. GINI was dropped because of collinearity with the fixed effects models. ELDERLY encountered the same inconsistencies as the other control variables. These variables are better suited to a model examining what conditions promote more total state education spending.

⁶ With respect to own-source revenue per pupil, states could potentially react in one of two ways. States could either reward districts for their relative local financing effort or take funding away because of perceived affluence or self-sufficiency. In 1982, own-source revenue varied positively with state aid, but in all three years examined here, own-source revenue per pupil varies negatively with state aid. The coefficients on own-source revenue per student are consistently negative; they are significant in four of the six models. This indicates that nationwide, states' attitudes shifted away from rewarding local financing effort and instead cut funding from districts that were able to raise money locally. The problem that this presents is that if either of these postulates is true, districts will begin to modify their behavior in order to maximize the number of state funds received. This introduces the problem of endogeneity because the direction of causality becomes ambiguous; we cannot know if the districts' behaviors are affecting states' tendencies to shift money toward or away from own-source revenue raising or vice versa.

distributing state aid based on enrollment does represent a trend toward targeting based on district characteristics, it is important to remember that many of our nation's most troubled school districts are also the most heavily populated. For these districts, many of them urban, shifting funds away from enrollment may inadvertently end up taking money away from the same students that advocates of redistribution are trying to help through school finance reform. This is especially true because in none of the six models is the positive free lunch eligibility coefficient larger than a negative district enrollment coefficient which means that the net effect is a decrease in funds to poor districts with large enrollment.

Similarly disconcerting, the coefficients on the percentage of black students variable indicate that districts with higher percentages of African-American students see less state education aid directed to them. This is troubling because black students are still achieving less than students of other races and ethnicities.⁷ African-American students, who lag the farthest behind other races in terms of the achievement gap, appear to be a financial detriment to districts trying to receive state education aid funds. Federal Title I funds that are directed to high-poverty school districts likely make up some of the decreases caused by the negative coefficients found here on both district enrollment and percentage of black students. Another silver lining in these results is, of course, the mostly positive coefficients seen on the percentage of Hispanic students variable. Though the negative coefficient on the 2005 non-fixed effects model is significant, the three more plausible fixed effects models show significantly positive rates of targeting to Hispanic students. The highest of these coefficients occurs in 2005 and is possibly attributable to the increased emphasis on English Language Learner (ELL) education brought about by No Child Left Behind (NCLB), though increasing populations of Hispanic students nationwide are also plausible causes of increased targeted spending toward them as well.

7 2007 results from the National Assessment of Educational Progress (the NAEP or Nation's Report Card) math and reading assessments show black students trailing all other races at both the 4th and 8th grade levels. Similar results hold for 2000, 2003, 2005.

The amount of unexplained variance in the models in this study lends credence to the idea that there are variables affecting targeting that have not been examined in this study. The largest r^2 obtained here is .2429, comparatively small when that leaves 75% of the variance unexplained. It begs the question of what other factors could be affecting the ways that states distribute their aid. Student achievement, as measured by performance in state standardized assessments, could be driving aid distribution if funds are being allocated to either reward high-achieving districts or help to raise achievement in underperforming schools. Determining what these other factors might be is a task for future research.

This study provides updates and changes a previous finding in the area of education finance targeting. But more questions remain. First, in a future analysis, more district level variables could be incorporated to determine more narrowly what district-level characteristics are being targeted. There are many examples of these variables. A few of these are district population density (to see if money is being targeted to rural or urban districts), and district percentage of special education students or district percentage of ELL students. Additionally, achievement variables could be incorporated into a future study to determine if districts who are not meeting achievement goals have additional funds targeted to them. Finally, it would be valuable to revisit the federal targeting question in Morgan and Pelissero's 1992 study. That study showed that there were no discernible targeting practices at the federal level, but since the implementation of NCLB and with accountability playing such an important part of the current domestic education culture, it would be interesting to see if districts getting additional federal based on achievement levels or if the federal government tends to target to other characteristics or if it is still not engaging in targeting practices. This is a rich field full of potential future inquiries. This is due in large part to the ways that NCLB has affected federal-state, state-local, and federal-local government relationships; with these changing dynamics, it is important to examine how fiscal policy is being affected.

Conclusion

This study's results are notable because they differ from those found in the most recent study of state aid targeting, Pelissero and Morgan's 1989 and 1992 efforts. The school finance reform movement appears to have gained ground in its effort to redistribute aid to poor and traditionally underachieving students. Regressions from three academic years that were conducted in this study show with statistical significance that school district enrollment, a historically dominant and positive determinant of where state education aid is allocated, now varies negatively with per student state aid. These regressions also show that school district poverty, as examined through student eligibility for federal free lunch programs, is being targeted nationally as evidenced by the significant and positive correlations obtained. Hispanic students are being similarly targeted, but coefficients for populations of black students vary negatively with state aid, which is a surprising finding that merits a closer look in future research.

This study is valuable in the context of today's education system for a few reasons. First, the American economy is in danger of being dragged down by a lack of a workforce that is as well-educated as it could be. The school districts that need to have educational aid targeted to them the most, because of poverty or populations of students from historically underachieving groups, are often also the school districts that are failing to produce well-educated and well-informed citizens. Fortunately, this study's results indicate that states are shifting their funding practices to try to ensure that districts who are in need are targeted with more funds. Unfortunately, this funding change is neglecting at least one notable group, black students, who continue to achieve less than other racial groups and are not realizing the financial benefits of increased targeting.

Finally, this study leaves the door open for new research in a number of directions. First, the low levels of explained variance in these models means there could be other variables affecting targeting and the distribution of state aid that were not considered in this study. Additionally, further

examinations into state behaviors toward district own-source revenue, NCLB's effect on federal targeting practices, other factors affecting district-level targeting, or the apparent shifting of funds away from black students that is revealed by this study would all be valuable contributions to this area of research, which is so important for understanding how education revenues can be spent to best aid students who need it.

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