

Cross-subsidization and Equity in Special Education Funding

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Abstract: State special education funding systems affect the provision of special education services and how these services are distributed based on school district wealth and composition of special need students. This study focuses on how district wealth and the provision of special education services are related to cross-subsidization, a feature of many state funding systems, where revenues provided for special education are insufficient to cover expenditures. Cross-subsidization occurs when district general funds are used for this shortfall in special education revenue. Using a unique panel dataset that includes detailed annual district level financial and enrollment information for 604 local and intermediate school districts in Michigan, our main findings are that: (i) the financial burden associated with cross-subsidization is significantly greater for the poorest districts due to their larger fraction of special need students; and (ii) the composition of students receiving special education services vary with district wealth and this variation is likely attributable to both compositional differences of special need students and differences in the identification or services provided to special need students.

(JEL Classifications: **I00, I2**)

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I. Introduction

The passage of the Education for all Handicapped Children Act in 1975, later renamed the Individuals with Disabilities Education Act (IDEA), established the rights of students with disabilities to receive a “free and appropriate” education. The law provided some federal funding for special education services but required states, in partnership with local districts, to develop systems to provide financial support. While each state has its own unique features, researchers often categorize the state special education funding system as per-pupil funding, cost reimbursement, resource based, and census allocation (Verstegen, 2011; Parrish et al, 2003; Harr, Parrish, & Chambers 2008).¹

A state’s funding structure affects both the level of special education services provided and how equitably these services are distributed across districts. Irrespective of the funding system, almost all states use general fund revenues to pay for special education services (which is termed cross subsidization). However, the level of cross subsidization and how it relates to a district’s wealth will clearly depend on the state’s funding system. The level of cross subsidization will also depend on a district’s composition of special need students and could affect the provision of special education services (Meredith & Underwood, 1995). This paper documents the relationships between cross-subsidization, district wealth, composition of special education students and the provisions of special education services in Michigan.

Michigan’s special education funding system, where both local school districts and Intermediate School Districts (ISDs) provide special education services, is an interesting system

¹ These different systems distribute state funds for special education to school districts based on the number (and types) of students identified as having special needs (per-pupil funding), the special education costs incurred by the districts (cost reimbursement), the special education resources deemed appropriate by the state (resource based), or based on the student age population residing in the school district (census allocation). See Harr, Parrish, & Chambers (2008), Dempsey & Fuchs (1993), Dhuey & Lipscomb (2011), Kwak (2010), Mahitivanichcha & Parrish (2005), and Baker & Ramsey (2010) for analysis and discussion of the financial incentives provided by the different funding systems.

to study equity issues associated with cross-subsidization. Michigan, like most states, devotes a large portion of its education budget, around \$1.0 Billion, to support special education, and total expenditures for special education in the state exceeds \$4 Billion (Michigan House Fiscal Agency, 2015). At just over 25% of school spending in the state, this represents a significant portion of Michigan's education related expenditures. Michigan funds special education services through a combination of per-pupil funding and cost reimbursement, resulting in a level of support from the state of around 30% of approved special education expenditures.² Restricted local funding, combined with this level of state support, results in significant cross-subsidization of special education in most districts. Michigan organizes local school districts under ISDs that coordinate special education services across local districts and usually operate facilities that provide special education services. In terms of special education expenditures, Conlin & Jalilevand (2015) find large inequities in spending across districts, based on taxable values at the local district and ISD levels.

This study uses a unique panel dataset that includes annual district level financial and enrollment data, allowing a credible estimate of cross-subsidization in Michigan, and its variation over time and across wealth quintiles. While this analysis is limited by the unobserved individual nature of each special education student's disability, using across district and within district, across year variation, we explore the relationships between cross-subsidization and district property wealth, as well as the composition and location of special education students. We find that: (i) the financial burden associated with cross-subsidization is significantly greater for the poorest districts due to their larger fraction of special need students; and (ii) the composition of students receiving special education services vary with district wealth and

² See Citizen's Research Council (2012) for an overview of Michigan's special education funding structure and Michigan Department of Education (2013) for details of the administrative rules for special education.

changes in a district's wealth significantly change the provision of special education services. There are many possible explanations for these findings, including differences in the composition of special need students, differences in whether a mildly impaired student receives any special education services, and variability in services provided to a student with a particular set of special education needs. The fact that changes in a district's wealth are associated with significant changes in the average level of services provided to special education students suggests that our findings are not solely attributable to compositional differences in special need students. In terms of student location, we find that whether a special education student is placed at an ISD facility or a local district does not appear to be significantly influenced by district wealth or cross-subsidization.

II. Literature Review

This study contributes to the research on equity, cross-subsidization, and provision of special education services. Research into equity issues around special education funding is not abundant, but has uncovered concerns. Harr, Parrish, & Chambers (2008), summarizing research from the Special Education Expenditure Project (SEEP) completed in 2002, determined that existing state systems tend to produce disparities in funding and expenditures that are unrelated to cost factors associated with the disabled student's needs.³ Conlin & Jalilevand (2015) found large disparities in spending per special education student across Michigan school districts which varied according to the property wealth and income of the district. The inequities were amplified by services provided by the Intermediate School Districts. The study also found large differences in the number of special education students. Baker and Ramsey (2010) raised equity concerns in their study of two states with census-based reimbursement systems, finding dramatic

³ See Chambers et al, (2002). More recent national data are not available.

disparities in special education funding per student resulting from the non-uniform distribution of students with special needs. Baker, Green, & Ramsey (2012) discuss inequities related to identification of special education students, noting that funding systems can have incentives embedded in them that promote or discourage identification, but that such incentives can distort the “true need”, or underlying distribution of special needs students. These studies illustrate common inequities in special education funding systems, but do not link inequities to cross-subsidization.

Cross-subsidization, also referred to as encroachment, and the competition for resources between special education and general education has been a concern for many years (Meredith & Underwood, 1995), and has contributed to the large number of lawsuits over special education funding systems (Parrish, 2001; Martin, Martin, & Terman, 1996; Sielke & Russo, 1999). Empirical work examining cross-subsidization, however, has been sparse. Parrish (2001) examined national special education expenditure data with cross-subsidization specifically in mind, but did not find evidence of cross-subsidization. Cullen (1997), in her study of special education “crowd-out” in Texas, does conclude that “special education mandates redistribute funds from regular education students to special needs students (p. 49).” Lankford & Wyckoff (1999) in their study of special education funding in New York state, find little evidence that special education expenditures “crowd-out” spending for regular education, but note that changing district composition, including increases in numbers of special education students has squeezed district budgets. Murphy and Picus (1996) identified encroachment among districts in California, and noted variation among counties in encroachment amounts. None of the mentioned studies, however, have quantified cross-subsidization in a funding system over time,

looked for variations in cross-subsidization related to district characteristics, or considered how cross-subsidization creates financial implications that may differ for poor and wealthy districts.

A significant amount of the literature on special education finance focuses on financial incentives embedded in state funding systems. Mahitivanichcha & Parrish (2005) surveyed several state funding systems, concluding that the relationship between incentives and practice is complex. They identify interactions between financial and compliance incentives which frequently arise in the administration of federal law. Dhuey & Lipscomb (2011), on the other hand, found that school districts respond to financial incentives. They compared the nine state census-based funding systems to systems in other states, and linked census based funding reforms to a 10% reduction in special education identification rates, changing placements for disabled students, and differing exit rates.

State specific research has also uncovered district responses to financial incentives. Kwak (2010) found that in California, districts responded to the 1997 conversion to a census-based system by classifying fewer students as disabled. Cullen (2003) concluded that financial incentives play an important role in determining the size of special education programs in Texas. Battisti, Friesen and Hickey (2012) similarly found that in British Columbia, the elimination of supplemental grants for special education students resulted in fewer students identified as having special needs.

Overall, empirical work has established that financial and other incentives can play a role in the administration of special education services and the identification of special education students, and that inequities exist in the levels of special education spending across districts. Less work has been done in the area of cross-subsidization. This paper contributes to our understanding of special education funding by examining cross-subsidization over a seven year

time period, under one state financing system, with a focus on the relationships between cross-subsidization and district wealth. Further, it is the first study to consider how the financial implications associated with cross-subsidization may vary for poor and wealthy districts due to compositional differences in the special needs population, and possibly affect the services provided to special needs students. While this paper does provide a detailed analysis of these relationships, the district level panel data does not allow causal inference in terms of how district wealth affects cross-subsidization and how cross-subsidization affects the composition of special need students and the provision of services for these students.

III. Background on Michigan Special Education Finance

Michigan currently has 549 local school districts and 280 charter schools. Each local district and charter school belongs to one of fifty-seven ISDs, countywide or several-county organizations that coordinate services for a group of school districts.⁴ ISDs provide a wide range of services, but have a central responsibility to provide and coordinate special education services. Some ISDs provide comprehensive special education services on site, while others coordinate special education in their member districts, while providing minimal services at ISD locations.⁵ ISDs may provide services that overlap with local district programs and local school districts may have the option of placing students in their own programs, or in ISD facilities. In addition, local districts may contract for services or receive in-kind services from their ISD. ISDs obtain resources for these activities from a special education property tax levy that provides revenues for ISD operations and for member districts. ISDs also receive state and federal funds, and may

⁴ Charter schools are assigned membership to ISDs and are eligible to receive special education revenues from federal, state, and local ISD sources. Because the number of special education students at charter schools is minimal, we focus on local school districts and ISDs.

⁵ Kent, Oakland, and Wayne ISDs, which cover over one third of Michigan's K-12 enrollment, offer minimal in-house special education services.

distribute funds to their member districts. Along with these ISD resources and state funding, local districts can receive special education funding from the federal government.

Federal law has established and protected the rights of disabled students and encourages districts to identify disabled students and provide services, regardless of cost and in the “least restrictive environment”. “Maintenance of effort” rules attempt to ensure that local and state special education spending levels are maintained, regardless of the levels of federal funding. Federal law thus provides compliance incentives to local school districts that can compete with financial incentives embedded in the state special education finance system.

IV. Data and Summary Statistics

The dataset consists of annual special education enrollment and financial information at both the local district and ISD level. The enrollment data, provided by the Michigan Department of Education (MDE) and the Michigan Center for Educational Performance and Information (CEPI), includes the number of students with Individualized Education Plans (IEPs) and the number of full time equivalent special education students (FTEs). Along with this enrollment information, the MDE provides complete special education expenditure and state revenue data.⁶ CEPI provides annual financial data for each school district and ISD. Finally, the Michigan Department of Treasure (MDT) provided taxable values and special education millage rates. The annual data from these different sources were obtained for 547 of the 552 local districts and all 57 ISDs from 2004 through 2010.

Table 1 contains the means and standard deviations of the enrollment and financial variables. Every student that receives special education services is provided with an IEP, outlining planned services, but many students at the local districts with IEPs spend a significant portion of their

⁶ The MDE provides this expenditure and revenue information for both local districts and ISDs on their Michigan State Aid Financial Status Reports. The Financial Information Database (FID) maintained by CEPI contains the financial data.

time in regular classrooms. Special education FTEs, in contrast, measure the equivalent full time number of special education students. Special education FTEs represent less than 5% of general education FTEs. On average, a district has more than three times the number of students with IEPs as FTEs (398 compared to 123), and IEPs are issued to 14% of students. This suggests that the majority of students receiving special education services are in regular classrooms for a significant portion of the day.⁷ Many of the more severely disabled students requiring full time services attend ISD facilities and, on average, ISDs enroll 281 special education FTEs at their facilities. Because there are almost ten times as many local districts as ISDs, the majority of special education FTEs receive services at the local district.

There are large differences across districts in the fraction of students receiving special education services and these differences are correlated with district demographics such as wealth. Figure 1 depicts the percent of total FTEs (sum of general and special education FTEs) that are special education, across different property wealth quintiles based on average annual taxable values per total FTE.⁸ The figure indicates that, in general, the percentage of special education FTEs decreases across wealth quintiles and that the poorest quintile has a much larger fraction of students with special education FTEs than the other wealth quintiles.⁹ In addition, the number of special education FTEs has declined from 2004 to 2010 for all wealth quintiles, with an average decrease of 26.6% across this time span, much greater than the 9.97% decrease in

⁷ The district does have discretion in terms of how they calculate a special education FTE.

⁸ One measure of district wealth is taxable value per total number of FTEs. To obtain the quintiles, we first calculate a district's average annual taxable value per total FTE from 2004 to 2010. This ensures that a local school district remains in the same quintile across years. We then designate the 20 percent of school districts with the largest average annual taxable values per total FTE as the wealthiest quintile, the districts from 20-40 percent as the wealthier quintile and so forth. As indicated in Table 1, the average annual taxable value per total FTE across all districts is \$330 million and varies significantly across districts.

⁹ The districts in the poorest quintile also have a higher proportion of IEPs but this difference relative to districts in the other quintiles is not as large as the difference in special education FTEs. One obvious explanation is that the distribution of students requiring specific types of special education services varies based on district wealth. It could also be the case that the incentive to provide special education services and provide a student with an IEP depends on the wealth of the district.

general education FTEs across the state.¹⁰ Interestingly, the poorest quintile has experienced the largest drop in general education FTEs (24.4%) as well as the largest percentage point decrease (38.9%) in the number of special education FTEs from 2004 to 2010. While the decline in special education FTEs for all wealth quintiles has been greater than the decline in total FTEs, the overall decline in IEPs is similar to the decline in general education FTEs (7.81% compared to 9.97%).¹¹ In terms of other wealth proxies, we obtain similar results when median income and percent of resident children (ages 5 to 17) above the poverty line are used as the measure of district wealth.

In terms of revenue designated for special education services, Table 1 indicates that the average for a local school district is slightly over \$3.1 million. The largest revenue sources are the state (average of \$1.45 million) and non-federal revenue transfers from the ISD (average of \$1.19 million). Combining revenue and expenditure data, we calculate that the average district will have expenditures in excess of special education designated revenue of \$1.36 million. Local districts make up this shortfall using general fund revenue. This shortfall results in 30% of the special education budget being cross subsidized by general fund revenue. Figure 2 demonstrates that while the amount of cross-subsidization per special education FTE does increase slightly across wealth quintiles, special education revenues, and thereby expenditures, increases

¹⁰ One explanation for the changes in FTEs are the changes associated with the reauthorization of IDEA in 2004. This reauthorization, which emphasized the education of students in the Least Restrictive Environment, caused many districts to switch to a co-teaching model of service delivery, placing special education students with a special education teacher in a general education class. Depending on how districts accounted for co-taught classrooms, this could result in a reduction in special education FTEs. Another explanation is that, conditional on special education services, districts have financial incentive to report the minimum number of special education FTEs. The decline could also reflect decreases in services per IEP.

¹¹ It is interesting to note that the poorest quintile experienced a percent decline in general education FTEs that is significantly larger than the decrease in IEPs (24.4% compared to 16.9%). This results in the percentage of total FTEs with IEPs increasing significantly across years for only the poorest quintile.

significantly more across wealth quintiles.¹² While the cross-subsidization per special education FTE is slightly lower for poorer districts, the amount required from the general education budget for special education expenditures is greater for the poorest districts due to the larger number of special education FTEs. This is demonstrated in Figure 3 which indicates that the cross-subsidization per total FTEs is significantly greater for districts in the poorest quintile. Similar figures are obtained when median income and percent of resident children above the poverty line are used as proxies for district wealth.

Along with the local school districts, there is significant variation in the amount of special education resources and services provided at facilities operated by the fifty seven ISDs. Table 2 summarizes ISD characteristics by the wealth quintile constructed from the local district taxable values per total FTEs. Notice that the fraction of special education FTEs located at ISD facilities does not vary systematically with wealth. The fraction of special education FTEs at ISD facilities is 0.12 for the poorest quintile, 0.23 for the poorer quintile and ranges between 0.15 and 0.18 for the other three quintiles. As expected, quintiles that service a larger portion of special education FTEs at ISD facilities distribute a smaller percentage of their revenue to local districts. In terms of expenditures per special education FTE at ISD facilities, it increases monotonically with quintile wealth - with some of these expenditures funding in-kind transfers to local districts. The ISDs associated with local districts in the wealthiest and wealthier quintiles receive a large portion, more than half, of their revenue from property taxes, while ISDs in the poorer and poorest quintiles receive around a quarter of their revenue from property taxes. The larger

¹² This difference in special education funding per special education FTE is primarily due to wealthy districts receiving larger transfers from their ISD and obtaining more state revenue for special education services. As Table 1 indicates, there are significant differences in tax bases across ISDs (both homestead and non-homestead properties) and this results in significant differences across ISDs in taxes collected from special education millages. In terms of state revenue, the Michigan funding system is based on cost reimbursement which results in higher spending districts receiving more state funds for special education.

proportion of property tax revenues for wealthier ISDs is attributable to a larger tax base, but not to a higher special education millage rate. In fact, the districts in the wealthiest quintile have the lowest average ISD special education millage rate of 2.54.¹³

V. Empirical Specification and Estimates

To further analyze the relationship between cross-subsidization, property wealth and the provision of special education services, we first estimate the following regression model:

$$\ln(\text{Cross Sub}_{st}) = \beta_1 \ln(\text{Taxable Value Per Total FTE}_{st}) + \theta_t + \varepsilon_{st}.$$

The variable $\ln(\text{Cross Sub}_{st})$ is the natural log of cross-subsidization per special education FTE or total FTE for school district s in year t ; $\ln(\text{Taxable Value Per Total FTE}_{st})$ is the natural log of the taxable value per total FTE for school district s in year t ; θ_t is year fixed effects; and ε_{st} is an idiosyncratic error term. By using cross district variation to identify the relationship between taxable value per total FTEs and cross-subsidization, this specification considers how cross-subsidization varies with district wealth. The estimate in Column 1 of Table 3, along with those obtained when using our other wealth proxies, suggests that wealthier districts choose special education spending levels that require higher rates of cross-subsidization per special education FTE. The positive estimate of β_1 indicates that a district with a ten percent greater taxable value per total FTEs is expected to have a 3.26 percent larger cross-subsidization per special education FTEs. The estimate of β_1 in Column 3 indicates a small positive correlation between taxable value per total FTE and cross-subsidization per total FTE: with this correlation being negative when median income and percent of resident children above the poverty line are used as proxies for district wealth. These correlations are attributable to districts in the poorest quintile having

¹³ ISD expenditures are not cross subsidized. ISDs obtain enough revenue from the special education millage and state/federal sources to cover all special education services provided at ISD facilities. They distribute revenue, or provide in-kind transfers, to their member districts only after ISD expenses are covered.

much larger cross-subsidization per total FTE due to their larger proportion of students requiring special education services (see Figure 3).¹⁴

To provide further insight on compositional issues, we include district-level fixed effects in the above specifications. By adding district-level indicator variables, we use within-district, across-year variation to identify the relationship between changes in taxable value per total FTEs and changes in cross-subsidization per FTEs. The estimates in Columns 2 and 4 of Panel A indicate that a decrease in a district's taxable value per total FTE is associated with a relatively large decrease in cross-subsidization per special education FTE and total FTE. The fact that the positive estimates of β_1 significantly increase with district fixed effects may be attributable to districts increasing the services provided to their special need students as their ISD's tax revenue from the special education millage increases. It may also be attributable to compositional changes in the districts' special education students. Interestingly, the estimate of β_1 is negative in this specification when median income and percent of resident children above the poverty line are used as wealth proxies. This further suggests compositional changes associated with changes in district wealth.

To further examine the compositional differences of special education students across districts, we estimate specifications that consider the relationship of the ratio of IEPs to FTEs to taxable value and cross-subsidization (see Columns 5 and 6 of Panel A in Table 3). To control for potential economies of scale, this specification also includes the natural log of total FTEs as a covariate. In addition, to provide insight on incentive issues, the natural log of cross-subsidization per special education FTEs is included as a covariate. The estimates in Column 5,

¹⁴ Irrespective of wealth proxy, the cross subsidization per total FTE for the wealthiest quintile is significantly less than for the poorest quintile. Districts in the wealthiest quintile have slightly greater cross subsidization per total FTE than the wealthier, median and poorer quintiles when the wealth proxy is based on taxable value but similar cross subsidization when median income and percent of resident children above the poverty line are the wealth proxies.

which do not include district fixed effects, provide some evidence that wealthier districts have slightly greater IEP to FTE ratios. Again, this could be due to a different population of special need students, differences in whether a mildly impaired student receives an IEP or differences in services provided to a student with an IEP. The coefficient estimate (6.003) associated with taxable value per total FTE when district fixed effects are included in the specification (Column 6) suggests that increases in a district's taxable value per total FTE is associated with significant changes in the ratio of IEPs to special education FTEs. It would be surprising if such large changes in this ratio are attributable solely to compositional changes in the population of special need students.¹⁵ The positive coefficient estimates associated with cross-subsidization provide no evidence that a district's decision to provide an IEP to a student with marginal special education needs is negatively influenced by the amount the district general fund subsidizes special education students. That said, it could be the case that those districts with large cross-subsidizations are attracting more students who require an IEP but have minimal special education needs.

The estimates in Panel A of Table 3 do not address the possible inequity associated with differences in ISD facilities and the incentives associated with placing a special education student at an ISD facility versus at a local school district. To provide insight into this location issue, we aggregate the annual data to the ISD level and construct the ratio of special education FTEs at the local school districts to FTEs at ISD facilities. The first two columns of Panel B contain estimates when this ratio is regressed on the natural log of taxable value per total FTE

¹⁵ We obtain somewhat similar estimates when we use median income and percent of resident children above the poverty line as wealth proxies.

and the natural log of total FTEs (in ISD facilities as well as the local districts).¹⁶ First, note that this ratio of special education FTEs at the local district to the ISD facilities does not vary with taxable value per total FTE. The positive coefficient when ISD fixed effects are included suggests that the wealth of a district increasing is associated with a slight increase in the proportion of special education FTEs located at the local districts. When cross-subsidization per special education FTEs is added as a covariate, the coefficient estimates suggest that while the ratio of special education FTEs at the local school districts and ISD facilities is positively correlated with local district cross-subsidization, this ratio does not change when a district's wealth changes across years. In summary, the estimates in Panel B provide no evidence that the decision of whether a student is placed at an ISD facility is influenced by changes in district wealth or local district financial incentives.

VI. Conclusion

Local school districts in Michigan have experienced significant declines in both general education and special education enrollment over the past 15 years. Over the time period we analyze (2004 through 2010), general education FTEs declined 9.97%, special education FTEs declined 26.6% and students with IEPs declined 7.81%. Along with declining enrollment, the state has reduced K-12 education funding (in real terms) which has caused many districts to experience budgetary challenges. Faced with declining enrollment and revenues, districts may reduce special education expenditures by decreasing identification (i.e., IEPs), decreasing services to students with IEPs, and/or encouraging students to receive services at ISD facilities. The incentive to take these actions is magnified by the significant amount of cross-subsidization that exists in Michigan school districts and may be greater for the poorest districts because of a

¹⁶ Kent, Oakland, and Wayne ISDs are outliers in terms of the ratio of special education FTEs at the local districts and at ISD facilities because they have very minimal ISD facilities and offer almost zero in-house special education services. Therefore, we drop these ISD observations when estimating the specifications in Panel B of Table 3.

significantly greater financial burden associated with cross-subsidization due to their larger fraction of special need students. The ability of school districts to take these actions is restricted by federal laws that encourage districts to identify disabled students and provide services, regardless of cost and in the “least restrictive environment”. Along with the “Maintenance of effort” rule, these federal laws may impede local school districts from decreasing services and dissuading special need students from attending the district.

This paper also finds that changes in a district’s wealth is associated with significant changes in the average level of services provided to students identified as special needs and that the composition of students receiving special education services vary with district wealth. This variation based on district wealth, and the changes in the variation across years, is likely attributable to both compositional differences of special need students and perhaps differences in the identification or services provided to special need students. Using district-level panel data, we are unable to determine whether our empirical results are mainly attributable to compositional or incentive differences. Observing individual students over time is likely necessary if one is to credibly estimate these compositional and incentive effects. That said, district-level panel data does allow us to credibly quantify not only the cross-subsidization but also the inequities that exist in special education services provided by Michigan school districts.

Table 1: Descriptive Statistics
Annual Observations from 2004 through 2010

	Means (Standard Deviations)
Students with IEPs at Local Districts	398 (901)
Special Education FTEs at Local Districts	123 (426)
General Education FTEs at Local District	2,689 (5,158)
Special Education FTEs at ISD Facilities	281 (328)
<u>Special Education Revenue Sources for Local District (\$Millions)</u>	
Federal Revenue	0.074 (0.655)
State Revenue	1.45 (4.80)
Local Revenue	0.056 (0.058)
Federal Revenue through ISD	0.344 (1.40)
Non-Federal Revenue through ISD	1.19 (4.42)
Cross-subsidization from General Fund (\$Millions)	1.36 (4.88)
Total Special Education Revenue for ISD (\$Millions)	82.6 (103)
Total Special Education Expenditures for ISD (\$Millions)	77.3 (92.4)
Taxable Value Per Total FTE at Local District (\$Millions)	330 (945)
Taxable Value of Homesteads in ISD (\$Billions)	7.70 (11.7)
Taxable Value of Non-Homesteads in ISD (\$ Billions)	5.46 (7.97)
ISD Special Education Millage	2.70 (1.05)
ISD Taxes Collected for Special Education from Homesteads (\$Millions)	22.7 (34.3)
ISD Taxes Collected for Special Education from Non-Homesteads (\$Millions)	13.7 (20.7)
Annual Local District Observations	3,829

Note: There are 165 observations where the number of special education FTEs is zero and 183 observations where the number of IEPs is zero, excluding charter schools. The averages, including those for the ISD related variables, are based on the local district-year observations. Therefore, information from ISDs containing a large number of local districts are given more weight than ISDs with fewer affiliated districts.

Table 2: ISD Characteristics by Local District Quintiles

	Poorest	Poorer	Medium	Wealthier	Wealthiest
Fraction of Special Education FTEs at ISD Facilities	0.12	0.23	0.18	0.15	0.16
Percent of ISD Revenue Transferred to Local Districts	0.51	0.19	0.35	0.37	0.47
Expenditures at ISDs facilities per Special Education FTE (in \$1,000) ^A	134	151	153	191	213
Percent of ISD Revenue Obtained from Property Taxes	0.28	0.25	0.41	0.61	0.76
Homestead Taxes per FTE	6,655	7,199	8,356	8,911	10,319
Non-Homestead Taxes per FTE	4,161	4,413	4,929	5,305	6,332
ISD Special Education Millage	3.07	2.98	3.22	2.89	2.54

Note A: These expenditures also include in-kind transfers from the ISD to the local districts.

Table 3: Complete Set of Regressions

Panel A: Local Districts	Cross Sub per SE FTE	Cross Sub per SE FTE	Cross Sub per Total FTE	Cross Sub per Total FTE	Ratio IEP to SE FTE	Ratio IEP to SE FTE
ln(Taxable Value Per Total FTE)	0.326** (0.033)	0.871** (0.156)	0.093** (0.029)	0.657** (0.143)	0.454* (0.224)	6.003** (1.881)
ln(Total FTEs)					-1.033** (0.193)	3.287 (3.926)
ln(Cross-subsidization Per SE FTEs)					1.941* (0.743)	3.173* (1.789)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Local District Fixed Effects	No	Yes	No	Yes	No	Yes
R-squared	0.05	0.74	0.01	0.75	0.08	0.36
Observations	3,500	3,500	3,500	3,500	3,500	3,500
Panel B: ISDs (Excludes Kent, Oakland, and Wayne)						
	Ratio Local to ISD	Ratio Local to ISD	Ratio Local to ISD	Ratio Local to ISD		
ln(Taxable Value Per Total FTEs)	-0.017 (0.259)	1.057 (0.960)	-0.091 (0.252)	1.054 (0.962)		
ln(Total FTEs)	0.646** (0.114)	1.362 (1.466)	0.668** (0.117)	1.357 (1.518)		
ln(Cross-subsidization per FTEs)			0.771** (0.134)	-0.026 (0.084)		
Year Fixed Effects	Yes	Yes	Yes	Yes		
ISD Fixed Effects	No	Yes	No	Yes		
R-squared	0.12	0.94	0.17	0.94		
Observations	377	377	377	377		

Note: Dependent variables are natural logs of the listed revenue variables. Each specification contains year fixed effects. Robust standard errors, clustered at the local school district or intermediate school district level given in parentheses. ** p<0.01, * p<0.05.

Figure 1. Special Education FTEs as Percent of Total FTEs by Wealth Quintiles

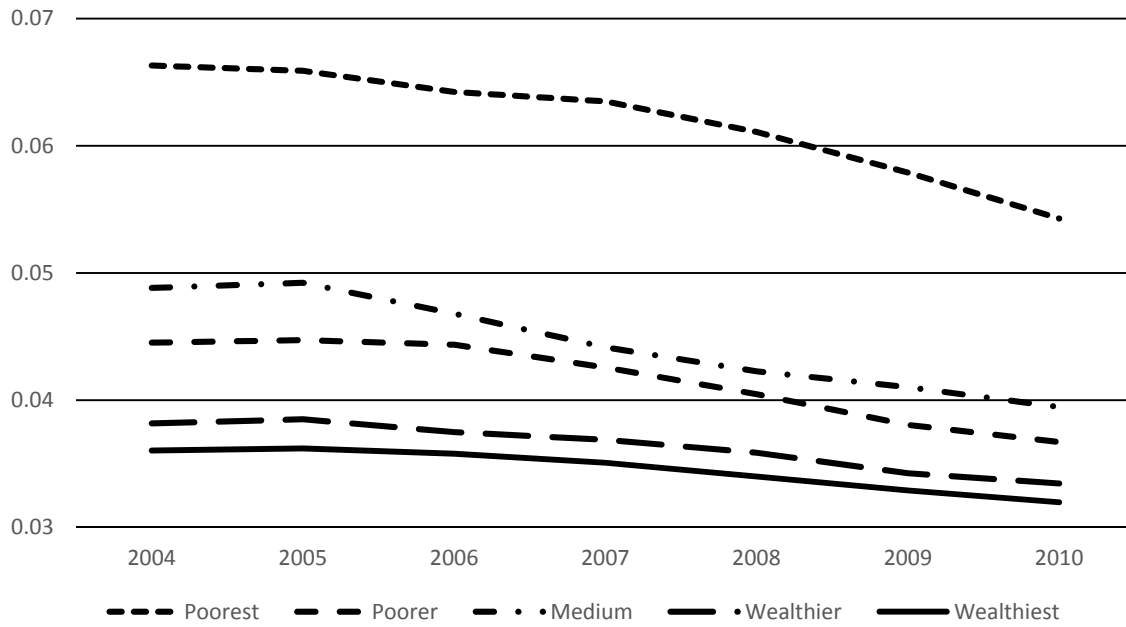


Figure 2. Special Education Funding per Special Education FTE by Source and Wealth Quintile

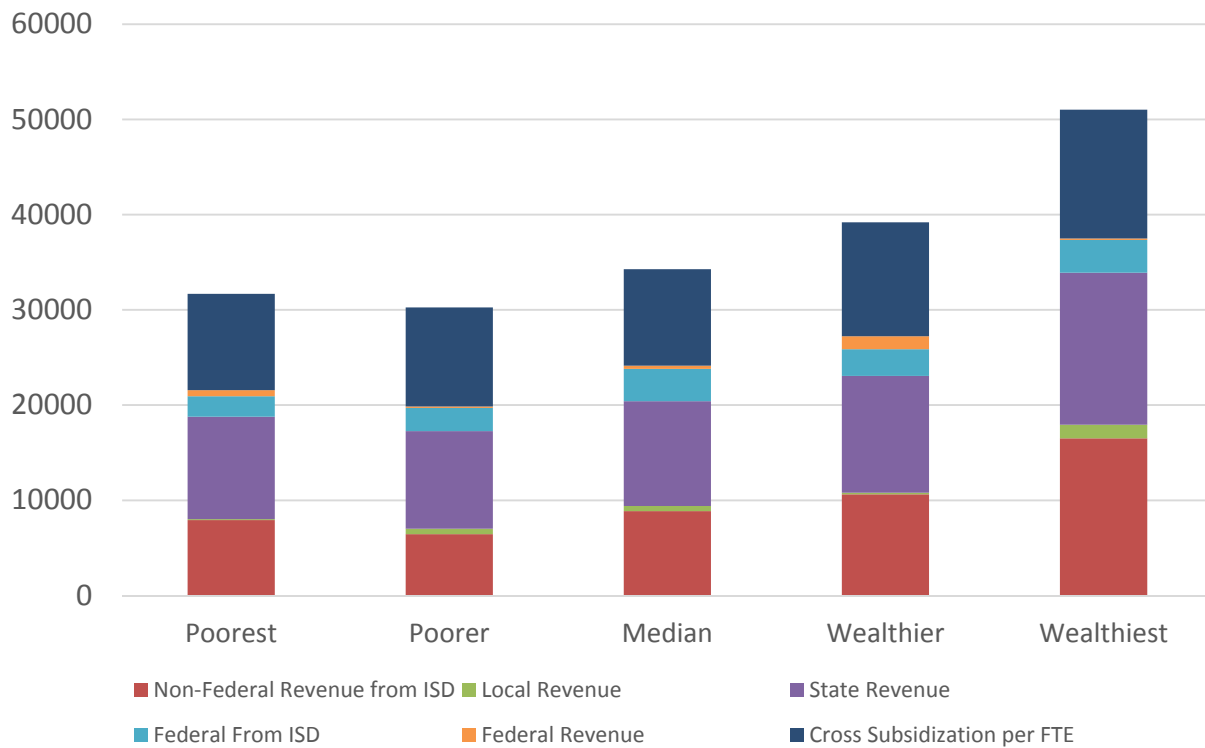
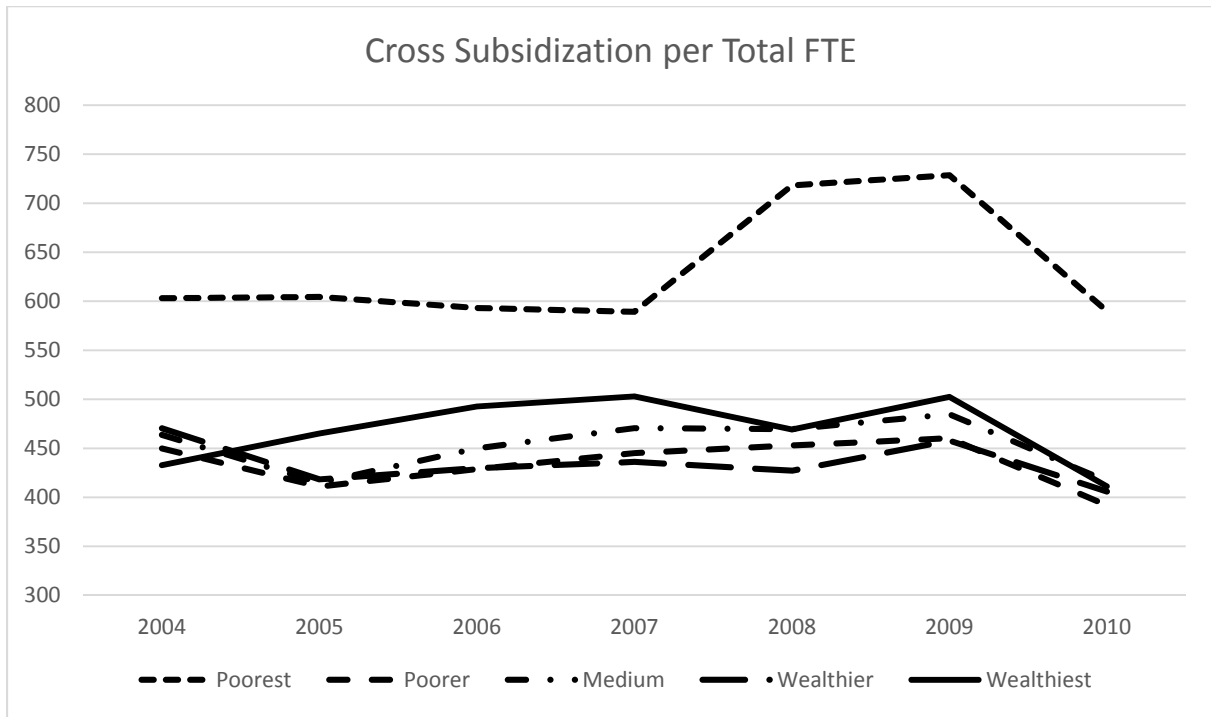


Figure 3. Cross-subsidization per Total FTE, by Wealth Quintile



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