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Assessing the Educational Opportunity of Emergent Bilingual Students: Do State School Finance Systems Provide Equitable Funding?

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Abstract

Despite the rapid increase in enrollment of students who speak a language other than English at home, little prior research examines whether school districts receive adequate funding for instructional programs for emergent bilinguals. We show that Great Recession budget cuts disproportionately impacted districts with greater proportions of students classified as English language learners (ELL). Next, we whether the particular mechanism states use to fund bilingual education is associated with equitable funding for high-ELL districts in those states. Finally, we draw on data from Texas to show that high-ELL Texas districts levy higher local property taxes, but have lower property values. Despite greater taxing effort, high-ELL districts receive an inequitable share of state funding following the Great Recession budget cuts.

Key words: school finance; equity; budgeting; emergent bilinguals; English language learners

Assessing the Educational Opportunity of Emergent Bilingual Students: Do State School Finance Systems Provide Equitable Funding?

U.S. schools have seen a dramatic increase in enrollment of students who speak a language other than English in the home over the past three decades (National Center for Education Statistics, 2012). Emergent bilinguals – students whose heritage language is not English – are now the fastest growing student group in the United States (Valentino & Reardon, 2015). Under federal policy, non-native English speakers who gain proficiency in English are reclassified from an English Language Learner (ELL) to English proficient. On average, students who are classified as ELL perform lower on standardized exams, scoring about one grade level below their non-ELL peers (Reardon & Galindo, 2009).

One of the key mechanisms for promoting equal educational opportunity is providing students with adequate funding levels (Baker, 2012; Card & Payne, 2002; Jackson, Johnson & Perscio, 2014). Although scholars debate the appropriate level of funding for K-12 education, there is general consensus that effective state school finance systems provide compensatory funding for students with greater needs (Odden & Picus, 2013; Verstegen, 2011). For emergent bilingual students –additional funding may be used for teacher professional development, curricular materials, and bilingual aides to help educators draw on the assets emergent bilinguals bring to schools, such as linguistic capital and cultural diversity (Gándara, Rumberger, Maxwell-Jolly, & Callahan, 2003; Jimenez-Castellanos & Topper, 2012; Parrish, 1994). In short, schools serving greater numbers of emergent bilingual students or students in poverty require additional funding to provide equitable learning opportunities.

The Great Recession had substantial impacts on state school finance systems and most states have not restored funding back to pre-recession levels (Leachman, Albares, Masterson & Wallace, 2016). Moreover, studies show recessionary budget cuts disproportionately impacted

districts and schools serving greater proportions of students of color and in poverty (Baker, 2014; Knight & Strunk, 2016). For example, faced with serious budget shortfalls following the Great Recession, Texas cut state education funding in a way that primarily affected high-poverty districts (Knight, 2016). In 2012, over 600 school districts sued the state for violating the state constitutional mandate of providing an adequate education for all students (Collier, 2016). Ultimately, the Texas Supreme Court ruled the finance system constitutional in May of 2016; however, the court's opinion labeled the system antiquated and urged the legislator to overhaul the state's school funding mechanism.[1]

Given the significant changes to state school finance systems in recent years, and the growing population of emergent bilinguals in U.S. schools, inquiry into the extent to which ELLs receive equitable educational opportunities is needed. Surprisingly, there is little research that directly evaluates the extent to which states compensate school districts for larger populations of ELLs (Rolle & Jimenez-Castellanos, 2012). This study examines whether emergent bilingual students have equal educational opportunity and explores how resource and achievement gaps have changed over time. The analysis then uses Texas – a state with a large ELL population that has recently experienced dramatic changes to its school finance system – to more closely examine some potential underlying causes of funding gaps. The study addresses the following research questions:

1. To what extent do state school finance systems provide equitable resource levels for ELLs, both nationally and in Texas?
2. How has funding for ELLs changed since the Great Recession?
3. What factors within the Texas school finance system influence funding gaps?

[1] *Texas Taxpayer and Student Fairness Coalition, et al. v. Scott, Combs, and the State Board of Education*, 2016

Findings show that prior to the Great Recession, districts with greater proportions of students classified as ELL received more funding per student, had higher average teacher salaries, and employed more teachers and other staff per student compared to otherwise similar districts in the same state. However, by the end of the recessionary budget cuts, districts did not receive any additional funding or other resources as the proportion of ELLs increased – and in some cases received less – after taking into account other district characteristics. Similarly, school districts in Texas do not receive any compensatory funding for ELLs, despite the student funding weights embedded in Texas school finance policy. This lack of additional funding persisted from 2007-08 through the 2012-13 school year. Finally, we show that high-ELL districts in Texas levied higher taxes, but had lower property values relative to otherwise similar low-ELL districts. As a result, high-ELL districts received far less local tax revenues. State and federal funding sources were not progressive enough to make up for the funding disparity created by differences in local property values.

Below we first present background literature and describe how the current study address important research gaps. The following section provides additional information on the policy context of this study. Subsequent sections describe the data and analytic approach, findings, and we conclude with discussion and policy implications.

Background Literature and Theoretical Framework

Two Perspectives on Effective Programs for ELLs

Emergent bilinguals represent a diverse group of students with a wide range of cultural and linguistic assets (García, Kleifgen & Falchi, 2008). Two divergent theoretical perspectives exist among scholars and practitioners pertaining to effective instruction for ELLs. On the one hand, researchers posit that ELLs should be exposed to as much English language instruction as

possible through programs such as English immersion (Porter, 2000). English immersion adopts a sink or swim model in which students are expected to learn the English language as they learn other content related to subject areas (Berliner & Glass, 2014). On the other hand, some scholars content that students learning English need support in their heritage language (Collier, 1992). Without developing academic literacy in a student's home language, students may not have the opportunity to draw connections between languages for which underlying proficiencies are similar (Cummins, 1979; 2000).

Transitional (or early-exit) bilingual programs use all-ELL classrooms and begin with instruction provided in the home language, but transition to English-only instruction with two to three years. Developmental (or late-exit) bilingual programs are similar, except that transition to English-only instruction takes place over five years. Dual-immersion or dual language instruction is different in that (a) classrooms may include both ELLs and native English speakers; (b) instruction in both languages is maintained throughout the program; and (c) native English speakers also learn a second language. Dual language programs provide ELLs greater opportunity to engage with native English speaking peers, while non-ELLs learn a second language in part through interactions with their ELL peers (Collier & Thomas, 2014).

Although substantial evidence supports the use of two languages in instructional programs for ELLs, researchers have not reached consensus on the most effective instructional models (Slavin, Madden, Calderon, Chamberlain & Hennessy, 2011). Contextual factors influence how effective programs will be in a particular setting (Gutiérrez, Zepeda & Castro, 2010). Many schools currently use English Immersion and parents sometimes prefer this instructional approach as a way to maximize their child's exposure to English (Karabenick & Noda, 2004). Given the role of parental choice in students' program enrollment, identifying

causal estimates of program effects has proven difficult. Valentino and Reardon (2015) compared test scores of students in four different instructional programs for ELLs, where over-enrollment in each program required random assignment of students. Students in transitional bilingual and developmental bilingual programs had average test scores in math and English greater than students in English Immersion. Students assigned to dual language had the highest long term achievement growth among the four instructional models studied. (August & Pease-Alvarez, 1996; Lindholm-Leary & Borsato, 2006). Several meta-analyses provide additional evidence that bilingual education, particularly dual immersion, are the most effected instructional programs for ELLs (Slavin et al., 2011; Green, 1997).

Cost of ELL Programs

Despite the large literature on program effects, very few studies compare the costs of instructional programs for ELLs. One study compared the per-student costs of maintaining transitional and developmental bilingual programs, pull-out English language courses for ELLs (i.e., English as a second language, ESL), dual language, and a program called Sheltered English in which teachers use activity-based lessons and limit the use of English (Parrish, 1994). ELL programs add only minimal classroom costs, whereas most of the additional costs associated with ELL instructional programs were outside the classroom, resulting from staff time of special resource teachers and administrative staff. In total, ELL programs result in approximately a 30% increase in costs per student, on average, across programs. Although ESL and Sheltered English were the most and least costly, respectively, differences in cost stemmed from local decisions rather than specific program design (Parrish, 1994). That is, the primary drivers of costs were more related to local resource allocation decisions and less related to the particular instructional model being implemented. These results are similar to a more recent statewide analysis of the

cost of dual language programs in Texas (Lara-Alecio et al., 2005). The authors found that dual language programs result in increases in costs that exceed transitional bilingual, but substantial variation in costs exists across sites using the same model.

Other methods used to assess cost in education focus on the additional costs associated with an additional ELL student (as opposed to the additional cost of ELL instructional programs). [2] These studies have direct policy relevance for state legislatures designing school finance systems because the findings insights into how different types of school districts should be funded. For instance, Duncombe and Yinger (2008) find that each ELL student is associated with an increase in per-student cost of 20% to reach the same state academic standards as non-ELL students. Presumably, these additional costs are allocated to instructional programs or interventions that improve outcomes for ELLs.

Funding for ELL Programs

While a small portion of federal funding supports bilingual education through Title III grants, the majority of funds allocated specifically for English language learners comes from state sources (Verstegen & Jordan, 2009). Many state school finance systems provide specific weights for ELLs that increase a school district's per-pupil base state funding by a given amount. For example, the 0.1 weight used in Texas implies that districts receive 10% more funding over above the base per-pupil allotment ($5,040 for 2014-15) for each ELL student. Theoretically,

[2] Both the Parrish (1994) and the Lara-Alecio et al. (2005) study use the Resource Cost Method in which empirical data on resource use is collected and assigned a cost value. The ingredients methods (Levin & McEwan, 2001) is a similar analytic approach, but is more often used in cost-effectiveness analyses. The literature describes four other approaches for measuring cost in education: (a) the evidence-based approach (Odden & Picus, 2015), which determines the cost of ELL programs based on best-practices derived from research literature (rather than empirical analyses); (b) Professional Judgement Panels which gather groups of educators to estimate resources required in various types of schools; (c) the successful schools approach, which examines resource allocation patterns in high-performing schools; and (d) cost function analyses, which use large datasets that include information on district expenditures and outcomes (Augenblick, Palaich, & Associates, 2011; Baker, Taylor & Vedlitz, 2005; Chambers & Levin, 2006; Gándara & Rumberger, 2007; Rebell, 2007).

student weights should be based on the marginal costs associated with instructional programs for ELLs described above. Scholars argue that the weights currently established in state school finance systems are often too low, and likely determined based on political and budgetary considerations rather than empirical evidence of actual cost (Duncombe & Yinger, 2008).

Approximately 37 states provide specific funding for students learning English (Verstegen, 2011). Most of those states use student weights that range from a low of 0.1 (in Texas) to as high as 2.5 in Georgia, but average around 0.3. Many other states provide a per-student dollar amount (e.g., $1,000 per student in New Hampshire and $290 per student in Idaho) or allocate a total amount across districts statewide, based on the number of student enrolled in programs for ELLs in each district. In all other states, state funding for ELLs comes in block grants from the general education fund or is drawn from funding allocated for low-income students (Verstegen, 2011).

Very little research exists on the extent to which districts serving greater proportions of ELLs actually receive additional funding, after taking into account other student demographics and local cost factors (Gándara, Rumberger, Maxwell-Jolly & Callahan, 2003). Arroyo (2008) found that, of the eight states that had at least 10 percent of its student population classified as ELLs, five spent less in high-ELL districts compared to low-ELL districts, two spent about the same, and only Alaska allocated greater funding levels to districts with the highest percent of ELL students. Two other studies focused just on Texas found no significant relationship between state and local funding and the percent of students receiving bilingual education in Texas school districts (Rolle & Jimenez-Castellanos, 2012; Rolle, Torres & Eason, 2010). Prior studies of funding gaps more broadly focus on differences among districts with lower per-pupil property wealth or serving a greater percent of student in poverty or of color (e.g., Baker, Sciarra &

Farrie, 2015; Berne & Stiefrel, 1994; Ushomirsky & Williams, 2015). No prior studies compare funding for ELLs across otherwise similar districts. That is, past studies do not adjust expenditures for differences in local cost or examine changes in funding equity over time. Finally, the literature has not explored how the underlying mechanisms of funding disparities beyond comparisons of local, state, and federal funding or explored how these relationships changed following the Great Recession spending cuts (Baker, 2014, Chakrabarti, Livingston and Roy, 2012, and Knight, 2016 explore how the recession impacted family income-based funding disparities).

This study builds on the literature by comparing funding rates between high- and low-ELL districts that have otherwise similar student demographics and local cost factors. The study further builds on past work by assessing equity in both dollar resources and actual educational resources such as the number of teacher, support staff, and guidance counselors for all districts nationally. Finally, detailed analysis of the Texas school finance shows specifically how differences in tax rates and property values influence funding gaps between high- and low-ELL districts in Texas. The study thus provides valuable insights into school funding disparities for emergent bilingual students in districts across the country.

Defining School Finance Equity

Educational equity is a subjected term with a wide array of interpretations in the literature (Stone, 2012). Researchers define school finance equity as the provision of resources sufficient to meet diverse student needs (Baker & Green, 2015). School districts receive local, state, and federal funding, all of which is governed by state school finance systems. Analyses of school district funding equity therefore compare districts within the same state (Card & Payne, 2002). Although the most recent wave of school finance litigation has focused on the concept of

adequacy, which assesses whether districts receive sufficient funding to meet state standards, the concepts of equity and adequacy are closely related. As Jimenez-Catellanos and Topper (2012) note, an adequate school finance system provides vertical equity, in which the allocation of funding accounts for the needs of students. Given research on the cost associated with instructional programs for emergent bilinguals, school finance equity for this student group implies that districts receive greater levels of funding and other resources as the percent of students classified as ELL increases.

Policy Context

School Finance Systems

In most states, school finance systems provide additional funding to districts that generate less local tax revenues per student due to lower property values (Odden & Picus, 2015). Rather than relying on sales or income, which may be vulnerable to economic business cycles, schools are funded through local property taxes, a far more stable source of tax revenues, (Brunori, 2005). The Great Recession differed from prior economic downturns in that property values and home ownership declined dramatically (Baker, 2015). As a result, states struggled to maintain school funding and few have restored funding back to pre-recession levels (Leachman et al., 2016). As noted earlier, state funding cuts disproportionately impacted high-poverty schools and the funding gap increased more in Texas than most other states (Knight, 2016). Understanding the underlying mechanism of a state school finance systems sheds light on why budget cuts may differentially impact school districts. We therefore provide additional background information on the Texas finance system in the subsection below.

The Texas School Finance System

The Texas school finance system has three separate components designed to provide

adequate and equitable funding for all districts. The first is a foundation program that allocates a base level of funding per "weighted" student for all districts. Students are given extra weight for funding purposes if they fall into certain categories such as low-income, special education, or emergent bilingual. Districts raise revenues by levying a local property tax for the maintenance and operations of schools (called M&O taxes), and the state pays the difference between the revenues raised through local M&O taxes and the pre-determined foundation level of funding, which in 2013-14 was $4,950 per weighted student.

Districts can supplement the base level of funding through additional local tax increases. The second component of state aid equalizes the tax base for additional increases in the M&O tax rate. That is, the state ensures that each 1% increase in the local property tax (up to 1.06%) yields the amount of revenue raised in the Austin Independent School District, which was the district at the 95th percentile of property wealth when Senate Bill 7 passed in 1993. In school year 2013-14, this amount was $59.97 per weighted student. The state provides up to $29.97 per weighted student for each additional 1% M&O tax increase beyond to 1.06% up to the statutory maximum of 1.17%. The state also provides equalization funding for bond repayments, called Interest and Sinking taxes (I&S), but only up to $35 and only for districts selected through an application process.

The third component of the Texas school finance system, called Chapter 41 recapture, redistributes local property tax revenues from high- to low-wealth districts. The policy is often referred to as the Robin Hood plan and is unique to Texas. Tax revenues generated from the first 1.00% of M&O taxes that exceed the foundation amount of $495,000 per weighted student are recaptured by the state. The revenues generated from taxes between 1.00% and 1.06% are not subject to recapture (and are therefore referred to as "golden pennies"). All revenues generated

from additional tax increases from 1.07% to 1.17% that exceed $319,500 are also remitted to the state (additional local tax increases above 1.06% are referred to as “copper pennies” because they are subject to recapture). Tax revenue raised through bonds (I&S taxes) are not subject to recapture. In 2013-14, there were 228 Chapter 41 districts and approximately $1.2 billion were recaptured and used for state aid programs for lower-wealth districts. A total of 37 districts have special provisions that reduce their Chapter 41 payments.[3]

Emergent Bilingual Student Populations

Emergent bilinguals are highly concentrated in a particular of states and districts. For example, half of all school districts enroll less than 1% ELL students, whereas one in five students is classified as ELL in the highest ELL districts (the 638 districts at or above the 95th percentile).[4] Table 1 shows the percent of students classified as ELL, for states that educate more ELL students than the national average. In 2012-13, 23% of students in California were classified as ELL, while ELLs represent about 16% of students in New Mexico, Nevada, and Texas. Emergent bilinguals are more likely than their native English speaking peers to come from low-income families (Reardon & Galindo, 2009). This trend can be seen in Figure 1, which shows the relationship between average district poverty rates and the average percent of students classified as ELL at the district level for 2012-13 in Texas (left panel) and in all other U.S. districts (right panel). Each circle represents a school district, with the size proportionate to district enrollment within each panel. The regression lines demonstrate that while both Texas and

[3] The finance system contains a second layer called the Target Revenue System. The Target Revenue System is a “hold harmless” clause that prevents districts from losing funding as a result of reforms implemented through House Bill 1. To ensure that no district lost funding as a result of the 2006 tax relief, House Bill 1 guarantees that districts receive at least the amount they would have received using the old formula system.

[4] According to NCES data, in 2012-13, 4.2 million students were classified as ELL, out of a total of 46.5 million enrolled in U.S. public schools (8.9%). Because the percent of ELLs is higher, on average, in larger districts, the average percent of ELL students across all U.S. districts, 4.4%, understates the actual percent of students classified as ELL nationally.

all other U.S. districts have positive relationships between poverty rates and ELL concentration, the relationship is stronger in Texas (the slope of the regression line is 0.74 in Texas and 0.33 in all other districts, a statistically significant difference).

The models we use in this study, described below, compare high-ELL districts to *otherwise similar* low-ELL districts. That is, our models control for local cost factors and district poverty rate so that we can compare districts that have similar poverty rates, but differ in their percent of ELLs. Figure 1 makes clear that although the percent of ELL students is positively correlated with poverty rate, there is not a perfect correlation – many high-ELL districts in Texas and nationally have relatively low-poverty, while many high-poverty districts have a relatively low percent of ELL students.

Table 2 shows differences in resources for districts with below 0.5% ELL students and those with more than 10%. The first two columns show the differences in district characteristics and resources between high- and low-ELL districts in 2007-08, in Texas. The next two columns show the same differences for 2012-13. Columns 5-8 display the same information for all other U.S. school districts. In both contexts, high-ELL districts have greater proportions of students of color and in poverty, have lower graduation rates, and score lower on standardizes exams. High-ELL districts also have higher enrollment and are located in higher cost labor markets, both in Texas and nationally.

The bottom panel of Table 2 shows that high-ELL districts in Texas received $2,806 fewer dollars per student than low-ELL districts in 2007-08. By 2012-13, that gap increased to $4,181. For all other US districts, the funding gap between high- and low-ELL districts increased from $191 to $1,088 from 2007-08 to 2012-13. In contrast, in both Texas and nationally, high-ELL districts had higher average salaries than low-ELL districts; however, the salary advantage

for high-ELL districts decreased in the years following the Great Recession (from 2007-08 to 2012-13). Although the per-pupil funding rates appear to increase over time, these nominal dollar values are not adjusted for inflation. The bottom four rows of Table 2 show that fewer staff members, teachers, guidance counselors, and support staff were employed per student in 2012-13 than in 2007-08. As with funding and spending rates, high-ELL districts employed fewer teachers, guidance counselors, support staff, and overall staff members per student than low-ELL districts, and the gap between high- and low-ELL districts expanded during the period of recessionary budget cuts.

These summary statistics provide cursory evidence that high-ELL districts receive less resources than low-ELL districts and that resource gaps have increased over the past six years. However, districts also face different cost factors. District enrollment size, the average cost of labor in the region, and population sparsity all impact the cost of educational production (Duncombe & Yinger, 2008; Gronberg, Jansen, Taylor & Booker, 2005). Larger districts are able to reduce per-student costs through economics of scale because fixed costs such as a superintendent or the central office building are spread over a larger number of students. Districts in more heavily populated areas can save money on transportation costs, whereas higher labor costs increase the cost of hiring otherwise similar teachers and other personnel. In short, differences in resources levels between high- and low-ELL districts shown in Table 2 may simply reflect differences in local cost factors that are correlated with the percent of ELL students in a particular district. We employ standard methods for adjusting comparisons for local cost factors. We then explore the underlying mechanisms of funding disparities in Texas. These methods are described in the following section.

Data and Analytic Approach

The analyses draw on district-level data form a variety of sources including the National Center of Education Statistics, the U.S. Census Bureau, the Education Comparable Wage Index dataset (Taylor & Fowler, 2006), and the TEA, Public Education Information Management System (PEIMS), for school years 2007-08 to 2012-13. The analytic dataset includes a total of 75,760 district-year observations over six years (6,108 in Texas) including 12,747 districts in 2012-13 nationally and 1,018 in Texas.

To address research question 1, we compare funding and resource levels for high-ELL districts to low-ELL districts in the same state that have similar cost factors and student demographics. District cost factors include enrollment size, the cost of labor, population density, and the proportion of students in poverty and enrolled in special education. To adjust funding and resource levels for local cost factors, we first predict per-pupil state and local funding rates (PPF) and include state and year fixed effects (labeled φ_s and π_t in equation 1, respectively), which allows for comparisons among districts in the same state during the same school year. We estimate the following model, indexing for district (*d*), state (*s*), and year (*t*):

$$PPF_{dst} = \beta_0 + \beta_1 \%ELL_{dst} + \%ELL_{dst} * \pi_t \lambda + X_{dst} \gamma + \varphi_s + \pi_t + \varepsilon_{dst} \quad (1)$$

The coefficient β_1 provides an estimate of the relationship between the percent of students classified as ELL in a particular district in 2007-08, and district funding per student. The vector of coefficients in λ show how the relationship between funding rates and the percent of ELL students differed in each subsequent year following the beginning of the Great Recession (2007-08). These coefficients provide insights into research question 2 of how funding equity has changed since the Great Recession. Other factors related to cost are included in the vector X_{dst} and ε_{dst} represents variation in funding not captured by variables in the model. Because the primary focus is on differences in funding rates in a particular year, we do not adjust nominal

dollar values for inflation.

Next, we exchange the outcome measure (state and local per-pupil funding) with alternate funding and resource variables, including total funding per pupil, per-pupil expenditures, average staff salaries, and the number of teachers, counselors, support staff, and total staff per 100 students. Each of these models is run for all states nationally, for only those states with where districts have 10% or more ELL students, and individually by state for the 15 states with the highest percent of ELL students. In order to simply interpretation of these results, we provide the raw coefficients and predicted values for districts classified as high- and low-ELL.

For research question 3, which explores underlying mechanisms of funding disparities, we first disaggregate total per-student funding into federal, state, and local funding. We run this same model as described in equation 1, this time predicting federal, state, and local per-student funding. Next, we focus more specifically on Texas, where additional data related to the school finance system are available. We again run the same models for federal, state, and local funding, this time just for Texas. We then explore the specific mechanism that determine district funding rates in Texas. As noted above, districts in Texas choose their local property tax rates for maintenance and operations (M&O tax rates), with larger increases requiring voter approval. Similarly, districts that gain voter approval to pass bonds do so through interest and sinking taxes (I&S taxes). M&O taxes are fully subsidized by the state, whereas I&S taxes are only partially subsidized and only for a portion of districts. To examine whether high-ELL and otherwise similar low-ELL districts levy different tax rates or have different property values, and whether those relationships have changed over time, we again run the model described in equation 1, this time substituting the outcome variable for M&O tax rates, I&S tax rates, whether the district is

levying the highest possible M&O tax rate, and the district's local per-pupil property values. In short, these models show how high- and low-ELL differ in their local tax effort decisions and local property values, and how those relationships changed over time during the recessionary budget cuts.

Findings

Funding Disparities and Changes Since the Great Recession

Findings for research questions 1 and 2 are reported in Table 3. The first row of Column 1 shows that in 2007-08, districts received about $50.01 more in state and local funding per pupil for each 1% increase in ELL students (% ELL ranges from 0 to 1). In other words, despite the funding gap shown in Table 2, in 2007-08 high-ELL districts actually received more funding than otherwise similar low-ELL districts in the same state. Findings in Table 3 differ from the summary statistics reported in Table 2 because the Table 3 results compare districts that are in the same state and adjust for local cost differences. High-ELL districts also had higher spending, average salaries, and employed more teachers and support staff in 2007-08 (Columns 3-7) compared to otherwise similar districts in the same state. The interactions between year and % ELL indicate that all of the resource advantages diminished over time, from before to after the Great Recession.

In order to make these results more interpretable, Panel B shows the predicted values for districts with 0% ELL and districts with about 22% ELL, the 5th and 95th percentile of % ELL nationally. Prior to the Great Recession spending cuts (in 2007-08), low-ELL districts received an average $10,665 per student, after adjusting for local cost factors, whereas otherwise similar high-ELL districts received $11,795 per student, a statistically significant difference of $1,131 (10.6% more funding). However, by the 2012-13 school year, high- and low-ELL districts

received essentially the same level of state and local funding (a difference of $9.70 per student, shown in the bottom row of Table 3, which is not statistically significant). Moreover, by 2012-13, high-ELL districts had significantly lower teacher salaries, and staffing ratios when compared to low-ELL districts. For example, the bottom row of Table 3 shows that high-ELL districts had about 0.098 fewer teachers for each 100 students (roughly an extra 0.25 students per teacher, on average), whereas prior to the recession, high-ELL districts had 0.266 more teachers per 100 students. Although not shown, our results are consistent when we include only states with above average proportion of ELLs.

Results run specifically for Texas reveal a similar story, except that the pre-recession system was already relatively inequitable. That is, prior to the Great Recession, high-ELL districts received less state and local funding per student, but slightly more *total* funding – when funds from federal sources are included. High-ELL districts in Texas spent more per student and offered higher average salaries, but had fewer teachers, guidance counselors, and support staff per student than low-ELL districts, prior to the recession. Despite these differences from national trends, changes in Texas school finance equity in Texas were consistent with the average changes in all other states. In particular, high-ELL districts in Texas experienced a disproportionate share of state funding cuts. As a result, by the 2012-13 school year, *total* funding was approximately equal between high- and low-ELL districts in Texas, per-student spending was only slightly greater in high-ELL districts, and average salaries were significantly lower. High-ELL districts in Texas had significantly fewer teachers, guidance counselors, and support staff compared to otherwise similar low-ELL districts in 2012-13.

Underlying Mechanisms of Funding Disparities

The third research question examines the underlying mechanisms associated with

changes in school finance equity for ELLs, particularly in Texas. We first run the same regression models as before, this time differentiating between federal, state, and local funding. Results are consistent with prior school finance literature. High-ELL districts received less local funding per student in 2007-08, but more state and federal funding, compared to otherwise similar low-ELL districts. However, as we discussed earlier (and reported in Table 2), by 2012-13, following the recessionary budget cuts, high-ELL districts received significantly less total funding per student, compared otherwise similar low-ELL districts. Results show that these changes occurred primarily because state funding became less progressive with respect to the percent of ELL students nationally. Meanwhile, federal funding for all U.S. districts also became slightly less progressive with respect to the proportion of ELLs, while there were no significant changes in the relationship between local funding and the percent of ELLs in a particular district from 2007-08 to 2012-13.[5]

In Texas, the findings are again largely consistent with prior research: while *local* funding was inequitably distributed across high- and low-ELL districts in 2007-08, state and federal funding filled in the gaps. On net, high-ELL districts in Texas received about the same total funding as low-ELL districts in 2007-08, holding constant other student demographics and cost factors. However, over the course of the recession, state funding for high-ELL districts in Texas dropped substantially, while local funding increased (and federal funding remained roughly constant. Thus by the end of the recessionary budget cuts, high-ELL districts still received approximately the same level of funding as low-ELL districts, but high-ELL districts paid a far greater percentage of their total funding through local taxes, compared to before the recession. In short, high-ELL districts maintained funding in spite of (rather than as a result of)

[5] Specific results are available from the author upon request.

changes in state funding. As noted above, the same general trends held nationally, except that districts were not able to maintain funding level by raising local tax revenues.

Additional results for research question 3 are reported in Table 4. The first panel of Table 4 shows the likelihood that high- and (otherwise similar) low-ELL districts are choosing to assess the maximum local M&O property tax. The second and third panels show the average tax rates for maintenance and operation (M&O, used to pay for salaries and other ongoing expenses) and interest and sinking (I&S, used to repay bonds), respectively, for high- and low-ELL districts. The fourth panel shows average property values per student for high-and low-ELL district and the final panel reports differences and significance tests between high- and low-ELL districts for each outcome. In 2007-08, roughly the same proportion of high- and low-ELL districts were levying the maximum M&O tax rate (about 3% of districts, Panel A, Column 1). Similarly, the average M&O tax rate was similar between high- and low-ELL districts in 2007-08, about $1.05 (meaning $1.05 taxes per $100 of assessed property value, Panel B, Column 1). However, in the years following the Great Recession, high-ELL districts became more likely than otherwise similar low-ELL districts to assess the maximum M&O tax rate (22.8% probability for high-ELL districts, compared to 16.6% for low-ELL districts, a statistically significant difference of 6.2 percentage points). High-ELL districts also increased their local M&O tax rates at a faster rate than low-ELL districts, as shown in the final column of Panel B.

Conversely, as shown in Panel C, low-ELL districts increased I&S tax rates – used to repay bonds – at a faster rate than otherwise similar high-ELL districts. These findings are not surprising given that high-ELL districts have less property wealth per pupil than low-ELL districts (shown in Panel D). Recall that Texas provides state funding to equalize the tax base across districts for M&O taxes, but does not provide the same level of tax base equalization for

I&S taxes. In other words, districts in Texas can expect to raise the same level of local funding for each 1% increase in M&O taxes, regardless of the value of local properties. The same is not true for bond repayments (I&S taxes). Districts with high local property wealth per student will therefore raise more tax revenues for each 1% increase in I&S taxes. Moreover, I&S taxes are not subject to Chapter 41 recapture in which high-wealth districts contribute extra funds to the state. High-wealth districts may therefore be more likely to pass bonds (by increasing I&S taxes) since these funds are not subject to recapture, whereas low-wealth districts in Texas may focus on increasing M&O taxes as a way to raise local school funding, since the state subsidizes funding for districts with low-property wealth. Panel D shows that although high-ELL districts experienced a faster rate of growth in local property wealth compared to low-ELL districts, a substantial gap in local property wealth persisted throughout the Great Recession period.

Discussion and Policy Implications

The analyses presented here have several policy implications. First, in 2007-08, districts received additional funding ELL students on average. As shown in Table 3, average state and local funding for districts with 0% ELL students in 2007-08 was $10,665, whereas districts with 22.6% ELL students (the 95th percentile) received $11,795, implying that on average nationally, districts received an additional 47% funding for each ELL student (an implicit student weight of 1.47). However, by 2012-13, funding advantages completely disappeared – districts actually received less funding per student for each additional student classified as ELL. The same general trends hold of average spending and average salaries and the number teachers, guidance counselors and support staff per student. In Texas, a finance system that was already inequitable with respect to ELL students because even less equitable during the Great Recession funding cuts. These findings follow a similar pattern when comparing high- and low-poverty districts,

holding the percent of ELLs constant (Knight, 2016). Not surprisingly then, given the positive correlation between district poverty rate and the percent of ELL students, omitting controls for student poverty increases funding disparities between high- and low-ELL districts.

Underlying Mechanisms

Beyond simply assessing whether ELL programs are adequately funded in U.S. schools, this study examined the potential underlying causing of funding disparities in order to offer some guidance for policymakers about how to close resource gaps. In both Texas and nationally, states make some effort to equalize funding between high- and low-ELL districts. However, after several years of Great Recession spending cuts, state and federal equalization of funding no longer offsets the disparities that arise from local financing of education.

Analysis of the Texas school finance system provides some insight into what drives these trends. Districts with higher proportions of ELL students have lower average property values per pupil, even after controlling for student poverty. Importantly, high-ELL districts not only chose higher M&O tax rates, but increased their local property taxes at a faster rate following the Great Recession than low-ELL districts. This finding largely counters the myth that immigrant families and/or families of ELL students are less willing to support higher taxes for local school funding (Barreto, Manzano & Segura, 2012; Chua, 2011; see also Lee & Zhou, 2014). Despite levying higher local property tax rates, lower property values prevented high-ELL districts in Texas from raising as much local tax revenues for education as otherwise similar low-ELL districts. That said, high-ELL districts appeared to pass fewer bonds, perhaps because the state does not equalize funding for bond repayments to the same extent as taxes for basic maintenance and operations. As a result, districts with higher percentages of ELL students receive less combined state and local funding and employed fewer staff members per student than their low-ELL

counterparts.

These findings suggest that increasing base funding for ELLs though weights or other mechanisms may not be sufficient for providing equitable learning opportunities. States need to protect the highest-need districts from fiscal crises in order to maintain stable learning environments. Moreover, as demonstrated by analyses of the Texas school finance system, equalizing only one part of the tax base (the M&O taxes), without providing additional subsidies for bond repayments, will not necessarily close fiscal disparities between high- and low-ELL districts.

Changes in Student Achievement Gaps

Funding cuts concentrated in high-ELL districts very likely have real consequences for achievement of student learning English. In order to investigate this issue further, we run the same regression models described earlier, this time predicting achievement on state standardized exams, normalized across states using nationally assessments (district achievement data is provided by the Stanford Education Data Archive, Reardon et al., 2016). Achievement data include information on average district test scores for grades 3-8 in English language arts and math. Prior to the Great Recession, the achievement gap between districts with 0% ELL students and those with 22% (approximately the 5th and 95th percentile) ranged from 0.13 to 0.18 standard deviations in English language arts and from 0.04 to 0.17 in math (with achievement gaps generally higher in the early grades). During the recessionary period of budget cuts, achievement gaps between high- and low-ELL districts had expanded by an average of 0.01 standard deviations per year in both Math and ELA. The same trends held for Texas and for only states with above average proportion of ELL students.[6]

[6] Results are available from the author upon request.

Conclusion

Prior research has documented the central importance of equitable funding for providing equal educational opportunity. This study finds that the Great Recession-era education funding cuts inequitably impacted districts with higher rates of ELL students. Few states around the country have restored funding to pre-Recession levels, preventing emergent bilingual students from receiving equitable educational opportunities. The Texas finance system demonstrates that many high-ELL districts levy the highest possible tax rates and still do not raise an equitable level of resources. Despite the student weights and tax equalization embedded in the Texas school finance system, ELL instructional programs are still likely underfunded, leading to a widening of the achievement gap. In order to equalize educational opportunity for all students, state legislatures must provide a sufficient level of funding for high-need districts.

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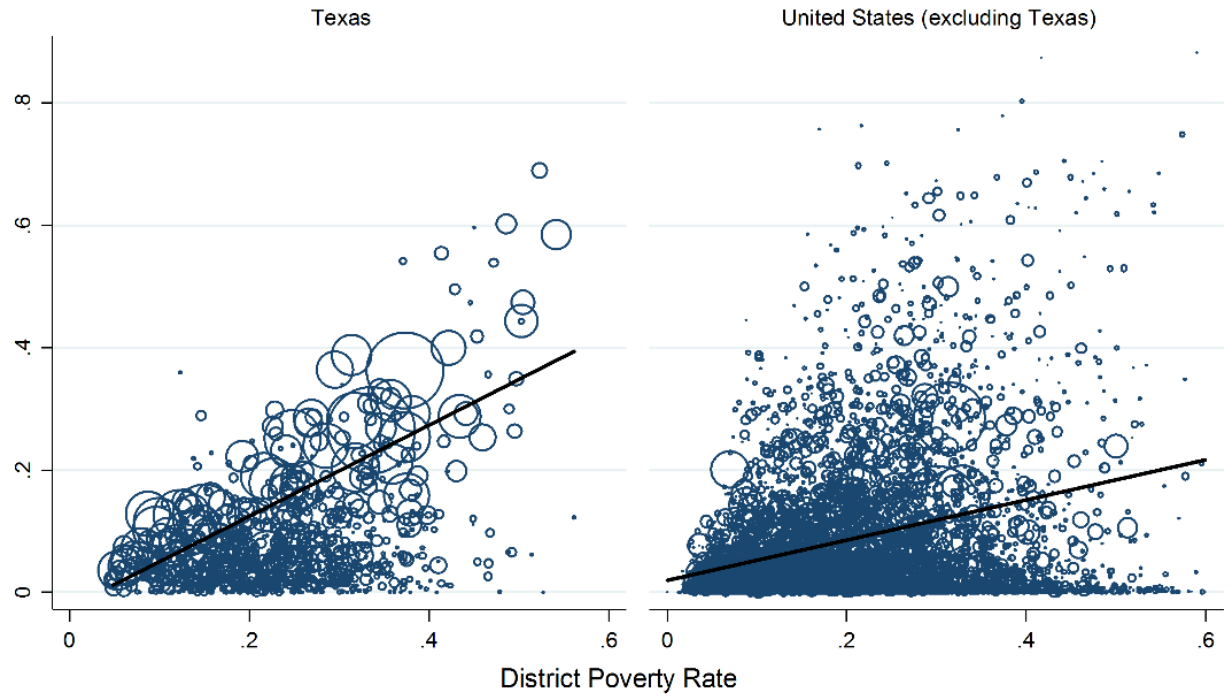
FIGURE 1

The relationship between district poverty rate and the percent of students in each district classified as English language learners in Texas and in all other school districts, 2012-13



Note: each circle represents a school district, with size proportionate to district enrollment within each panel.
Source: Authors' calculations based on U.S. Census Bureau data and NCES Common Core of Data.

TABLE 1

Percent of students classified as English Language Learners by state, 2007-08 to 2012-13

State	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	Districts (2012-13)
California	24.37	24.33	28.86	23.10	23.10	22.81	864
New Mexico	18.60	15.51	15.47	15.71	16.15	15.76	87
Nevada	10.87	17.62	16.01	19.40	19.63	15.74	17
Texas	9.74	15.17	15.00	14.98	14.92	15.11	1,018
Colorado	10.66	10.87	11.44	11.84	12.01	11.98	175
Alaska	12.83	9.17	11.12	11.32	11.13	11.32	50
D.C.	7.03	9.86	9.58	8.46	8.39	10.25	1
Illinois	7.49	9.71	8.59	8.36	8.18	9.42	830
Florida	8.74	8.62	8.77	8.71	8.81	9.03	67
Oregon	11.07	11.26	11.06	10.55	11.34	8.97	174
Washington	7.84	7.99	6.29	8.65	7.86	8.94	274
Hawaii	9.43	10.34	10.04	10.63	13.55	8.92	1
All other states	4.44	4.44	4.34	4.32	4.45	4.53	9,190
Total	8.30	8.96	9.37	8.73	8.83	8.88	12,748

Note. District of Columbia Public Schools (D.C.) excludes surrounding charter schools. All other states include those with below the 2012-13 national average % of ELL (8.9%). In each state, because larger districts tend to have higher proportions of English language learners (ELL), the average percent of ELLs across all districts in a state is lower than the state's percent of ELLs (i.e., the total number of ELLs in the state divided by total state enrollment), which is reported here.

TABLE 2

Summary statistics for districts with low % English language learners and high % English language learners, Texas and all other U.S. Districts, 2007-08 and 2012-13

	Texas school districts				All US school districts[a]			
	2007-08		2012-13		2007-08		2012-13	
	≤ 0.5%	≥ 10%	≤ 0.5%	≥ 10%	≤ 0.5%	≥ 10%	≤ 0.5%	≥ 10%
Average district characteristics and student demographics / outcomes								
% Poverty	18.1%	29.1%	21.9%	28.6%	15.7%	19.6%	18.6%	24.4%
% FRL	44.1%	52.6%	51.5%	71.3%	38.9%	57.5%	44.2%	64.3%
% LEP	0.1%	18.0%	0.1%	19.3%	0.1%	25.1%	0.1%	23.3%
% SPED	12.7%	9.5%	9.7%	8.5%	14.7%	11.8%	14.8%	11.7%
% URM	18.9%	75.6%	26.6%	71.7%	11.6%	56.8%	14.1%	60.3%
Grade 3 ELA	0.018	-0.758	-0.207	-1.013	0.142	-0.767	0.108	-0.786
Grade 3 Math	-0.005	-0.373	-0.145	-0.493	0.109	-0.651	0.076	-0.721
Fresh. grad. rate	83.6%	70.3%	n/a	n/a	83.7%	73.6%	n/a	n/a
Dist. Enroll.	734	15,004	422	11,081	1,424	8,979	1,288	8,987
Cost of Wage	1.14	1.24	1.24	1.39	1.20	1.33	1.30	1.45
Num. of districts	153	123	95	256	5,831	1,416	5,273	1,418
School inputs (unadjusted outcome measures)								
Funding per Stu.	14,242	11,436	16,563	12,381	12,705	12,514	13,928	12,840
Federal	945	1,257	1,055	1,365	848	1,406	963	1,479
State	6,070	5,922	5,176	5,002	6,544	6,678	6,790	6,351
Local	7,228	4,257	10,332	6,014	5,313	4,429	6,174	5,009
Expend. Per Stu.	10,267	9,085	11,107	9,440	10,610	10,564	11,835	10,942
Avg. salaries	36,234	39,287	39,581	41,813	43,795	53,864	47,502	56,672
Staff per 100 students								
All Staff	18.2	15.6	17.6	14.9	14.4	12.0	14.6	11.4
Teachers	9.67	7.63	9.70	7.54	7.74	6.36	7.87	6.13
Guid. Coun.	0.44	0.28	0.39	0.26	0.36	0.24	0.38	0.26
Sup. Staff	0.53	0.42	0.57	0.50	0.58	0.63	0.71	0.59

[a] Excludes Hawaii and Washington D.C. because these districts are excluded from the analytic sample.

Note. FRL stands for free or reduced price lunch; ELL stands for English language learner; SPED stands for special education students; and URM stands for underrepresented minority. Grade 3 ELA and Math refer to scores on state standardized exams, normalized for national comparisons (taken from Reardon et al., 2016).

TABLE 3

Regression coefficients showing the relationship between funding / resource levels and the percent of students classified as English Language Learners, 2007-08 to 2012-13

	Adj. state/ local PPR	Adj. total PPR	Adj. total PPE	Avg. Salaries	Staff per 100 students		
					Teachers	Gd. Coun.	Sup. Staff
Panel A: Regression coefficients							
% ELL	5000.59***	5152.19***	4356.63***	8963.65***	1.179***	-0.353	2.247*
	(597.0)	(582.7)	(446.6)	(2024.8)	(0.167)	(0.235)	(0.928)
% ELL x 2008-09	-2407.10***	-2092.95***	-1893.26***	-8992.57***	-0.571***	-0.388**	-1.209*
	(284.9)	(302.4)	(241.6)	(2232.6)	(0.072)	(0.135)	(0.563)
% ELL x 2009-10	-4029.53***	-4273.16***	-3182.55***	23981.94***	-0.949***	-0.214	-0.411
	(385.8)	(412.8)	(300.7)	(3932.5)	(0.135)	(0.195)	(0.754)
% ELL x 2010-11	-3829.89***	-3991.59***	-3545.89***	-5765.54**	-1.413***	-0.537**	-2.290***
	(361.7)	(458.3)	(288.6)	(1899.9)	(0.124)	(0.194)	(0.646)
% ELL x 2011-12	-5075.97***	-5065.82***	-4193.56***	-11594.19***	-1.495***	-0.350*	-3.002***
	(603.4)	(620.5)	(335.5)	(1991.2)	(0.178)	(0.156)	(0.715)
% ELL x 2012-13	-5043.53***	-5566.51***	-4737.98***	-14564.60***	-1.612***	-0.415*	-3.675***
	(625.7)	(611.5)	(363.5)	(2504.4)	(0.202)	(0.164)	(0.770)
R-squ.	0.703	0.690	0.782	0.773	0.723	0.377	0.453
N	75,760	75,760	75,760	75,305	74,694	71,984	71,766
Panel B: Predicted values for 2007-08							
High ELL districts	11,795	12,774	10,853	53,699	6.422	2.141	5.107
	(110.10)	(112.86)	(89.25)	(370.77)	(0.03)	(0.04)	(0.17)
Low-ELL districts	10,665	11,609	9,868	51,673	6.156	2.221	4.599
	(83.85)	(72.23)	(55.64)	(295.79)	(0.02)	(0.03)	(0.09)
Difference	1130.64***	1164.91***	985.03***	2026.68***	0.266***	-0.080	0.508**
	(138.40)	(134.00)	(105.17)	(474.30)	(0.038)	(0.050)	(0.193)
Panel C: Predicted values for 2012-13							
High ELL districts	10,977	11,881	10,179	51,656	6.129	2.062	5.262
	(91.51)	(102.85)	(86.13)	(458.29)	(0.04)	(0.04)	(0.13)
Low-ELL districts	10,987	11,975	10,266	52,922	6.227	2.236	5.585
	(68.82)	(81.33)	(50.67)	(236.00)	(0.02)	(0.02)	(0.07)
Difference	-9.70	-93.67	-86.23	-1266.38*	-0.098*	-0.174***	-0.323*
	(114.51)	(131.12)	(99.93)	(515.49)	(0.042)	(0.048)	(0.152)

Note. PPR and PPE stand for per-pupil revenues and expenditures, respectively. Each column of Panel A represents a separate regression. Interactions in rows 2-6 show how the relationship between the proportion of ELL students and resource levels changed each year, relative to the base year (2007-08). For example, districts received $50.01 more state and local revenues per student from state and local sources during the 2007-08 school year for each 1% increase in the proportion of ELL students (% ELL ranges from 0 to 1). In 2012-13, districts received $50.44 *less* per student for each 1% increase in the proportion of ELL students, relative to 2007-08 funding. Predicted values for high- and low-ELL districts in panels B and C are based on districts at the 5th and 95th percentile of % ELL (about 0% and 22% ELL). The sample includes 75,760 district-year observations or about 12,600 districts per year nationally, representing about 95% of all school districts each year (districts were excluded if they are not included in the educational cost of labor index or if they did not report student demographic or finance data). *** p<.001, ** p<.01, * p<.05.

TABLE 5

Predicted values for high- and low-ELL districts in Texas based on models predicting whether a district levies the highest possible tax rate, the M&O tax rates, I&S tax rates, and local per-student property values, 2007-08 to 2012-13

	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	Diff. 2007-08 to 2012-13
Panel A: Districts with the highest possible local M & O property tax rate							
High-ELL	0.026	0.081	0.109	0.166	0.165	0.228	0.202***
	(0.017)	(0.011)	(0.011)	(0.011)	(0.012)	(0.013)	(0.021)
Low-ELL	0.029	0.034	0.081	0.086	0.113	0.166	0.137***
	(0.015)	(0.017)	(0.016)	(0.016)	(0.016)	(0.017)	(0.023)
Panel B: Local district property tax rate for maintenance and operations (M & O, fully equalized tax base)							
High-ELL	1.046	1.053	1.056	1.065	1.065	1.070	0.024***
	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
Low-ELL	1.047	1.048	1.053	1.052	1.058	1.064	0.018***
	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)
Panel C: Local district property tax rate for bond repayment (I & S, partially equalized tax base)							
Low-ELL	0.267	0.283	0.286	0.289	0.287	0.286	0.019**
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.007)
High-ELL	0.250	0.252	0.250	0.247	0.247	0.248	-0.002
	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.007)
Panel D: Local district property value per pupil ($1,000s)							
High-ELL	342.559	351.968	320.252	309.171	311.632	352.134	9.576
	(13.909)	(9.609)	(9.646)	(9.603)	(9.747)	(10.573)	(17.471)
Low-ELL	454.860	435.181	409.217	399.098	410.580	404.212	-50.648
	(12.891)	(14.181)	(13.850)	(13.842)	(13.857)	(14.053)	(19.070)
Panel E: Differences between low- and high-ELL districts							
Dist. with highest possible M & O rate	-0.003	0.047*	0.028	0.080***	0.053**	0.062**	0.065*
	(0.023)	(0.020)	(0.020)	(0.020)	(0.020)	(0.021)	(0.031)
Average M & O rate	-0.001	0.005	0.003	0.012***	0.007*	0.006+	0.007
	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.005)
Average I & S rate	-0.016	-0.032	-0.036	-0.042	-0.040	-0.038	-0.021
	(0.007)	(0.007)	(0.006)	(0.006)	(0.006)	(0.007)	(0.010)
Prop. value per pupil	-112.30	-83.21	-88.96	-89.93	-98.95	-52.08	60.22*
	(18.965)	(17.130)	(16.878)	(16.847)	(16.941)	(17.586)	(25.864)

Note. High- and low-ELL districts are those at the 5th and 95th percentile of % ELL, respectively (about 0% and 22% ELL). *** p<.001, ** p<.01, * p<.05.