School Capital Expenditure Rules and Distribution

By Barbara Biasi, Julien Lafortune, and David Schönholzer*

In recent years, the availability of new data has revived the "does money matter" debate in education, opened by the Coleman report (Coleman et al., 1966) and focused on the effects of public school spending on students' outcomes. While quantifying these effects, studies in the U.S. have unveiled large differences across states and over time in the level of spending and in its distribution across more and less affluent school districts.[1] These works, however, have often focused on the effects of current expenditure. Much less is known about how school *capital* expenditures and their within-state distribution have evolved over time.[2] This is in spite of the fact that, while half of all public school districts require physical improvements in their schools (GAO, 2020), evidence on the effects of spending on capital projects on students is mixed.[3]

In this paper we begin to fill in this gap by providing new evidence on how capital expenditures vary across more and less affluent districts in each state and how spending levels have evolved in the past two decades. We then relate spending levels, distribution, and trends to the various rules that govern how districts can raise and spend funds for capital projects. We specifically focus on (a) voter approval of extra spending, (b) the share of funds that come from the state, and (c) the presence of a limit to the amount of debt a district can undertake to finance capital projects.

I. Data

We combine data from several sources. We use annual district-level finance data from the National Center of Education Statistics' (NCES) census of school districts and the Census of Governments to construct measures of per student total capital expenditures and state support for capital expenditures.[4] As capital expenditures are often irregular, we use a five-year moving average of per student expenditures. We use data on mean household income for each school district from the 2000 Census. Finally, we construct a novel dataset of state-level capital funding rules, including information collected on voter approval of capital construction bonds, the source of state funding for capital spending, and the presence of district debt limits. We convert all figures to 2020 dollars per pupil using the Consumer Price Index.

Given data availability, we study the 19-year period from 1999 to 2017.[5] To construct measures of the distribution of capital spending and funding within a state, we follow Lafortune, Rothstein and Schanzenbach (2018) and divide districts into within-state quintiles based on their mean household income in 2000. We focus on four pri-

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[1] See, for example, Jackson, Johnson and Persico (2015); Lafortune, Rothstein and Schanzenbach (2018); Biasi (2019).

[2] Duncombe and Wang (2009) examine within-state inequality in capital spending from 1998-2002.

[3] For example, Neilson and Zimmerman (2014); Conlin and Thompson (2017); Lafortune and Schonholzer (2021) find positive effects on test scores, whereas Baron (2019), Martorell, Stange and McFarlin Jr (2016), and Cellini, Ferreira and Rothstein (2010) do not.

[4] We exclude seven states when analyzing state support; six (AR, IA, MA, NJ, NM, and NY) due to large differences between district and state-reported measures, following Filardo (2016), and one (RI) which has state funding greater than total outlay for nearly all years in our sample.

[5] Data on state support for capital is available from 1995; as we rely on 5-year moving averages we begin our sample in 1999. We include only districts with non-missing capital outlay and enrollment for all years.

mary outcomes: (1) the state mean; (2) the mean among districts in the lowest income quintile (Q1); (3) the mean among districts in the highest income quintile (Q5); (4) the difference in means between the highest and lowest quintiles (Q5-Q1).

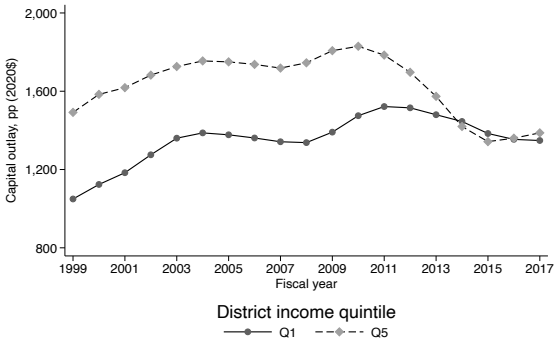
II. Expenditure Distribution

In Figure 1 we examine the trends in capital expenditures and state support for capital expenditures over the past 19 years. Panel (a) reports mean capital spending per student for Q1 and Q5 school districts, and panel (c) reports their difference. In the average state, capital expenditures have been greater in the highest-income than the lowest-income districts in nearly every year of the past two decades, but this difference has fallen considerably since 2008. While the most affluent districts (Q5) spent nearly $500 more per student than the least affluent (Q1) within a state in 1998, they spent only $50 more in 2017. This recent equalization was nearly entirely driven by a large decline in spending in Q5 districts following the Great Recession; after a period of rapid growth between the mid-1990s and the early 2000s, per student capital spending has fallen to its lowest level since 1997 in these districts.

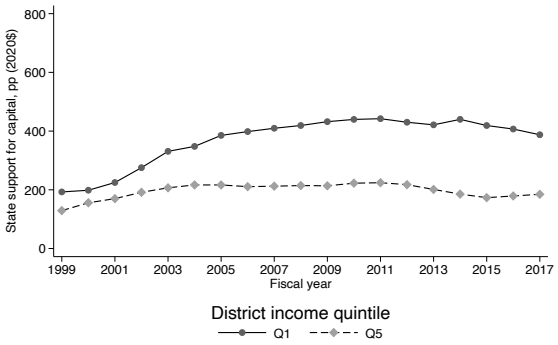
State support for capital outlay was instead higher in Q1 districts for the period 1998-2018. In Q1 districts, it nearly doubled between 1999 and 2008 and remained constant between 2008 and 2018; in Q5 districts, it followed a similar trajectory but with a smaller pre-recession increase (Figure 1, panel (b)). As a result, the Q5-Q1 difference (which is negative) doubled in magnitude over the past two decades (panel (c)). Unlike with operational expenditures, for which state revenues equalize or overcome differences due to local revenues, state support for capital expenditures is much lower and does not drive any of the recent equalization across districts of varying income. We return to the role of state transfers further below.

There are notable cross-state differences in the distribution of capital expenditures and state support within a state. In fact, in 2017, capital spending is higher in Q1 than in Q5 districts in 15 states, while state

(a) Capital outlay



(b) State support for capital expenditures



(c) Q5-Q1 difference

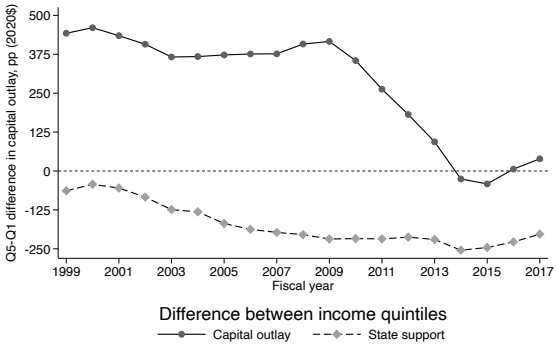


Figure 1. : Trends in per student capital expenditures, 1999-2017

Note: Panel a): mean per student capital spending in districts in the bottom (Q1) and top (Q5) quintile of the state income distribution in 2000. Panel b): mean per student state support for capital spending in Q1 and Q5 districts. Panel c): Q5-Q1 mean difference in per student capital spending and state support for capital spending. Means are constructed as five-year moving averages for each state.

support is higher in Q5 than in Q1 districts in 20 states. These differences may be related to the variation in how school capital expenditures are funded across states.

III. Fiscal Rules

State constitutions and laws that govern capital expenditures of school districts and state support differ in many aspects. Table 1 summarizes eight key characteristics that shape the amount and distribution of capital funding in each state. School districts in 47 states require voter approval to issue bonds. The average voter share required for bond passage across these 47 states is 52%; 10 of these states require a supermajority to approve a bond, with an average required voter share of 60%.

Table 1—: Summary of state fiscal rules

	States	Mean
Voter approval required	47	0.52
Supermajority	10	0.60
Property tax limit	22	0.02
Debt limit	40	0.11
State matching	27	—
State source: general fund	15	—
State source: bonds	13	—
County/state approval	22	—

Note: Counts of states with fiscal rule and means of fiscal rule for the states that have it.

Many states also impose limits on property tax rates and debts that districts can issue. Twenty-two states have an average property tax limit of 2% of assessed values; in some states, this limit can be suspended by voter approval. Forty states have an average debt limit of 11% of assessed values.

An important component of state support for capital spending are grants that match a share of all funds raised through local bonds. Twenty-seven states provide matching grants for bonds. States rely on various sources to support district capital spending. Fifteen states draw most funds from their general fund, while 13 states issue statewide bonds. Specific statewide taxes are another important source of state funding for district capital. In addition to voter requirements, 22 states require county and/or state approval to issue bonds or obtain funds directly from the state.

A. *Supermajority*

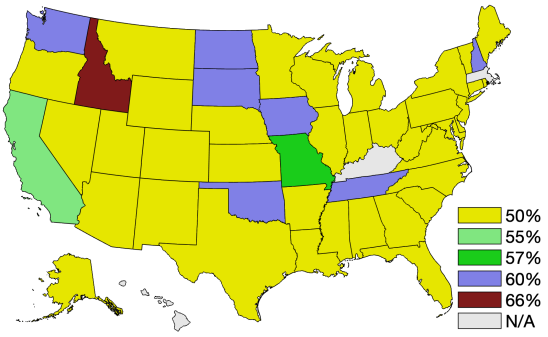


Figure 2. : Supermajority requirements

Note: HI, KY, and MA require no voter approval.

Ten states require a supermajority of voters to approve for a bond to be issued. The map in Figure 2 shows that California, Idaho, Iowa, Missouri, the Dakotas, New Hampshire, Oklahoma, Tennessee, and Washington require thresholds ranging from 55% to two-thirds. Only two states changed the threshold in the last thirty years: California lowered it from two-thirds to 55% in 2001, and New Hampshire lowered it from two-thirds to 60% in 1999.

Table 2—: Supermajority and capital spending

	(1) Mean	(2) Q1	(3) Q5	(4) Q5 − Q1
Supermajority	-306	-358	-125	233
	(148)	(181)	(181)	(179)
Constant	1443	1444	1673	228
	(114)	(154)	(117)	(142)
R^2	0.040	0.031	0.006	0.015
N	47	47	47	47

Note: OLS estimates of an indicator for whether a state with voter bonds requires a supermajority (*Supermajority*) on mean per student capital spending across all states and districts (column 1), in Q1 districts (column 2), in Q5 districts (column 3) and on the Q5-Q1 spending difference (column 4). Robust standard errors in parentheses.

Next, we present some simple correla-

tions with supermajority rules. Intuitively, higher vote thresholds present an obstacle to districts in need of capital funding. Indeed, as shown in Table 2, supermajority states spend $306 less compared to states with a simple majority requirement, or 21% less. Column (2) shows that this association is concentrated in Q1 districts. As a result, the gap between the richest and the poorest districts is more than twice as wide in supermajority states.

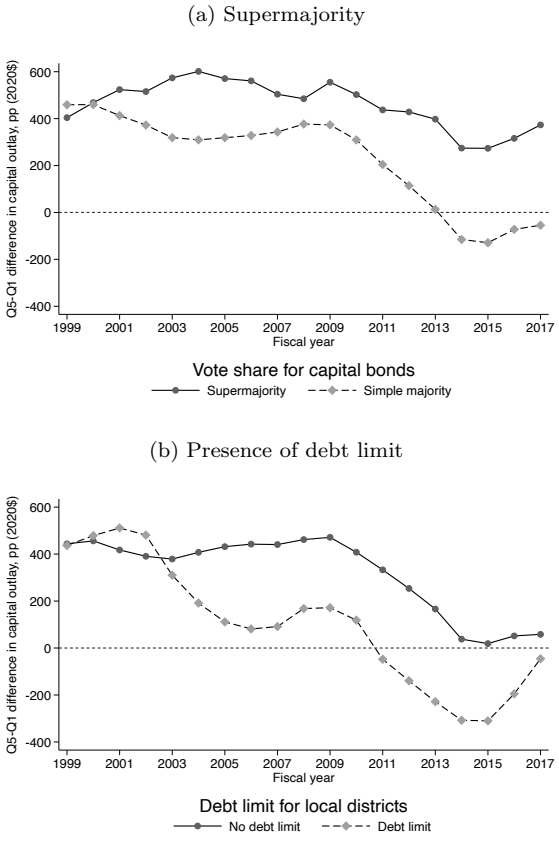


Figure 3. : Q5-Q1 difference in capital spending, by fiscal rules, 1999-2017

Note: Differences in mean per pupil capital spending in districts in the top (Q5) vs bottom (Q1) quintile of their state income distribution in 2000, shown separately for states with a simple majority and those with a supermajority (Panel a) and for states with and without a debt limit (Panel b). Means are constructed as five-year moving averages for each state.

The correlations in Table 2 mask important time trends. Figure 3 (panel a) shows the Q5-Q1 gap in capital spending in states requiring a simple or supermajority. States with a simple majority had a gap of $450 per student in 1999, but became more progressive following 2008; Q1 districts now spend roughly $50 per student more than Q5 districts in these states. States with a supermajority instead saw no comparable trend over time, and have roughly the same gap in 2017 as in 1999 ($400 per student).

B. State Contribution

State contributions may also affect the level and distribution of capital expenditures. As shown in Table 3, higher state shares are associated with slightly lower expenditures. This correlation is entirely due to districts in Q5 (column 3), for whom a 10% increase in state share is associated with a 2.5% ($42.6) drop in capital outlay. Column (4) corroborates our earlier finding that higher state shares are strongly associated with smaller gaps between the richest and the poorest districts.

Table 3—: State share and capital spending

	(1) Mean	(2) Q1	(3) Q5	(4) Q5 − Q1
State share	-96	75	-426	-501
	(268)	(371)	(217)	(276)
Constant	1373	1325	1709	384
	(77)	(97)	(87)	(95)
R^2	0.003	0.001	0.062	0.064
N	50	50	50	50

Note: OLS estimates of the state share of capital spending (*State share*) on mean per student capital spending across all states and districts (column 1), in Q1 districts (column 2), in Q5 districts (column 3) and on the Q5-Q1 spending difference (column 4). Robust standard errors in parentheses.

C. Debt Limits

Limits to the amount of debt that districts can issue are another important rule constraining capital spending. Forty states have such limits in place, ranging from 2% to 50% of the taxable value of property within a district. Panel b) of Figure 3 shows the trend in the Q5-Q1 difference in states with and without a debt limit in place. The difference is highest in states with a debt

limit, ranging from $455 in 1998 to $462 in 2008 and $58 in 2017. It is instead lower at $440 in 1998, $168 in 2008, and -$46 in 2017 for states without a limit. This is consistent with debt limits imposing a more binding constraint on districts with lower incomes and smaller local property tax bases.

IV. Discussion and Conclusion

Capital expenditures and the rules governing them vary widely across states, with potentially far-reaching consequences for students. We present new evidence on the distribution of capital expenditures over the last two decades. Rapid growth in spending up to the Great Recession was followed by a swift collapse in in rich districts, which eliminated most of the gap between rich and poor districts within states.

State institutions play an important role in these patterns over time and across states. The evidence presented here points to constraints imposed on districts ability to raise local funding through bond issuances and the structure of state support for capital expenditures. In future work, we seek to better understand how the variation in rules mediates the heterogeneity in the effect of capital expenditures across states documented in previous studies.

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