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The Impact of Political Party Control on Education Finance and Outcomes: Evidence from U.S. States

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The Impact of Political Party Control on Education Finance and Outcomes: Evidence from U.S. States

Mark J. Chin & Lena Shi*

ABSTRACT:

Given states' balanced budget requirements, investment decisions often involve trade-offs between policymakers' budget priorities. Does political party control affect investment decisions and outcomes? Using a regression discontinuity design based on close state elections between 1984-2013, we find that marginally Democratic legislatures spend more on higher education but less on K-12 education. Rather than trading off within the education budget, policymakers trade education and welfare, particularly in liberal and high-poverty states. Increases in local revenue offset party differences in K-12 spending, suggesting that policymakers make trade-offs by considering the availability of external budget sources and how investments respond to constituents' needs. (JEL I22, I28, H72, H75)

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Research shows that education funding is critical for improving student outcomes (Abott et al. 2020; Deming and Walters 2017; Candelaria and Shores 2017; Hyman 2017; R. Johnson and Jackson 2017; Jackson, Johnson, and Persico 2016; Bound and Turner 2007). Voters and policymakers also recognize the importance of education: they have ranked education as a top policy priority and 73 percent of the public opposes cutting education to balance the budget (Gallup 2020; Pew Research Center 2010). Yet education is one of the most common line items to get cut when budgets are tight (Johnson, Oliff, and Williams 2011; Kane, Orszag, and Apostolov 2005; McGranahan 1999). Spending cuts may exacerbate variation between states, as per-pupil education investments differ by as much as 313% for K-12 or 668% for higher education (Tandberg and Laderman 2018; Annual Survey of School System Finances 2016).

States' level of education investment depends not only on the tax revenue available to spend, but also on competing spending priorities. Given restrictions against running deficits, policymakers may confront difficult trade-offs when balancing the state budget (Bohn and Inman 1996; Poterba 1994). Party affiliation often guides policymakers' tax and spending decisions, as Democrats have a stronger reputation than Republicans for increasing taxes, spending, and redistribution (Sieg and Yoon 2017; Reed 2006; Besley and Case 2003; Alt and Lowry 1994). In 1999, education was the top policy priority for both parties but is no longer considered among Republicans' top 5 issues today (Pew Research Center 2019). With partisanship increasing significantly since the 1980s (Caughey, Warshaw, and Xu 2017), understanding the role of party control on investments and trade-offs is particularly relevant.

In this study, we investigate the effect of state legislatures' party control on investments in different government functions. We focus on education, the largest state budget item until Medicaid surpassed it in 2015 (Annual Survey of

State and Local Finances, Volume 4; Urban Institute, 2017). State education finance is also critical to K-12 schools and colleges because states provide their largest source of revenue (NCES 2018 Table 235.10; NCES 2018 Table 333.10). On average, Democrat-controlled states in our sample spend more per pupil than Republican-controlled states on higher education until 2007 but less on K-12 until 2010 (Figure 1). Simple OLS estimates show that Democrats spend substantially more on higher education and less on K-12 (Appendix Table 4). However, these differences in raw means may be biased because the party in control of state legislatures is not random. Party control may relate to economic circumstances, school quality, voter preferences, and other confounding factors that also affect education spending and outcomes. In the ideal experiment to isolate the effect of political party, we would compare appropriations between states identical on all characteristics except party control of the legislature. Given the infeasibility of randomly assigning political party to states, we overcome bias by using a regression discontinuity (RD) design.

[Insert Figure 1 here.]

Our RD design leverages legislative elections between 1984 and 2013 to identify the causal effects of state legislatures' political party on education finance and student outcomes. Specifically, for each state, we aggregate voting results across electoral districts to calculate the strength and margin of Democratic victory (or loss) in the legislature, which we then use as the RD running variable. Our measure of Democratic control is therefore a function of both the number of seats needed to secure majority control and the margins of victory for these seats. We then identify the effect of political party by comparing states with narrow Democratic wins or losses, controlling for state and year fixed effects.

Using data from the State Higher Education Executive Officers and Common Core of Data, we compare total and per-student education spending and outcomes between states just above and below the cut-off for securing majority Democratic party status. The main threat to identification is that other treatments occur at the cut-off for Democratic control. We provide evidence of the internal validity of our estimates below using covariate balance tests and a McCrary test for changes in density around the cut-off. Furthermore, state-level elections are less susceptible to manipulation from pre-election behavior or characteristics of candidates (de la Cuesta and Imai 2016).

Our RD estimates show that marginally Democratic state legislatures spend 8 percent less than Republicans in K-12 education appropriations per pupil, two years after an election. This result is statistically significant and robust to various regression specifications and samples. Despite decreased state support under Democrats, districts raise revenues to counteract the decrease such that K-12 current expenditures still increase marginally, consistent with other findings that local spending can offset state funding (Baicker and Gordon 2006; Card and Payne 2002). This implies that under weakly Democratic states, increases in non-state revenue sources such as local property taxes help stabilize education expenditures over time. This small differences in K-12 expenditures between parties may explain why there are no changes in student-teacher ratios or attendance rates by party control, consistent with Dynes and Holbein (2020).

In contrast, legislatures under marginal Democratic control increase higher education appropriations and enrollment. Total higher education appropriations increase by 6 percent while full-time undergraduate and graduate enrollment increase by 3.4 percent two years after an election. Alternative undergraduate enrollment definitions considering institution type and by race are positive under Democrats, and statistically significant at public institutions and community colleges (Appendix Table 3). Compared to total funding changes, per-pupil higher

education funding increases are positive but smaller (as Democrats also increase enrollment) and insignificant. Liberal states and those with higher baseline unemployment drive the partisan effects on higher education expenditures.

We find suggestive evidence that Democrats' spending decisions depend on economic circumstances and competing priorities, rather than trade-offs within the education budget. We find that higher education, a discretionary item that occupies a smaller share of the budget, does not alone offset the K-12 decrease. Instead, Democratic-controlled legislatures may appear to trade-off K-12 spending for health and welfare spending, which primarily consists of Medicaid. The magnitude of Democratic increases to welfare and health spending almost exactly offset Democratic decreases to K-12 spending. Though we do not observe statistically significant party effects for health and welfare, the effects of marginal Democratic-control on K-12 spending are consistently negative over time and frequently occur alongside positive increases to welfare spending in the same election cycle. One possible explanation is that a rise in Medicaid and welfare spending, which receive federal funding matches based on caseloads, crowd out education, which lacks this budget structure. However, that alone is unlikely to explain why we observe partisan differences. Our heterogeneity analysis reveals another possibility that Democrats make spending trade-offs by considering constituents' ideologies and needs; Democratic decreases in K-12 education are driven by states with higher baseline poverty rates and more liberal citizens. Democratic legislatures may be aware that they can address poverty through health and welfare investments while maintaining education spending levels in the short-term through local funding sources. Together with the finding that states with more liberal citizens and higher unemployment drive the increases in Democrats' higher education spending, these findings provide more nuance to the common perception that Democrats spend more on public education overall.

Policymakers consider how different state spending choices serve redistributive and economic goals—and the availability of external budgets.

Our paper contributes to three literatures. This is the first paper, to our knowledge, to evaluate party differences on state spending priorities ranging from education to health care. The question of whether and when party differences exist remains an active area of research. Recent studies that show no or few differences in policy outcomes by party for mayors (Ferreira and Gyourko 2009) and state offices (Dynes and Holbein 2020; Leigh 2008) contradict other studies documenting party differences on fiscal policy (Reed 2006; Besley and Case 2003; Poterba 1994; Alt and Lowry 1994), environmental enforcement (Konisky 2007), incarceration rates and sentencing (A. Cohen and Yang 2019; Yates and Fording 2005), and fair employment legislation (Chen 2007). While policymakers may not always be able to control the effects of their policies, they do have direct authority over budgetary decisions. Therefore, our paper's exploration of parties' spending decisions on states' largest budget items can provide direct insight into parties' policy priorities and trade-offs.

Second, our paper also builds on literature documenting determinants of education finance and state spending by describing conditions when partisanship affects different categories of state spending. Furthermore, this paper evaluates party effects on both K-12 and higher education spending and documents how even though they share similar functions, their party effects show different signs and magnitudes under various economic and political conditions. Evaluating the effects of partisanship on spending and when partisanship matters builds on the growing literature of political and economic conditions affecting state investments (Perez, Benitez, and Seiber 2018; Clemens and Miran 2012; L. Cohen, Coval, and Malloy 2011). Regression discontinuity studies evaluating partisanship effects on education spending have focused on governors even though partisanship plays a larger role in legislatures' budget negotiations and legislatures can play an equal

or larger role in crafting state budgets (Ortega 2020; Beland and Oloomi 2017; Hill and Jones 2017). An established body of literature evaluates changes to investments and student outcomes under school finance reforms (Lafortune, Rothstein, and Schanzenbach 2018; Jackson, Johnson, and Persico 2016; Card and Payne 2002) but few studies have documented how economic and political conditions interact with school finance and policy implementation (Berry 2010).

Finally, our finding that Democrats increase higher education funding particularly in liberal states and in times of unemployment offers a mechanism to explain differences in economic growth by party. Studies have shown that Democratic control contributes to higher GDP growth, lower unemployment rates, and decreased income inequality by race (Blinder and Watson 2016; Beland 2015; Leigh 2008). A robust literature documents the relationship between human capital investment and wages, as well as human capital and economic growth (Zimmerman 2014; Hoekstra 2009; Goldin and Katz 2008). This paper's findings help explain why economic outcomes improve under Democrats.

The rest of the paper is organized as follows. Section I describes the role of state legislators in education finance. Section II describes our data and provides summary and descriptive statistics. Section III describes the empirical strategy. Section IV presents the main results along with robustness checks. Section V is our conclusion where we discuss these findings.

I. The Role of State Legislators in Education Finance

A. State Legislators

Elected by citizens from their districts, state legislators are responsible for budgets, legislation, and responding to constituents. State legislatures except for Nebraska's are composed of two separate legislative chambers. The lower (and typically larger) chamber is the house. With over 7,000 representatives in U.S.

state houses, partisanship matters more in the lower chambers because coalitions play a larger role for their governance (Balla et al. 2002). Notably, parties with majority control can set the legislative agenda to achieve their policy goals (Bianco and Sened 2005; Lee, Moretti, and Butler 2004; Wright and Schaffner 2002), control more discretionary funding decisions (Curto-Grau and Zudenkova 2018), and receive more financial support from regional and federal counterparts when political parties align (Curto-Grau, Solé-Ollé, and Sorribas-Navarro 2018; Albouy 2013).

Making budget appropriations is one of state legislatures' primary responsibilities, and often the main focus of legislative sessions (Abney and Lauth 1987). Depending on the state, the governor may propose the initial budget, but the legislature is responsible for reviewing, amending, and approving the state budget. Studies suggest that legislatures possessed equal budgetary influence as governors in the 1990's and potentially even more influence in the 1970's and 1980's (Abney and Lauth 1998; Dometrius and Wright 2010). Most states' fiscal years run from July 1 through June 30. Because state legislature elections typically occur in November with legislators beginning their first term the following January, the first budget cycle that legislators can influence typically begins at least one to two years after they take office (National Conference of State Legislatures 2008). Finally, though house representatives' terms usually last just two years, studies show that marginally Democratic state legislatures have a low probability of holding onto their party control long-term (Feigenbaum, Fouirnaies, and Hall 2017). This highlights the importance of the short-term budgetary decisions made by legislatures under weak political party control following elections.

B. State Education Finance

Investments in public K-12 and higher education together make up the largest state budget item. K-12 education spending was the single largest budget

item from 1977 to 2015, until it was outpaced by Medicaid. States contribute the largest source of revenue for K-12 and higher education during our panel (NCES 2018 Table 235.10; NCES 2018 Table 333.10). Income and sales taxes are states' most common and largest revenue sources (CCRSL 2017).

Between 1972 to 1987, states' investments in K-12 grew by over 10 percent of schools' revenues to 49 percent, with one study attributing the growth in states' role in K-12 funding to state finance reforms that held states responsible for ensuring equitable and adequate spending across districts (Murray, Rueben, and Rosenberg 2007). Before 1970, local property taxes provided most of the funding for K-12 but were surpassed by states as the main revenue source in 1979 (NCES 2018 Table 235.10; Loeb 2001). However, policymakers can still leverage local property taxes and other sources. Iowa school districts, for example, raised property taxes by 8.8 percent in 2010, 2 years after Democrats won back the house for the first time in 18 years. Local schools raised property taxes when Democrats, responding to recessionary pressures, decreased state aid to local schools rather than raising taxes. The choices of Iowa's legislators to cut spending rather than raise taxes is also a common way for states to respond when facing budget shortfalls (McGranahan 1999) (see Appendix A for another case study of Michigan on how political parties influence states' school finance).

Colleges and universities have relied on states as their largest source of revenue until this revenue stream was surpassed by tuition and fees in 2013-14 (NCES 2018; Table 333.10). The exception is community colleges, which relies primarily on state revenue; states make up 29 percent of their revenues compared to 17 from tuition and fees.

II. Data and Descriptive Statistics

A. Data

We investigate the impact of party control of state houses on education finances and outcomes. We build a panel dataset that spans legislative elections occurring between 1984 and 2013 and covers four key categories: election data, state appropriations, student outcomes, and other state-level data.

The first category comprises state legislative election data compiled by Klarner (2018) on all 50 states' legislative general election results. These data describe, at the election district level, election type, candidates, vote share, margin of victory, and outcome. For our analyses, we exclude state-election observations with data abnormalities (e.g., missing vote counts; Klarner 2018), primary elections, non-partisan and/or unicameral legislatures (Nebraska), and state chambers with multimember districts, following Eggers and Fouirnaies (2014). We also focus on state house elections because many states do not elect every senate seat each election cycle and, as noted above, political partisanship often matters more in these lower chambers. We aggregate district-election results into a single state-level metric describing the Democratic legislative control and the strength of this control in any given year. We describe this measure, which contains information on both the number of seats needed to flip party control of state legislatures and the margins of victory for these seats, in more detail below.

The second category of data we use captures appropriations data. This includes K-12 appropriations from the National Center for Education Statistics' Common Core of Data (CCD), including various measures of public-school revenue and spending at the state level. The other data source for school spending includes public higher education appropriations from the State Higher Education Executive Officers (SHEEO). Together, these sources provide information on state funding to K-12 and higher education for every state and year of our panel

except Virginia in the 1986-1987 and 1987-1988 school years, for which we only have the latter. Both data from the CCD and SHEEO include student enrollment data at the state level, allowing us to calculate per-pupil finance measures. For non-education budget categories, we use the Historical Database on Individual Government Finances (INDFIN) data from the U.S. Census Bureau. We focus specifically on states' per-capita spending on the largest non-educational budget items, which include highways, public welfare, and health and hospitals.

Third, to investigate downstream impacts on student outcomes, we use state-level K-12 data from the CCD on student-teacher ratios and average daily attendance rates. We similarly investigate effects of political party on college enrollment using data from SHEEO.

Our final data sources describe states' economic and demographic conditions. Specifically, in analyses we follow Ortega (2020) and control for other branches of state government's party control and a state's demographic characteristics, unemployment rate, and per-capita personal income using data from the University of Kentucky's Center for Poverty Research (2019). Because in heterogeneity analyses, we explore if results vary by state's political ideology and whether the state's school finance system had experienced significant reform, we control for these measures in analyses as well. For political ideology, we use Berry et al.'s (1998) state-level citizen ideology measure. To identify the presence of significant school finance reform, we flag elections occurring after the year of each state's first substantial legislative reform or first court case overturning the constitutionality of their school finance systems. We collate this information for the years spanning 1970 through 2014 using research conducted by Corcoran and Evans (2013), Downes and Shah (2006), LaFortune, Rothstein, and Schanzenbach (2018), and Shores, Candelaria, and Kabourek (2019).

B. Descriptive Statistics

Because we hypothesize that state legislators may make budget trade-offs between higher education spending, K-12 spending, and spending on other areas, our main analytic sample includes state-election observations without any missing appropriations data. For K-12 appropriations, higher education appropriations, and the INDFIN state government spending outcomes, we have data beginning in the 1986-1987 school year, the 1979-1980 school year, and the 1966-1967 school years, respectively. We thus focus on elections impacting school years beginning in 1986-1987, when appropriations data on all three sources are available.

Below we explore impacts of Democratic control on school finance and education outcomes one and two academic years after elections, when state legislatures can theoretically influence budgets before the subsequent election. Thus, the earliest possible election we consider in our data occurs on November 1984.[1] Of the remaining 482 state-elections occurring between November 1984 and November 2013, we then exclude the one observation with missing spending data: Virginia in November 1985, which lacks information on K-12 state appropriations. Our final sample includes 481 state-election-cycles.

[Insert Table 1 here.]

In Table 1, we provide descriptive statistics separately for Democrat-controlled and Republican-controlled houses for all 481 state-election observations in our panel dataset. We also provide these statistics for a subsample of state-election observations with "close elections"—defined as elections where majority control of the house was determined by fewer than five seats, with each legislator of these determining seats winning with a vote margin of less than 10

[1] Assuming the first post-treatment time period is the 1985-1986 school year and the second post-treatment time period if the 1986-1987 school year.

percentage points. We describe baseline economic and demographic characteristics for these observations in the year of the election and state appropriations to public education two years after elections. Although Democrat-controlled states have a higher poverty rate and are more liberal on average in the full sample, there are no statistically different baseline characteristics in the close-election sample. Comparing more similar states in the close-election sample provides more confidence in the use of an RD to help identify unbiased effects of party control. In Appendix Figure 1, we document the states that appear in our RD samples and their frequency of appearance. Notably, we find these states to be distributed across the country, assuaging any concerns that our findings may be driven by party control effects in particular states or regions of the U.S.

III. Empirical Methodology

A. Estimation Specification

To identify the impact of state legislatures' party affiliation, we compare marginally elected Democratic and Republican majority state legislatures. However, party control of state legislatures likely correlates with other observable and unobservable state characteristics that influence school finance and education outcomes. Thus, to identify causal impacts, we leverage variation in house party control resulting from close elections. Our preferred regression specification is:

$$(1)\ Y_{it} = \alpha + \beta_1 DemocratMargin_{it} + \beta_2 Democrat_{it} + \beta_3(DemocratMargin_{it} \times Democrat_{it}) + \delta_i + \gamma_j + \varepsilon_{it}$$

Y_{it} captures inflation-adjusted appropriations to public K-12 or higher education institutions from the state government (or our other education outcomes) in state i either one or two school years following election cycle t. Predictors in this model

include $Democrat_{it}$, which indicates a majority Democratic state house, and the running variable, $DemocratMargin_{it}$.

Existing studies arrive at plausibly causal estimates of party control using an RD design, with the Democratic margin of victory, $DemocratMargin_{it}$, serving as the running variable. When electing officials for most levels of executive office (i.e., governor, mayor, president), the margin of victory from a single election determines party control. However, party control of state houses instead depends on winning enough district-level elections.

We therefore calculate $DemocratMargin_{it}$ by aggregating multiple election results based on the share of seats and vote percentages that Democrats need to secure majority control. First, we identify the number of district-level elections, n, required to flip the majority party status of each state house. We then identify the margins of victory (in cases where Democrats have a majority) or loss (in cases where Democrats are in the minority) for the winning (losing) Democratic candidate in the n closest elections. To arrive at state-level estimates for $DemocratMargin_{it}$, we then follow Folke (2014) and sum these n margins to calculate the minimum rectilinear distance to flip party control of the house (i.e., $\sum_1^n(DemocratDistrictMargin)$). We rescale this vote margin or margin of victory measure (the L_1 Norm or the "Manhattan Distance") to be negative when Democrats are in the minority.[2] As such, states with more positive (negative) estimates of $DemocratMargin_{it}$ have state houses that are more strongly Democratic (Republican) because vote margins of victory (loss) across the closest Democratic winners (losers) are large and/or Democrats need to flip more seats to secure the majority. Alternatively, states with $DemocratMargin_{it}$ estimates near

[2] In Appendix Tables 1 and 2, we provide results using running variables used in other studies investigating impacts of party control of state legislatures (Feigenbaum et al. 2017). Our results are generally robust to using other measures such as Uniform Swing and Euclidean Distance. In Appendix B, we provide more detail on the estimation of all of these running variables.

zero are not only closer to flipping from Democratic to Republican house control (or vice versa)—they are more plausibly comparable.

In Equation (1), β_1 captures the underlying relationship between Democratic margin of victory in state house elections and education outcomes; β_3 captures any difference in this relationship between majority and minority Democratic state houses; and β_2 captures the effect of interest—the impact of "just barely" achieving a Democratic majority—by leveraging the quasi-random variation in house control resulting from a series of close district-level elections. The estimated model above also includes state fixed effects, δ_i, and election cycle fixed effects, γ_j, which allow us to account for differences in outcomes across contexts or election cycles.

When estimating the RD model represented in Equation (1), we focus on marginally Democratic or Republican houses close to the threshold for majority party control. This limits the influence of potential outliers in party control on estimates and reduces the chance that results are sensitive to how we model the relationship between the running variable and outcomes. We use an empirically determined optimal "bandwidth" for $DemocratMargin_{it}$ to make these exclusions (Calonico et al. 2017), but show that our results are robust to different bandwidths (Appendix Tables 1 and 2).

Finally, we show that the direction of impact of a Democratic house majority on outcomes does not change when we employ simpler models (that require stronger assumptions to arrival at causal conclusions); we describe these models and the qualitatively similar results in Appendix C and Appendix Table 4.

B. Internal Validity of RD Estimates

To further support the internal validity of our RD estimates of state legislative partisanship's impact on education finance and outcomes, we show

that state-elections with margin of victory scores just above zero (barely majority Democrat houses) are similar to those with margin of victory scores just below zero (barely majority Republican houses) on observable characteristics. The key identifying assumption is that other plausible determinants of education appropriations and outcomes evolve smoothly across the cut-off. This is necessary in order to attribute any observed discontinuities in outcomes to the "treatment" of Democratic party control, rather than other confounding variables. Though we cannot test for equivalence on unobservable characteristics, the absence of other discontinuities on observable characteristics may assuage concerns that RD estimates may be biased by other factors besides Democratic control.

To perform this test, we estimate Equation (1), but replace our outcome measures with state-level characteristics measured at baseline, right before or when elections occur. Results from estimation of this model, seen in Table 2, show little evidence that state-election observations on either side of the margin of victory threshold differ from one another at baseline. The one exception is that we observe that barely Democratic houses are more likely in state-election observations that also have Democratic senates. Thus, in our preferred models, we control for these factors and in sensitivity analyses we also explore whether results differ when we omit observations around the margin of victory threshold (i.e., a donut RD). Results omitting covariates and observations largely converge with those from models with covariates, as seen in Appendix Tables 1 and 2.

[Insert Table 2 here.]

Next, we demonstrate that the partisanship of states' houses is independently determined from the margin of victory threshold. In order to interpret β_1 as a causal estimate, there should be no manipulation of the margin of victory score, which determines party control in the state legislature. Some may

question the validity of using close elections to identify quasi-random variation in party control of different branches of government more broadly because incumbents tend to have advantages in terms of political relationships and resources that may confound estimates. Our specific RD design may alleviate those concerns because our running variable depends on multiple separate close district-level elections (Grimmer, Hersh, Feinstein, and Carpenter 2011). By leveraging results from several elections, we are less concerned about manipulation related to pre-election behavior or characteristics of candidates, such as resource advantages, and post-election advantages, such as vote-tallying (de la Cuesta and Imai 2016). Extant evidence also suggests that these challenges are less relevant for state legislative legislations, further supporting their use in RD approaches (Eggers et al. 2015). When we conduct a McCrary Test, we find that the design satisfies this identifying assumption. In Figure 2 we show visual evidence that there is no bunching in observations above or below the cut-off, as might occur if vote margins scores can be manipulated to ensure securing (or losing) majority Democratic status.

[Insert Figure 2 here.]

IV. Results

A. The Impact of States' Party Control on Education Finance and Outcomes

Weakly Democratic states increase higher education but decrease K-12 funding. In Table 3, we present our main results for the impact of Democratic control of state houses on state appropriations to public higher and K-12 education. Each column displays estimates of β_2 from the estimation of Equation (1) with baseline controls. From Table 3's panel B, we find that two years after elections, Democratic houses appropriate to public higher education 6.2 percent

more overall to public post-secondary institutions. When investigating other commonly used higher education funding measures suggested by Tandberg and Griffith (2013) in columns 2 and 3, we also find that two years post-election, Democrats appropriate 2.4 percent more per pupil and 1.8 percent more per $1000 dollars of state-level personal income. Though all measures and coefficients are positive and similar in magnitude, the per-pupil (a need-based measure of funding) and the per-income (an effort-based measure of funding) estimates are not statistically significant. However, we focus on the total funding measure but always report enrollment changes to public post-secondary institutions, to demonstrate how per-pupil results may change under Democrats. Unlike in K-12, where enrollment is compulsory and thus more stable, higher education enrollment may shift depending on policies implemented by the party in control of the state house, such as financial aid or college preparation programs. Therefore, evaluating total higher education funding offers insight into spending decisions absent of other Democratic policies that may affect enrollment.

Table 3, column 4 shows that Democratic houses decrease appropriations per pupil to K-12 by approximately 4.3 percent and 8.4 percent one- and two-years post elections relative to Republicans, respectively. These results two years later are robust to different modeling decisions: across specifications and samples, we observe statistically significant negative impacts of Democratic control on K-12 funding and statistically significant positive impacts higher education spending (Appendix Table 1). Like OLS and differences-in-differences estimates, the RD estimates consistently show positive effects in higher education and negative effects in K-12 (Appendix Table 4, see also Figure 1).

[Insert Table 3 here.]

Figure 3 shows these impacts visually by plotting the residuals from a regression predicting spending outcomes with state and election-year fixed effects and covariates on the Democratic margin of victory. Figure 3 plots the average (residualized) total higher education and K-12 appropriations per-pupil two years after the elections above and below the threshold to secure or lose Democratic party control. At this margin of victory threshold for achieving party control—centered at zero—we observe large negative discontinuities for K-12 and positive discontinuities for higher education two years after the election.

[Insert Figure 3 here.]

Democratic control of the state house increases college enrollment and local appropriations, the latter contributing to net positive K-12 expenditures. Table 4 shows these effects of Democratic party control on other K-12 finance and downstream student outcomes as our dependent variables. Table 4 column 1 shows that under Democrats, there is a 1.7 percent increase in full-time equivalent (FTE) undergraduate and graduate college enrollment at public institutions one year after the election and a 3.4 percent increase two years after the election. Though insignificant, these results converge with Deming and Walters (2017). Like Deming and Walters (2017), we find significant increases in enrollment at two-year institutions (Appendix Table 3).[3] The increase in both higher education enrollment and overall appropriations under Democrats explain why the effects on higher education appropriations per-pupil are weaker than total levels of higher education appropriations. Column 2 shows small null effects on net tuition per

[3] Data on enrollment and finance by higher education institution type come from the Delta Cost Project, which consolidates information from the Integrated Postsecondary Education Data System (IPEDS) into a single longitudinal database. We do not focus on these analyses in the main text because of less complete data coverage. IPEDS suffers from missing data for certain variables, in particular for two-year institutions.

pupil at public institutions—suggesting that increases in appropriations likely translated to school investments rather than reduced tuition prices.

[Insert Table 4 here.]

Columns 3 through 7 show the effects of marginal Democratic majority on K-12 spending and outcomes. Column 3 show that local appropriations, two years post elections, increase by approximately 9.6 percent under Democrats. One possible interpretation is that Democrats change K-12 funding formulas so that state funding decreases and local funding increases, but we later show how reforms to funding formulas likely do not explain the observed compensatory effect of political party on local investment. Instead, local districts may be raising more revenue to neutralize the difference in K-12 state spending between parties. Column 4 shows that federal financial support to public K-12 does not significantly differ by party. Overall current expenditures increase slightly by 1.8 percent, likely due to the observed increases in local spending offsetting decreases to state spending under Democrats, consistent with other studies documenting how local and state funding may counteract one another (Baicker and Gordon 2006; Card and Payne 2002). The small increase in current spending, however, is accompanied by an insignificant 2.6 percent decrease in student-teacher ratios (column 6). Statewide estimates of daily attendance similarly do not show evidence of change under Democratic state houses (column 7), consistent with another recent study evaluating party effects (Dynes and Holbein 2020). Simpler models with stronger assumptions again generally show similar effects for FTE college enrollment at public institutions, local funding for K-12, and current expenditures in K-12 (Appendix Table 4).

The K-12 results are not driven by specific years or states, as depicted in Figure 4 and Appendix Figure 1, respectively. In Figure 4, we show that the

impact of Democratic control on state funding to public K-12 is largely negative over time by displaying coefficients from our RD model represented by Equation (1) estimated within election year. Because we cannot account for state- or election-level differences when using within-year models, we use residualized school finance and education outcomes as our dependent variables. Specifically, we regress these outcome measures on our baseline controls, state fixed effects, and election fixed effects, and then use residuals from these full panel models in within-year models.[4] Figure 4 plots the impact of Democratic house control on residualized outcomes over different election cycles occurring during our panel. Second, the impact of Democratic control on local revenues in public K-12 is largely positive over time, further supporting the conclusion that local revenues increase to offset decreases in state support to elementary and secondary education. Finally, the effects of Democrats on total higher education spending appear more cyclical, potentially due to varying economic conditions over time.

[Insert Figure 4 here.]

B. Heterogeneous Treatment Effects: Contexts and Conditions for Party Effects

Although both contribute to states' education budgets, K-12 education investments under marginal Democratic house control goes in the opposite direction of higher education investments. These party effects occur in different years, providing one piece of evidence that policymakers do not trade-off between K-12 and higher education (Figure 4). The opposing effects for K-12 and higher education instead may indicate that Democrats' spending decisions depend on budget structures and how perceptions about how different investments

[4] Most state house elections occur in even years. A few occur in odd years. We group odd year elections with the prior even year elections to improve precision (e.g., elections occurring in 1987 are considered concurrently with elections occurring in 1986 for our within-year RD models).

accomplish their priorities. We hypothesize that differences in the economic health of states—which can translate to subsequent shifts in state government revenues and spending decisions—may influence variation in the impact of Democratic house control on education spending, and that results would be strongest when policymakers' political ideology aligns with that of their voters. We thus explore heterogeneous treatment effects to understand the different factors affecting K-12 and higher education spending—specifically how the effects of political party on education finance vary across different settings and economic conditions.

The effects of Democratic control on higher education and K-12 education spending and college enrollment are strongest when liberal policymakers' party affiliation align with citizens' liberal ideology. This is consistent with findings that states are more likely to implement a more liberal policy such as increased spending on higher education if they have more policy support (Lax and Phillips 2012). Table 5 Panel A shows that Democrats in liberal states reduce state appropriations to K-12 by 14.2 percent (column 2); in conservative states, party differences are zero. Panel A also shows that liberal states drive the effect of Democratic party control on increasing higher education appropriations by 8.9 percent (column 1) and enrollment by 5 percent (column 3). Democrats' effects are larger in liberal states and, for these three particular outcomes, differences by state type are statistically significant, providing more suggestive evidence that policymakers are responsive to their constituents (Lee, Moretti, and Butler 2004).

[Insert Table 5 here.]

Table 5's Panel B column 1 shows that effects for state higher education funding are primarily driven by changes in state-election observations with baseline unemployment rates above the state median. In states with higher

baseline unemployment, Democratic houses appropriate 10.5 percent more overall to higher education; for observations with lower baseline unemployment, this effect is approximately 2.9 percent—and this effect difference is statistically significant. Democrats similarly increase college enrollment outcomes more when baseline unemployment is higher, though the difference between high and low unemployment conditions is statistically insignificant. Economic and unemployment conditions may therefore provide Democrats with stronger policy justifications or serve as a clearer policy tool to increase economic mobility through college investments. Democrats' preferences of investing in the human capital of those in postsecondary institutions to increase economic mobility may help explain why Democrats have higher GDP growth and lower unemployment rates when they occupy office as president and governor (Blinder and Watson 2016; Beland 2015; Leigh 2008).

We then explore why K-12 spending does not follow the same trends as higher education based on economic conditions. One possibility is that, as a larger budget expenditure, K-12 spending is crowded out by large priorities such as welfare and Medicaid. Medicaid, for example, receives federal government reimbursements between 50 cents and 83 cents of every state dollar invested, with poorer states receiving more reimbursements. However, we still observe partisan effects under Democrats; table 5's Panel C shows evidence that states with higher baseline poverty (i.e., baseline poverty rates above the state median) drive Democratic house effects in K-12. Under Democratic houses, decreases to K-12 appropriations are greater as are increases to higher education appropriations and enrollment (though the difference for higher education appropriations is insignificant). The K-12 decreases (and trade-offs) under Democrats in states with high poverty rates suggests that Democrats may perceive Medicaid and welfare as relatively more effective strategies to increase mobility among the highest-needs communities and children whereas higher education represents a clearer

investment to increase economic opportunity. This finding further highlights the significance of economic conditions in shaping Democrats' policy decisions.

Finally, in Panel D of Table 5, we show results from heterogeneity analyses investigating whether or not party differences in education finance and outcomes vary for state-election observations occurring after significant court-mandated and/or legislative school finance reform in K-12. We find limited evidence of pre-post reform differences for higher education outcomes. We find slightly stronger evidence that Democratic houses appropriated less to K-12 public schools prior to significant school finance reform. State funding to K-12 decreased by approximately 14 percent and local funding increased by 16 percent in observations before school finance reform, but these estimates attenuate towards zero (and are insignificant) post-reform. Differences in impacts by whether states faced school finance reforms, however, are insignificant. This result does converge with expectations, however, if we assume that state legislatures have less flexibility in changing appropriations to public primary and secondary schools after these reforms. In results available upon request, we find no Democrat-Republican differences in the likelihood of passing significant school finance reform legislation following close house elections. From this we conclude that it is unlikely that the observed overall negative Democratic effect on states' K-12 spending and compensatory increase in local revenue is driven by substantial changes to school funding formulas under Democrats.

Two other explanations may explain why we do not see school finance reforms or formula changes driving the compensatory increases in local revenue sources under Democrats. First, prior research shows that expenditures per student increased in states with and without courts overruling their state finance formulas (Card and Payne 2002). Second, the most common type of state formula through the mid-1990s primarily increased (rather than decreased) revenues and spending

in the lowest-income districts with limited property tax bases (Lafortune, Rothstein, and Schanzenbach 2018; Jackson, Johnson, and Persico 2016).

C. The Role of Budget Trade-offs on Party Impacts

Heterogeneous impacts suggest that political and economic conditions play a role in Democrats' decisions to decrease K-12 spending but increase higher education spending. Therefore, policymakers' decisions may also reflect trade-offs with the other non-education budget items that may contribute to their party's and liberal constituents' priorities. With this in mind, we next explore how state spending changes in the following areas under Democratic houses: public welfare (which primarily consists of Medicaid), highways, and health and hospitals. In Table 6, we present results from estimating Equation (1) but replace the outcome with state spending on these categories from INDFIN in addition to education spending data from the CCD and SHEEO. To make estimates comparable and to ease interpretation, we use the same sample of state-election observations (the RD sample for per-pupil K-12 state appropriations two years after elections) and calculate per capita state revenue, expenditures, and spending—without log transforming these per capita estimates.[5] Each column of Table 6 shows the RD impact of Democrat control on different per capita state finance outcomes.

[Insert Table 6 here.]

First, we find that under weakly Democratic controlled houses, overall revenues and expenditures are lower, but these effects are insignificant. Second, per capita K-12 spending significantly decreases by 59 dollars and per capita higher education spending increases by 2 dollars, consistent with our original

[5] Correlations between per-capita and per-pupil state appropriations to K-12 and higher education are .95 and .72, respectively.

findings. However, since K-12 occupies a larger share of the overall budget, its decrease is substantially larger in absolute dollars than the increase in higher education, further cementing that Democrats are not necessarily trading off on spending within public education. Third, Democrats appropriate significantly less to highways by 25 dollars per-capita which, in combination with decreases in K-12 spending, account for much of the overall decrease in Democratic expenditures. Most importantly, we see a large (though insignificant) increase in per capita welfare spending under Democrats by 51 dollars and health by 8 dollars per-capita. Since Medicaid represents the largest welfare budget item, health spending exceeds any other budget item. The sum of changes to K-12, higher education, highway, welfare, and health/hospital spending from states approximates the overall decrease in expenditures under Democrats very closely.

In Figure 5, we plot the impact of marginal Democratic houses on states' per-capita spending on K-12 and welfare for each election cycle, again using residualized outcomes. Like in Figure 4, we show that per-capita decreases under Democrats to K-12 are consistent over time. We also observe that Democrats increase welfare spending in most election cycles—and often in the same years that we observe K-12 spending decreases.

[Insert Figure 5 here.]

Altogether, these findings offer suggestive evidence that Democrats may trade-off K-12 and welfare in particular.

D. Robustness Checks

We test whether our main results are robust to different specifications in Appendix Tables 1 and 2 and find consistent negative impacts for K-12 appropriations and outcomes under multiple models and positive impacts for

higher education spending and enrollment. Panel A explores whether the results are robust when employing running variables used in other studies investigating impacts of party control of state legislatures (Feigenbaum et al. 2017; Fiva et al. 2014). K-12 estimates are consistently around 8 percent but 7 percent under the uniform distance running variable while higher education estimates remain around 4 to 9 percent. Panel B shows that results hold under different polynomial specifications (i.e., quadratic and cubic), compared to the local linear regression in our default model: K-12 estimates remain negative while higher education estimates remain positive. Panel C explores whether using an optimal bandwidth that is 80 percent of the optimal bandwidth calculated following Calonico et al. (2014) or whether using a specification with 120 percent of the optimal bandwidth changes the results. Higher education and K-12 results are statistically significant under both bandwidth specifications. In Panel D we present estimates of the RD model represented in Equation (1) that excludes observations immediately to the right and left of the margin of victory cut-off for Democratic control using a "donut-hole" RD, yielding similar results. Finally, in Panel E we present estimates of the RD model omitting baseline covariates, again finding consistency with our main results.

V. Conclusion

State education appropriations and outcomes vary by state and over time. Does political party affect how policymakers invest in resources, particularly education? This question of whether elected officials' policy agendas and values matter has remained under debate. Evaluating party effects on spending offers a direct view of whether and when party differences exist. Yet naïve estimates of the effects of party control may be biased because political affiliations may reflect voters' ideology, political and economic climate, leadership quality, and other

state characteristics that may also affect education outcomes. Our paper offers new evidence that party affiliation affects education spending using a regression discontinuity that leverages close elections based on the margin of victory for party control in the state house between 1984-2013.

We find that a weak Democratic majority in the state legislature decreases K-12 education state appropriations by 8 percent. However, increases in local revenue to K-12 districts largely offset this decrease. These findings are robust to various specifications. Heterogeneous treatment effects suggest that Democratic houses in states with higher baseline poverty and with more liberal citizens largely drive these effects. We find suggestive evidence for increases in state appropriations and college enrollment to public institutions under Democratic houses, particularly in states with more liberal citizens and higher unemployment. Democrats appropriate 6.2 percent more to higher education overall but 10.5 percent more in states where unemployment is higher when legislators are elected.

It may be surprising to observe K-12 and higher education budget items with opposing trends even though both relate to education. We considered two primary explanations for why Democrats decrease K-12 education but increase higher education. The first is that policymakers trade off K-12 education spending for increased higher education spending. However, we find little evidence in support of this: the Democrat-Republican per-capita difference in states' appropriation to higher education is much smaller than the difference for K-12. Furthermore, whereas we observe the negative Democratic effect more consistently across election cycles, changes to higher education finance appear more cyclical. That leads to our next possibility: that policymakers trade off K-12 spending with spending on other areas to satisfy balanced budget requirements. We show that though the positive Democratic impacts to public welfare, health, and hospitals are insignificant, the observed party differences account for nearly all of the decrease in K-12 funding. Democrats increasing higher education to

improve economic outcomes and trading off welfare for K-12 for redistributive goals are consistent with past findings on Democrats' policy priorities.

Though our findings accord with studies that show that the party affiliation of legislators affect their policy and budget decisions, our results paint a more nuanced picture of how partisanship influences policy agendas and budgets. Common perception might be that Democrats would always increase funding to public education. However, policymakers' spending choices depend largely on their own (and alternative) revenue sources, competing or complementary policy priorities, and economic conditions. Thus, policymakers must balance constituents' expectations with their ability to justify spending decisions in meeting those priorities. Alternatively, to accomplish redistributive priorities, Democrats may perceive some budget items (e.g. welfare) as more effective means than others (e.g. K-12 education). The need to make trade-offs may be particularly true in a political environment of increasing partisanship and decreasing government unification (Caughey, Warshaw, and Xu 2017; Ansolabehere, Rodden, and Snyder Jr. 2006). That local revenues to K-12 districts increase enough to offset decreases in state support suggests that, these trade-offs may not necessarily lead to negative short-term consequences.

Even with many states setting minimum per-pupil K-12 spending requirements, without consistent state support, districts may find it difficult to raise expenditures to a level that guarantees a high-quality education for all students. Similarly, without significant state support, the finances of public institutions of higher education have shown to be more vulnerable to political and economic fluctuations in recent years. As close elections become increasingly common in today's polarized political climate, education appropriations may be more exposed to political priorities. Other budget items such as health care and welfare have distinct budget processes and structures that tie it to federal matches, caseloads, and labels as mandatory budget items that offer a higher degree of

protection against political and economic changes. Without efforts to change the structure of the budget formulas based on student enrollment or offer federal matching support, education appropriations may be more exposed to political fluctuations than other large budget priorities.

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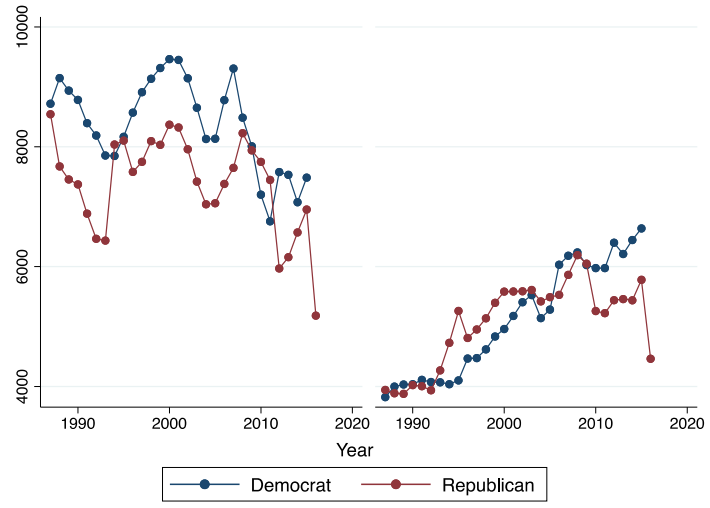

FIGURE 1: STATES' AVERAGE PER-PUPIL APPROPRIATIONS IN 2010 DOLLARS FOR HIGHER EDUCATION (LEFT) AND K-12 (RIGHT) BY POLITICAL PARTY OVER TIME

Source: State Higher Education Executive Officers and the National Center for Education Statistics' Common Core of Data

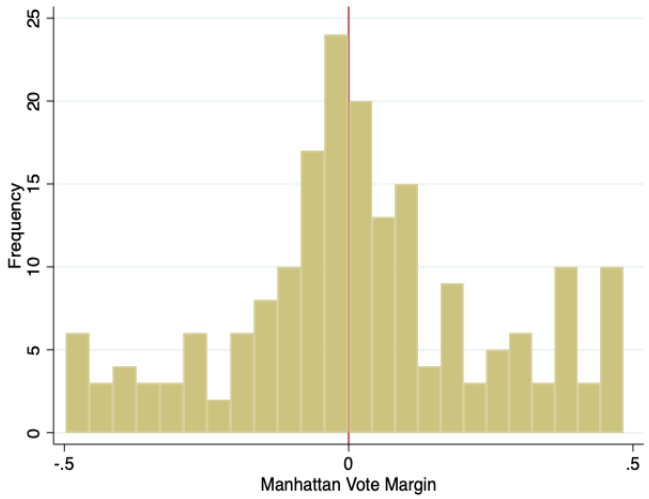

FIGURE 2: DISTRIBUTION OF THE DEMOCRATIC MARGIN OF VICTORY MEASURE AT THE STATE-ELECTION LEVEL

Note: The red line identifies the threshold that determines whether or not Democrats control the state house. The p-value for the McCrary test is 0.84.
Source: Klarner data (2018)

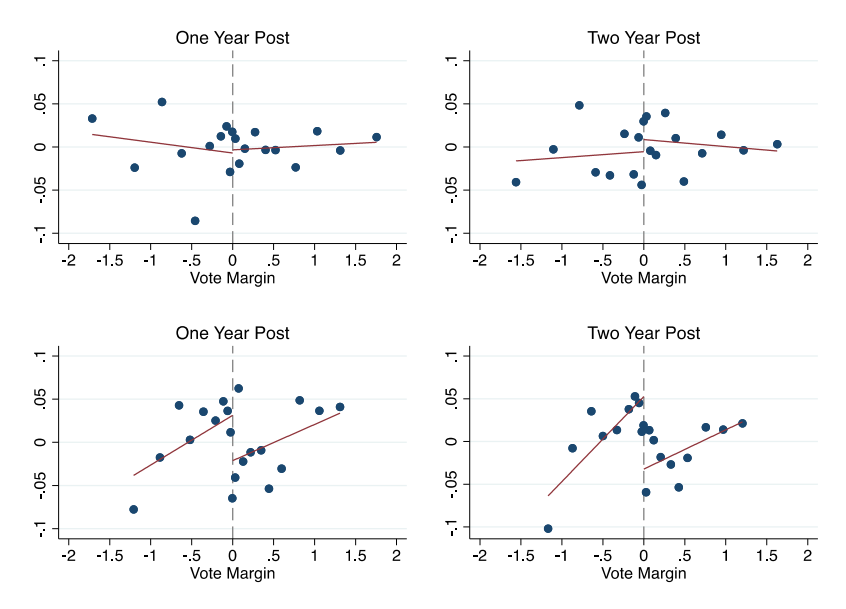

FIGURE 3: DEMOCRATIC MARGIN OF VICTORY AND ADJUSTED LOGGED TOTAL HIGHER EDUCATION (TOP) AND PER-PUPIL K-12 (BOTTOM) APPROPRIATIONS IN 2010 DOLLARS

Note: Binned (20 bins) scatter plots with line of best fit of residualized school finance outcomes (adjusting for baseline covariates, state fixed effects, and election year fixed effects) against the Democratic margin of victory measure. Observations to the right of the vertical line indicate Democrat-controlled houses.

Sources: State Higher Education Executive Officers, the National Center for Education Statistics' Common Core of Data, and Klarner data (2018)

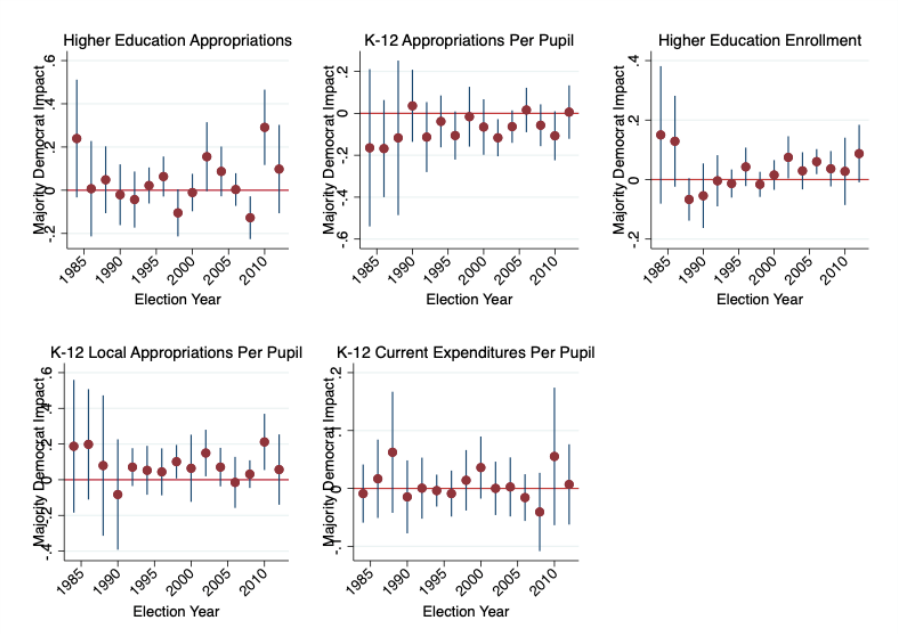

FIGURE 4. DEMOCRATIC CONTROL REGRESSION DISCONTINUITY IMPACTS ON OUTCOMES ACROSS ELECTION CYCLES

Note: These graphs plot treatment effects of Democratic house control on residualized two-years post election outcomes (from models using the whole panel of data, adjusting for baseline covariates, state fixed effects, and election year fixed effects) from within-election year models. All appropriations are per-pupil and in 2010 dollars. All outcomes are log transformed.

Sources: State Higher Education Executive Officers, the National Center for Education Statistics' Common Core of Data, and Klarner data (2018)

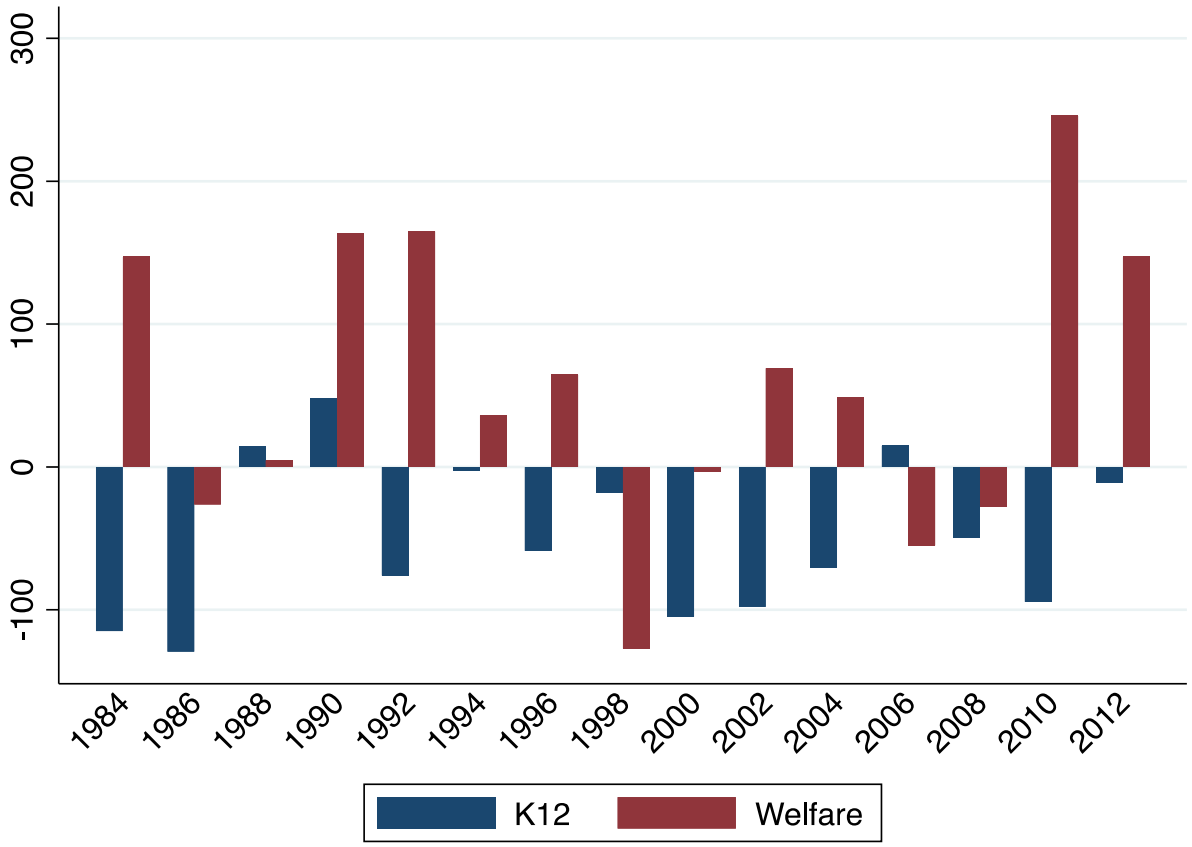

FIGURE 5. DEMOCRATIC CONTROL REGRESSION DISCONTINUITY IMPACTS ON STATE K-12 AND WELFARE APPROPRIATIONS ACROSS ELECTION CYCLES

Note: These graphs plot treatment effects of Democratic house control on residualized two-years post election outcomes (from models using the whole panel of data, adjusting for baseline covariates, state fixed effects, and election year fixed effects) from within-election year models. All appropriations are per-capita and in 2010 dollars.

Source: Historical Database on Individual Government Finances, the National Center for Education Statistics' Common Core of Data, and Klarner data (2018)

TABLE 1. SUMMARY STATISTICS

	Full sample			Close election sample		
	Democratic house (1)	Republican house (2)	p-value (3)	Democratic house (4)	Republican house (5)	p-value (6)
Panel A. Baseline characteristics						
Proportion unemployed	0.060 (0.018)	0.057 (0.019)	0.182	0.060 (0.018)	0.058 (0.018)	0.577
Proportion in poverty	0.132 (0.036)	0.118 (0.029)	0.000	0.125 (0.028)	0.116 (0.028)	0.103
Income per capita (Log)	10.474 (0.197)	10.498 (0.141)	0.141	10.461 (0.119)	10.463 (0.127)	0.943
Citizen liberalness (z-score)	0.463 (0.967)	-0.211 (0.653)	0.000	0.258 (0.628)	0.164 (0.504)	0.376
Democratic governor	0.513	0.422	0.048	0.526	0.533	0.940
Democratic senate	0.751	0.211	0.000	0.456	0.400	0.544
Post first major School Finance Reform	0.726	0.667	0.164	0.561	0.500	0.510
Panel B. Spending Outcomes two years post-election						
Higher education enrollment	234967.22 (293415.28)	196390.41 (194747.48)	0.103	234664.66 (196697.44)	180184.23 (197042.80)	0.137
Higher education state appropriations per pupil	8341.59 (2284.97)	7416.77 (2627.96)	0.000	7297.40 (1589.32)	7249.94 (2197.23)	0.894
K-12 enrollment	1198214.50 (1348139.38)	945981.63 (995438.88)	0.024	1207036.13 (1047752.19)	876980.81 (1005800.25)	0.085
K-12 state appropriations per pupil	5002.43 (1821.15)	5383.45 (1890.55)	0.026	4604.30 (1365.73)	5484.15 (1671.09)	0.002
N	277	204		57	60	

Note: All dollars are in 2010 dollars. Close elections include those where fewer than five seats determine party control of the house, and the margins of victory for each of these seats is less than ten percentage points. Standard deviations in parentheses. *P*-values describe two-sample t-tests comparing means between Democratic and Republican houses.

Source: State Higher Education Executive Officers, the National Center for Education Statistics' Common Core of Data, UKCPR, Berry et al. data (1998), Corcoran and Evans (2013) data, Downes and Shah (2006) data, LaFortune, Rothstein, and Schanzenbach (2018) data, Shores, Candelaria, and Kabourek (2019) data, and Klarner data (2018)

TABLE 2. COVARIATE BALANCE

	Proportion unemployed (1)	Proportion in poverty (2)	Income per capita (Log) (3)	Democratic governor (4)	Democratic senate (5)	Citizen liberalness (z-score) (6)	Post first major School Finance Reform (7)
Democrat Majority	0.00168	0.00386	-0.00742	0.063	0.167	0.0725	0.0266
	(0.00158)	(0.00259)	(0.00509)	(0.093)	(0.076)	(0.0708)	(0.0200)
N	306	274	266	303	266	277	310
R^2	0.785	0.772	0.947	0.252	0.601	0.833	0.958

Note: All dollars are in 2010 dollars. State and election fixed effects included in all models. Standard errors clustered at the state level in parentheses.

Source: UKCPR, Berry et al. data (1998), Corcoran and Evans (2013) data, Downes and Shah (2006) data, LaFortune, Rothstein, and Schanzenbach (2018) data, Shores, Candelaria, and Kabourek (2019) data, and Klarner data (2018)

TABLE 3. IMPACT OF POLITICAL PARTY MAJORITY ON K-12 AND HIGHER EDUCATION APPROPRIATIONS

	Higher education appropriations (Log) (1)	Higher education appropriations per pupil (Log) (2)	Higher education appropriations per $1000 in income (Log) (3)	K-12 appropriations per pupil (Log) (4)
Panel A. One year post election				
Democrat Majority	0.019	0.002	-0.002	-0.043
	(0.016)	(0.015)	(0.021)	(0.028)
N	260	273	302	263
R^2	0.987	0.889	0.957	0.867
Panel B. Two years post election				
Democrat Majority	0.062	0.024	0.018	-0.084
	(0.020)	(0.015)	(0.016)	(0.039)
N	281	291	310	293
R^2	0.986	0.880	0.956	0.882

Note: All dollars are in 2010 dollars. All models include covariates: proportion unemployed, proportion in poverty, income per capita (logged), citizen liberalness, and dummy variables for: the election occurring after the states' first school finance reform; and being under Democratic senate and/or governor control. State and election fixed effects included in all models. Standard errors clustered at the state level in parentheses.

Source: State Higher Education Executive Officers, the National Center for Education Statistics' Common Core of Data, and Klarner data (2018)

TABLE 4. IMPACT OF POLITICAL PARTY MAJORITY ON OTHER K-12 AND HIGHER EDUCATION OUTCOMES

	Higher education outcomes		K12 outcomes				
	Full-time enrollment (Log) (1)	Net tuition per pupil (Log) (2)	Local appropriations per pupil (Log) (3)	Federal appropriations per pupil (Log) (4)	Current expenditures per pupil (Log) (5)	Student-teacher ratio (6)	Average daily attendance rate (7)
Panel A. One year post election							
Democrat Majority	0.0171	0.0135	0.0579	0.0103	0.0145	-0.0402	-0.0009
	(0.0101)	(0.0252)	(0.0208)	(0.0112)	(0.00812)	(0.0846)	(0.00277)
N	254	231	263	278	220	253	295
R^2	0.996	0.954	0.900	0.974	0.961	0.950	0.755
Panel B. Two years post election							
Democrat Majority	0.0341	-0.0000	0.0964	0.0051	0.0175	-0.0259	0.0005
	(0.0205)	(0.0287)	(0.0334)	(0.0188)	(0.00860)	(0.106)	(0.00362)
N	278	244	236	293	231	283	283
R^2	0.996	0.955	0.882	0.959	0.954	0.930	0.758

Note: All dollars are in 2010 dollars. All models include covariates: proportion unemployed, proportion in poverty, income per capita (logged), citizen liberalness, and dummy variables for: the election occurring after the states' first school finance reform; and being under Democratic senate and/or governor control. State and election fixed effects included in all models. Standard errors clustered at the state level in parentheses.

Source: State Higher Education Executive Officers, the National Center for Education Statistics' Common Core of Data, and Klarner data (2018)

TABLE 5. HETEROGENEITY BY STATE CHARACTERISTICS

	Higher education appropriations (Log) (1)	K-12 appropriations per pupil (Log) (2)	Higher education FTE enrollment (Log) (3)	K-12 local appropriations per pupil (Log) (4)	K-12 current expenditure per pupil (Log) (5)
Panel A. Heterogeneity by state liberalness					
Democrat Majority x Conservative	0.015	-0.002	0.008	0.051	0.018
	(0.029)	(0.028)	(0.017)	(0.024)	(0.015)
Democrat Majority x Liberal	0.089	-0.142	0.050	0.128	0.017
	(0.029)	(0.053)	(0.024)	(0.046)	(0.010)
Effect difference p-value	0.026	0.0122	0.0181	0.123	0.943
Panel B. Heterogeneity by baseline unemployment					
Democrat Majority x Low unemployment	0.029	-0.068	0.028	0.094	0.022
	(0.022)	(0.038)	(0.021)	(0.043)	(0.010)
Democrat Majority x High unemployment	0.105	-0.093	0.041	0.095	0.018
	(0.031)	(0.043)	(0.025)	(0.041)	(0.014)
Effect difference p-value	0.028	0.344	0.491	0.980	0.802
Panel C. Heterogeneity by baseline poverty					
Democrat Majority x Low poverty	0.025	-0.053	0.007	0.070	0.021
	(0.024)	(0.040)	(0.019)	(0.035)	(0.010)
Democrat Majority x High poverty	0.087	-0.110	0.051	0.118	0.013
	(0.031)	(0.042)	(0.025)	(0.035)	(0.012)
Effect difference p-value	0.155	0.073	0.078	0.076	0.542
Panel D. Heterogeneity by whether first School Finance Reform case occurred before election					
Democrat Majority x Pre SFR	0.081	-0.142	0.055	0.155	0.019
	(0.038)	(0.080)	(0.029)	(0.075)	(0.011)
Democrat Majority x Post SFR	0.048	-0.040	0.018	0.045	0.016
	(0.023)	(0.034)	(0.019)	(0.044)	(0.011)
Effect difference p-value	0.481	0.278	0.192	0.287	0.827
N	281	293	278	236	231

Note: All dollars are in 2010 dollars. All models include covariates: proportion unemployed, proportion in poverty, income per capita (logged), citizen liberalness, and dummy variables for: the election occurring after the states' first school finance reform; and being under Democratic senate and/or governor control. State and election fixed effects included in all models. Standard errors clustered at the state level in parentheses.

Source: State Higher Education Executive Officers, the National Center for Education Statistics' Common Core of Data, UKCPR, Berry et al. data (1998), Corcoran and Evans (2013) data, Downes and Shah (2006) data, LaFortune, Rothstein, and Schanzenbach (2018) data, Shores, Candelaria, and Kabourek (2019) data, and Klarner data (2018)

TABLE 6. IMPACT OF DEMOCRAT MAJORITY ON OTHER BUDGET PER-CAPITA SPENDING

	Revenue (1)	Expenditures (2)	K-12 (3)	Higher Education (4)	Highways (5)	Welfare (6)	Health and Hospitals (7)
Democrat Majority	-115.00	-26.20	-58.87	2.03	-25.45	51.25	8.41
	(202.10)	(78.49)	(30.53)	(4.038)	(11.28)	(36.05)	(14.40)
R^2	0.785	0.772	0.947	0.252	0.601	0.833	0.958

Note: All dollars are in 2010 dollars. All models include covariates: proportion unemployed, proportion in poverty, income per capita (logged), citizen liberalness, and dummy variables for: the election occurring after the states' first school finance reform; and being under Democratic senate and/or governor control. State and election fixed effects included in all models. Standard errors clustered at the state level in parentheses.

Source: Historical Database on Individual Government Finances, State Higher Education Executive Officers, the National Center for Education Statistics' Common Core of Data, and Klarner data (2018)

Online Appendix Tables and Figures

FIGURE 1. REGRESSION DISCONTINUITY SAMPLE FOR HIGHER EDUCATION (TOP) AND K-12 (BOTTOM): COUNTS BY STATE

Note: Appendix Figure 1 shows two maps for the inclusion of different states in the RD samples. The top map shows the sample of states and their frequency of inclusion for the RD model using higher education total state spending outcomes, two years post elections. The bottom map shows the sample of states and their frequency of inclusion for the RD model using K-12 per-pupil state spending outcomes, two years post elections.

Source: State Higher Education Executive Officers, the National Center for Education Statistics' Common Core of Data, and Klarner data (2018)

APPENDIX TABLE 1. ROBUSTNESS CHECKS FOR RD IMPACTS ON STATE APPROPRIATIONS TO PUBLIC EDUCATION

	Higher education Appropriations (Log) (1)	N	K-12 appropriations per pupil (Log) (2)	N
Main effect, two-years post elections	0.062	281	-0.084	293
	(0.020)		(0.039)	
	Panel A. Running variable sensitivity			
Euclidean distance	0.070	300	-0.081	298
	(0.025)		(0.041)	
Uniform distance	0.067	269	-0.066	170
	(0.024)		(0.064)	
	Panel B. Polynomial sensitivity			
Quadratic	0.047	326	-0.081	317
	(0.022)		(0.041)	
Cubic	0.039	350	-0.057	329
	(0.020)		(0.049)	
	Panel C. Bandwidth sensitivity			
Optimal Bandwidth * .8	0.050	296	-0.070	266
	(0.020)		(0.039)	
Optimal Bandwidth * 1.2	0.053	310	-0.074	313
	(0.025)		(0.038)	
	Panel D. Omit cut-off observations			
Donut-hole	0.093	184	-0.142	193
	(0.042)		(0.066)	
	Panel E. Covariates			
Omitting all covariates	0.064	281	-0.092	293
	(0.026)		(0.039)	

Note: All dollars are in 2010 dollars. Covariates included in all models except those in Panel E. Covariates include: proportion unemployed, proportion in poverty, income per capita (logged), citizen liberalness, and dummy variables for: the election occurring after the states' first school finance reform; and being under Democratic senate and/or governor control. State and election fixed effects included in all models. Standard errors clustered at the state level in parentheses.

Source: State Higher Education Executive Officers, the National Center for Education Statistics' Common Core of Data, and Klarner data (2018)

APPENDIX TABLE 2. ROBUSTNESS CHECKS FOR RD IMPACTS ON DOWNSTREAM STUDENT OUTCOMES

	Higher education FTE enrollment (Log) (1)	N	K12 local appropriations per pupil (Log) (2)	N	K12 expenditures per pupil (Log) (3)	M
Main effect	0.034	278	0.096	236	0.018	231
	(0.021)		(0.033)		(0.009)	
			Panel A. Running variable sensitivity			
Euclidean distance	0.026	258	0.111	264	0.016	225
	(0.021)		(0.039)		(0.009)	
Uniform distance	0.009	204	0.158	173	0.033	168
	(0.023)		(0.050)		(0.014)	
			Panel B. Polynomial sensitivity			
Quadratic	0.022	317	0.114	293	0.021	286
	(0.018)		(0.033)		(0.009)	
Cubic	0.011	347	0.136	317	0.026	324
	(0.016)		(0.038)		(0.010)	
			Panel C. Bandwidth sensitivity			
Optimal Bandwidth * 0.8	0.019	251	0.115	216	0.012	206
	(0.019)		(0.034)		(0.009)	
Optimal Bandwidth * 1.2	0.042	296	0.094	256	0.014	250
	(0.021)		(0.034)		(0.009)	
			Panel D. Omit cut-off observations			
Donut-hole	0.049	180	0.002	162	0.025	159
	(0.029)		(0.054)		(0.016)	
			Panel E. Covariates			
Omitting all covariates	0.042	278	0.093	236	0.007	231
	(0.021)		(0.039)		(0.009)	

Note: All dollars are in 2010 dollars. Covariates included in all models except those in Panel E. Covariates include: proportion unemployed, proportion in poverty, income per capita (logged), citizen liberalness, and dummy variables for: the election occurring after the states' first school finance reform; and being under Democratic senate and/or governor control. State and election fixed effects included in all models. Standard errors clustered at the state level in parentheses.

Source: State Higher Education Executive Officers, the National Center for Education Statistics' Common Core of Data, and Klarner data (2018)

APPENDIX TABLE 3. RD IMPACTS ON HIGHER EDUCATION OUTCOMES BY INSTITUTION TYPE

	Appropriations (Log) (1)	FTE undergraduate enrollment (Log) (2)	White enrollment (Log) (3)	Black/Hispanic enrollment (Log) (4)
All public institutions	0.076	0.067		
	(0.033)	(0.029)		
4-year institutions	0.080	0.036	0.016	0.039
	(0.033)	(0.027)	(0.022)	(0.036)
2-year institutions	0.060	0.082	0.049	0.052
	(0.063)	(0.038)	(0.032)	(0.066)

Note: All dollars are in 2010 dollars. Covariates and state and election fixed effects included in all models. Covariates include proportion unemployed, proportion in poverty, income per capita (logged), citizen liberalness, and dummy variables for: the election occurring after the states' first school finance reform; and being under Democratic senate and/or governor control. Standard errors clustered at the state level in parentheses. Excluded elections include those in 1985, 1987, and 2013 due to missing data. Also excluded are states where less than 85% of the total appropriations are accounted for by the institution-level data (due to missingness).

Source: Grapevine Surveys, U.S. Census Bureau, Integrated Postsecondary Education Data System, and Klarner data (2018)

APPENDIX TABLE 4. IMPACT OF DEMOCRATIC HOUSE CONTROL ON OUTCOMES TWO YEARS POST ELECTIONS BY MODEL

	Higher education appropriations (Log) (1)	K-12 appropriations per pupil (Log) (2)	Higher education FTE enrollment (Log) (3)	K-12 local appropriations per pupil (Log) (4)	K12 current expenditures per pupil (Log) (5)
Simple Ordinary Least Squares (OLS)	0.446	-0.170	0.294	0.122	-0.028
	(0.206)	(0.077)	(0.198)	(0.085)	(0.035)
State & Election Year Fixed Effects	0.042	-0.029	0.022	0.090	0.019
	(0.026)	(0.036)	(0.021)	(0.036)	(0.014)
State & Election Year Fixed Effects using RD Sample	0.031	-0.045	0.031	0.068	0.002
	(0.025)	(0.035)	(0.023)	(0.034)	(0.011)
RD	0.062	-0.084	0.034	0.096	0.018
	(0.020)	(0.039)	(0.021)	(0.033)	(0.009)

Note. All dollars are in 2010 dollars. Covariates included in all models. Covariates include proportion unemployed, proportion in poverty, income per capita (logged), citizen liberalness, and dummy variables for: the election occurring after the states' first school finance reform; and being under Democratic senate and/or governor control. Simple OLS=no state or election fixed effects, all observations. State&Election Year FE=state and election fixed effects, all observations. State&Election Year FE, RD Sample=state and election fixed effects, only observations in the RD sample determined by optimal bandwidth calculations. RD=main RD effects. Standard errors clustered at the state level in parentheses.
Source: State Higher Education Executive Officers, the National Center for Education Statistics' Common Core of Data, and Klarner data (2018)

Appendix A. Case Study: Michigan House

Michigan presents a useful case study to evaluate the effects of political party in the state legislature. In 1994, Michigan was the first state to end its 100-year reliance on local property tax to fund public education. At that point, Michigan ranked sixth in the nation in its reliance on property taxes. Following this shift away from local funding, the state's share in educational investment increased from 29 percent to 78 percent. Republicans who took control of the House, and shortly after the Senate, helped pass the policy change to eliminate property tax reliance after securing party control of the legislature for the first time in 27 years. Michigan eliminated its reliance on local property taxes after public schools in Kalkaska shut down during the school year in 1993 because voters rejected three property tax increases to stabilize education funding.

As part of the reforms to change education finance in Michigan, Republicans leveraged increases to the sales and cigarette taxes to augment state education budgets by about 6 percent. Michigan then used a state formula to distribute aid to districts based on a foundation allowance, which primarily increased funding for low-funded districts. Following this formula, Michigan paid for the difference between the total foundation allowance (set at $5,000 per-pupil) and the revenue that local districts collect from non-homestead property taxes to businesses, industries, and second homes. Although basic foundation allowances were the most common type of school finance reform, Michigan did not face any court mandates to implement the foundation allowance. Nothing guided aid distribution to institutions of higher education until 1998, when Michigan developed a community college funding formula.

After regaining control of the House in 1996, Democrats increased funding for public universities by 4 percent in the 1997-1998 budget and 2.8 percent in the 1998-99 budget, despite lower state revenues resulting from the phase out of their Single Business Tax. They also appropriated a 2.3 percent increase in need-based financial aid and support for independent colleges, as well as an additional $2 million to provide a tuition incentive program for Medicaid-eligible students to attend college.

Under Republicans in 2004, general fund revenues fell to the available revenue amount in 1993. Republicans chose to cut spending by 10 percent and maintain K-12 education at the existing level. In the next year's 2005-2006 budget, community college funding decreased 3.7 percent but higher education overall increased 1.3 percent. Once Democrats regained control in 2006, they increased higher education appropriations by 18 percent and community college appropriations by 29 percent while keeping K-12 funding constant.

Between the Michigan House's 1999-2000 budget and 2008-2009 budget, the fraction of adjusted gross appropriations devoted to education finance changed very little. The fraction of education finance made up approximately 35.5 percent

in both periods. Similarly, the share appropriated to transportation, the social safety net, and corrections were nearly identical over the course of this time period. The only difference was the fraction devoted to Medicaid, health care, and aging, which increased by 5 percentage points. One possible explanation is that Medicaid, along with welfare, were designated as "matching federal funds," which provided Michigan (and other states) more incentive to maintain or increase these programs' investments compared to education finance.

Appendix B. Estimating a state-level margin of victory measure for Democratic house control

As noted in the main text, most RD studies identifying the effects of political party control of different governmental branches in the U.S. use voting results from a single election. Party control of the presidency, governorships, and mayorships, for example, depend only on the vote share of the Democratic candidate relative to that of the Republican candidate (or second highest vote receiving non-Democratic candidate). When vote shares between Democratic and Republican candidates running for these elected positions are similar, any observed effects of party control are less likely to be biased by omitted variables.

Identifying a state-level vote margin variable that can similarly both identify party control of state houses and the "strength" of this control is slightly more difficult. This is because party control is determined not by a single election. Instead, party control of houses depends on a party winning a majority of district-level elections, or house seats.

Ultimately, the dependency of "treatment" (i.e., Democratic party control of the house) on several "running variables" (i.e., Democratic vote margins across several district elections) calls for a variation of the traditional RD approach to identify causal effects. In our study, we focus on one such variation, where we reduce multiple running variables into a single metric. We consider three vote margin metrics in the main text and in appendices, following Feigenbaum et al. (2017): a Manhattan distance metric, a Euclidean distance metric, and a Uniform distance metric.

To estimate each of these three metrics, we first identify the n number of seats in each state house that would need to switch party hands to flip the majority status of the house. We then identify the individual district-level elections that would have been most likely to switch party hands in the appropriate direction: when the house is majority Democrat, we identify the n closest elections where the Democrat won; when the house is majority Republican, we identify the n closest elections where the Democrat lost. We leverage the absolute value of all n district-level vote margins, $DemDistrictMargin$, to calculate each state-level vote margin metric.

For the Manhattan distance, we simply add all n $DemDistrictMargin$ values (i.e., $\sum_1^n DemDistrictMargin$). For the Euclidean distance, we calculate the "straight-line" distance between the n closest elections and zero (i.e., $(\sqrt{\sum_1^n (DemDistrictMargin)^2}$), where the seat would have thus flipped party control. We multiply these distance measures so that Democrat majority houses have positive values and Democrat minority houses have negative values (i.e., going over the zero threshold indicates the house party affiliation flipping). The intuition behind these first two metrics is that Democratic and Republican state

houses with Manhattan or Euclidean distance scores closer to zero are more similar to one another than those with more extreme values. Larger values (more negative or more positive) indicate that more individual seats need to change hands to flip party control of the house and/or that the seats that would need to change hands are more strongly Republican or Democrat.

To arrive at the final metric, the Uniform distance score, we simply take the greatest $DemDistrictMargin$ value across the n closest district-level elections, again rescaling the score to be positive if the house is majority Democratic and to be negative if the house is majority Republican. The intuition behind the Uniform distance metric is that all n elections would have flipped party control if the seat in this set with the greatest vote margin flipped party control.

Appendix C. Estimating the impact of Democratic house control on outcomes using different models

Our preferred model to estimate the impact of a majority Democratic house on education finance and outcomes is the RD model represented in Equation (1). The RD identification strategy allows us to plausibly infer the causality of impact estimates. However, we also estimate simpler models with more stringent assumptions to infer causality to help demonstrate the consistency of our results.

First, we estimate a simple OLS model, where we predict our education finance and outcomes with just our primary covariates and an indicator variable for whether or not the state house was under Democratic control.

Second, we estimate a fixed effects model ("State & Election Year FE") where in addition to covariates and the Democratic majority indicator, we also include state and election year fixed effects. This model specifically allows us to account for persistent context-specific differences in outcomes as well as contemporaneous trends in outcomes when identifying the effect of Democratic control of the house.

The final simpler model we estimate builds on this second model by using the same controls (and fixed effects) but by also restricting the sample of observations in the analysis. Specifically, we include only state-elections in analyses that we would also be including in the RD sample ("State & Election Year FE, RD Sample"). By restricting the analytic sample, we reduce the influence of potential outliers in terms of Democratic strength (or weakness) in the house on observed relationships between Democratic control of the house and education finance and outcomes.

In Appendix Table 4, we document the point estimate across models for majority Democratic control on our primary outcomes. We find that results are fairly consistent between the RD model and the simpler models.