Equity and Unrestricted Funds in Special Education

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Abstract: A state's special education 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, districts in almost all states use unrestricted funds to pay for special education services not covered by revenue designated for special education. This study focuses on how district wealth and the provision of special education services are related to this use of unrestricted funds. 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 using unrestricted funds for special education expenditures is significantly greater for the poorest districts due to their larger fraction of special need students; and (ii) students receiving special education services vary with district wealth and this variation is likely attributable to both compositional differences of special need students and financial incentives that create differences in the special education identification and services. While unable to quantify the compositional and incentive effects, our results clearly document large inequities in special education funding across Michigan school districts.

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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, districts in almost all states use unrestricted funds to pay for special education services not covered by revenue designated for special education. The level of unrestricted funds required, however, and how it relates to a district's wealth will clearly depend on the state's funding system. The level 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 unrestricted funds, district wealth, composition of special education students and the provisions of special education services in Michigan. While this paper does not address how unrestricted funds should be allocated across special and general education students, it does document the inequalities generated from having special education

[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.

funding dependent on property taxes and from having larger proportions of special need students in the poorest districts. These inequities are pertinent for special education students and, through the use of unrestricted funds, general education students.[2]

Michigan's special education funding system is an interesting system in which to study equity and composition issues due to the shared responsibilities of local school districts and Intermediate School Districts (ISDs) to provide services and its combination of federal, state and local revenue sources. Michigan organizes local school districts under ISDs that coordinate special education services across local districts and often operate facilities for those students requiring significant special education services.[3] ISDs also levy a special education millage which provides local source revenue to support special education at the ISD and in its member districts. Since there are large tax base differences across ISDs, there is significant variation in these revenues across ISDs. From 2004 through 2010, total annual revenue from federal, state and local sources designated for special education services averaged $1,987 million (M) for the ISDs and $1,706M for the local school districts. Total annual special education expenditures by the over 550 local school districts averaged $2,452M, requiring districts to spend $746 M annually from unrestricted funds on special education services.[4,5] The amount of unrestricted funds used for special education expenditures varies dramatically across districts due to differences in the fraction of students requiring special education services and the amount of

[2] Conlin & Thompson (2014) consider equity issues in Ohio and Michigan school districts by comparing how total revenue and expenditures vary based on district wealth.
[3] 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.
[4] The Michigan House Fiscal Agency estimates that total expenditures for special education in the state exceeds $4 Billion in 2015. At just over 25% of school spending in the state, this represents a significant portion of Michigan's education related expenditures.
[5] ISDs receive full funding for special education services and do not use unrestricted funds for special education.

local source revenues received from the ISDs.[6] This uneven reliance on unrestricted funds has been a prominent issue in many of the poorest Michigan school districts including Detroit and Flint.[7]

This study uses a unique panel dataset that includes annual district level financial and enrollment data from Michigan, allowing credible estimates of special education expenditures and revenue, student composition and district wealth. While this analysis is limited by the unobserved individual nature of each special education student's disability, we explore the composition and location of special education students as well as the relationships between unrestricted fund expenditures on special education and district property wealth. We find that: (i) the financial burden associated with using unrestricted funds for special education expenditures is significantly greater for the poorest districts due to their larger fraction of special need students; and (ii) students receiving special education services vary with district wealth and this variation is likely attributable to both compositional differences of special need students and financial incentives that create differences in the special education identification and 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

[6] 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.

[7] In a March 26, 2015 Detroit News article, a memo by William Aldridge (the former chief financial and administrative officer of Detroit Public Schools) is mentioned that states Detroit Public Schools "was required to subsidize special education operations by over $40 million" in the 2013-2014 academic year.

students. While we are unable to quantify the compositional and incentive effects, our results clearly document large inequities in special education funding across Michigan school districts.

II. **Literature Review**

This study contributes to the research on equity, funding of special education, 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.[8] 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 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 the level of unrestricted funds used for special education expenditures.

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

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 this competition and the level of unrestricted funds used for special education expenditures (referred to as encroachment in some of the literature), however, has been sparse. Parrish (2001) examined national special education expenditure data and found no evidence of encroachment. 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 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 encroachment in a funding system over time, looked for variations in encroachment related to district characteristics, or considered how encroachment 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 being 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. Mininal work has been done on the equity issues associated with encroachment. This paper contributes to our understanding of special education funding by examining encroachment over a seven-year time period, under one state financing system, with a focus on the relationships between encroachment and district wealth. It is the first study to consider how the financial implications associated with using unrestricted funds for special education services 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. In this manner, our results have implications for inequities in special education services but also for inequities in the distribution of education resources for general education students, due to the use of unrestricted funds. While this paper does provide a detailed analysis of these relationships and inequities, the district

level panel data does not allow causal inference in terms of how district wealth affects encroachment and how encroachment affects the composition of special need students and the provision of educational resources for all 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.[9] 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 and provide minimal services at ISD locations.[10] 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 distribute funds to their member districts. Along with the ISD resources and state funding, local districts 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

[9] 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.

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

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.[11] 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 while the U.S. Census provided median income and percent of resident students living above the poverty line. 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 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

[11] 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.

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.[12] 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.[13] 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.[14] 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 general education FTEs across the state.[15] Interestingly, the poorest quintile has experienced

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

[13] 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.

[14] 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.

[15] 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

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%).[16] When other wealth proxies are used, such as median income and percent of resident children (ages 5 to 17) above the poverty line, we obtain similar results.

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 unrestricted funds which pay for 30% of the special education expenditures (i.e., encroachment). Figure 2 demonstrates that while the level of encroachment per special education FTE does increase slightly across wealth quintiles, special education revenues, and thereby expenditures, increases significantly more across wealth quintiles.[17] In addition, the amount local districts receive from their ISD per special education FTE is much greater for the wealthy districts.

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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.

[16] 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.

[17] 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.

While the encroachment per special education FTE is slightly lower for poorer districts, the amount required from unrestricted funds 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 level of encroachment per total FTEs is significantly greater for districts in the poorest quintile. The poorest quintile also has a much higher level of encroachment per total FTE when median income and percent of resident children above the poverty line are used as proxies for district wealth. One explanation for this greater level of encroachment, partly attributable to the larger proportion of students requiring special education services, is the concentration of charter schools in the poorest areas of Michigan. Along with this concentration, Jalilevand (2016) documents the lower enrollment of students requiring special education services in charter schools relative to the public schools in these poor districts. Other factors associated with poverty (such as lead poisoning, food insecurity, abuse, trauma and inadequate medical care) are also likely to contribute to the larger proportion of special need students in the poorest quintile.

Similar to 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 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.[18]

V. **Empirical Specification and Estimates**

To further analyze the relationship between unrestricted funds used on special education expenditures, wealth and the provision of special education services, we first estimate the following regression model:

$$\ln(\text{Unrestricted Funds}_{st}) = \beta_1 \text{WealthProxy}_{st} + \boldsymbol{\theta_t} + \varepsilon_{st}.$$

The variable $\ln(\text{Unrestricted Funds}_{st})$ is the natural log of unrestricted funds spent per special education FTE or total FTE for school district *s* in year *t;* WealthProxy_{st} is the natural log of the taxable value per total FTE, the natural log of median income, or the percent of resident children above the poverty line for school district *s* in year *t*; $\boldsymbol{\theta_t}$ is year fixed effects; and ε_{st} is an idiosyncratic error term. This specification uses cross district variation to identify the relationship between these wealth proxies and encroachment. Panel A of Table 3 contains estimates when the natural log of the taxable value per total FTE is the wealth proxy while Panels B and C contain estimates when the proxies are the natural log of median income and percent of resident children above the poverty line, respectively. The estimates in Column 1 of

[18] There is no encroachment issue associated with ISD expenditures. 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.

Table 3 indicate that, irrespective of the proxy, wealthier districts choose special education spending levels that require higher rates of unrestricted funds per special education FTE. In terms of Panel A, the positive estimate of β_1 indicates that a district with a ten percent greater taxable value per total FTEs is expected to have 3.26 percent more in unrestricted fund expenditures per special education FTEs (which is consistent with the Figure 2 bar chart). This is in part attributable to the smaller proportion of special need students in the wealthier districts.

To provide insight on how the financial burden associated with encroachment varies across districts, we estimate the above specification with the natural log of unrestricted funds spent per <u>total</u> FTE as the dependent variable (Column 2 of Table 3). The estimate of β_1 differs significantly across wealth proxies. Based on Figure 3, it is not surprising that this estimate is positive for taxable value per total FTE. While encroachment per total FTE is much greater for districts in the poorest quintile than districts in the other quintiles, districts in the wealthiest quintile (with much larger tax bases) average slightly greater encroachment than districts in the other three quintiles. The non-monotonic relationship between the natural log of taxable value per total FTE and encroachment per total FTE is not captured by this specification which restricts the relationship to be linear. As for median income and percent above the poverty line, their relationship to encroachment per total FTE is more monotonic.[19] The large negative estimates of β_1 suggests that the financial burden associated with encroachment is much greater for districts with a low median income and a high proportion of children below the poverty line.

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 wealth proxies and changes

[19] Unlike taxable value per total FTEs, if you replicate figure 3 using these other wealth proxies, the level of encroachment decreases almost monotonically across wealth quintiles.

in unrestricted fund expenditures per FTEs. The estimates in Columns 3 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 unrestricted fund expenditures 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 that could arise from student movements or changes in identification of special needs students. Compositional changes may also explain why, when district-level fixed effects are included and median income and percent of resident children above the poverty line are used as wealth proxies, the estimates of β_1 suggest a strong negative correlation between changes in these wealth proxies and changes in both the encroachment per special education FTE as well per total FTE.

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 encroachment (see Columns 1 and 2 in Table 4). 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 unrestricted fund expenditures (i.e. encroachment) per special education FTEs is included as a covariate. The estimates in Column 1, 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 2) 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. The positive coefficient estimates associated with encroachment 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 of unrestricted funds the district spends on special education services. That said, it could be the case that those districts with large encroachments are attracting more students who require an IEP but have minimal special education needs.

The prior estimates 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. Columns 3 through 6 in Table 4 contain estimates when this ratio is regressed on the natural log of taxable value per total FTE and the natural log of total FTEs (in ISD facilities as well as the local districts).[20] 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 unrestricted fund expenditures per special education FTEs is added as a covariate, the coefficient estimates suggest that while the ratio of special education

[20] 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.

FTEs at the local school districts and ISD facilities is positively correlated with local district encroachment, 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.[21]

VI. Conclusion

Local school districts in Michigan have experienced significant declines in both general education and special education enrollment in 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. This paper documents one reason why poorer districts often experienced more severe budgetary challenges. Having special education funding dependent on property taxes and not directly accounting for the large proportion of special need students in the poorest districts results in financial hardship for these districts and generates inequities across districts. These inequities are not only relevant for special need students but also general education students because the burden of the $746M spent annually from unrestricted funds on special education expenditures is borne disproportionately by the poorest districts.

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

[21] We obtain similar results when median income and percent of resident children above the poverty line are used as wealth proxies.

attributable to both compositional differences of special need students and perhaps differences in identification and services. 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 unrestricted funds spent on special education services that exists in Michigan school districts. This incentive may be stronger for the poorest districts because their financial burden associated with this encroachment issue is greater due to their larger fraction of special need students.[22]

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 amount of unrestricted funds used for special education expenditures but also the inequities that exist in special education services that affect both special and general education students in Michigan school districts.

[22] 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.

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)
Special Education Revenue Sources for Local District ($Millions)	
Federal Revenue	0.074
	(0.655)
State Revenue	1.45
	(4.80)
Local Revenue	0.056
	(0.058)
Federal Revenue through ISD	0.344
	(1.40)
Non-Federal Revenue through ISD	1.19
	(4.42)
Unrestricted Funds used for Special Education Expenditures/ Encroachment ($Millions)	1.36
	(4.88)
Total Special Education Revenue for ISD ($Millions)	34.9
	(56.9)
Taxable Value Per Total FTE at Local District ($Millions)	330
	(945)
Median Income ($Thousands)	57.9
	(15.5)
Percent of student age residents above the poverty line	85.4
	(8.0)
Taxable Value of Homesteads in ISD ($Millions)	314
	(302)
Taxable Value of Non-Homesteads in ISD ($ Millions)	201
	(166)
ISD Special Education Millage	2.52
	(1.08)
ISD Taxes Collected for Special Education from Homesteads ($Millions)	12.8
	(24.7)
ISD Taxes Collected for Special Education from Non-Homesteads ($Millions)	5.66
	(10.8)
Annual Local District Observations	3,829
Annual ISD Observations	399

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 for the local school district variables are based on the 3,829 local district-year observations and the averages for the ISD variables are based on the 399 ISD-year observations.

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: Encroachment Regressions

Panel A: Wealth Proxy - Taxable Value Per Total FTE	Encroachment per SE FTE	Encroachment per Total FTE	Encroachment per SE FTE	Encroachment per Total FTE
ln(Taxable Value Per Total FTE)	0.326**	0.093**	0.871**	0.657**
	(0.033)	(0.029)	(0.156)	(0.143)
Year Fixed Effects	Yes	Yes	Yes	Yes
Local District Fixed Effects	No	No	Yes	Yes
R-squared	0.05	0.01	0.74	0.75
Observations	3,500	3,500	3,500	3,500
Panel B: Wealth Proxy - Median Income	Encroachment per SE FTE	Encroachment per Total FTE	Encroachment per SE FTE	Encroachment per Total FTE
ln(Median Income)	0.116*	-0.340**	-0.721**	-0.519**
	(0.060)	(0.053)	(0.339)	(0.284)
Year Fixed Effects	Yes	Yes	Yes	Yes
Local District Fixed Effects	No	No	Yes	Yes
R-squared	0.01	0.01	0.74	0.75
Observations	3,449	3,459	3,449	3,459
Panel B: Wealth Proxy – Percent above Poverty Line	Encroachment per SE FTE	Encroachment per Total FTE	Encroachment per SE FTE	Encroachment per Total FTE
Percent of Resident Children above Poverty Line	0.269	-1.582**	-1.024	-0.481
	(0.195)	(0.172)	(0.558)	(0.483)
Year Fixed Effects	Yes	Yes	Yes	Yes
Local District Fixed Effects	No	No	Yes	Yes
R-squared	0.01	0.03	0.69	0.75
Observations	3,449	3,459	3,449	3,459

Note: Dependent variables are natural logs of the listed revenue variables. Robust standard errors, clustered at the local school district are given in parentheses.
** p<0.01, * p<0.05.

Table 4: Composition and Location Regressions

	Local Districts		ISDs (Excludes Kent, Oakland, and Wayne)			
	Ratio IEP to SE FTE	Ratio IEP to SE FTE	Ratio Local to ISD	Ratio Local to ISD	Ratio Local to ISD	Ratio Local to ISD
ln(Taxable Value Per Total FTE)	0.454*	6.003**	-0.017	1.057	-0.091	1.054
	(0.224)	(1.881)	(0.259)	(0.960)	(0.252)	(0.962)
ln(Total FTEs)	-1.033**	3.287	0.646**	1.362	0.668**	1.357
	(0.193)	(3.926)	(0.114)	(1.466)	(0.117)	(1.518)
ln(Unrestricted Fund Expenditures Per SE FTEs)	1.941*	3.173*			0.771**	-0.026
	(0.743)	(1.789)			(0.134)	(0.084)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Local District or ISD Fixed Effects	No	Yes	No	Yes	No	Yes
R-squared	0.08	0.36	0.12	0.94	0.17	0.94
Observations	3,500	3,500	377	377	377	377

Note: Dependent variables are the listed ratio variables. 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

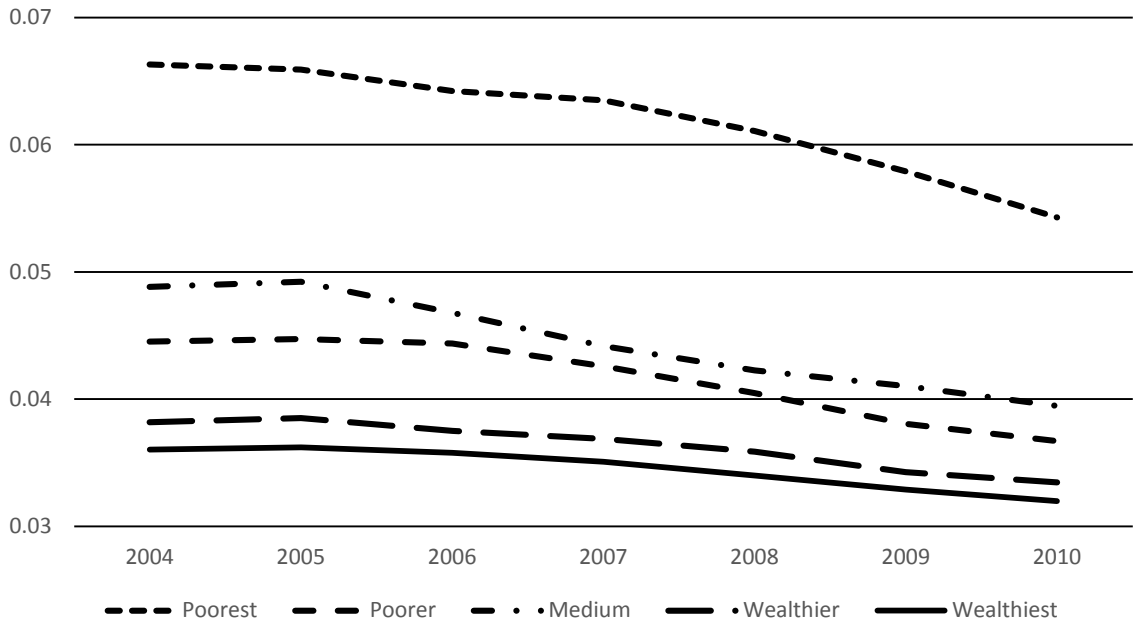


Figure 2. Special Education Funding per Special Education FTE by Source and Wealth Quintile

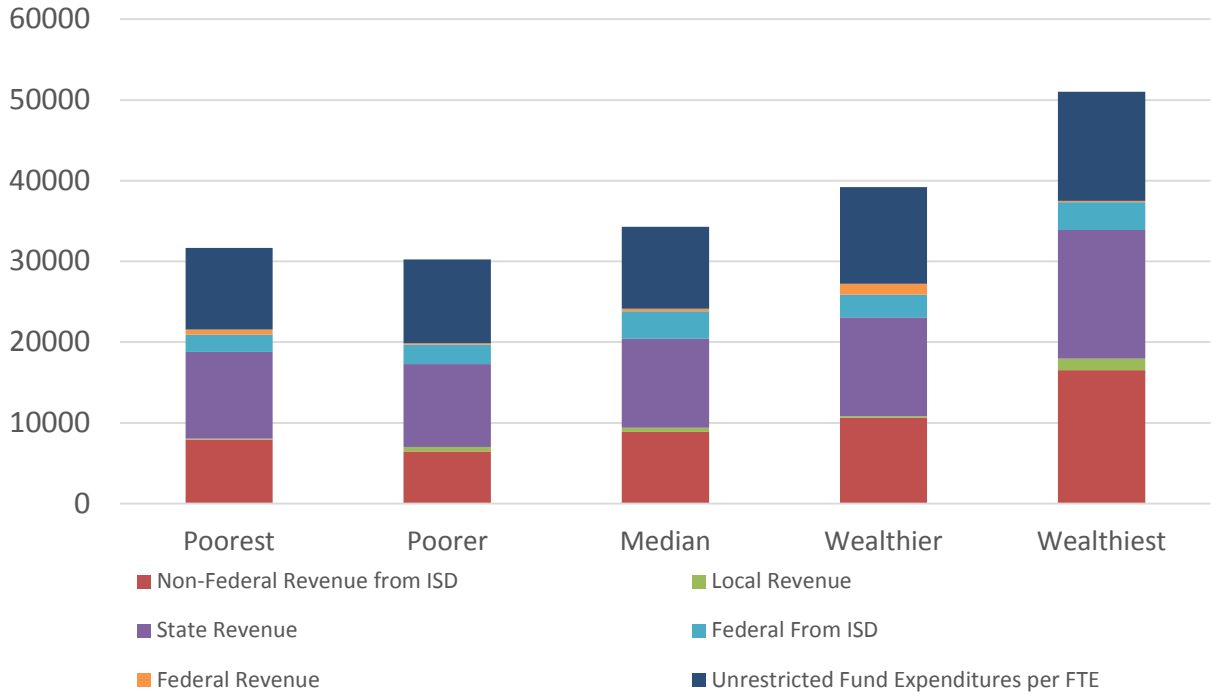
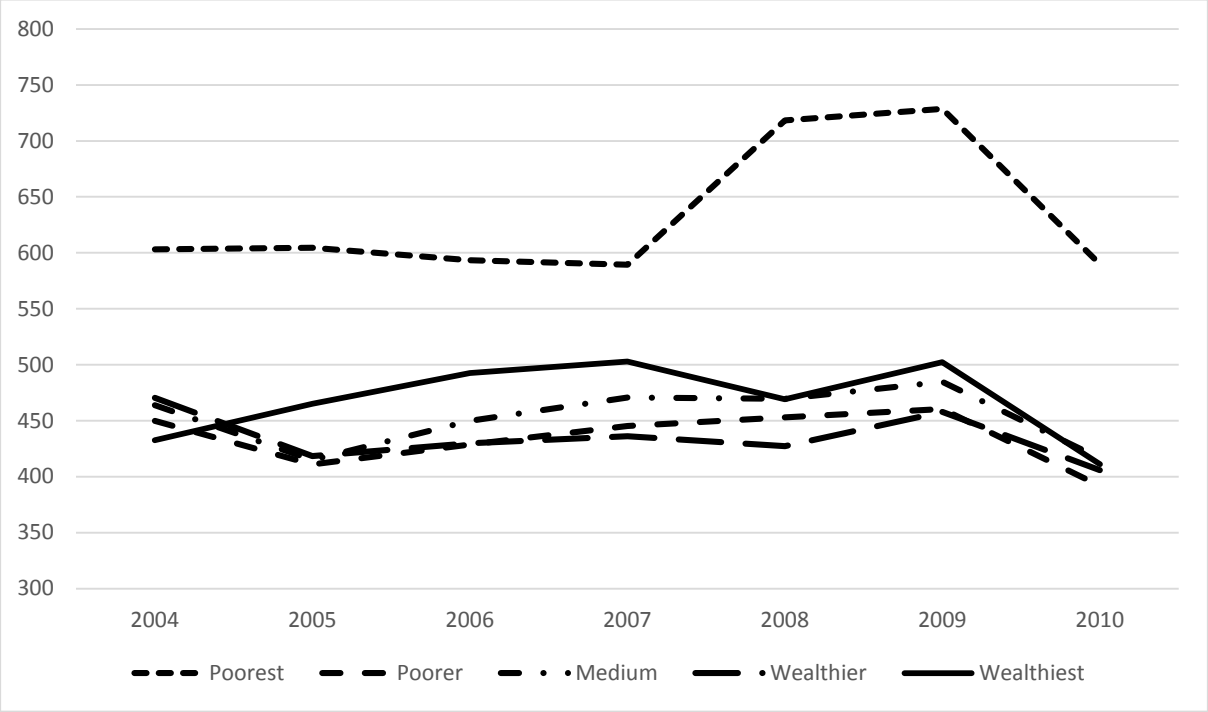


Figure 3. Unrestricted Funds for Special Education Expenditures per Total FTE, by Wealth Quintile



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