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# The politics of progressivity: Court-ordered reforms, racial difference, and school finance fairness

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This paper contributes to our understanding of American education politics by exploring when and why states redistribute K-12 education dollars to poorer schools. It does so by examining three explanations for intra-state changes in progressivity: court-ordered finance reforms, political trends, and demographic changes. Using state-level data from 1995-2016, we find mixed evidence that progressivity increased following a court-ordered school finance overhaul. Rather, we show that changes in progressivity were most consistently tied to changes in student demography: as students became poorer, or more racially diverse, lawmakers created less progressive finance systems. The paper concludes by discussing what these findings mean for advocates seeking to protect and advance gains in education spending progressivity.

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**The politics of progressivity:**
**Court-ordered reforms, racial difference, and school finance fairness**

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This paper contributes to our understanding of American education politics by exploring when and why states redistribute K-12 education dollars to poorer schools. It does so by examining three explanations for intra-state changes in progressivity: court-ordered finance reforms, political trends, and demographic changes. Using state-level data from 1995-2016, we find mixed evidence that progressivity increased following a court-ordered school finance overhaul. Rather, we show that changes in progressivity were most consistently tied to changes in student demography: as students became poorer, or more racially diverse, lawmakers created less progressive finance systems. The paper concludes by discussing what these findings mean for advocates seeking to protect and advance gains in education spending progressivity.

Key words: school finance, court cases, progressivity, race, student poverty

Controversy over school finance fairness is one of the enduring features of American education politics: in most states there are ongoing debates about how to distribute education dollars to ensure that all students have an equal chance of success. Since at least the 1970s, school equity advocates have turned to the courts to achieve a more equitable distribution of education dollars (Rebell, 2009; West & Peterson, 2007a). Research that has examined these efforts shows that court-ordered reforms increased spending progressivity: they pushed states to remedy the historical spending inequity between low- and high-income school districts (C. Berry, 2007; Corcoran et al., 2004; C. Jackson et al., 2016; Murray et al., 1998).

While these studies make important contributions to our understanding of progressivity, many examine court decisions from before the millennium. It is less clear, however, whether more recent court decisions have pushed states toward higher levels of redistribution (Candelaria & Shores, 2019; Condron, 2017). Moreover, at least two other explanations have emerged as competing or complementary reasons for variation in school spending progressivity.

First, scholars have suggested that education spending progressivity may be tied to state politics (Greene, 2020; Malin, 2016). In general, the public policy literature would support such a proposition: research suggests that the policy choices made by elected officials tend to reflect the ideological characteristics and partisanship of state residents (Burstein, 2003; Jacobson, 2017; Mayhew, 1974; Page & Shapiro, 1983; Sulkin, 2005; Wood & Theobald, 2003). As such, perhaps the progressivity of school finance systems moves in lockstep with state political trends. Second, school finance decisions may be influenced by changing racial demographics. Across varied areas of public policy, research suggests that as jurisdictions become more racially or ethnically different, elected officials redistribute fewer public dollars (Alesina et al., 1999; O'Brien, 2017; Soss et al., 2011). Over the last forty years, one of the most significant

demographic changes in the U.S. has been the shrinking and aging of the non-Hispanic White population relative to various racial and ethnic minority groups (Schaeffer, 2019; Turner, 2015). While this shift occurred nationwide, states experienced differential rates of change. Thus, perhaps changes in state education finance progressivity are strongly predicted by changes in racial and ethnic demography.

Though there are theoretical reasons and empirical evidence buttressing each of these explanations, few works have sought to bring them together into a single inquiry. This is potentially problematic because some of these explanations may be related to each other; for example, judges may hand down decisions overturning the constitutionality of their state's education finance system when the political timing is right. As such, we contribute by studying how court orders, political trends, and demographic changes are associated with changes in K-12 school finance progressivity from 1995-2016. With this research, we hope to update and improve our theoretical understanding of how the redistribution of education dollars works. Additionally, we aim to provide school equity advocates – who think strategically about how to deploy their resources (Constantelos, 2010) – with a clearer understanding of where and when the conditions are ripe for making change.[1]

The paper unfolds as follows. First, we provide some background information on school finance, spending inequality within and across the U.S. states, and document why spending matters for students. Second, we consider how advocates use courts to alter school spending progressivity and theorize about why court decisions, and changing state political and demographic characteristics, may affect progressivity. Third, we discuss our empirical approach and present our findings.

In brief, we find mixed evidence that court orders led to higher levels of K-12 school finance progressivity. Rather, changes in progressivity were more consistently predicted by changes in state demographic characteristics. Specifically, as the percentage of poor children increased – and as the student population became more racially diverse – states tended to redistribute fewer education dollars to poor districts. We conclude by considering what these findings imply for our understanding of education politics and efforts to reform school finance.

## School finance and spending inequality

Before exploring the politics of K-12 redistribution, it is useful to provide a bit of background about school finance and why it matters. In every state, districts are funded by a mixture of federal, state, and local revenues. According to the Census Bureau (2019), the average federal contribution to K-12 student education is 7.7 percent, the average state contribution is 46.7 percent, and the average local contribution is 45.6 percent. In general, state (and federal) revenue is used to mitigate disparities in local revenues (Chingos & Blagg, 2017). However, some states do more to remedy local disparities and there are significant within-state changes over time. According to the School Finance Indicators (SFI) Database (2021), for instance, at the turn of the millennium, students in low-income districts in Connecticut received around 30 percent more than students in middle and high-income districts; fifteen years later, low-income students were receiving 3 percent less than their wealthier peers.

While this is something of an extreme example, the database indicates that, from 1995 to 2016, the average within-state progressivity standard deviation was around 10 percent. If we assume that a state is at the average district progressivity level, it would fund wealthy districts at around $13,187 per pupil and poor districts at around $16,088 per student (US Census Bureau, 2021). Assuming spending in the wealthy districts stayed constant, a 10 percent change in

progressivity would result in an increase or decrease to poor districts of around $1,300 per student.

While intra-state comparisons like this are useful, these estimates do not account for differences in the cost of educating all students. This is problematic because student population characteristics, like child poverty and language proficiency, make education more expensive in some areas (Olson, 2012). For example, Duncombe and Yinger (2005) estimate that it costs districts from 122 to 167 percent more to educate a student living in poverty, relative to a non-poor student. Thus, if states are to ensure that all students have an equal chance at success, they must strive for finance equity: funding districts commensurate with their needs rather than aiming for mere parity (Knight & Mendoza, 2019).

With these considerations in mind, how should we characterize spending currently? Although there is not a single, agreed-upon way to measure finance equity – and below we will discuss the advantages and disadvantages of different approaches – scholars agree that measures published by the School Finances Indicator Database (2021) and the Urban Institute (2017) offer sophisticated ways of describing each state's finance system (Knight & Mendoza, 2019). The School Finance Indicators Database (SFI) uses a regression-based approach in which student funding rates are determined based on the number of poor students in the district and a set of district control variables. SFI then estimates and compares predicted spending in poor and non-poor districts across each state. When considering federal, state, and local revenues, the SFI suggests that the average high-poverty district received 22 percent more funding than the average low-poverty district. The Urban Institute (UI) uses a weighted average approach which determines the average statewide funding across districts, weighted by the number of low-

income students therein. Using this methodology, and including all three revenue sources, the UI suggests that poor students receive about 4 percent more funding than non-poor students.[2]

If these estimates are accurate, most states have achieved some level of progressivity in how they fund education. This is no small victory and stands in contrast to some popular views of spending inequity (Kozol, 1991). However, when we factor in the costs associated with educating poor students (Duncombe & Yinger, 2005), the picture changes: both studies reveal that U.S. states are underspending on education for poor students.

The follow-up question – what effect does this inequality have on student achievement? – is the subject of considerable debate (Coleman et al., 1966; Hanushek, 1997; C. Jackson et al., 2016). In part, this disagreement results from the difficulty of causally demonstrating how education spending, relative to other factors, shapes educational outcomes. While we acknowledge this difficulty, studies using experimental and quasi-experimental methods show that increased spending leads to more teachers, lower student-teacher ratios, increased teacher compensation and, most important, improved educational outcomes (Dynarski et al., 2013; C. Jackson et al., 2018; Konstantopoulos & Chung, 2009).

Putting all of this together, we draw three conclusions about K-12 education finance in the U.S. First, research suggests that money helps determine what types of educational programming and services districts can offer to students and, as such, student achievement and well-being. Second, states have the ability to redistribute education funds to even out intra-state disparities and, on average, have achieved modest levels of school finance progressivity. Finally, progressivity within states ebbs and flows over time. This last point raises the question that motivates this paper: what explains why states build more or less progressive K-12 school finance systems? In the introduction, we identified three potential explanations for changes in

progressivity. In the next section we begin to consider these explanations by reviewing research exploring how court orders shape progressivity.

**Courts and school finance systems**

The process of challenging a state's school finance system in court is complex (Hutt et al., 2020; Rebell, 2009; West & Peterson, 2007a). At the beginning, plaintiffs and advocacy organizations bring a lawsuit that challenges the constitutionality of a state's education system in a trial court. Win or lose, plaintiffs eventually advance to their state supreme court, to defend or challenge the lower-court ruling. If the supreme court rules in plaintiffs' favor, which we refer to as a successful high-court ruling (HCR), they typically require that the legislature adopts a new state school finance formula and/or passes a budget responsive to their ruling. We refer to this step of the process as remedy legislation (RL) which may involve tax increases to fully fund the existing or newly-adopted funding formula. Next, advocates need to successfully push for a legislative budget enactment (LBA) that funds the new formula. As such, even in the wake of a successful court challenge, political maneuvering has the potential to preclude significant changes in progressivity.

This discussion highlights the importance of precision in studying how courts shape school spending. Often the literature refers to court-ordered school finance reforms as "SFRs" but uses an HCR as an indicator of reform. This approach is potentially problematic because, for example, a judge may issue an HCR but the legislature may not pass RL or an LBA; alternatively, all three may occur while the legislature chooses to implement the reform incrementally (Corcoran & Evans, 2010).

This review also shows that court orders emerge from a complex interplay of factors and considerations. If so, like other judicial decisions, HCRs may be tied to state political

environments, like party control, and elite ideological commitments (Brace et al., 2000; Hutt et al., 2020; Pinello, 1999; Segal & Spaeth, 2002). This would seem particularly likely since judges operate without "sword or purse" and, thus, must rely upon other political actors to implement their decisions (C. Berry & Wysong, 2012; Canon & Johnson, 1999; Hamilton, 1787). As a result, judges may be wary of issuing orders that are at odds with public opinion or the views of elected officials (Rosenberg, 1991).

Whether the issuing of an HCR reflects state political environments or not – an issue we examine empirically below – they have emerged as a prominent explanation for school finance progressivity. Murray et al. (1998) look at 1971-1996 to see how HCRs were associated with the distribution of school resources. They find that HCRs reduced within-state inequality by 19-34%. In essence, they suggest, states responded to HCRs by increasing spending in poor districts while keeping spending in rich districts relatively constant. Similarly, Card and Payne (2002) look at the effect of HCRs on the relationship between level of education spending and wealth of districts from 1977-1992. They find that in states where the funding system was ruled unconstitutional, there was a redistribution in education monies in favor of poor districts.

Berry (2007) studies the effects of school finance litigation from 1970-2003 and finds that HCRs led to a 16 percent decrease in inequality within states. Corcoran et al. (2004) examine the changing distribution of education finance from 1972 to 1997. They find that significant progress was made in equalizing education spending during this time (inequality fell from around 20 to 35 percent). They suggest that some of this progress was related to HCRs challenging the constitutionality of local education funding; they estimate that court rulings reduced intra-state inequality from 16-38 percent by increasing spending in low-income districts (while spending in upper-income districts stayed roughly constant).

Jackson et al. (2016) examine children born between 1955 and 1985 whom they followed through 2011. Like Corcoran and colleagues, their analysis shows that in the years after an HCR there was a rise in per-pupil spending for those in low-income school districts and not much of a change for those in wealthy districts. Similarly, Candalaria and Shores (2019) estimate the effect of overturning a state's finance system on education spending, from 1990 to 2010. They find that such overhauls were associated with an increase in funding of 11-12 percent for the poorest students.

In contrast with much of the literature, Condron (2017) shows a more complex relationship between school finance litigation and progressivity. Examining the same years as Candalaria and Shores, Condron shows that the filing of a school finance lawsuit increased progressivity in the first decade of the study (1990-2000); however, in the second decade, (2001-2010), the filing of a lawsuit was unrelated to changes in progressivity. More important for our study, Condron finds that winning a lawsuit was unrelated to changes in education spending progressivity.

Taken in summary, this literature suggests that HCRs have a progressive effect on education finance systems. However, many of these works cover period before the millennium, a time when HCRs were a relatively new advocacy strategy. The two studies that look at more recent years (Candalaria and Shores and Condron) offer conflicting views about whether this strategy continues to push states toward progressivity. Additionally, relatively few of these works explicitly consider or control for political or demographic factors that may confound any effects attributable to HCRs. Put simply, HCRs may be endogenous to state politics. As such, we think it reasonable to expect that *the issuing of HCRs led to more progressive school finance*

*systems*, but that it is also important to explore this relationship in the context of other factors that may shape progressivity.

**Political ideology and partisanship**

In addition to HCRs, there are a variety of state political factors that may push lawmakers to create more or less progressive school finance systems over time. Comporting to the basic expectations of democratic theory, studies have long shown that elected officials are responsive to citizen preferences (Burstein, 2003; Jacobson, 2017; Mayhew, 1974; Sulkin, 2005). In short, this research suggests that politicians have a keen interest in maintaining popular support and making their reelection more probable. Thus, one explanation for K-12 education redistributiveness looks toward citizen ideology: the "interrelated political beliefs, values, and policy positions" (Lee, 2009, p. 27) held by members of the public. As citizen opinion on progressivity shifts, it seems reasonable to expect that policymakers follow suit. In fact, research supports this view: the preferences of the electorate appear to influence the formation of public policy and reorient it if it drifts too far from a particular ideal point (Erikson et al., 2007; Wood & Theobald, 2003). As such, perhaps the ideology of an electorate will shape the redistributiveness of its K-12 education system.

Over the last several decades, the time period studied in this paper, liberal thought and advocacy has favored public policies that redistribute income and wealth; conservative thought and advocacy, in contrast, has pushed for policies that lower taxes and cut redistributive policies (B. Jackson, 2017). One way of understanding this phenomenon is by using a class lens: wealth and income, while not the only influence on a person's opinions, remain strong predictors of political ideology and partisan affiliation. Specifically, as Bartels (2016) notes, despite journalistic accounts to the contrary, lower-income voters tend to support redistribution and the

Democratic Party while upper-income voters resist such efforts and support the Republican Party. Drawing from research like this, we expect that as a state's citizens became more liberal, they were likely to favor redistribution, leading to more progressive school finance systems. In contrast, as states became more conservative, they were more likely to resist redistribution, leading to less progressive finance systems. Therefore, we generally expect that *as citizens became more liberal, policymakers created more progressive school finance systems.*

While we think this expectation is reasonable, we are conscious of research suggesting that the politics of education financing operates differently (Malin, 2016). Specifically, education policy is tightly connected to homeownership – in the U.S., families often choose where to live based on public school quality. Thus, voters may view choices about education spending as influencing two outcomes that directly affect them: student learning (especially for parents) and home values (Black, 1999; Clinton & Grissom, 2015). As such, voters who otherwise favor redistribution may oppose progressive education spending formulas. By studying the matter empirically, over a number of years, this research can help illuminate these conflicting expectations about the relationship between state political ideology and education spending.

Though citizen preferences may shape trends in education spending, this focus misses the connection between an electorate's ideological commitments and the selection, election, and behavior of elected officials. Due to state political institutions, like the nature of primary rules, level of gerrymandering, or recent electoral history, politicians' views may be more or less representative of citizens' views (Sulkin, 2005). In addition, an important vein of political science scholarship suggests that citizen preferences are influenced by elite rhetoric and advocacy (Zaller, 1992). Specifically, political parties play a decisive role developing ideas, connecting the elected and the electorate, and organizing policymaking inside government (Lee,

2009). As such, it is important to ask how partisanship and ideology, inside government, may influence the redistributiveness of K-12 education spending.

Over long periods of time, the ideological commitments of political parties evolve (Carmines & Stimson, 1990). However, within shorter historical periods, a set of ideological commitments, that is meaningful for candidates, elected officials, and voters, is part of the glue enabling successful party politics (Skowronek, 2000). As alluded to above, in the period that we focus upon in this paper, the Democratic Party advocated for policies that favored higher levels of government spending, generally, and economic redistribution, particularly (Rigby & Hatch, 2017). This made for good politics for the Democrats who tended to draw higher levels of support from less wealthy citizens (Kitchens, 2020). During this same period, the Republican Party, which had wealthier supporters, pushed for welfare state retrenchment and fought to equate "redistribution" with socialism (O'Keefe & Helderman, 2012; Pierson, 1994). As such, it seems reasonable to expect that the partisanship of elected officials was associated with differences in spending patterns (Hill & Jones, 2017; Rigby & Hatch, 2017).

Therefore, we generally expect that party control affects education spending progressivity; specifically, we expect that *states with a unified Democratic government developed more progressive school finance systems.* However, we also recognize that state electoral processes are contingent and that party labels may not mean the same thing from state to state. For example, due to scandal or crisis, a state with a mostly conservative electorate may elect a Democratic governor and legislature. Thus, in addition to exploring whether the partisanship of elected officials is related to redistribution, we also examine the ideology of state elected officials. As with our expectation about the electorate's ideology, we expect that *as state lawmakers became more liberal, they built more progressive school finance systems.*

**Demographic characteristics**

Our final explanation for within-state variation in state school funding progressivity looks at the politics that accompany demographic changes (Turner, 2015). According to social identity theory, people generally trust and prefer interacting with people whom they perceive as similar to themselves (Alderfer, 1986; McPherson et al., 2001). When people encounter those whom they perceive as different, they feel increased in-group solidarity and may enact "opportunity hoarding": working to protect or preserve their resources from those in other groups (O'Brien, 2017). Aligned with these theoretical expectations, research suggests that jurisdictions with higher levels of demographic heterogeneity are less likely to spend money on public goods (Alesina et al., 1999) or redistribute welfare dollars (Alesina & Glaeser, 2005).

The U.S., the focus of this study, has long had a political culture that emphasizes ascriptive hierarchy (Smith, 1993). Reflecting this tradition, non-Hispanic White Americans have used informal and formal practices to maintain a racial hierarchy that places themselves above people of color (Soss et al., 2011; Wilkerson, 2020). To advance this agenda, non-Hispanic White Americans have tended to ascribe negative characteristics, like indolence, criminality, and low intelligence, to racial minorities, while ascribing positive characteristics to themselves (Einstein & Glick, 2017; Priest et al., 2018; Soss et al., 2011).

In the twentieth century, civil rights laws responded to this tradition and sought to prevent racial discrimination; unfortunately, research suggests that discrimination and racial inequality persist across various parts of U.S. society (Bertrand & Mullainathan, 2004; Kim & Kiesel, 2018). Perhaps as a result of this tradition of racial animus, U.S. lawmakers, who remain overwhelmingly non-Hispanic White (National Conference of State Legislatures, 2015), have tended to adopt less generous welfare programs when their jurisdictions include (or are perceived

to include) a large number of Black and Hispanic citizens (Gilens, 1999; O'Brien, 2017). This research suggests that the redistribution of state dollars in the U.S. is racialized. As such, *we expect that as state Black and Hispanic populations grew, and as states became more racially and ethnically diverse, policymakers created less progressive school finance systems.*

In addition, research suggests that racial and ethnic differences by age group are particularly salient for understanding education spending progressivity: when older citizens hold different racial and ethnic identities than school-aged children, they appear to strongly oppose redistribution (Figlio & Fletcher, 2012; Poterba, 1997). This angle is particularly important to examine in light of the major demographic changes in the U.S. over the past forty years: there has been steady growth in Hispanic immigrants, many of whom are younger than non-Hispanic Whites (Turner, 2015). Thus, while still a majority, non-Hispanic Whites are older and becoming a smaller part of the U.S. population: they make up 62 percent of the U.S. population, down from 84 percent in 1965, and have a modal age of 58; Hispanic Americans make up 18 percent of the population, up from 4 percent in 1965, and have a modal age of 11 (Pew Research Center, 2015; Schaeffer, 2019).

These demographic changes have helped usher in a politics of racial resentment, making immigration restriction and nativist appeals politically resonant for non-Hispanic Whites (Lind, 2017; Newman et al., 2018). Putting all of this together, we expect that policymakers are attuned to (and perhaps augment) the concerns non-Hispanic Whites express about changing race-age demographics. Thus, *we expect that as state Black and Hispanic child populations grew, and as state child populations became more racially and ethnically diverse, policymakers created less progressive school finance systems.*

In addition to race-age differences, we are also interested in how school finance progressivity may be tied to the demographic-economic characteristics inside states. Specifically, research suggests that economic inequality, the distribution of income and wealth within a state, and child poverty, the percentage of poor children in a state, may condition progressivity. Beginning with inequality, the literature contains conflicting accounts of how inequality may be related to school finance equity. According to the elite theory, economic inequality allows state elites to further consolidate economic and political power, hoarding resources and resisting efforts to redistribute income and wealth (Bechtel et al., 2018; Hacker et al., 2005). Since K-12 education spending is a primary lever for redistributing resources, state economic inequality would thus be associated with less progressive school finance systems.

Alternatively, according to the median voter model, growing economic inequality increases the political interest of lower-income voters in higher taxes and greater redistribution (Gilens & Page, 2014). Put simply, as the gap between the fortunes of the wealthy and non-wealthy increases, lower-income voters can obtain public services at a lower individual cost if taxes are progressive (Corcoran & Evans, 2010). Thus, as economic inequality increases in a jurisdiction, political pressure builds to increase taxes for the wealthy and to use public policy for redistribution. Again, since K-12 education spending is one of the key domains in which disputes over "fairness" and "equal opportunity" take place, we might expect that inequality is associated with higher levels of progressivity.

This discussion reveals that there are competing theoretical expectations about the relationship between economic inequality and education spending progressivity. Since these expectations run in contrary directions, we adopt a null hypothesis and expect that *changes in state economic inequality were unassociated with changes in school finance progressivity.*

In a similar vein, it is unclear, at the level of theory, what role changes in child poverty may have on K-12 finance progressivity. On the one hand, an increase in the incidence of child poverty may condition a progressive political response: as a state's economic fortunes sour, voters may rally around low-income families and favor economic redistribution. Supporting this possibility, public opinion polling shows that citizens feel more generous toward low-income people during recessions (Gilens, 1999). On the other hand, as poverty rises, funding low- and middle-class school districts requires ever higher levels of redistribution (as local tax revenues disappear). Following elite theory, the corresponding political dynamic may be unfavorable for education progressivity: as the power and resources of lower-income people ebbs, the wealthy are in an ever-stronger position to protect their resources and resist redistribution (Hacker et al., 2005). Since both outcomes seem plausible, we adopt a null hypothesis and expect that *changes in state child poverty rates were unassociated with changes in school finance progressivity.*

## Data and method

To test the above hypotheses, we examine a panel dataset that includes 45 states and covers the years 1995 to 2016; the unit of analysis throughout is a state-year.[3] Our dependent variable is school finance progressivity. As noted above, local funding plays an important role in how American schools are funded; if state governments did not redistribute revenues, poorer districts would underspend relative to richer districts. We also argued that students in poor districts need higher levels of funding to account for the learning difficulties that accompany living in high-poverty neighborhoods. Thus, we define states as having progressive school finance systems when per pupil spending in high-poverty districts is equal or greater to per pupil spending in low-poverty districts. As this definition implies, progressivity is a continuum and states can become more or less progressive over time.

In the school finance literature, there are a number of ways of measuring school finance progressivity. To ensure that our results are as robust as possible, we use two measures that scholars consider generally sound (Knight & Mendoza, 2019). First, we use a variable called *progressivity (SFI)* drawn from the School Finance Indicators Database (2021). This database uses the Census Department and Department of Education's Common Core of Data Local Education Agency Finance Survey (F-33) and School District Fiscal data to calculate the statewide ratio between: 1) the predicted per-pupil spending in districts with a 30% student poverty rate; and 2) the predicted per-pupil spending in districts with a 0% student poverty rate. All estimates include spending drawn from federal, state, and local revenues and adjust for state demographic characteristics, like district size and population density, and economic variables, like regional wage competitiveness, applying an extended version of Taylor's Education Comparable Wage Index (Bush School of Government & Public Service, 2021). This variable can be interpreted such that a 1 indicates that that districts with high levels of child poverty receive equal funding as those with no child poverty; figures below 1 denote regressivity and figures above 1 imply progressivity.

Second, we use the variable *progressivity (UI)* calculated using a method developed by researchers at the Urban Institute (2017).[4] Specifically, we use a measure that captures the statewide ratio in differences between per-student revenue for poor and non-poor students. Like the *progressivity (SFI)* variable, this variable uses federal, state, and local revenues from the Department of Education's F-33 survey. We merged the data with district-level poverty data from the Census Bureau's Model-based Small Area Income and Poverty Estimates. Spending was adjusted for differences that districts face in labor market costs (based on a measure of the salaries of college graduates who are not teachers in the district's labor market). This variable

can be interpreted such that a 1 indicates that that poor and wealthy students within a state receive equal funding; figures below 1 denote regressivity and figures above 1 imply progressivity.[5]

Though school finance politics and lawsuits concern state and local funding, both of the measures of progressivity include federal revenue. We include federal revenue because there is evidence that states alter their district spending allotments in response to the receipt of federal education dollars. For example, though Title 1 was meant to add to existing spending for poor districts, federal funding has tended to crowd out state and local funding for these districts (Gordon, 2004). As such, gaining a more complete perspective on a state's education finance system requires choosing measures that include all three types of funding.

While scholars generally see these two measures of progressivity as helpful for understanding state-level finance equity, it is important to acknowledge their limitations. As Knight and Mendoza (2019) note, the SFI usefully accounts for district-level characteristics, but might not perform well in states with a small number of districts (where outliers could distort statewide predictions). The UI measure, which uses students not districts as its unit of analysis, avoids this problem. However, the UI measure, unlike the SFI measure, does not account for differences in district size and population. As this discussion shows, these measures have strengths and weaknesses; by using both, this paper provides a robust view of how its hypotheses explain intra-state changes in progressivity.

Our first expectation is that the issuing of an HCR will trigger higher levels of progressivity. Similar to prior work, we measure HCRs using a list assembled by Jackson and colleagues (2016); this list catalogues high court orders overturning a state's school finance system based on equity or adequacy grounds.[6] Since their list stops in 2010, we updated it using

data assembled by the Center for Educational Equity at Teachers College (2021). The dichotomous *HCR* variable is coded "0" for state-years that did not have an HCR during the time period of our study; the variable is coded "1" for state years that had an HCR in the present year or in a previous year (during the time we studied). For example, the state years for Arizona are coded "0" until 1997, when the state supreme court overturned the constitutionality of its school finance system; beginning that year, all Arizona state years are coded "1." Notably, the dataset includes 19 states that had an HCR during this time period as well as 26 that did not (see Appendix Table 1 for a list of all states that won an HCR during this time period). While this variable enables us to capture an HCR that occurs during the time we studied, it does not account for the winning of an HCR prior to this time period nor the winning of subsequent HCRs after the initial win.

In addition to this dichotomous measure, we explore whether the effects of an HCR accumulate over time. This is important because, as our discussion above suggests, it may take significant time for elected officials to make the legislative and administrative changes necessary to implement an HCR. As such, the continuous *HCR cumulative* measures the cumulative years since an HCR was issued.

Our second expectation is that progressivity was related to ideological changes in a state's citizenry. Specifically, we expect that increases in the percentage of liberal citizens were associated with more progressive spending systems. To measure this hypothesis, we use a variable *citizen liberalism*, adapted from data collected by Enns and Koch (2013), which uses public opinion survey data to provide estimates of state political ideology over time. Their estimates rely on national-level polls conducted by the Roper Center, the American National Election Survey, and the General Social Survey with an average of over 13,000 respondents per

year. They generated their estimates using a multi-level model that predicts state opinion based on factors like gender, age, and region. Missing values were supplemented with data from Gallup's yearly publication of political ideology in each state. We constructed the variable, *citizen liberalism,* by subtracting the percent of a state's liberal citizens from the percent of a state's conservative citizens, providing a net measure of the ideological position of a state's citizenry.

Moving to elected officials, we explore how changes in the partisanship and political ideology of elected officials were related to changes in progressivity. To examine the partisanship of elected officials, we use the variable *unified Democratic government*, drawn from the Correlates of State Policy project and data from the National Conference of State Legislatures. This is a categorical variable which indicates whether the state legislature and governor were both members of the Democratic Party. To examine the political ideology of state elected officials, we use the variable *lawmaker liberalism*, developed by Berry and colleagues (1998), which measures the ideology of each state's government drawing from estimates of the ideological position of the governor and the major party delegations in each legislative house.

Next, we examine how state racial demographics were associated with progressivity using Census data.[7] We begin, in Table 4, by looking at three population-level race measurements: *percent White*, which captures the percent of the state population that was non-Hispanic White, *percent Black or Hispanic*, which captures the percent of the state population that was Black or Hispanic, and *racial diversity*, a Blau diversity index that looked at the overall level of racial difference in a state.[8] In Table 5 we continue the analysis by looking at three variables examining the racial characteristics of each state's school-aged children (ages 5-17): *percent White children*, which captures the percent of the state's child population that was non-

Hispanic White, *percent Black or Hispanic children*, which captures the percent of the state's child population that was Black or Hispanic, and *child racial diversity*, a Blau diversity index that looked at the overall level of racial difference among children in the states.

Finally, we examine within-state economic inequality and child poverty. To examine economic inequality, we use a variable called *income inequality*, calculated by Frank (2021). This variable captures the spread of income within a state using a Gini coefficient. To examine child poverty, we use a variable called *percent child poverty*, which uses Census data to calculate the level of poverty among a state's school-aged children (5-17 years old).

Table 1 presents the summary statistics of the variables used in this analysis and Table 2 presents the correlation coefficients among the predictor variables.

[Tables 1 and 2 here]

One interesting aspect of Table 2 is that HCRs are only weakly correlated with the political variables in the analysis. Below, we will explore whether this is true in the context of a more rigorous analysis. Additionally, Table 2 lets us begin to address the concern that the state political variables – *citizen liberalism*, *lawmaker liberalism*, and *unified Democratic government* – are strongly correlated. As is evident in Table 2, *citizen liberalism* and *lawmaker liberalism* have a correlation coefficient of 0.50 and *lawmaker liberalism* and *unified Democratic government* have a correlation coefficient of 0.65. This raises modeling questions, specifically whether these variables are colinear and, thus, explaining similar parts of a state's political environment. As discussed in the results section, to ensure that these correlations did not distort our findings, we assessed these political variables independently.

Table 2 also shows significant overlap between state racial and economic characteristics: states with higher levels of non-Hispanic White populations had higher child poverty rates. In

addition, as we might expect, there were strong relationships among the various racial measures. For example, it is unsurprising that states with a high proportion of non-Hispanic White residents also had a higher proportion of non-Hispanic White children. Since this paper is designed to investigate how race matters, we explore each racial measure separately: in Table 4, we explore racial characteristics in the general population; in Table 5, we explore the racial characteristics of the student population.

For all analyses, we use OLS regression with state and year fixed effects. Using state fixed effects enables us to remove unobserved heterogeneity between states in order to observe changes within states over time. In addition, we cluster standard errors by state to account for the fact that the state-years are not independent. Because our intention is to examine state policy changes, we do not weight states by population or public school enrollment.

We use year fixed effects because, though we are looking at intra-state variation, states are situated nationally and, therefore, may be influenced by national trends. To explore whether there was a secular trend in progressivity, we analyzed how each state's progressivity level moved together over time. This analysis revealed evidence of a national trend that may have buoyed or squelched other intra-state influences on progressivity. As such, we present our findings with year fixed effects to ensure that any observed progressivity changes can rightfully be ascribed to intra-state changes in the independent variables.

Putting all of this together, Equation 1 highlights the generalized estimation approach that we use for this analysis:

$$PROG_{ij} = \alpha + \beta HCR_{ij} + \beta POL_{ij} + \beta ECON_{ij} + \beta RACE_{ij} + \gamma_i + \lambda_j + \varepsilon_{ij} \quad (1)$$

where *PROG* refers to one of the measures of progressivity for each *i* state in *j* year; $\alpha$ is the intercept; *HCR* refers to one of the HCR variables (*HCR* or *HCR cumulative*); *POL* refers to the

set of state political variables (*citizen liberalism*, *unified Democratic government*, *lawmaker liberalism*); *ECON* refers to the state economic variables (*income inequality*, *percent child poverty*); *RACE* refers to one of the race variables (*percent White*, *percent Black or Hispanic*, *racial diversity, percent White children*, *percent Black or Hispanic children*, or *child racial diversity)*; $\gamma$ connotes state fixed effects; $\lambda$ connotes year fixed effects; and $\varepsilon$ is the error term.

The reported coefficients that derive from this approach can be interpreted as showing how within-state changes in the independent variables are associated with within-state changes in progressivity. Since our research design is not experimental or quasi-experimental, we cannot draw causal claims about the findings. Nonetheless, by looking within states over a significant period of time, we show which state-level factors were most strongly associated with changes in progressivity.

**Results**

Our first expectation is that the passage of an HCR triggers states to create more progressive K-12 school finance systems. To examine this expectation, we begin by presenting a simple model that demonstrates how the two HCR variables were, in the absence of other independent variables, related to state progressivity. Thus, Table 3 regresses the progressivity measures on the paper's dichotomous and cumulative HCR variables, with only state and year fixed effects as controls.

[Table 3 here]

This table reveals mixed support for the expectation regarding HCRs. On the left side of the table we see that the issuing of an HCR did not have a strong relationship with intra-state changes in progressivity.[9] Though the dichotomous HCR measure was not related to progressivity, when we

use a variable that captures years since an HCR, we see a strong, positive connection to progressivity. This implies that the effects of an HCR accumulated over time.

While these findings are useful, one of the rationales for this paper is to examine HCRs using a model that includes aspects of a state's political and demographic characteristics. Thus, we now pivot to a multivariate analysis. Because *HCR* was not a significant predictor of progressivity on its own, Tables 4 and 5 examine the *HCR cumulative* variable in the context of the other independent variables.

[Tables 4 and 5 here]

In a multivariate context, we see that *HCR cumulative* was a less consistent predictor of progressivity: in only two of the twelve models was an increase in progressivity tied to the number of years since an HCR. To put the meaning of the *HCR cumulative* coefficients into more concrete terms, assume that a state was at the district progressivity (SFI) average (1.22) in the year that an HCR was issued, spending $13,187 per pupil in wealthy districts and $16,088 per pupil in poor districts (US Census Bureau, 2021). Based on the findings in Column 3, Table 5, after three years the state would have a district progressivity score of 1.24; assuming that spending in wealthy districts stayed constant, the state would have raised its per pupil spending in poor districts to $16,352, an increase of $264.

What explains why HCRs did not have a more consistent, powerful relationship with progressivity? One possibility is that HCRs were endogenous to state political environments: perhaps judges were more likely to issue a court order when the political timing was right (Greene, 2020). If so, any apparent effect that HCRs had on progressivity would be reduced by utilizing a model that captures aspects of a state's political context. To explore that possibility, we used an event history model (hazard analysis) to determine if the winning of an HCR was

related to any of the state political and demographic characteristics that we discuss above. This analysis revealed that none of the state political and demographic indicators were statistically-significant predictors of HCRs (see Appendix Table 2).

Another possibility for the inconsistent relationship between HCRs and progressivity is that our models do not account for interactions between a court decision and state political environments. As such, we ran a supplemental analysis in which we interacted *HCR* with the three political variables examined in the models (see Appendix Table 3). It revealed that in five of the six models the effect that HCRs had on progressivity did not appear to be contingent upon these three variables. The one exception (Column 2) shows that an HCR had more of an impact on the student progressivity measure (UI) when it was issued in the context of a more liberal citizenry.

Moving beyond HCRs, we expected that changes in progressivity would be strongly tied to changes in state political environments: as state citizens and lawmakers became more liberal, or the Democrats took control of state government, policymakers would create more progressive K-12 finance systems. In fact, the findings in Tables 4 and 5 offer little support for this hypothesis. Because the political variables were somewhat correlated, we ran these models with each political variable individually (with the remainder of the model).[10] In none of these estimates were the state political variables strongly associated with either progressivity metric.

As noted above, party labels can mean different things in different contexts: a Democrat in Vermont may hold a different set of commitments than a Democrat in Alabama. Since the South is often an outlier in national politics, we examined the models used in Tables 4 and 5 while interacting the variable *unified Democratic government* with a variable that indicated

whether the state was located in the South. This analysis revealed no meaningful differences between Democratic control in the South relative to other regions.

Moving to our third set of expectations, we hypothesized that state policymakers would alter their school finance systems in response to changes in state racial and economic demographics. Specifically, we discussed conflicting expectations about how inequality and student poverty might manifest politically and, thus, decided to test null hypotheses. As Tables 4 and 5 show, the results here reveal little evidence that changes in state economic inequality were related to changes in progressivity.

However, there is a strong, consistent relationship between *percent child poverty* and the district progressivity measure (SFI): as child poverty rates increased, lawmakers acted to make their school finance systems less progressive. To further our understanding of this relationship, it is useful to consider how a change in child poverty was likely to alter a state's district progressivity score. As with the example above, assume that a state had an average district progressivity score (1.22) and spent the national average of $13,187 per pupil for students in wealthy districts and $16,088 per pupil for students in poor districts (US Census Bureau, 2021). If we use the findings from Column 1, Table 4, for example, a one standard deviation increase in child poverty would be associated with a 0.03 point change in district progressivity, corresponding to a $369 drop in per pupil spending in poor districts.

Tables 4 and 5 also explore the expectation that changes in progressivity would be tied to changes in state racial demography. In Table 4 we see that changes in the composition of the full population were relatively unassociated with changes in progressivity. The lone exception is in Column 4 where, as expected, as the percentage of Black and Hispanics rose, progressivity declined; using the data and method described above, a one standard deviation increase in this

variable was associated with an $92 decline in the student progressivity measure. For the other ways that we measured population-wide state racial characteristics, we see little relationship with decisions about school finance redistribution.

However, when we pivot to exploring the racial dynamics of the student-aged population (Table 5), we see consistent support for our expectations. Columns 1 and 2 show that a rise in the percentage of White children within a state was associated with an increase in progressivity. Similarly, Columns 3-5 show that increasing proportions of Black and Hispanic students, and increasing levels of child racial diversity, were associated with declines in progressivity. To understand the concrete implications of these findings, again assume that a state begins at the district progressivity average (spending $13,187 per pupil for students in wealthy districts and $16,088 per pupil for students in poor districts). Using the findings in Table 5, a one standard deviation increase in *percent White children* would increase per pupil spending in poor districts by $277 (Column 1). In contrast, a one standard deviation increase in *percent Black or Hispanic children* would decrease per pupil spending in poor districts by $312 (Column 3); similarly, a one standard deviation increase in *child racial diversity* would decrease per pupil spending in poor districts by $319 (Column 5).

## Discussion

In summary, our analysis suggests that changes in K-12 school finance progressivity were most consistently and strongly related to state-level demographic changes. Specifically, changes in child demography appeared to impact decisions about redistribution: as the percentage of poor children within a state grew, or as the percentage of students of color rose, policymakers created less progressive school finance systems. In this section, we interpret these

findings and consider what they mean for our theoretical understanding of the politics of state education progressivity.

Many works in the school finance literature suggest that HCRs push states to significantly redistribute their education dollars. The results above show mixed support for this expectation. While we show some evidence of progressivity gains in the years following an HCR, the mere issuing of a court order did not push states into significantly different progressivity trajectories. To further illustrate this non-finding, Figure 1 plots the district progressivity (SFI) trajectories of states that had an HCR during this time period and those that never had an HCR (in this period or any prior period).

[Figure 1 here]

As is evident in this figure, there was a similar rise and fall in district progressivity across states with and without an HCR during this period.

While our HCR-related findings do not fit neatly with existing literature, we caution against interpreting them as a challenge to past research. As we noted at the outset, much of the existing literature focuses on the history of fair-funding court cases before the millennium; the time period we examine focuses on a more recent history. In addition, while we chose defensible, common ways to study court orders and progressivity, there are other reasonable, well-supported approaches to studying HCRs. Perhaps other approaches to measurement will unearth a different set of findings. In fact, as we write in the conclusion, we hope that this paper spurs further research into the role that the courts play in shaping education policy.

Our findings also diverge with research examining the relationship between state politics and policymaking. As democratic theory hopes, and a long list of studies show (Jacobson, 2017; Mayhew, 1974; Sulkin, 2005; Wood & Theobald, 2003), elected officials tend to be attuned and

responsive to citizen preferences. However, like Malin (2016) we found little evidence that as citizens became more liberal or conservative, policymakers made their school finance systems more or less progressive. Similarly, we found that shifts in legislator ideology and party were unassociated with changes in progressivity.

One interpretation of this finding is that it suggests a disconnect between what Americans want, who they elect, and what they get from government, at least in terms of education policy. Perhaps our findings, which cover a period in which American politics became considerably more polarized, highlight the gridlock that results as political parties drift further apart. If so, it may help explain Americans' increasing frustration with and alienation from their government (Kettl, 2019). Another possibility is that education policy is different from other areas of U.S. policymaking: because education spending is directly tied to home values, voters who otherwise favor redistribution may push against progressive spending formulas (Black, 1999; Malin, 2016). While this explanation could illuminate why becoming more liberal did not lead to greater progressivity, it cannot explain why becoming more conservative did not lead to lower levels of progressivity. As such, these findings highlight the need for greater understanding of what contemporary politics – both in terms of ideology and party – mean for education spending. For example, under what conditions, if any, does party control matter for the politics of education finance redistribution?

Returning to our consideration of inequality and poverty, our results inform the expectations born of elite theory and median voter theory. Unfortunately, we see little evidence supporting the latter: state political systems did not, in the aggregate, respond to increased economic inequality with higher levels of redistribution. In fact, economic inequality did not have a strong relationship with progressivity in either direction. Since these results emerge from

a period in which economic inequality grew rapidly across American society, this is a troubling finding. While inequality did not, on its own, contribute to or against redistribution, child poverty did. As elite theory expects, as the percentage of poor children rose, lawmakers moved against redistribution. While this is an important and troubling finding, we did not explore why or how a change in child poverty influenced state politics. As such, the search for a causal mechanism may be a fruitful area for future research.

Another disturbing implication of these findings is that fights about school spending progressivity – like conflicts over welfare taxation and spending generally (Alesina & Glaeser, 2005; O'Brien, 2017) – appear to be rooted in a politics of racial difference. Over the past forty years, non-Hispanic White Americans have become a smaller part of the national population while remaining significantly over-represented in state legislatures (National Conference of State Legislatures, 2015). During this same time, research has revealed differences between the voters that turn out for school board elections and the students that schools educate; these gaps are most evident in racial-minority majority jurisdictions and school districts with large gaps in racial achievement (Kogan et al., 2021). Perhaps as a result of this gap, as state youth populations became more racially diverse, lawmakers moved away from school finance redistribution.

In the near term, we hope that publicizing these discrepancies will raise consciousness and generate support for remediation. The longer term implications of this problem are less clear. Perhaps as a larger proportion of racial minorities become adults, they will amass political power, compelling non-Hispanic Whites to accede to their wishes or form political coalitions. In fact, one reading of our findings is that such a scenario is already underway: increasing racial difference across all age groups (Table 4) was not as strong of a predictor of changes in progressivity as increasing racial difference among children (Table 5).

Whatever the future holds, these findings suggest that understanding state education finance progressivity requires grappling with more than judicial decisions: racial and economic demographic changes appear to alter how state policymakers redistribute state education dollars. Below, in the paper's final section, we consider what researchers can do to better understand these politics and what our findings mean for advocates trying to push for more progressive school finance systems.

## Conclusion

Currently, most states have school finance systems that are modestly progressive: when federal, state, and local revenues are included, low-income students and districts receive somewhat more than their wealthier counterparts (Chingos & Blagg, 2017; *School Finance Indicators Database*, 2021). Nonetheless, there is considerable state-to-state variation and, more important for this paper, redistribution within states rises and falls over time. Our research has sought to better understand these vicissitudes in education finance progressivity. In this section, we highlight what our findings mean for school equity advocates and suggest some directions for future research.

At least since the *Serrano* case in California, school equity advocates have employed lawsuits challenging the constitutionality of their state finance systems. In the period that we examined – 1995-2016 – there was mixed evidence about the relationship between successful lawsuits and school funding progressivity. In contrast, we found consistent evidence suggesting that decisions about education finance redistribution were predicted by changes in state demography. Specifically, as state youth populations became poorer and more racially and ethnically diverse, the political winds appeared to blow against redistribution.

While these findings are troubling, they can provide useful information to fair-funding advocates as they assess the national education landscape and choose where to focus their efforts. To do so, we juxtapose our findings, which look at how internal state dynamics drive the movement toward and away from greater progressivity, with a snapshot of variation across the states. Specifically, we identify median levels of progressivity, child racial diversity, and child poverty across states. Combining this information with the findings from our intra-state analysis, we identify: 1) states that are difficult to change; 2) states that should, based on the factors that we identify here, have more progressive funding schemes than they do; and 3) states that are currently progressive but, based on our analysis, may be susceptible to backsliding. To assist advocates in choosing where to play "offense" and "defense", Figure 2 uses 2016 SFI data to show how specific states measure up in terms of progressivity, child poverty, and child racial diversity.[11]

[Figure 2 here]

To begin, in the lower-right quadrant of both plots we see that Alabama, Florida, Illinois, Louisiana, and New York all fit neatly into our findings: they have relatively high levels of child poverty and child racial diversity and, as we would expect, relatively low levels of progressivity. Based on our findings, we would expect advocacy efforts in these states would likely face an uphill battle. Next are states that we might think of as safely progressive: in the upper-left quadrant of both plots we find states like Utah, Minnesota, Wyoming, South Dakota, and North Dakota. These states have relatively low levels of child poverty and child racial diversity and, aligned with the results of our analysis, high levels of progressivity. While spending in these states should be watched by advocates, these states seem unlikely to backslide in progressivity.

More intriguingly, this graph highlights states that, based on our findings, may be susceptible to change. On the offensive side, our results suggest that advocacy efforts in Maine, New Hampshire, and Wisconsin may face a less daunting path toward greater progressivity: these states have relatively low rates of child poverty and diversity but relatively low levels of progressivity. Moving to defense, there are several states that may be in danger of backsliding: these states that have relatively high levels of child poverty and child racial diversity, but have managed to create relatively progressive school finance systems. For example, in the upper-right quadrant of both plots we find Oklahoma, South Carolina, and New Mexico. If our analysis is right, these states could quickly be transformed into less progressive systems.

In addition to highlighting advocacy opportunities and vulnerabilities, we also identify a variety of areas for future research. One of the notable differences between our work and other studies in the literature is that our evidence suggests that HCRs had a more modest relationship with school finance progressivity. Thus, we hope that future research can revisit this finding to explore if the effectiveness of HCRs has changed over time. Recently, there has been some work on this topic, but our results suggest the need for greater attention to understanding how the impact of school finance lawsuits may have changed over the years.

Additionally, our work highlights the need for greater attention the politics of racial diversity and school finance. Though we document how changing racial demographics are associated with changes in progressivity, we did not explore the reason(s) behind it. One possibility is that non-Hispanic White adults see growing numbers of racial minority school-aged children and react conservatively, pushing state lawmakers to create less progressive systems. To explore this explanation, it would be useful to study the interplay between citizen ideology and racial demography. Racial minorities in the U.S. tend to support more liberal candidates,

suggesting that increased diversity would lead to increased citizen liberalism. But, as the research here suggests, state populations that become more racially diverse may also trigger a backlash among non-Hispanic White voters. Thus, we highlight the need to understand when and why demographic changes alter citizens' political perspectives and choices.

Finally, we hope that future work will examine the factors that exacerbate or mitigate the negative relationship between the racial diversity and progressivity. In particular, we are curious about moderators that we did not observe in this study that pushed politically vulnerable states toward progressivity; in other words, how did states like South Caroline and New Mexico, with relatively high levels of child poverty and racial diversity, manage to build more progressive systems? Perhaps these states had a higher percentage of minority legislators – or higher levels of racial minority voter turnout – and were thus able to push back against regressive tendencies among non-Hispanic White legislators. Also, we are interested in how patterns of residential segregation, built and maintained by local policymakers, exacerbate or moderate the political push for progressivity (Trounstine, 2018). By exploring this topic further, we can develop a more sophisticated understanding of how to build school finance systems that give all students an equal opportunity for success.

**Notes**

[1] While we explore how changing state environments were associated with changes in progressivity, a full analysis of the costs and benefits of different advocacy strategies is beyond the scope of this paper.

[2] Because the SFI and UI progressivity measures are computed differently, the magnitude of these within-state differences are not directly comparable. Also, our focus is on within-state inequality; including differences across states or within districts would lead to different estimates of spending inequality.

[3] The District of Columbia and Hawaii are excluded because they are single-district systems. Alaska is excluded because the state's population density is highly correlated with poverty, resulting in inconsistent estimates of within-state resource distribution. Delaware is excluded as the citizen ideology data were unreliable, perhaps due to its small size. Nevada is excluded because there are relatively few districts and a large share of students are in one single district; as such we were unable to produce reliable progressivity estimates. Nebraska is excluded because the state has a non-partisan legislature, preventing the examination of party control.

[4] Recently, questions were raised about the Urban Institute's approach to measuring state-level K-12 spending progressivity (Barnum, 2022). During litigation surrounding a Pennsylvania fair-funding lawsuit, plaintiffs' experts argued that the Urban Institute's approach artificially inflated the progressivity of the state's spending formula. In response, researchers at the Urban Institute issued a correction and instructions for re-calculating their measure of progressivity; we use this revised approach in this manuscript.

[5] While these progressivity measures have different foci, both begin by using a district-level dataset. Thus, while we think it important to present two different measures of progressivity, readers should not infer that *progressivity (UI)* is more precise than *progressivity (SFI)*.

[6] In the early years of school-finance litigation (the 1970s), most lawsuits were argued on the grounds of "equity." In some cases, states responded to equity lawsuits by "leveling down" spending across the board, rather than "leveling up" spending in high-needs districts; thus, in the 1980s, advocates began to challenge state finance systems on the grounds of "adequacy" (West & Peterson, 2007b). Although the legal arguments were different, the goal was the same: securing more funds for students in high-needs districts to ensure that they received an equal education (Rebell, 2009). Since our dataset covers the period after the 1980s, most of the successful HCRs that we examine originated as adequacy lawsuits (84 percent). Because adequacy and equity lawsuits both push for more progressive spending (relative to their state's *status quo*) and there was little variation in our dataset, we follow Jackson et al. (2016) and examine all HCRs together in our analysis.

[7] Population racial characteristics were determined at the state aggregate level using individual level data from the Integrated Public Use Microdata System (IPUMS), using American Community Survey (ACS) annual 1% samples from 2005 forward, which were somewhat smaller than 1% samples from 2001 to 2004. For years prior we use Census 1990 and 2000 5% samples. We impute estimates for 1995 to 1999 as linear trends within states using our entire panel of non-missing years (1990, 2000 to 2015). Person weighting is used in all of our calculations.

[8] In its general form, a Blau index is calculated with the following formula: $1- \sum p_i^2$ where $p$ is the proportion of group members in a population and $i$ is the number of different categories. In raw form, a Blau score of 0 indicates perfect homogeneity; a score of 1 indicates perfect heterogeneity. For this paper, *racial diversity* includes four ethnic and racial categories: Non-

Hispanic White, Black, Hispanic, and Asian/Pacific Islander.

[9] Since several of the states examined here had an HCR issued prior to this study (see the note under Appendix Table 1), in a supplemental analysis we examined whether "first-win" states differed from those that had won an HCR previously. That analysis revealed that an HCR in a "first-win" state did not lead to higher levels of progressivity.

[10] Because the political and race variables were somewhat correlated, we also ran these models without the race variables. In none of these analyses were the political variables associated with changes in progressivity.

[11] Though our two dependent variables are constructed differently, we observed similar patterns when we used the Urban Institute dependent variable to explore variation in progressivity and these selected predictor variables.

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Table 1: Summary Statistics

| | Mean | SD across states | SD within states | Min. | Max. |
|---|---|---|---|---|---|
| Progressivity (SFI) | 1.221 | 0.203 | 0.095 | 0.732 | 2.140 |
| Progressivity (UI) | 1.037 | 0.034 | 0.017 | 0.845 | 1.173 |
| HCR | 0.300 | 0.458 | 0.271 | 0 | 1 |
| HCR cumulative | 2.641 | 4.952 | 3.413 | 0 | 20 |
| Citizen liberalism | -0.186 | 0.099 | 0.049 | -0.455 | 0.153 |
| Lawmaker liberalism | 45.575 | 15.244 | 10.150 | 17.512 | 73.619 |
| Unified Democratic government | 0.218 | 0.413 | 0.348 | 0 | 1 |
| Income inequality | 0.587 | 0.044 | 0.036 | 0.426 | 0.711 |
| Percent child poverty | 0.163 | 0.050 | 0.021 | 0.052 | 0.317 |
| Percent White | 0.759 | 0.138 | 0.028 | 0.385 | 0.978 |
| Percent Black or Hispanic | 0.199 | 0.127 | 0.023 | 0.010 | 0.513 |
| Racial diversity | 0.365 | 0.159 | 0.035 | 0.043 | 0.669 |
| Percent White children | 0.685 | 0.160 | 0.042 | 0.243 | 0.966 |
| Percent Black or Hispanic children | 0.243 | 0.151 | 0.029 | 0.012 | 0.615 |
| Child racial diversity | 0.446 | 0.155 | 0.051 | 0.067 | 0.692 |

Note: Total observations = 990; number of states = 45.

Table 2: Correlation Matrix

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. HCR | | | | | | | | | | | | |
| 2. HCR cumulative | 0.82 | | | | | | | | | | | |
| 3. Citizen liberalism | -0.02 | 0.03 | | | | | | | | | | |
| 4. Lawmaker liberalism | -0.06 | -0.11 | 0.50 | | | | | | | | | |
| 5. Unified Dem. govt | 0.03 | 0.02 | 0.29 | 0.65 | | | | | | | | |
| 6. Income inequality | 0.07 | 0.01 | -0.06 | 0.01 | 0.05 | | | | | | | |
| 7. Percent child poverty | 0.07 | 0.12 | -0.28 | -0.10 | 0.05 | 0.23 | | | | | | |
| 8. Percent White | -0.08 | -0.08 | -0.13 | -0.01 | -0.14 | -0.31 | -0.51 | | | | | |
| 9. Percent Black or Hispanic | 0.08 | 0.08 | 0.08 | -0.01 | 0.12 | 0.29 | 0.55 | -0.98 | | | | |
| 10. Racial diversity | 0.06 | 0.05 | 0.13 | 0.00 | 0.12 | 0.32 | 0.46 | -0.97 | 0.95 | | | |
| 11. Percent White children | -0.10 | -0.11 | -0.14 | 0.00 | -0.14 | -0.31 | -0.53 | 0.99 | -0.96 | -0.97 | | |
| 12. Percent Black or Hisp. child. | 0.09 | 0.09 | 0.10 | 0.00 | 0.12 | 0.29 | 0.56 | -0.97 | 0.99 | 0.95 | -0.97 | |
| 13. Child racial diversity | 0.06 | 0.06 | 0.14 | -0.01 | 0.10 | 0.31 | 0.44 | -0.91 | 0.87 | 0.97 | -0.93 | 0.88 |

Note: Total observations = 990; number of states = 45.

Table 3: Predicting K-12 State Finance Progressivity, HCRs only

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| HCR | 0.016 | 0.002 | --- | --- |
| | (0.021) | (0.004) | --- | --- |
| HCR cumulative | --- | --- | 0.005* | 0.001* |
| | --- | --- | (0.002) | (0.000) |
| Constant | 1.151* | 1.029* | 1.151* | 1.029* |
| | (0.017) | (0.004) | (0.016) | (0.004) |
| R-squared | 0.222 | 0.055 | 0.238 | 0.074 |

Note: Total observations = 990; number of states = 45. The dependent variable for odd-numbered columns is *progressivity (SFI)*, a variable that captures the statewide ratio between: 1) the predicted per pupil spending in districts with a 30% student poverty rate; and 2) the predicted per pupil spending in districts with a 0% student poverty rate. The dependent variable for even-numbered columns is *progressivity (UI)*, which captures the statewide ratio in differences between per-student revenue for poor and non-poor students. Each cell includes OLS coefficients, calculated with state and year fixed effects, and standard errors, clustered by state, in parentheses; an asterisk denotes statistical significance at $p<0.05$.

Table 4: Predicting K-12 State Finance Progressivity, General Population Demographics

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| HCR cumulative | 0.005 | 0.001 | 0.005 | 0.001 | 0.004 | 0.001 |
| | (0.002) | (0.000) | (0.002) | (0.000) | (0.003) | (0.000) |
| Citizen liberalism | 0.142 | 0.005 | 0.144 | 0.007 | 0.163 | 0.003 |
| | (0.145) | (0.018) | (0.142) | (0.017) | (0.144) | (0.019) |
| Lawmaker liberalism | 0.001 | 0.000 | 0.001 | 0.000 | 0.001 | 0.000 |
| | (0.001) | (0.000) | (0.001) | (0.000) | (0.001) | (0.000) |
| Unified Democratic government | -0.007 | -0.001 | -0.006 | -0.001 | -0.008 | -0.002 |
| | (0.012) | (0.003) | (0.012) | (0.003) | (0.012) | (0.003) |
| Income inequality | -0.082 | -0.007 | -0.081 | -0.006 | -0.118 | -0.015 |
| | (0.319) | (0.055) | (0.319) | (0.055) | (0.310) | (0.055) |
| Percent child poverty | -1.330* | -0.048 | -1.293* | -0.038 | -1.184* | -0.027 |
| | (0.528) | (0.078) | (0.514) | (0.076) | (0.512) | (0.079) |
| Percent White | 0.598 | 0.155 | --- | --- | --- | --- |
| | (0.533) | (0.098) | --- | --- | --- | --- |
| Percent Black or Hispanic | --- | --- | -1.062 | -0.308* | --- | --- |
| | --- | --- | (0.635) | (0.118) | --- | --- |
| Racial diversity | --- | --- | --- | --- | -0.916 | -0.117 |
| | --- | --- | --- | --- | (0.468) | (0.079) |
| Constant | 0.947* | 0.914* | 1.599* | 1.089* | 1.703* | 1.074* |
| | (0.456) | (0.083) | (0.224) | (0.038) | (0.227) | (0.037) |
| R-squared | 0.278 | 0.086 | 0.283 | 0.101 | 0.287 | 0.085 |

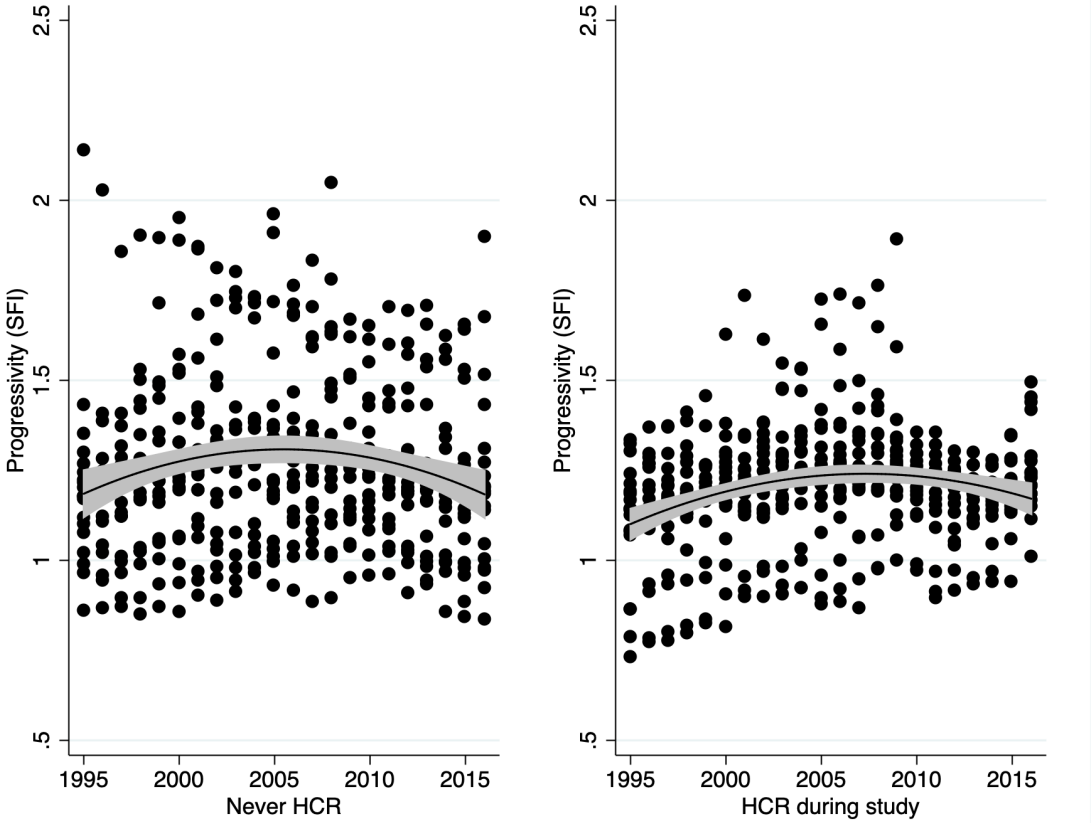
Note: Total observations = 990; number of states = 45. The dependent variable for odd-numbered columns is *progressivity (SFI)*, a variable that captures the statewide ratio between: 1) the predicted per pupil spending in districts with a 30% student poverty rate; and 2) the predicted per pupil spending in districts with a 0% student poverty rate. The dependent variable for even-numbered columns is *progressivity (UI)*, which captures the statewide ratio in differences between per-student revenue for poor and non-poor students. Each cell includes OLS coefficients, calculated with state and year fixed effects, and standard errors, clustered by state, in parentheses; an asterisk denotes statistical significance at $p<0.05$.

Table 5: Predicting K-12 State Finance Progressivity, Child Population Demographics

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| HCR cumulative | 0.004 | 0.001 | 0.005* | 0.001* | 0.004 | 0.001 |
| | (0.002) | (0.000) | (0.002) | (0.000) | (0.003) | (0.000) |
| Citizen liberalism | 0.196 | 0.010 | 0.171 | 0.011 | 0.152 | -0.002 |
| | (0.142) | (0.018) | (0.141) | (0.017) | (0.141) | (0.020) |
| Lawmaker liberalism | 0.001 | 0.000 | 0.001 | 0.000 | 0.001 | 0.000 |
| | (0.001) | (0.000) | (0.001) | (0.000) | (0.001) | (0.000) |
| Unified Democratic government | -0.006 | -0.001 | -0.006 | -0.001 | -0.011 | -0.002 |
| | (0.012) | (0.003) | (0.013) | (0.003) | (0.012) | (0.003) |
| Income inequality | -0.087 | -0.010 | -0.096 | -0.011 | -0.150 | -0.016 |
| | (0.310) | (0.054) | (0.315) | (0.053) | (0.305) | (0.054) |
| Percent child poverty | -1.229* | -0.030 | -1.206* | -0.019 | -1.113* | -0.032 |
| | (0.506) | (0.075) | (0.501) | (0.074) | (0.524) | (0.080) |
| Percent White children | 0.747* | 0.121* | --- | --- | --- | --- |
| | (0.293) | (0.050) | --- | --- | --- | --- |
| Percent Black or Hisp. children | --- | --- | -0.814* | -0.190* | --- | --- |
| | --- | --- | (0.354) | (0.062) | --- | --- |
| Child racial diversity | --- | --- | --- | --- | -0.474* | -0.025 |
| | --- | --- | --- | --- | (0.202) | (0.035) |
| Constant | 0.863* | 0.947* | 1.584* | 1.075* | 1.600* | 1.047* |
| | (0.276) | (0.056) | (0.208) | (0.031) | (0.194) | (0.030) |
| R-squared | 0.290 | 0.091 | 0.290 | 0.103 | 0.290 | 0.080 |

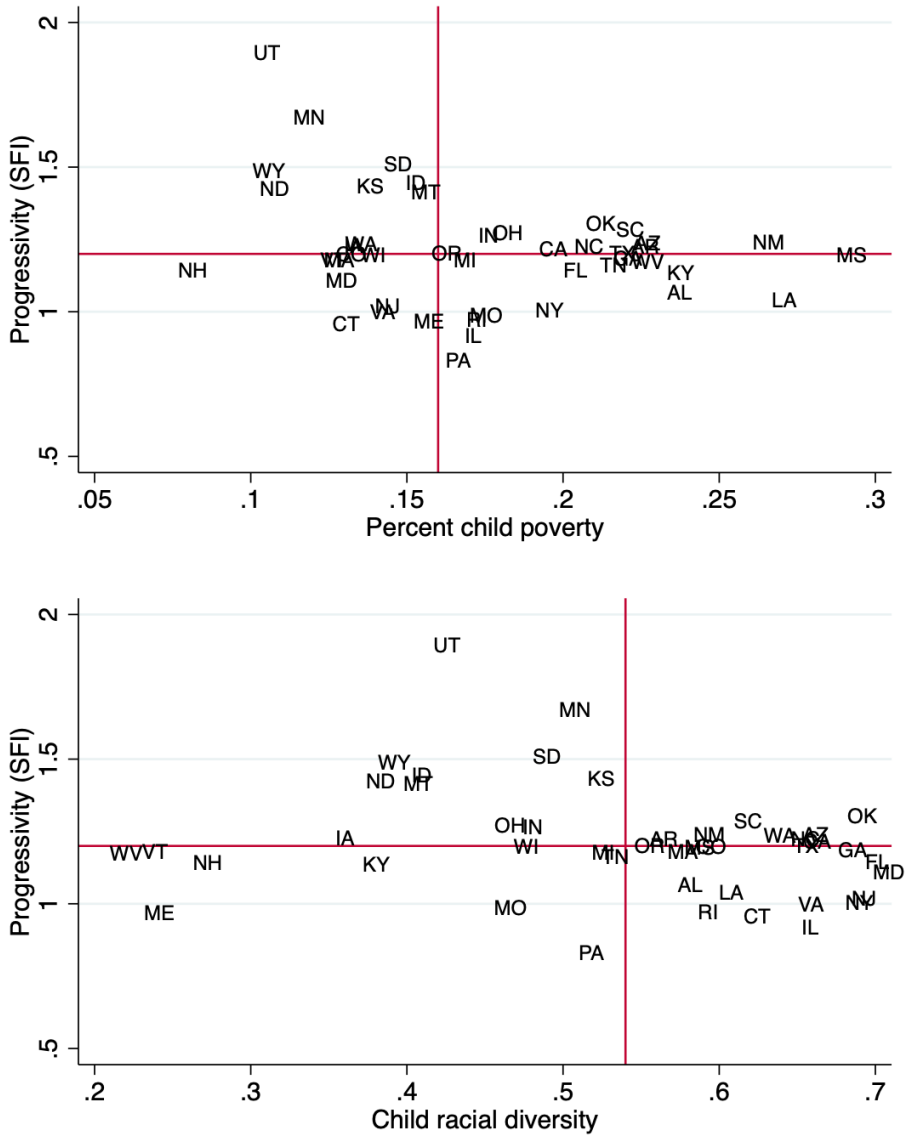
Note: Total observations = 990; number of states = 45. The dependent variable for odd-numbered columns is *progressivity (SFI)*, a variable that captures the statewide ratio between: 1) the predicted per pupil spending in districts with a 30% student poverty rate; and 2) the predicted per pupil spending in districts with a 0% student poverty rate. The dependent variable for even-numbered columns is *progressivity (UI)*, which captures the statewide ratio in differences between per-student revenue for poor and non-poor students. Each cell includes OLS coefficients, calculated with state and year fixed effects, and standard errors, clustered by state, in parentheses; an asterisk denotes statistical significance at $p<0.05$.

Figure 1: Trends in District Progressivity by HCR Status




Note: The plot on the left tracks the progressivity trajectory for states that never had an HCR, during the time period of this study or before. The plot of the right tracks the change in progressivity for nineteen states that had an HCR from 1995 to 2016. The black lines in the center of each plot represent the quadratic progressivity regression line; the grey areas around those lines are the 95 percent confidence intervals.

Figure 2: Progressivity by Selected Predictor Variables




Note: These plots use data from 2016 to plot the relationship between district progressivity (SFI), percent child poverty (top plot), and child racial diversity (bottom plot). The horizontal red lines correspond to the median level of progressivity in this year; the vertical lines refer to the median value of percent child poverty (top plot) and child racial diversity (bottom plot).

Appendix Table 1: States with HCRs from 1995-2016

| State | Year |
|---|---|
| Arkansas | 2002 |
| Arizona | 1997 |
| Idaho | 1998 |
| Kansas | 2005 |
| Maryland | 2005 |
| Michigan | 1997 |
| Montana | 2005 |
| North Carolina | 1997 |
| New Hampshire | 1997 |
| New Mexico | 1998 |
| New York | 2003 |
| Ohio | 1997 |
| Oregon | 2009 |
| South Carolina | 2005 |
| Tennessee | 2002 |
| Texas | 2004 |
| Vermont | 1997 |
| Washington | 2007 |
| Wyoming | 2001 |

Note: This list includes all states that had an HCR during the time period of this study. Nine of these nineteen states (AR, AZ, KS, MT, NH, TN, TX, WA, and WY) had also won an HCR prior to this time period. As noted in the text, there were no substantive differences, in terms of the relationship with progressivity, between states that had first-time HCRs and those that also had an HCR prior to the start of the time period studied here.

Appendix Table 2: Predicting HCRs

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Citizen liberalism | -0.714 | --- | --- | 2.201 |
| | (3.271) | --- | --- | (4.356) |
| Income inequality | -2.014 | -4.278 | -2.050 | -4.147 |
| | (10.496) | (11.415) | (10.627) | (11.481) |
| Percent child poverty | 0.232 | 1.382 | 0.933 | 2.702 |
| | (5.883) | (5.396) | (5.335) | (6.635) |
| Racial diversity | 0.694 | 0.747 | 0.537 | 0.370 |
| | (1.849) | (1.872) | (1.789) | (1.870) |
| Lawmaker liberalism | --- | -0.020 | --- | -0.036 |
| | --- | (0.020) | --- | (0.031) |
| Unified Democratic government | --- | --- | -0.121 | 0.600 |
| | --- | --- | (0.607) | (0.834) |

Note: Total observations = 717; number of states = 45; incidences of HCRs = 19. The dependent variable in this analysis is *HCR*, a binary variable that captures the issuing of a court order overturning the constitutionality of a state's education finance system. Each cell includes a hazard ratio, derived from a Cox proportional hazard model, with standard errors, clustered by state, in parentheses. Because the three state political variables were correlated, we tested each individually – in models 1-3 – before including all in model 4. All models were run with state and year fixed effects.

Appendix Table 3: Interacting HCRs and Political Variables

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| HCR | 0.028 | 0.019* | -0.004 | -0.007 | 0.003 | -0.000 |
| | (0.035) | (0.007) | (0.043) | (0.008) | (0.017) | (0.003) |
| Citizen liberalism | 0.140 | -0.034 | 0.190 | 0.007 | 0.190 | 0.009 |
| | (0.179) | (0.027) | (0.149) | (0.018) | (0.148) | (0.018) |
| Lawmaker liberalism | 0.001 | 0.000 | 0.001 | 0.000 | 0.001 | 0.000 |
| | (0.001) | (0.000) | (0.001) | (0.000) | (0.001) | (0.000) |
| Unified Dem. govt. | -0.008 | -0.002 | -0.008 | -0.002 | -0.015 | -0.004 |
| | (0.013) | (0.003) | (0.013) | (0.003) | (0.017) | (0.004) |
| Income inequality | -0.118 | -0.017 | -0.118 | -0.016 | -0.118 | -0.015 |
| | (0.306) | (0.052) | (0.305) | (0.053) | (0.308) | (0.055) |
| Percent child poverty | -1.068* | 0.016 | -1.087* | -0.001 | -1.073* | -0.001 |
| | (0.467) | (0.064) | (0.471) | (0.067) | (0.462) | (0.070) |
| Racial diversity | -1.140* | -0.160 | -1.161* | -0.177* | -1.149* | -0.167* |
| | (0.414) | (0.080) | (0.421) | (0.085) | (0.409) | (0.082) |
| HCR x citizen liberalism | 0.109 | 0.090* | --- | --- | --- | --- |
| | (0.141) | (0.028) | --- | --- | --- | --- |
| HCR x lwmkr liberalism | --- | --- | 0.000 | 0.000 | --- | --- |
| | --- | --- | (0.001) | (0.000) | --- | --- |
| HCR x Unified Dem. govt | --- | --- | --- | --- | 0.019 | 0.006 |
| | --- | --- | --- | --- | (0.025) | (0.004) |
| Constant | 1.746* | 1.072* | 1.771* | 1.092* | 1.759* | 1.085* |
| | (0.228) | (0.037) | (0.217) | (0.035) | (0.219) | (0.036) |
| R-squared | 0.279 | 0.099 | 0.278 | 0.076 | 0.279 | 0.076 |

Note: Total observations = 990; number of states = 45. The dependent variable for odd-numbered columns is *progressivity (SFI)*, a variable that captures the statewide ratio between: 1) the predicted per pupil spending in districts with a 30% student poverty rate; and 2) the predicted per pupil spending in districts with a 0% student poverty rate. The dependent variable for even-numbered columns is *progressivity (UI)*, which captures the statewide ratio in differences between per-student revenue for poor and non-poor students. Each cell includes OLS coefficients, calculated with state and year fixed effects, and standard errors, clustered by state, in parentheses; an asterisk denotes statistical significance at $p<0.05$.