SO SLOW TO CHANGE: THE LIMITED GROWTH OF NONTAX REVENUES IN PUBLIC EDUCATION FINANCE, 1991–2010

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Abstract

We examine changes in the use of nontax revenues for education finance from 1991 to 2010. Beyond the summary of usage over time, we ask whether nontraditional revenues like fees accentuate or mitigate the impact of downturns. More generally, we examine the extent to which school districts have responded to fiscal pressures by turning to nontax revenues. We also document the extent to which the use of nontax revenues varies across districts according to student poverty status. We show that alternative revenues continue to be a small source of local revenues and have increased quite little since the early 1990s. There was at most a minimal shift to nontax revenues in downturns, though there is evidence of greater use of these revenues among school districts facing more permanent fiscal pressures like tax limits. Differential access to fee revenues and other alternative revenues during downturns may slightly accentuate inequities in K–12 education spending.

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1. INTRODUCTION

School district per pupil revenues have been declining over the past few years in many parts of the country. As a result of the Great Recession, school districts have faced reductions in their two most important sources of revenue—property taxes and state aid. Although funding aid through the American Recovery and Reinvestment Act provided some help through fiscal year 2011, increased federal education funding was temporary. In order to prevent large cuts in education spending, school districts needed to find new sources of revenue. This paper examines how this combination of pressures may have influenced a shift in the mix of local school district revenues.

The popular press is replete with examples of school districts using fees to close funding gaps (e.g., The Pew Charitable Trusts 2012; Maxwell 2013). In very recent years, the growing use of fees has spawned lawsuits challenging their use in Idaho (Joki v. State of Idaho) and California (Doe v. The State of California). Killeen (2007) suggests, however, that the media attention paid to fees may overstate their importance as a response to the declines in federal and state aid. For example, in a survey of school administrators conducted by the American Association of School Administrators, only 17 percent of the respondents indicated that they were "shifting funding of extracurricular activities to families/community/boosters" in response to federal aid cuts resulting from sequestration (AASA 2013). These survey results are consistent with the finding in the sparse literature on school district utilization of these alternative revenue sources of relatively limited use of non-property tax revenues (Wassmer and Fisher 2002). This uncertainty about the extent to which districts had turned to fees to close revenue gaps is indicative of the fact that the use of alternative local government revenues for school districts is not well understood (Coleman 2014).

A relatively large public finance literature documents the fact that local governments often diversify away from property taxes and toward alternative revenues like fees in response to economic contractions and institutional pressures. Comparable research among school districts is far more limited but suggestive of a similar type of revenue diversification. Existing evidence on the link between tax limits and usage of fees suggests the possibility that imposition of fiscal constraints results in greater use of non-property tax revenues (Wassmer and Fisher 2002). The cross-sectional nature of the few studies of school district use of fees and charges means, however, that we cannot be sure whether the increased utilization of these revenue sources was a result of fiscal constraints or whether the political climate that led a state's voters or politicians to adopt fiscal constraints also made fees more tenable. The slightly larger literature on private contributions to public schools (Brunner and Sonstelie 1997, 2003; Brunner and Imazeki 2005; Downes and Steinman

2008) suggests contributions are sensitive to fiscal constraints but sheds no light on whether contributions are pro-cyclical. In the aftermath of the largest downturn since the Great Depression, the time is right to revisit the question of whether school districts turn to alternative revenue sources when faced with fiscal pressures.

We seek to accomplish three goals in this paper. First, because of the absence of systematic evidence on how the use of alternative revenue sources by school districts responds to fiscal pressures, our analysis will begin with a summary of the evolution of fees and other alternative revenue sources over the last two decades. Alternative revenues include fees and user charges for items like textbooks, transportation, and student activities. We will also document the extent to which the use of fees varies across school districts according to their student poverty status, with an eye toward providing some evidence on the question of whether the use of nontax revenue sources raises equity concerns.

Our second goal will be to examine the extent to which school districts have increased their reliance on these alternative revenue sources in response to the fiscal pressures created not only by economic downturns but also by constraints created by tax and expenditure limits and school finance reforms. Our third and final goal is to outline and discuss the policy implications of our findings.

The data needed to execute the type of analyses described here must span business cycles and cover states with a variety of fiscal institutions that affect each school district's ability to raise revenue. The F-33 survey data are part of the National Center for Education Statistics Common Core of Data (CCD) and satisfy these objectives. These data are national in scope and are available back to the 1991–92 school year. They allow us to examine the extent to which school districts have turned to alternative revenue sources in downturns and when faced with fiscal constraints such as tax and expenditure limits. In addition, because the CCD provides relatively rich data on each district's student population, one may summarize the characteristics of districts that make heavy and light use of alternative revenues.

The balance of this paper is organized in four sections. In the next section, the literature on alternative school district revenues is presented. This section provides definitions of these alternative revenues and places them within the context of the mix of overall state and local revenues. Our literature review helps frame our empirical models by providing a brief overview of what is known about the determinants of use of alternative local revenues. The following section describes the data and their sources and explains the methods used in this analysis. This is followed by a presentation of estimates of the empirical models used to explore how the use of fees and other alternative revenues

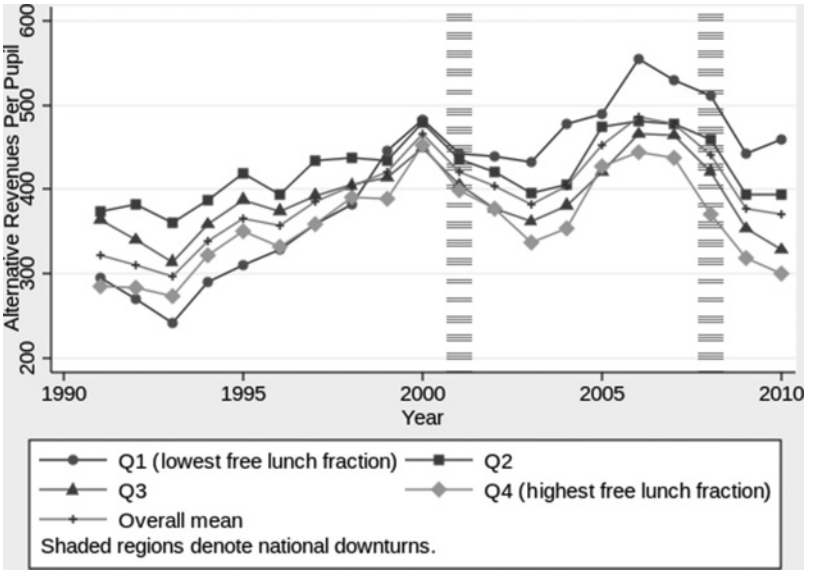

Figure 1. Per Pupil Alternative Revenues by Quartiles of Share of Students Eligible for Free Lunch, Fiscal Years 1992–2011.

changes across the business cycle. We then close by suggesting next steps for researchers and by making the case that fees remain an underutilized source of revenue.

2. BACKGROUND

Alternative Local Revenues in Context

In sharp contrast with state and local governments generally, locally-sourced revenues for public education are characterized by an overwhelming reliance on property taxation and particularly limited experimentation with nontaxed-based revenue sources. Our data, as summarized in figures 1 and 2, indicate that in school year 2010–11 (fiscal year 2011), nontax-based revenue sources accounted for about 10 percent of total own-source revenues, including both fee-based sources (called charges) and other miscellaneous sources like donations.

Figure 3 shows the historical mix of state and local revenues by source for the past forty years. This chart includes revenue for all local governments (education and municipal), as well as state governments. Since the late 1970s the prominence of property taxation in the mix of overall revenues has decreased. Whereas tax-based revenues have remained somewhat stable in the overall mix, most of the change in revenues is due to the growth in charges and miscellaneous revenue. What are charges and miscellaneous revenue sources? These include a blend of fee-based revenues, as well as other revenues

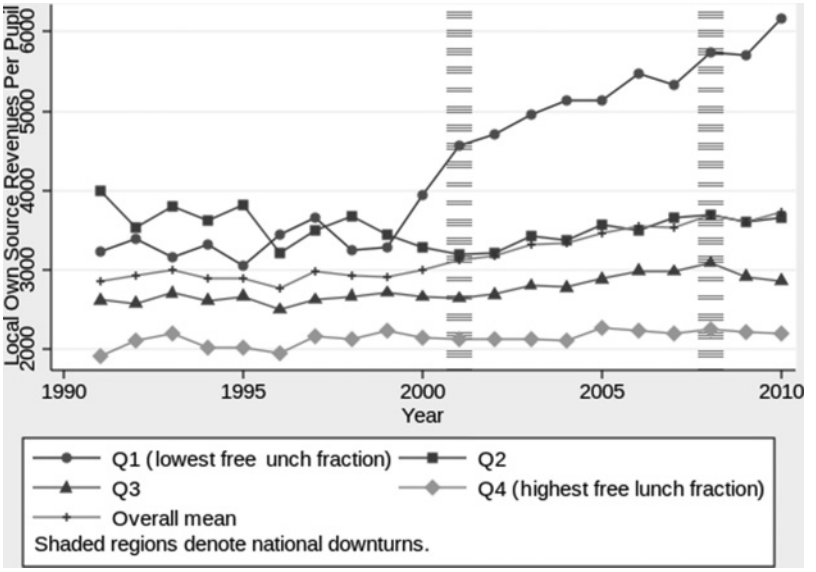

Figure 2. Per Pupil Total Local Own-Source Revenues by Quartile of Share of Students Eligible for Free Lunch, Fiscal Years 1992–2011.

Figure 3. State and Local General Revenue by Source, 1977–2010. *Source:* The Urban Institute-Brookings Tax Policy Center; U.S. Census Bureau, Annual Survey of State and Local Government Finances (various years).

(miscellaneous) like interest earnings, sale of governmental property, and other nonspecified revenues. Charges and miscellaneous revenue swelled during the first tax revolt in the late 1970s and early 1980s (Fisher 2007) and have been relatively stable since then at just under 20 percent of total revenues.

The definition of charges and miscellaneous revenue differs by level of government, particularly when comparing state and local governments with school district organizations. In state governments, major current charges or fees include revenues from sources like higher education institutions, hospitals, and highways. Municipalities draw fees from more sources, including airports, sewerage, solid waste management, and parks and recreation, to name some of the larger categories. These are very different types of fees and sources of fees than are used by school district organizations. For education finance, where are fees in the mix of other nontax-based or alternative local revenues? Addonizio (1999) and Killeen (2007) use a three-point categorization to describe nontax-based local education revenues: Fixed revenue sources involve *donor activities* such as those from booster clubs, foundations, as well as private donations to education organizations; e*nterprise activities* involve the entrepreneurial use of facilities, staff, and children to create revenue through activities like entrance fees, textbook fees, leasing of facility spaces, or vendor contracts. There is a third category of indirect revenue generation that comes from *cooperative services*, where districts generate revenue or conserve expenditures through cooperative agreements with organizations like regional education agencies. Cooperative services could involve revenues generated by districts for housing professional development activities or could involve the savings gleaned by exporting service delivery related to test scoring or special education services. The primary focus of this paper concerns charges or fee-based revenue as a particularly focused form of alternative and nontax-based local revenue.

In education finance, alternative and nontax-based local revenues are defined by the Census (F-33 survey instrument) to include transportation fees from pupils and parents, textbook sales and rentals, district activity receipts, and general student fees. Until recently, the Census has opted to lump the balance of nontax-based revenues into one nonspecified category.[1] In general, nontax revenues like fees provide a small share of school district revenues—fees constitute on the order of $100 per pupil or less across states, or less than 3 percent of local revenues.

What Drives Shifts in Alternative Local Revenue Usage

Macroeconomic Shifts

Although the literature on school district responses to economic downturns is relatively limited (an exception is Reschovsky 2004), the public finance literature on state and local governments generally documents several key

1. In 2006 the Census Bureau widened survey items to include private contributions, rents, fines, and property sales.

relationships between the overall level of economic activity and the level and mix of state and local governments finances. First, sheer size matters in the interconnection. Harris and Shadunsky (2013) note that subnational governments account for a substantial portion of economic activity in the United States, as measured in gross domestic product (GDP) terms. Large changes in government revenues as a result of contraction have both concurrent and even lagged effects on consumption and spending behavior. Second, the multiplicity of levels of state and local governments adds to the complexity of the response of these governments to large economic shifts. Reschovsky (2004) describes three aspects of this relationship: large dependencies of local governments on state grant transfers make them susceptible to budget shocks associated with downturns; state governments may shift authority or responsibility for government programs to local entities, without supportive grants; and budget shortfalls and associated program cuts to state government can curtail spending on expensive social services programs and shift additional burdens to local governments. Third, the very nature of what causes recessions, such as the housing crisis in the most recent period, has been shown to influence changes in state and local government revenue.

The Great Recession followed a particularly large housing market contraction, one that is consistently noted as the biggest since the Great Depression. What are the mechanisms at work that link housing contractions to local government revenue? Recent work by Lutz, Molloy, and Shan (2011) describes five tax channels by which the housing market was of influence to state and local revenues during the Great Recession. Using quarterly estimates of state and local tax revenue, they create state by state estimates of how the reliance on one or more tax channels impacts either local or state revenue totals. Despite a prerecession downward trend in housing values, property tax receipts continued to climb through the end of 2009. These findings reinforce those of Lutz (2008), which show a rather extensive delay in the impact of housing price shifts on property taxation, upward of a three-year lag. Chernick, Langley, and Reschovsky (2011) examined shifts in property tax revenue through this same period and noted that the lag in response was likely due to normal administrative delays in reassessing property in times of rapidly changing housing prices. Others have noted that rigidities in reassessment resulting from tax limitations measures also contribute to the lag (Skidmore and Tosun 2011). Whatever the source, this lag contributes to fiscal stability. State government budgets respond more quickly to pro-cyclical decreases of individual and corporate income taxes, whereas local government budgets have a muted response in part because of their heavy dependence upon property taxation.

Recent scholarship on the Great Recession documents the relatively large economic shock to state and local governments, as well as the extended

recovery period. These are two features that appear to distinguish this recession from other post–World War II downturns and may contribute to new patterns of revenue diversification among governments (Dadayan 2012; Dadayan and Boyd 2012). Harris and Shadunsky (2013) note that both state and local government spending contracted in the long recovery, reducing by historic proportions the state and local contribution to GDP. They surmise that the relatively weak growth in property taxation is to blame. State and local government spending contracted as real property tax revenues declined following the trough of the Great Recession.

Popular press discussion of alternative revenue usage suggests revenue diversification will happen during and after economic downturns (Killeen 2007). Yet, formal empirical analysis is limited, with no consistent picture of the impact of downturns having emerged. In addition, the link between total revenues and the extent of revenue diversification has not been conclusively established. For example, Sjoquist, Walker, and Wallace (2005) ask whether municipalities in Georgia end up with either lower property tax revenue or greater levels of government spending as a result of revenue diversification away from sole reliance on property taxation. They find support for both outcomes. More recently, Chernick, Langley, and Reschovsky (2011) use a panel of the largest U.S. cities from 1997 to 2008 to examine how the relative reliance on revenue sources influences overall levels of revenues. They find that a more diversified revenue structure is strongly associated with higher local revenues. These recent studies suggest the impact of large economic shocks, like the Great Recession, on local governments (such as school districts) may well depend on the mix of revenue types.

Institutional Elements

Of the institutional factors that influence revenue diversification among state and local governments, tax and expenditure limitations have been most studied. McGuire (1999) and Mullins and Wallin (2004) summarize much of the earliest literature on the fiscal effects of tax and expenditure limitations. Tax and expenditure limitations do appear to slow the growth of property tax revenues. The effects of the limitations on total local revenues are much smaller, with the best estimates indicating limits have little or no effect on local revenues. The research also points to three changes in the fiscal systems in states with local limitations that have blunted the effects of limitations on local revenues. First, increased state aid, funded by increased state taxes, compensates for the decline in local revenues (Mullins and Wallin 2004). Second, overrides (in those states that allow overrides) have permitted voters in some localities to maintain post-limitation spending along the path it would have followed in the absence of the limit (McGuire 1999). Third, in localities constrained by

limits, there has been an increased reliance on other local taxes and user fees (Mullins and Wallin 2004).

Shadbegian (2003) is the most direct antecedent to our analysis. Using data aggregated to the state level, Shadbegian established that limits have almost no net effect on total spending on public education, with increases in direct and indirect spending by state governments compensating for a decline in spending from local own-source revenue. Not surprisingly, the presence of a limit on state government revenues or expenditures reduced the extent to which state spending could compensate for reductions in local own-source revenue.

Two papers by Philip Joyce and Daniel Mullins (Joyce and Mullins 1991; Mullins and Joyce 1996) and a paper by Mullins (2004) also have helped provide a richer picture of the impact of tax and expenditure limits (TELs) on state and local fiscal structures. The first two of these papers used state-level data to document the limited impact of TELs on the size of the state and local sectors. The limits did have an impact, however. Most notable of the effects of the limits were increasing centralization of revenue-raising, growth in spending by state governments, growth in the local use of nontax revenues, and reduction in revenue raised through local broad-based taxes. The variation across localities in the extent to which the limits constrained local spending (Figlio 1997) meant, however, that state-level data provided an imperfect picture of the full impact of limits, since spending data from constrained localities was averaged with spending data from localities unaffected by the constraints. As a result, the data used in these papers did not enable examining such questions as the extent to which the impact of limits varied across localities. What the results of the papers do make clear is the extent to which education spending is affected by a limit depends upon the ease of generating nontax revenue and the post-limit distribution of state aid.[2]

Because county-level fiscal data from the Census of Governments are used in Mullins (2004), this paper provides more direct information on the extent to which TELs have heterogeneous effects. Mullins concentrated on the extent to which limits affected the within-county variation in general and education expenditures. When data from all counties are used and limits are not distinguished by the extent to which they bind, he finds that within-county variation in both general and education expenditures increases after TELs. Further, more binding limits appear over time to increase variation in both general and education expenditures. Such a result is consistent with limits

2. Growth of nontax revenue may be an explanation for Dye, McGuire, and McMillen's (2005) findings that, in Illinois school districts subject to a tax cap, growth in operating spending had declined less than had growth in school district tax revenues, and the different changes in growth rates were not attributable to compensating changes in state aid.

having heterogeneous effects, with limits binding most in localities that were initially low-spending and with state aid not compensating fully for the impact of the constraints. In suburban fringe counties, however, the overall effect of more binding limits was to reduce variation in education expenditures and to have no impact on general expenditures. Why these counties look different from all others is not clear, though differential ability to pass overrides and differential access to nontax revenues are two possible explanations.

Several other institutional factors influence local revenue structures. First, only government services that allow for some sort of market-style pricing (e.g., parking garages, building permits, gate ticketing) lend themselves to fee-based revenue mechanisms. Whether a local government has a lot or little of these services affects the degree to which diversification is possible, irrespective of the normative arguments for or against fees. Second, school districts will be able to generate little or no revenue from fees levied on services for which inexpensive private-sector alternatives exist. Third, regulative institutions work in ways other than the TELs described here to influence local revenue structures. For example, the use of student activity or even textbook fees in public schools has been ruled on by state courts in a number of ways. Generally, the courts decide on the constitutional merits of fee usage depending on whether they limit access to curricular versus extracurricular activities in school (Killeen 2007). In the case of schools, there are more limited types of services that immediately lend themselves to market-style pricing, in comparison with state and local governments, and this may lead to more limited revenue diversification.

Organizational Conditions

A limited body of public finance research has examined the correlates of alternative local revenue sources at the local level (Hendrick 2002; Caroll, Eger, and Marlowe 2003). More recent work by Alm, Buschman, and Sjoquist (2011) decomposes changes in the local reliance on property taxation among all local governments and school districts in Georgia. Local source revenues from property taxation increase with population size, but are unresponsive to measures of income. Although prior research by these same authors showed that the diversity of the local revenue mixture at the school district level is negatively associated with weakening state aid transfers (Alm, Buschman, and Sjoquist 2009), these findings were not duplicated in the 2011 study.

Chernick, Langley, and Reschovsky (2011) rely on the constructed cities database[3] to document how total revenues are positively associated with greater

3. The constructed cities database, which is now called the Fiscally Standardized Cities database, was created by the authors to facilitate comparisons of finances across the largest cities in the U.S. The database accounts for differences across cities in tax and spending responsibilities. More detail on the database can be found at www.lincolninst.edu/subcenters/fiscally-standardized-cities/.

local revenue diversification away from property taxation. Average household income drives up revenues. Netzer (1992) suggested user charges likely interact with the tax structure to a certain extent, and the nonrelationship between them likely means voters and legislators do not really "see user charges as regressive to an objectionable extent" (p. 509).

Two prior studies in education finance focused on fee-based revenue and noted their relatively weak role in overall local revenues (Wassmer and Fisher 2002; Killeen 2007). Using a cross-section of state-level data, Wassmer and Fisher found relatively limited use of nonproperty tax revenues as a source of school district funds. They did find, however, that states with TELs on local governments had higher fee revenues, suggesting the possibility that imposition of fiscal constraints results in greater use of nonproperty tax revenues (Wassmer and Fisher 2002). The cross-sectional nature of this analysis, however, made it impossible to show conclusively whether the increased use of alternative revenue sources in states with TELs was a result of fiscal constraints or a political climate that made both limits and fees more tenable.

Killeen (2007) used a panel of Ohio school districts to examine correlates to user fees in the mix of overall local revenues. He found per capita fees among school districts were negatively related to enrollment, with little or no effect of race, ethnicity, or proportion of students designated as special education. Consistent with the findings among local governments generally, household income was positively correlated with fee use in school districts. Because the analysis was limited to a single state, however, Killeen could not isolate the impact of fiscal institutions on fee use.

This review of the somewhat limited literature on fees and other alternative revenue sources establishes that, although much still needs to be learned about factors linked to school district use of these revenue instruments, a variety of factors in addition to fiscal pressures may well influence the degree to which districts draw upon alternative revenue sources. We now turn to the data we use to explore the evolution of nontax revenues and to the modeling choices we make in our attempt to distinguish the role of fiscal pressures from other determinants discussed here.

3. DATA AND METHODS

Data

The bulk of the data used in this paper were drawn from the National Center for Education Statistics' CCD. In fiscal year 1990 financial data collected by the Census Bureau and released as the F-33 survey became part of the CCD, although in fiscal year 1990 no information on student fees was collected. As a result, our data begin with fiscal year 1992 (school year 1991–92) and include every fiscal year through 2011. In fiscal years 1993 and 1994, not all districts

in the country completed the F-33 survey. In each of those years, coverage in eight states was incomplete.[4] We chose to include data from those fiscal years both because few districts were excluded in those years and because in those fiscal years the mean characteristics of included districts differed little from the mean characteristics of the universe of districts in fiscal years 1992 and 1995.

As part of our analysis, we also draw from the CCD information on each district's staffing and student composition. Data on each district's racial/ethnic composition, population eligible for free lunches, and population designated as special needs were available in all years, data on the population eligible for reduced-price lunches and the population of limited English proficient students only became available in the 1998–99 school year, and then for only a portion of the universe of districts.

To create our measure of student fees, we combined four line items on the F-33 survey: transportation fees from pupils and parents, textbook sales and rentals, district activity receipts, and student fees, nonspecified.[5]

Table 1 provides summary information on key financial, student demographic, and district demographic data for selected years.[6] Not surprisingly, due to district consolidations the number of districts present in the 2010–11 school year is smaller than the number present in 1991–92. We make no effort to create a balanced panel; both pre-consolidation and post-consolidation districts are included in the data set. Although this does mean that "new" districts are not truly new, we made the choice to keep both pre- and post-consolidation districts so as to provide as complete a picture as possible of the evolution of the use of student fees over the last two decades.

We have also created variables to indicate whether a state had experienced a court decision mandating school finance reform, whether localities in a state were subject to tax (revenue) or expenditure limits, and whether the state government was subject to a tax (revenue) or expenditure limit. Our starting point for the court-ordered finance reform indicator was table 1 in Springer,

4. For details on the extent of coverage in fiscal years 1993 and 1994, see www.census.gov/govs/www/school9296doc.html.
5. We had hoped to create measures of district revenues from sales and from entrepreneurial activity, but doing so was not possible since, in fiscal year 2006, the Census Bureau added to the F-33 survey items on private contributions, rents and royalties, fines and forfeits, and sales of property. Prior to that year, these items were probably part of each district's miscellaneous revenues, though some districts may have included these items in their reports of other, nonfee alternative revenue sources. As a result, we can only be confident that our measures of fee revenue and the total of local, nontax revenue are consistently reported in all years.
6. Data on each district's racial/ethnic composition, age composition, and per capita income were drawn from the Decennial Censuses of 1990, 2000, and 2010. Because the long-form Census was discontinued after the 2000 Census, no information on district per capita income was available in the 2010 Census. In creating our final data set, we matched each school year to the nearest Decennial Census year.

Table 1. Summary Statistics: Explanatory Variables

	1990–91		1995–96		2000–01		2005–06		2010–11	
Variable	**Mean**	**Standard Deviation**	**Mean**	**Standard Deviation**	**Mean**	**Standard Deviation**	**Mean**	**Standard Deviation**	**Mean**	**Standard Deviation**
Enrollment	2,790	12,920	3,127	13,978	3,196	14,563	3,496	14,940	3,612	14,875
Fraction special education	0.090	0.156	0.103	0.084	0.132	0.084	0.143	0.070	0.135	0.057
Fraction eligible for free lunch	0.176	0.197	0.214	0.208	0.228	0.204	0.284	0.208	0.367	0.211
Fraction reduced-price lunch eligible	—	—	—	—	0.073	0.057	0.082	0.054	0.081	0.056
Fraction limited English proficient	—	—	—	—	0.032	0.093	0.042	0.102	0.029	0.064
Fraction African American	0.056	0.142	0.066	0.158	0.072	0.170	0.071	0.159	0.070	0.155
Fraction Asian American	0.013	0.033	0.014	0.036	0.016	0.041	0.019	0.044	0.019	0.044
Fraction Native American	0.023	0.101	0.027	0.110	0.030	0.116	0.031	0.118	0.030	0.115
Fraction Hispanic	0.063	0.151	0.068	0.156	0.084	0.170	0.101	0.184	0.123	0.196
State formula aid per pupil	$1,738	$1,176	$1,977	$1,236	$2,458	$1,525	$2,588	$1,959	$2,690	$6,836
Federal aid per pupil	$302	$473	$313	$572	$425	$659	$624	$1,001	$845	$1,230
Court-ordered finance reform	0.332	0.471	0.406	0.491	0.539	0.499	0.625	0.484	0.651	0.477
State limit	0.449	0.497	0.535	0.499	0.543	0.498	0.615	0.487	0.668	0.471
Local limit	0.671	0.470	0.689	0.463	0.761	0.427	0.796	0.403	0.858	0.349
Downturn	0.127	0.333	0.034	0.180	0.401	0.490	0.072	0.258	0.083	0.276
Observations	13,882		13,861		14,265		13,704		13,257	

Liu, and Guthrie (2009). Because that table ends in 2005, we used state-by-state information provided by the National Education Access Network (2014) and Verstegen (2011) to extend the information through the 2010–11 school year.[7]

One critical institutional reality that might influence a district's willingness to expand alternative revenue use is the age composition of the student population. Many of the services that are mentioned in popular press stories discussing the increased prevalence of fees are services like athletics or other extracurriculars that are available only to high school students. Grouping together districts that serve high school age students with districts that do not might result in understatement of the responsiveness of fees. For that reason, we generate results for all districts together and separately for elementary, high school, and K–12 districts.

Our starting point for the timing of state and local revenue and expenditure limits were McCubbins and Moule (2010) for state limits and Mullins and Wallin (2004) for local limits. Information on state limits was brought up to date using Waisanen (2010). The Lincoln Institute of Land Policy's *Significant Features of the Property Tax* provided the information needed to bring up to date information on local limits.[8] Following the tradition in the literature, school districts were classified as being potentially subject to a limit if in the state or the county in which that district was located there existed limits on expenditures, limits on revenues, or combined limits on nominal tax rates and assessment growth. If any one of these three limits was present, a district was treated as having a limit on the ability to raise revenues.[9]

Owyang, Piger, and Wall (2005) have observed the timing of the phases of business cycles can vary substantively from state to state. As a result, we needed to create a state-specific indicator of when a state was in a recession. To do this, we started with monthly state coincident indices provided by the Federal Reserve Bank of Philadelphia.[10] In the literature, cycles are timed using either the algorithm of Bry and Boschan (1971) or the Markov-regime switching model of Hamilton (1989). We chose to use the Bry and Boschan algorithm because it is simple to apply and relatively transparent. We classified states as being in recession in a school year if more than six months in that school year were between the peak and the trough (inclusive) of a cycle.

7. Because Springer, Liu, and Guthrie (2009) find little evidence that there is a difference in the effects of court mandated equity and adequacy reforms, we chose to group together all court mandates.
8. See www.lincolninst.edu/subcenters/significant-features-property-tax/.
9. In Illinois, residents of individual counties can choose to impose limits. As a result, we coded the timing of limits in counties in Illinois using the August 2012 version of the History of PTELL map provided by the Property Tax Division of the Illinois Department of Revenue.
10. As Owyang, Piger, and Wall (2005) note, gross state product is only available on an annual basis and thus gross state product cannot be used to date state cycles.

Methods

We use two basic specifications to explore the possibility that districts made more use of nontax revenue sources when traditional sources of revenues became constrained due to either institutions or economic circumstances. We began by estimating

$$\ln(\text{revenue\_source}_{it}) = \alpha_i + \tau_t + X_{it}\beta + Z_{it}\gamma + R_{it}\delta + \varepsilon_{it} \quad (1)$$

where $\text{revenue\_source}_{it}$ was per pupil revenues from the specified source in district i in school year t, α_i was a district-specific effect, and τ_t was a school year-specific effect. The vector X_{it} consists of attributes of each district's student population, Z_{it} consists of indicators of the fiscal institutions facing the school district, such as the presence of revenue limits or court mandates requiring finance reforms, and R_{it} contains measures of plausibly exogenous revenue sources.

The case for district-specific effects is particularly strong in this context. As we noted earlier, access to fees varies from district to district. Other institutional factors that influence district use of fees will also be absorbed in α_i.

The time effects τ_t are included to control, in a relatively flexible manner, for common year-to-year fluctuations in the dependent variable. An examination of these time effects will help determine the extent to which the uses of fees were responsive to economic exigencies. The downside of using time effects to shed light on how the use of alternative revenue sources changed during downturns is the variation from state to state in the timing of downturns. For that reason, we explored a second specification

$$\ln(\text{revenue\_source}_{it}) = \alpha_i + \tau_1\text{trend}_t + \tau_2(\text{trend}_t)^2 + X_{it}\beta + Z_{it}\gamma + R_{it}\delta + \eta\text{Downturn}_{it} + \varepsilon_{it}. \quad (2)$$

Here, trend_t is a time trend (measured relative to 1991) and Downturn_{it} is a dummy variable indicating whether the state in which a district is located is in a downturn.

In order to explore the possibility that districts might target the use of fees for services that are more akin to private goods, we estimated variants of equations 1 and 2 using per pupil revenues from specific alternative revenue sources as our dependent variable. The most obvious candidates were revenues from transportation fees and school lunch, since low-income students are eligible for free or highly-subsidized school lunches.

We included per pupil amounts of federal aid and the formula-driven portion of state aid in R_{it}, because these quantities were least likely to be responsive to unobserved attributes of each district that could potentially influence each

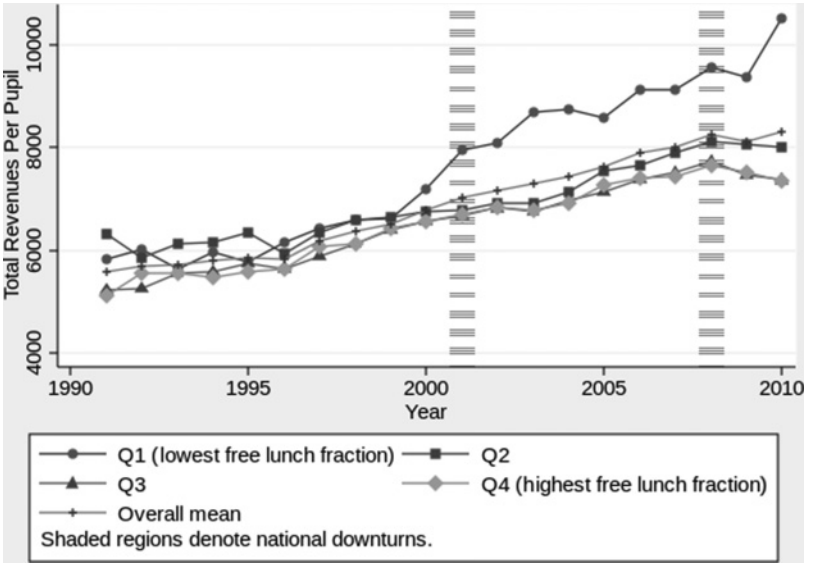

Figure 4. Per Pupil Total Revenues by Quartiles of Share of Students Eligible for Free Lunch, Fiscal Years 1992–2011.

district's use of fees or other revenue sources. Nevertheless, since these aid variables might be endogenous, we also estimated variants of equations 1 and 2 that exclude these variables. Because the inclusion of the aid variables had only small effects on the estimated impacts of the remaining explanatory variables, we only present estimates of specifications that include the aid variables.

4. FINDINGS

Trends in Fees and Other Revenue Sources

Figure 1 documents the relatively minor growth in nontax revenues at the local level over the study period; these revenues remain remarkably small portions of total own-source revenue in education. Figures 2, 4, and 5 plot the yearly means of per pupil own-source revenues, per-pupil total revenues, and per pupil fees for all districts and for districts divided into quartiles based on the fraction of students who are free-lunch eligible.

Figure 4 shows that the upward trend in real per pupil revenues documented by Chakrabarti, Farber, and Livingston (2013) (among others) is evident for each of the four quartiles. The trend is most evident for the districts with the lowest levels of student poverty. Across the nation, the gap between these districts and the districts in the remaining three quartiles has grown substantially since 2000. From figure 2, the importance of own-source revenues in promoting this gap is evident; the sharp upward trend in total revenues of

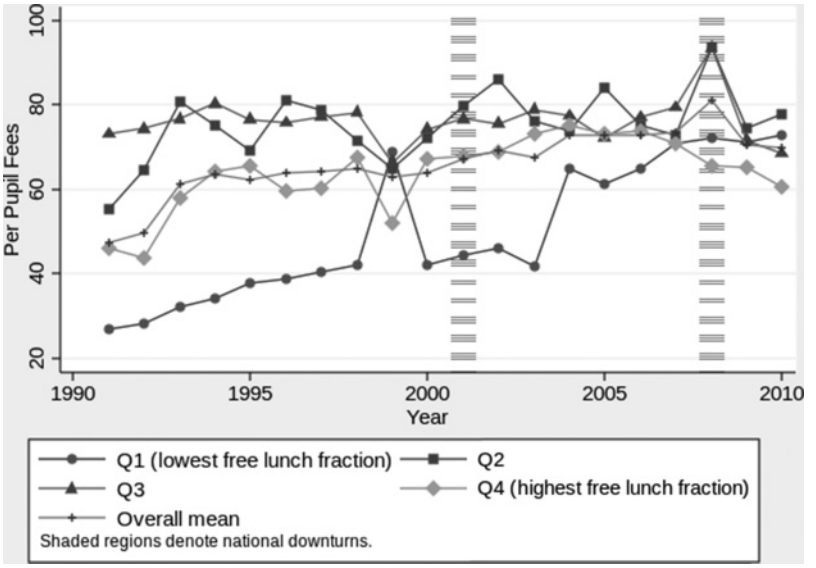

Figure 5. Per Pupil Fees by Quartiles of Share of Students Eligible for Free Lunch, Fiscal Years 1992–2011.

districts with the lowest levels of student poverty is duplicated by the trend in local-source revenue for these districts.

Figures 1 and 5 make clear that, although both total alternative revenues and fee revenues have also been trending up for all districts, the differences between the quartiles in the trends is not as sharp as are the differences in figures 2 and 4. Nevertheless, both fee revenues and total alternative revenues have contributed to the growing gap in own-source and total revenues between the lowest poverty districts and districts in the remaining three quartiles. In the first year for which we have data, per pupil fees in the districts with the lowest fractions free-lunch eligible were noticeably lower than per pupil fees in the remaining three quartiles. By the 2010–11 school year, per pupil fees for these districts with the lowest student poverty had surpassed the mean for the highest-poverty districts, and was on a par with districts in the other two quartiles.

In spite of the upward trends for fee revenues and total alternative revenues, these remain relatively minor sources of both own-source and total revenue. Consistent with prior research, fee revenue on a per capita basis is still under $100 per pupil, per year. Between 1991 and 2010, fee revenue actually became a smaller fraction of total revenue, both overall and for each quartile. Fee revenue as a share of own-source revenue has increased slightly for the mean districts, but that increase has been driven by the growth in the lowest-poverty districts. The type of growth in fee revenue that Wassmer and Fisher (2002) argued was possible, simply has not occurred.

Fees and Alternative Revenues: Correlates

Estimates of variants of equation 1 are given in table 2, and table 3 includes estimates of the parameters of equation 2. The columns of the tables include separate regressions, each with a different dependent variable. Each dependent variable is the natural log of a different measure of per pupil revenue. In addition to total fees, transportation fees, revenues from school lunches, and alternative revenues, we include revenues from local sources and total revenues as dependent variables in order to provide some context for the results for fees and alternative revenues.

The estimated effects of the common explanatory variables differ little between tables 2 and 3. For simplicity, our discussion will focus on the estimates in table 3.

Impact of Fiscal Pressures

We turn first to the relationship between nontax revenues and sources of fiscal pressure. The general lesson from these estimates is the lack of consistent evidence of increased use of nontax revenues in response to fiscal pressure. For example, our results do not provide a uniform picture of whether fees are used more heavily by districts constrained by fiscal institutions. Although fee revenues are higher in districts in states with limits on localities (*local limit*), they are not higher where limits on state governments are likely to affect state aid flows (*state limit*). Alternative revenues overall are lower in districts with state limits. Similar lack of clarity is evident in the coefficients on the court-ordered reform indicator (*court-ordered finance reform*), though that lack of clarity may be a result of the fact that court-ordered reforms have heterogeneous effects on districts.

We also see no evidence that fees and total alternative revenues are being used to compensate for declines in state formula aid or federal aid. Statistically significant coefficients on the aid variables are positive (*state formula aid, federal aid*), though they are quantitatively small with elasticities ranging from 0.01 to 0.04.

Our confidence in concluding there is no consistent evidence of alternative revenues being used to compensate for declines in traditional revenues is increased by the consistency of our estimates with existing estimates in the literature. For example, like Wassmer and Fisher (2002), we find revenues from fees and alternative revenues are higher in states where limits have been imposed on the ability of local governments to raise revenues. The final two columns of table 3 are also consistent with the general findings in the literature that, whereas local limits reduce own-source revenues, they do not reduce overall revenues. Only in states where limits are imposed on both state and local governments is revenue reduced.

Table 2. Impact of Downturns on School District Revenues – Year Effects Included[a,b]

	Dependent Variable[c]					
Explanatory Variable	**Fees**	**Transportation Fees**	**Revenues from School Lunch**	**Alternative Revenues**	**Revenues from Local Sources**	**Total Revenue**
Log of Enrollment	–0.0875***	–0.5211***	–0.2908***	–0.3589***	–0.4291***	–0.3430***
	(0.0298)	(0.1033)	(0.0269)	(0.0145)	(0.0126)	(0.0070)
Fraction special education	0.4008***	–0.4363**	0.0909***	–0.1251***	0.4882***	0.1688***
	(0.0690)	(0.2035)	(0.0294)	(0.0400)	(0.0408)	(0.0173)
Fraction eligible for free lunch	0.0633**	–0.0130	–0.2244***	–0.0797**	–0.0164	–0.0056
	(0.0259)	(0.0717)	(0.0190)	(0.0158)	(0.0113)	(0.0046)
Fraction Asian American	1.4624***	–0.7776	1.3748***	0.7087***	0.8127***	0.3824***
	(0.3935)	(0.9642)	(0.2037)	(0.1568)	(0.1124)	(0.0584)
Fraction Native American	0.3289***	–0.4298	–0.3148***	0.3358***	0.0601	0.0306
	(0.1274)	(0.4747)	(0.0967)	(0.0711)	(0.0521)	(0.0245)
Fraction African American	–0.7436***	–0.8670**	–0.4436***	–0.5810***	–0.2794***	–0.0484*
	(0.1543)	(0.4134)	(0.0929)	(0.0779)	(0.0561)	(0.0288)
Fraction Hispanic	–0.4685***	–0.8377*	–0.7287***	–0.2064***	0.1989***	0.0659***
	(0.1363)	(0.4417)	(0.0615)	(0.0551)	(0.0381)	(0.0206)
State limit	–0.0141	0.2530***	0.0115*	–0.1002***	0.0176***	–0.0322***
	(0.0099)	(0.0672)	(0.0069)	(0.0072)	(0.0047)	(0.0025)
Local limit	0.1079***	–0.0464	0.0089*	0.0180***	–0.0192***	–0.0013
	(0.0091)	(0.0604)	(0.0050)	(0.0053)	(0.0035)	(0.0016)
Court ordered finance reform	0.0875***	0.1801***	–0.0273***	–0.0562***	–0.0532***	0.0166***
	(0.0121)	(0.0525)	(0.0052)	(0.0066)	(0.0060)	(0.0023)
Log of state formula aid	–0.0023	0.0462***	0.0142***	0.0015	–0.2056***	0.0464***
	(0.0075)	(0.0131)	(0.0011)	(0.0045)	(0.0061)	(0.0020)
Log of federal aid	0.0159**	0.0130	0.0505***	0.0426***	0.0285***	0.0805***
	(0.0070)	(0.0243)	(0.0052)	(0.0048)	(0.0037)	(0.0019)
	School Year Effects[d]					
1992–93	0.0480***	–0.0132	–0.0046	–0.0259***	0.0370***	0.0304***
	(0.0075)	(0.0279)	(0.0033)	(0.0048)	(0.0026)	(0.0013)
1993–94	0.0668***	0.0049	–0.0096***	–0.0029	0.0551***	0.0372***
	(0.0087)	(0.0327)	(0.0036)	(0.0050)	(0.0029)	(0.0014)
1994–95	0.0392***	–0.0997**	0.0031	0.0983***	0.0665***	0.0533***
	(0.0092)	(0.0404)	(0.0041)	(0.0052)	(0.0032)	(0.0015)
1995–96	0.0410***	–0.1101***	0.0216***	0.1451***	0.0759***	0.0702***
	(0.0093)	(0.0427)	(0.0041)	(0.0052)	(0.0033)	(0.0016)
1996–97	–0.0140	–0.1025**	0.0253***	0.1714***	0.1000***	0.0928***
	(0.0098)	(0.0442)	(0.0043)	(0.0056)	(0.0037)	(0.0018)
1997–98	0.0181	–0.0987*	0.0553***	0.2369***	0.1379***	0.1185***
	(0.0112)	(0.0505)	(0.0048)	(0.0059)	(0.0039)	(0.0019)

Table 2. Continued.

	Dependent Variable[c]					
Explanatory Variable	**Fees**	**Transportation Fees**	**Revenues from School Lunch**	**Alternative Revenues**	**Revenues from Local Sources**	**Total Revenue**
1998–99	0.0097	–0.0644	0.0825***	0.2732***	0.1524***	0.1405***
	(0.0109)	(0.0509)	(0.0049)	(0.0061)	(0.0042)	(0.0020)
1999–00	0.0109	–0.0754	0.1008***	0.3096***	0.1674***	0.1573***
	(0.0112)	(0.0519)	(0.0052)	(0.0063)	(0.0045)	(0.0021)
2000–01	–0.0046	–0.0795	0.1139***	0.3933***	0.2097***	0.1937***
	(0.0119)	(0.0539)	(0.0054)	(0.0066)	(0.0047)	(0.0022)
2001–02	0.0128	–0.0157	0.1356***	0.2763***	0.2191***	0.2055***
	(0.0124)	(0.0545)	(0.0059)	(0.0071)	(0.0051)	(0.0024)
2002–03	0.0336***	–0.0065	0.1238***	0.2225***	0.2143***	0.2092***
	(0.0134)	(0.0571)	(0.0063)	(0.0075)	(0.0055)	(0.0026)
2003–04	–0.0222	0.0113	0.1261***	0.1718***	0.2561***	0.2177***
	(0.0156)	(0.0585)	(0.0067)	(0.0078)	(0.0055)	(0.0026)
2004–05	–0.0116	0.0044	0.1277***	0.2408***	0.2285***	0.2317***
	(0.0158)	(0.0608)	(0.0067)	(0.0078)	(0.0060)	(0.0027)
2005–06	–0.0097	0.0128	0.1317***	0.3821***	0.2632***	0.2496***
	(0.0165)	(0.0621)	(0.0072)	(0.0081)	(0.0063)	(0.0029)
2006–07	–0.0166	0.0078	0.1348***	0.4665***	0.3019***	0.2818***
	(0.0170)	(0.0620)	(0.0074)	(0.0082)	(0.0063)	(0.0029)
2007–08	–0.0325*	–0.0166	0.1187***	0.4221***	0.3122***	0.2940***
	(0.0173)	(0.0643)	(0.0076)	(0.0082)	(0.0062)	(0.0029)
2008–09	–0.0267	0.0203	0.1247***	0.2991***	0.3289***	0.3033***
	(0.0180)	(0.0684)	(0.0082)	(0.0088)	(0.0068)	(0.0032)
2009–10	–0.0568***	0.0055	0.0492***	0.1724***	0.2660**	0.2658**
	(0.0195)	(0.0727)	(0.0097)	(0.0098)	(0.0080)	(0.0036)
2010–11	–0.0328*	–0.0395	0.0019	0.1434***	0.2700***	0.2638***
	(0.0198)	(0.0742)	(0.0096)	(0.0097)	(0.0079)	(0.0036)
Number of observations	194,491	24,423	233,016	260,058	260,802	260,863
Number of districts	12,865	3,707	14,342	15,340	15,387	15,398
Within R^2	0.0078	0.0168	0.0603	0.1111	0.2258	0.6115
F Statistic	22.33	3.42	152.96	476.26	460.19	2116.59

Notes: [a]All regressions include district-specific fixed effects.
[b]In parentheses are standard errors robust to heteroskedasticity and calculated by clustering by school district.
[c]All dependent variables are measured as the natural log of the per pupil revenue measure.
[d]Bolded year effects correspond to years which overlap with downturns as determined by the NBER Business Cycle Dating Committee.
*Statistically significant at the 10% level; **statistically significant at the 5% level; ***statistically significant at the 1% level.

Table 3. Impact of Downturns on School District Revenues – State-Specific Downturn Variable Included[a,b]

	Dependent Variable[c]					
Explanatory Variable	**Fees**	**Transportation Fees**	**Revenues from School Lunch**	**Alternative Revenues**	**Revenues from Local Sources**	**Total Revenue**
Log of Enrollment	–0.0883***	–0.5306***	–0.1602***	–0.3786***	–0.4356***	–0.3487***
	(0.0296)	(0.1031)	(0.0193)	(0.0146)	(0.0126)	(0.0070)
Fraction special education	0.3893***	–0.3929**	0.0831***	–0.1544***	0.4827***	0.1643**
	(0.0672)	(0.1941)	(0.0292)	(0.0411)	(0.0402)	(0.0170)
Fraction eligible for free lunch	0.0725***	0.0231	–0.2466***	–0.1066**	–0.0251**	–0.0140**
	(0.0255)	(0.0720)	(0.0192)	(0.0160)	(0.0113)	(0.0047)
Fraction Asian American	1.4496***	–0.6365	1.4622***	0.8795***	0.8666***	0.4283***
	(0.3919)	(0.9628)	(0.2052)	(0.1592)	(0.1133)	(0.0583)
Fraction Native American	0.3231**	–0.3440	–0.3059***	0.3832***	0.0781	0.0438*
	(0.1272)	(0.4759)	(0.0970)	(0.0714)	(0.0521)	(0.0246)
Fraction African American	–0.7549***	–0.8518**	–0.3813***	–0.4665***	–0.1663***	–0.0206
	(0.1540)	(0.4111)	(0.0928)	(0.0784)	(0.0528)	(0.0289)
Fraction Hispanic	–0.4649***	–0.8109*	–0.7082***	–0.1691***	0.2121***	0.0746***
	(0.1363)	(0.4399)	(0.0614)	(0.0550)	(0.0381)	(0.0207)
State limit	–0.0109	0.1898***	0.0073	–0.0920***	0.0181***	–0.0329***
	(0.0098)	(0.0622)	(0.0068)	(0.0071)	(0.0046)	(0.0025)
Local limit	0.1080***	–0.0778	0.0046	0.0173***	–0.0183***	–0.0007
	(0.0090)	(0.0599)	(0.0050)	(0.0054)	(0.0035)	(0.0016)
Court ordered finance reform	0.0865***	0.1583***	–0.0320***	–0.0481***	–0.0553***	0.0136***
	(0.0119)	(0.0482)	(0.0051)	(0.0066)	(0.0060)	(0.0022)
Log of state formula aid	–0.0040	0.0400***	0.0150***	0.0106**	–0.2040***	0.0481**
	(0.0075)	(0.0127)	(0.0011)	(0.0045)	(0.0061)	(0.0020)
Log of federal aid	0.0161**	0.0165	0.0479***	–0.0004	0.0220**	0.0757***
	(0.0066)	(0.0224)	(0.0049)	(0.0046)	(0.0035)	(0.0018)
Trend	–0.0017	–0.0017	0.0291***	0.0622***	0.0282***	0.0263***
	(0.0017)	(0.0077)	(0.0008)	(0.0010)	(0.0007)	(0.0003)
Trend squared	–0.0001	0.0002	–0.0012***	–0.0024***	–0.0006***	–0.0005***
	(0.0001)	(0.0004)	(0.00004)	(0.0001)	(0.0000)	(0.0000)
Downturn indicator	0.0088***	0.0492***	0.0199***	–0.0021	0.0150***	0.0109***
	(0.0036)	(0.0134)	(0.0015)	(0.0022)	(0.0013)	(0.0006)
Number of observations	194,491	24,423	233,016	260,058	260,802	260,863
Number of districts	12,865	3,707	14,342	15,340	15,387	15,398
Within R^2	0.0068	0.0150	0.0532	0.0785	0.2217	0.6061
F Statistic	25.11	5.40	184.81	425.86	807.27	4221.07

Notes: [a]All regressions include district-specific fixed effects.
[b]In parentheses are standard errors robust to heteroskedasticity and calculated by clustering by school district.
[c]All dependent variables are measured as the natural log of the per pupil revenue measure.
*Statistically significant at the 10% level; **statistically significant at the 5% level; ***statistically significant at the 1% level.

Beyond the new description of fee revenue use among school districts, we also ask whether shifts in the use of fees may be attributed to the economic downturn. The results do not consistently show that fee revenue usage by school districts was countercyclical. The coefficients on the year dummies in table 2 indicate that fee revenues fell in the first year of each downturn and then rebounded in the second year. Because the timing of changes in revenue flows have not necessarily matched the timing of downturns, the coefficients for the years immediately after a downturn might also reflect district efforts to use alternative revenue sources to fill gaps—although the results show no consistent picture that user fee revenues are countercyclical. Total alternative revenues generally decline in the downturn and post-downturn years, with the exception being the first year of the downturn that started during the 2000–01 school year.

The lack of clarity in table 2 may be partly attributable to the fact that the timing of downturns is not uniform across all states. Table 3 presents the findings with controls for the timing of the economic downturn within states. The coefficients on that variable indicate fee revenues do move countercyclically and total alternative revenues exhibit no cyclical behavior, all else equal. The magnitude of the coefficient on the indicator in the fees regression is small (implying a percent change of less than one), however, indicating fee revenues fill little of the gap created by cyclical declines in state aid and other revenue sources. In summary, the results in table 3 provide limited evidence that growth in alternative and nontax revenues is particularly responsive to economic downturns among states hardest hit by the Great Recession.[11]

Other Correlates with Alternative Revenue Use

We find that larger districts (*enrollment*) make less use of fees and alternative revenues, with an elasticity of fees with respect to enrollment of about –0.09 and of alternative revenues with respect to enrollment of about –0.38. This finding parallels a common result in the literature on private contributions (Brunner and Sonstelie 2003; Downes and Steinman 2008), as well as the results in Killeen (2007). Our finding that fees are higher in districts in which a larger proportion of students are on IEPs (*special education*),[12] however, runs

11. If the services for which fees are charged are highly price elastic, then districts may be more willing to add fees than to increase existing fees. As a result, limiting our analysis to only those districts with fee revenues, as we do in tables 3 and 4, might understate the degree of responsiveness of fees and other alternative revenues. To explore this possibility, we estimated variants of equations 1 and 2 in which the dependent variable was the level of per pupil revenues from fees or other alternative revenue sources or was a dummy variable indicating whether a district had any revenues of a particular type. The implications of those estimates, which are available upon request, are consistent with the implications of the estimates in tables 2 and 3.
12. Every public school student who receives special education must have an Individualized Education Program (IEP).

counter to Killeen's results. The difference between our results and Killeen's probably reflects our ability to account for district-specific effects and to include a richer set of controls for student demographics.[13]

Fee revenues also appear to be higher in districts with larger proportions of students eligible for free school lunch. Wassmer and Fisher (2002) also found a negative relationship between income and fee revenues. Although in the Ohio districts analyzed by Killeen (2007) fee revenues were higher in districts with higher median household income, that result was attributable to the strength of the relationship between fee revenues and income in the poorest districts. We will return to that observation subsequently when we look explicitly at how fee usage varies by the economic status of a district's student population.

Fee revenues are also higher in districts with larger proportions of Asian American and Native American students and lower in districts with larger proportions of African American and Hispanic students, all results that are generally consistent with Killeen (2007).

Narrowing the Scope: Disaggregating Revenue Sources and District Types

The results for transportation fees and revenues from school lunch generally look very similar to those for fees. The coefficients on the year dummies exhibit patterns of year-to-year change much like the coefficients on the year dummies for fees, and the coefficients on the Downturn dummy indicate these revenue sources exhibit some countercyclical movement—though both of these coefficients are quantitatively small. Neither of these revenue sources appears to be used more heavily when aid is reduced, and only transportation fees appear to be larger in districts in states with either state or local limits. Further, few districts generate revenues by charging for transportation, indicating that Wassmer and Fisher's (2002) argument about the underutilization of this and other alternative revenue sources continues to be valid.

The absence of evidence in tables 2 and 3 that fees and other alternative revenues are responsive to fiscal constraints may be due to the fact that we do not separately analyze districts by the type of students they serve. The results in table 4, which provide estimates of equation 2 for each type of district, suggest there is little evidence that districts' use of fees in response to fiscal constraints differs by district type. Not surprisingly, because most districts are K–12, the results for these districts closely parallel the results in table 3. Somewhat surprisingly, high school districts do not appear to make more use of fees in the face of fiscal constraints. For these districts, the coefficients on

13. When we estimate models that use the shorter panel for which fraction limited English proficient is available, we find the coefficient on fraction limited English proficient is consistently negative and significant, a finding that matches Killeen (2007).

Table 4. Impact of Downturns on School District Revenues by District Type[a,b]

	Dependent Variable[c]					
Explanatory Variable	**Fees – Elementary Districts**	**Fees – High School Districts**	**Fees – K–12 Districts**	**Alternative Revenues – Elementary Districts**	**Alternative Revenues – High School Districts**	**Alternative Revenues – K–12 Districts**
Log of Enrollment	0.0842	–0.1089	–0.1361***	–0.4423***	–0.3872***	–0.2993***
	(0.0610)	(0.1781)	(0.0335)	(0.0261)	(0.0814)	(0.0180)
Fraction special education	0.3477***	0.0605	0.4468***	–0.1356*	–0.1605	–0.2754***
	(0.1162)	(0.3170)	(0.0550)	(0.0743)	(0.1164)	(0.0354)
Fraction eligible for free lunch	0.0286	–0.1843	0.0652**	–0.2295***	–0.2350***	–0.0614***
	(0.0745)	(0.2190)	(0.0254)	(0.0334)	(0.0861)	(0.0173)
Fraction Asian American	0.8307***	0.4005	1.6251***	0.6766**	0.8168	1.0548***
	(0.5876)	(1.9609)	(0.5352)	(0.2839)	(0.6650)	(0.2115)
Fraction Native American	0.0584	0.0730	0.3990***	0.0122	–0.9285**	0.8168***
	(0.1810)	(0.6292)	(0.1548)	(0.1475)	(0.3944)	(0.1041)
Fraction African American	–0.5184	–0.9677*	–0.9268***	–0.0727	–0.7858*	–0.5538***
	(0.3215)	(0.5336)	(0.1883)	(0.1406)	(0.4484)	(0.0997)
Fraction Hispanic	0.1927	–0.1315	–0.6295***	–0.2768***	–0.7024**	–0.1768***
	(0.3184)	(0.9154)	(0.1466)	(0.0957)	(0.3393)	(0.0682)
State limit	–0.1106*	–0.1754*	0.0112	–0.0430	–0.0254	–0.0819***
	(0.0577)	(0.0976)	(0.0101)	(0.0437)	(0.1986)	(0.0071)
Local limit	–0.0626**	–0.2221***	0.1140***	0.0155	0.0080	0.0088
	(0.0301)	(0.0526)	(0.0107)	(0.0182)	(0.0353)	(0.0057)
Court ordered finance reform	0.7069***	–0.4041***	0.0987***	–0.1014***	–0.0783	–0.0177***
	(0.1240)	(0.1366)	(0.0116)	(0.0253)	(0.0587)	(0.0069)
Log of state formula aid	0.0391***	–0.0172	0.0082***	0.0141***	0.0280**	–0.0023*
	(0.0120)	(0.0182)	(0.0021)	(0.0043)	(0.0125)	(0.0012)
Log of federal aid	–0.0143	–0.0260	0.0136*	0.0298***	–0.0231	–0.0297***
	(0.0162)	(0.0221)	(0.0075)	(0.0099)	(0.0143)	(0.0055)
Trend	0.0394***	0.0695***	–0.0056***	0.0799***	0.0717***	0.0608***
	(0.0017)	(0.0144)	(0.0017)	(0.0027)	(0.0055)	(0.0010)
Trend squared	–0.0015***	–0.0019***	–0.0001	–0.0034***	–0.0026***	–0.0023***
	(0.0003)	(0.0006)	(0.0001)	(0.0001)	(0.0003)	(0.00004)
Downturn indicator	0.0195*	–0.0345	0.0209***	0.0269***	0.0244	–0.0011
	(0.0100)	(0.0210)	(0.0041)	(0.0068)	(0.0162)	(0.0023)
Number of observations	19,059	5,763	159,578	43,491	8,470	190,670
Number of districts	1,922	525	10,607	3,541	661	11,349
Within R^2	0.0496	0.0438	0.0111	0.0850	0.0701	0.0773
F Statistic	9.28	4.03	28.20	99.92	19.04	324.57

Notes: [a]All regressions include district-specific fixed effects.
[b]In parentheses are standard errors robust to heteroskedasticity and calculated by clustering by school district.
[c]All dependent variables are measured as the natural log of the per pupil revenue measure.
*Statistically significant at the 10% level; **statistically significant at the 5% level; ***statistically significant at the 1% level.

the state and local limit dummies are both negative; neither of the coefficients on the aid variables differs from zero; and the coefficient on the downturn variable is positive for all alternative revenues, negative for fees, and effectively zero for both.

Heterogeneity in the Use of Fees and Alternative Revenues

Figures 1 and 5 offer evidence that the patterns of change in the use of alternative revenues and fees have not been the same for districts with different levels of student poverty. The results in tables 5 and 6 were generated to shed some light on the sources of this heterogeneity. Some of the results in these tables do suggest potential sources of heterogeneity. For example, the negative coefficient on fraction free lunch in the fees model for the highest poverty districts helps explain why fee revenues have fallen in these districts over the past several years. The sharp drops in alternative revenues in districts in the second and third quartiles could be attributable, in part, to the strength of the negative relationship between alternative revenues and federal aid.

These results also tend to confirm findings in the literature. For example, for most districts fee revenues are higher when limits on local revenue-raising ability are in place. Districts with the highest average poverty exhibit a strong negative relationship between fee revenues and this measure of economic well-being, whereas no such relationship is apparent for the lowest poverty districts. These findings echo results in Killeen (2007).

At the same time, the results in tables 5 and 6 might raise as many questions as they address. For example, there is the surprising result that districts with the lowest level of student poverty appear to make less use of fees in states with court-ordered finance reform. This result stands in sharp contrast to the findings of Brunner and Sonstelie (1997, 2003), Brunner and Imazeki (2005), and Downes and Steinman (2008) on the growth of private contributions in districts constrained by post-reform finance systems. For the same districts, in the alternative revenues model, the negative coefficient on the local limit is also surprising. Although both of these results might be attributable to better access to additional property tax revenues relative to other districts,[14] further exploration of these counterintuitive results is clearly necessary.

The estimates in tables 5 and 6 also fail to provide a uniform picture of whether differential use of fees and other alternative revenues accentuates inequalities during downturns. For example, for the lowest poverty districts, the negative coefficient on the downturn indicator in the fees regression would appear to indicate fee revenues in these districts move cyclically. In the fees

14. This possibility is suggested by the finding that higher income districts are more likely to override local limits, which dates back to Reschovsky and Schwartz (1992) and has been confirmed by Bradbury and Zhao (2009) and others.

Table 5. Impact of Downturns on School District Revenues – Districts Grouped by Student Poverty[a] Dependent Variable: Natural Log of Per Pupil Fee Revenue[b]

Explanatory Variable	First Quartile of Fraction Free Lunch	Second Quartile of Fraction Free Lunch	Third Quartile of Fraction Free Lunch	Fourth Quartile of Fraction Free Lunch
Log of Enrollment	–0.0455	–0.0940	–0.1385**	–0.2249***
	(0.0723)	(0.0606)	(0.0568)	(0.0424)
Fraction special education	0.2471**	0.1677	0.3190***	0.0164
	(0.1126)	(0.1460)	(0.0940)	(0.0793)
Fraction eligible for free lunch	–0.0317	0.3953**	0.1647	–0.1379**
	(0.1717)	(0.1671)	(0.1147)	(0.0701)
Fraction Asian American	0.3266	1.8712*	–0.1009	0.4200
	(0.5451)	(1.0922)	(0.8444)	(0.5473)
Fraction Native American	0.4024	0.6757	1.2812***	–0.0205
	(0.5597)	(0.4291)	(0.3021)	(0.1214)
Fraction African American	–0.6232**	–1.1233**	–1.4168***	–0.3864*
	(0.2891)	(0.4650)	(0.3596)	(0.2220)
Fraction Hispanic	0.8765**	0.7104*	–1.1229***	–0.8485***
	(0.3839)	(0.3985)	(0.2519)	(0.1715)
State limit	–0.0428***	0.0972***	–0.0950***	–0.0976**
	(0.0154)	(0.0205)	(0.0206)	(0.0389)
Local limit	0.0112	0.1433***	0.0885***	0.0578***
	(0.0169)	(0.0170)	(0.0178)	(0.0168)
Court ordered finance reform	–0.1716***	0.1583***	0.1360***	0.0413
	(0.0324)	(0.0205)	(0.0203)	(0.0257)
Log of state formula aid	–0.0317*	0.0037	–0.0007	–0.0428***
	(0.0180)	(0.0127)	(0.0125)	(0.0134)
Log of federal aid	0.0072	0.0226*	–0.0012	0.0197
	(0.0105)	(0.0122)	(0.0135)	(0.0142)
Trend	0.0095**	0.0040	–0.0060*	0.0054*
	(0.0038)	(0.0041)	(0.0034)	(0.0031)
Trend squared	0.0003	–0.0011***	–0.0001	–0.0003*
	(0.0002)	(0.0002)	(0.0001)	(0.0001)
Downturn indicator	–0.0350***	0.0605***	0.0174**	–0.0004
	(0.0066)	(0.0088)	(0.0078)	(0.0066)
Number of observations	44,218	50,868	52,654	46,751
Number of districts	7,363	6,761	7,320	5,384
Within R^2	0.0216	0.0133	0.0158	0.0103
F Statistic	17.09	14.39	13.37	8.9

Notes: [a]All regressions include district-specific fixed effects.
[b]In parentheses are standard errors robust to heteroskedasticity and calculated by clustering by school district.
*Statistically significant at the 10% level; **statistically significant at the 5% level; ***statistically significant at the 1% level.

Table 6. Impact of Downturns on School District Revenues – Districts Grouped by Student Poverty[a] Dependent Variable: Natural Log of Per Pupil Alternative Revenues[b]

Explanatory Variable	First Quartile of Fraction Free Lunch	Second Quartile of Fraction Free Lunch	Third Quartile of Fraction Free Lunch	Fourth Quartile of Fraction Free Lunch
Log of Enrollment	–0.5336***	–0.3742***	–0.3677***	–0.4570***
	(0.0432)	(0.0273)	(0.0246)	(0.0284)
Fraction special education	0.0739	–0.2908***	–0.1875	–0.1084**
	(0.0515)	(0.0700)	(0.0940)	(0.0553)
Fraction eligible for free lunch	–0.3098**	–0.7440***	–0.6455***	–0.2797***
	(0.1213)	(0.0922)	(0.0567)	(0.0879)
Fraction Asian American	0.5102*	1.1905***	0.7162**	0.3117
	(0.2739)	(1.3724)	(0.3289)	(0.2970)
Fraction Native American	0.1826	0.4858**	0.7411***	0.3383***
	(0.1573)	(0.2222)	(0.1567)	(0.0792)
Fraction African American	–0.2476	0.2339	–0.3447*	–0.5737***
	(0.1562)	(0.2212)	(0.1939)	(0.1308)
Fraction Hispanic	–0.1752	0.0537	0.0275	0.0254
	(0.1586)	(0.1493)	(0.0945)	(0.0902)
State limit	–0.0360**	–0.0356***	–0.0827***	–0.1726***
	(0.0157)	(0.0128)	(0.0141)	(0.0338)
Local limit	–0.0596***	0.0243***	0.0375***	0.1073***
	(0.0104)	(0.0091)	(0.0098)	(0.0122)
Court ordered finance reform	–0.0298**	–0.0495***	–0.0276**	–0.0669***
	(0.0146)	(0.0107)	(0.0116)	(0.0169)
Log of state formula aid	0.0421***	0.0016	0.0093	–0.0103
	(0.0111)	(0.0073)	(0.0080)	(0.0113)
Log of federal aid	–0.0037	–0.0175**	–0.0187**	–0.0034
	(0.0079)	(0.0078)	(0.0135)	(0.0116)
Trend	0.0622***	0.0539***	0.0487***	0.0694***
	(0.0038)	(0.0025)	(0.0019)	(0.0020)
Trend squared	–0.0021***	–0.0018***	–0.0017***	–0.0028***
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Downturn indicator	0.0032	0.0033	–0.0098**	–0.0141***
	(0.0043)	(0.0043)	(0.0042)	(0.0051)
Number of observations	61,629	64,426	67,461	66,542
Number of districts	9,421	8,320	8,788	6,825
Within R^2	0.0915	0.0495	0.0578	0.0922
F Statistic	102.33	75.68	101.82	153.1

Notes: [a]All regressions include district-specific fixed effects.
[b]In parentheses are standard errors robust to heteroskedasticity and calculated by clustering by school district.
*Statistically significant at the 10% level; **statistically significant at the 5% level; ***statistically significant at the 1% level.

regression, however, the coefficients on this indicator are positive for the next two quartiles. And, in the alternative revenues regression, the coefficients on the downturn indicators are consistent with alternative revenues moving cyclically in the districts with the highest levels of student poverty. Thus, the preponderance of evidence from these regressions is consistent with our interpretation of figures 1 and 5—differential access to fee revenues and other alternative revenues during downturns may slightly accentuate inequities in K–12 education spending.

5. DISCUSSION

Summary of Major Findings

One of the major contributions of this work is that it offers the first long-term portrait of the use of alternative local revenues in the funding of public education. The use of nontax revenues in education contrasts sharply with their use among state and local governments. We have demonstrated that alternative revenues provide a small share of local education revenues, and they have increased quite minimally since the early 1990s. For example, between 1991 and 2010, fee revenue grew by 47 percent to just under $70 per pupil. This contrasts with total revenue growth during this period of 53 percent and alternative (nontax and nonfee) revenue growth of 87 percent.

We started this paper with the assumption that the Great Recession would have stimulated a substantial fiscal shock among local school districts, similar to the period of change following the national tax revolts in the late 1970s. We assumed that local districts would respond to the downturn with some movement away from reliance on the property tax and toward alternative revenues like fees. Not only was this shift minimal in total fee revenue, we found only a mild association with the downturn. For both the 2001 and 2007 recessions, our results indicate an immediate decline in fee revenues in the year following the onset of the recession, followed by a small increase.

Prospects for Reducing Reliance on the Property Tax

Despite the conventional expectation that school districts might move toward user fees in public education finance, they have been very slow to do so. Even the fiscal stress resulting from recessions has not substantively shifted revenues away from property taxation. We are thus left with the question: What events might stimulate school districts to move away from property taxation?

State and local governments in general appeared to migrate toward fee-based revenues following periods of tax revolts and TELs. Although more research is needed, this suggests large fiscal shocks could stimulate the increased use of non-tax revenues by school districts. The findings in this paper,

however, signal that school districts may be quite resistant to local revenue diversification even during major economic downturns. Historically, the property tax has provided a stable source of revenue for school districts, and the added fiscal pressure associated with downturns was not enough to trigger revenue diversification by school districts. We examine whether the use of alternative local revenues could occur as long as three years after the Great Recession, but find very little support for this idea. Similarly, there is no strong evidence of revenue restructuring or diversification as a result of the 2001 recession.[15]

The literature suggests fiscal pressures created by contractions of state aid or responses to TELs might trigger a shift toward fees or other nontax revenues. But our findings suggest temporary fiscal pressures, such as those created by downturns, may simply not be enough to motivate fee usage. Even permanent fiscal pressures, such as those that may be created by property tax limits, might only induce limited revenue diversification.

One reason for the slow rate of adoption of fees and charges by school districts might be that their opportunities for fee-based financing are quite limited. Both the courts and public opinion tend to agree that the core education functions of public schools, and most of their budgets, are not amenable to the collection of fees.[16] Although there is support for the use of fees for extracurricular activities, these activities generally account for a minor portion of education spending. Cutbacks in spending on extracurricular activities as a result of recessions may further reduce the opportunity for fee-based revenues.

Irrespective of the persistent public support for funding education through anything but the property tax, and despite the size of the Great Recession and the extended recovery, our findings point to very limited movement toward the use of alternative local revenues, such as fees. Although local governments other than school districts, including institutions of higher education, readily rely on fee revenues to supplement and supplant property taxation, no such change seems underfoot in public education, at least for now.

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15. Our failure to find evidence of increased use of fees could be a result of the shifting of service provision from schools to other local governments in the face of fiscal constraints. Such shifting might happen if public perceptions of schools levying fees differ from perceptions of other local governments levying fees, even if those fees are for the same services. However, Downes (2007) suggests there is no evidence of such shifting in the face of fiscal constraints.
16. In contrast, municipal and county governments generally provide a broader range of services where it is acceptable to raise revenues by charging fees for services.

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