

State Governance and Educational Outcomes in the United States

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ABSTRACT: This paper develops an institutional theory of educational performance that extends Chubb and Moe's (1988; 1990) logic from local schools to the state level. Our analysis flows from one observation and one assumption. The observation is that the state institutions governing public education are subject to varying degrees of democratic control. The assumption, which serves as our primary research hypothesis, is that as state institutions governing education are subject to more democratic control, it will be more difficult for states to achieve desired policy outcomes. Specifically, we explore state results on the National Assessment of Educational Progress (NAEP) in 4th and 8th grade reading and math. Overall, we find somewhat mixed results but clear indications that the level of democratic control is indeed related to state educational outcomes.

Presented at the Annual Meeting of the Midwest Political Science Association, April 7-10, 2005, Chicago, IL. Many thanks to David Kysilko who provided key data on state governing institutions. For financial assistance from the College of William and Mary, Manna is grateful to the Faculty Research Committee and O'Hara thanks the Roy R. Charles Center.

Since the early 1970s, several factors have caused state governments to significantly increase their role in the nation's public schools. State education finance reform, which gained momentum in the 1970s and has persisted to this day, has created greater parity between state and local sources of school funds (Ladd, Chalk, and Hansen 1999). In the 1980s, the responses of state policymakers to the famous *Nation at Risk* report accelerated state reforms and prompted new ones to improve the quality of teachers, demand more rigor in instruction, and encourage reform models in local districts and schools (Firestone, Fuhrman, and Kirst 1990; Murphy 1990).

Today, even though the No Child Left Behind Act (NCLB) has ratcheted up the federal role in American education, the states remain crucial. NCLB relies upon states to develop content standards in key subjects, tests to determine student mastery of these topics, and accountability systems that identify schools and districts needing improvement. While some federal requirements in NCLB are indeed prescriptive, the substance of the law flows from philosophies of standards-based reform that state leaders have advocated for two decades (Ravitch 1995). Further, because Washington relies so heavily on the states for NCLB implementation, state policymakers continue to have important substantive influence on how the law is playing out in practice (Erpenbach, Fast, and Potts 2003; Fast and Erpenbach 2004).

Previous political science research on the states' role in education has often addressed the intergovernmental dynamics of federal-state relations (Chubb 1985; Fuhrman 1987; Fuhrman 1994). Since the passage of NCLB, other scholars and analysts have extended this work while attending to whether states can meet the challenges that NCLB poses (Peterson and West 2003; Ravitch 2002). Policy scholars and political scientists have also incorporated the states' role in more general analyses of education governance (Conley 2003; Epstein 2004; Wirt and Kirst 1997). We know of no political science research, however, that has addressed how state institutional arrangements that govern education influence student performance. That is somewhat surprising given the discipline's reputation for careful and theoretically rigorous study of institutions (Moe 1984; Moe 1990; Orren and Skowronek 1994; Pierson 2000; Sheingate 2003).

During the last quarter century, one of the most influential political science efforts on institutions and education is Chubb and Moe's (1988; 1990) work on school performance. These authors argued that because local educational institutions emerge from a system of politics rather than markets, the public schools are at a systematic disadvantage relative to their private school counterparts. The result is that public schools are likely to under perform on various measures of achievement.

Chubb and Moe's (1988; 1990) effort prompted a rich debate about the institutional design of schools and the impact of choice programs more generally (Henig 1994; Howell and Peterson 2002; Smith 1994; Weiss 1998; Witte 2000). Hess's (1999; 2002) studies of district-level institutions and the incentives they create for local leaders takes a parallel approach. These structures and incentives, grounded in logics of politics, produce the counterintuitive outcome of too much rather than too little reform. This creates problems because as reforms constantly change, districts tend to spin their wheels and not get traction to solve persistent problems that confront them.

We generally agree with Chubb and Moe (1988, p. 1065) that "virtually all public schools in the United States are governed by democratic institutions of the same basic form." However, when one considers the organization of state-level institutions that oversee K-12 systems, a dominant arrangement does not emerge. It is true that essentially all states possess governors, legislatures, state boards of education, and state education agencies (headed by the chief state school officer) who are responsible for the nation's schools. Commonalities across states break down, though, when one considers the lines of authority that connect these key actors. Thus, even though the power these state institutions wield derives from a logic of politics rather than markets (Chubb and Moe 1988 pp. 1067-1070), we suspect that the influence of politics and democratic control may emerge in different ways because the incentive structures that relate these institutions vary greatly from state to state. If so, empirical research should be able to explain variation in state outcomes using measures of state institutional arrangements and the levels of democratic control those arrangements imply.

In this paper we focus on state outcomes and analyze the relationship between state institutions that govern education and student performance. In so doing, we build on a growing body of work that attempts to relate governance to the results that policies produce (Heinrich and Lynn 2000; Hill and Lynn 2004; Lynn, Heinrich, and Hill 2001). We develop our argument in the following four sections. First, we extend Chubb and Moe's institutional theory of public school organization to the state level. Second, we describe our data and methods. In the third section we present results from several statistical models designed to test the impact of state democratic control on student outcomes. Our fourth section concludes.

An institutional theory of state educational performance

Our institutional theory of state educational performance flows from one observation and one assumption. The observation is that the state institutions governing public education are subject to varying degrees of democratic control. The assumption, which extends Chubb and Moe's (1988) logic to the state level and serves as our primary research hypothesis, is that as state institutions governing education are subject to more democratic control, it will be more difficult for states to achieve desired policy outcomes. In this section we describe these two points in turn.

State governance of public education

Four key state actors are responsible for governing K-12 education in the United States: governors' offices, state legislatures, state education agencies, and state school boards.¹ In this section we briefly describe the roles these actors play.

Governors and legislators, who work in separated systems of overlapping authority (Jones 1994), have become increasingly attuned to concerns about the quality of the nation's schools. Those concerns rose in the 1970s and early 1980s when state political leaders began seeing direct links between education and state economic performance. In subsequent years, they increased their policymaking role vis-à-vis state education boards and state school chiefs (Campbell et al. 1980; Wirt and Kirst 1997, Chapters 9-10). Governors, especially, began exercising political and policy leadership in education by offering their own reform agendas,

¹ As of 2004, Minnesota and Wisconsin were the only two states in the U.S. without state boards of education.

working to increase their profiles through organizations such as the National Governors' Association, and asserting their priorities at major events including the 1989 national education summit with President George H. W. Bush. Today, recent gubernatorial proposals to reform high schools (Olson 2005) and legislators' criticisms of NCLB (National Conference of State Legislatures 2005) are examples of how these actors have important voices in national and state policy debates.

On the administrative side of K-12 governance, the key state player is the chief state school officer. As head of the state education agency (SEA), chiefs are responsible for the daily functioning of state policy and, importantly, for developing and interpreting regulations that guide the distribution of state and federal education aid. For most of their history, SEAs were quite small, understaffed, and not well-regarded (Graham 1984; Timar 1997). It was only after the passage of the first Elementary and Secondary Education Act in 1965, and the ensuing flow of federal resources that the law produced, that these organizations began to increase their influence and capabilities (Halperin 1975).

Substantively speaking, however, that financial link to the federal government has been both a blessing and a curse for SEAs, chief state school officers, and other state actors. It meant that chiefs and their SEA workforces developed increasing levels of autonomy in their states and strong allegiances to federal policy. That frustrated, and can still frustrate, governors and legislators who sometimes accuse their state education bureaucracies of rogue behavior (Bell 1988; Hill 2000). Despite those tensions, the flurry of state reforms during the 1980s and the expansion of the federal role in the 1990s have increased the policy pressure on chiefs and SEAs (Kaagan and Usdan 1993; Timar 1997). Rather than serving primarily as a banker to transfer funds to local districts, now state agencies are playing more substantively important policy roles. These activities include guiding the development of student tests and state accountability systems, implementing federal education law, and lobbying national officials for favorable regulatory interpretations of high stakes policies such as NCLB (Hamann and Lane 2004; Olson 2003; Prah 2003).

Finally, state boards of education appear to possess both significant powers but limited influence. State constitutions and statutes provide boards with important formal responsibilities. These include controlling state teacher and administrator licensing standards, which essentially outline who can enter the public education field; defining high school graduation requirements; approving state standards and testing systems; and setting rules for school district accreditation (Cohen 1987).

Even with these formal powers, several observers have characterized state education boards as relatively weak institutions, especially relative to other state actors (Conley 2003; First and Quaglia 1990; Sergioivanni, Burlingame, and Coombs 1987; Wirt and Kirst 1997).² In part, these weaknesses derive from the part-time or even voluntary status of most state board members. Additionally, boards lack the staff resources of governors, legislators, or state education chiefs, which means they often tend to support recommendations from these other actors rather than

² One recent study of board activity found that boards spend most of their time on "administrivia" and "ceremonial duties," rather than on the policy strategy activities that are supposed to drive their workloads (NASBE Study Group on Education Governance 1996, p. 14).

pushing hard for their own. And as education has become more politically charged, several boards have experienced turnover in their ranks (NASBE Study Group on Education Governance 1996, pp. 24-5). Still, because boards' possess formal authority over state education policy, governors, legislators, and state education chiefs must reconcile their own work with the reality that boards may and sometimes do assert themselves in important ways (Cowell 2002).

Overall, as we noted in our opening remarks, these four key institutions are present in nearly every state, but the relationship between them—in particular between governors' offices, state boards, and state education departments—varies significantly. Far from a one best system of governance (Tyack 1974), states have chosen many different arrangements to govern their K-12 education systems. We summarize the most popular models in Figure 1.

Insert Figure 1 about here

Each governance model in this figure captures a different relationship between the key actors that govern K-12 education at the state level.³ In states where the voters elect the governor, the governor appoints the board of education and the board selects the chief state school officer, we categorize the state under the Model I arrangement.⁴ The Model II arrangement consists of states in which the voters elect both the governor and the board of education, and the board selects the chief state school officer. Where the voters elect both the governor and the chief and the governor appoints the board, Model III applies. Finally, Model IV represents the states in which the voters elect the governor who then selects both the board of education and the chief. States with Models I and IV are theoretically subject to the least amount of democratic control because their governance is more centralized, whereas states with Models II and III are more decentralized and therefore subject to a greater amount of democratic control.

State governance, democratic control, and educational outcomes

Our key assumption about governance and performance, which we test in this paper, flows from the relationships between the four institutional actors we just described and their connections to potential constituent groups. We argue that as state institutions governing education are subject to more democratic control, it will be more difficult for states to achieve desired policy outcomes. We consider a policy area more subject to democratic control if concerned individuals and interest groups enjoy more opportunities to influence policy outcomes in the area.

At the school level, democratic control can hamper public school performance because it tends to increase the number of constituents with some say over school objectives. For school officials, accumulating budgetary resources (which they may not directly control) and deploying staffs (who can be difficult to hire and fire) requires them to placate several different constituent

³ State legislatures do not appear explicitly in Figure 1. Their influence emerges implicitly, though, in states where governors appoint board members or chiefs. That role parallels the work of the U.S. Senate, which provides advice and consent for presidential appointees.

⁴ We should note that in states with Models I and III an incoming governor does not get to appoint the entire board because board members typically serve staggered terms. We do not consider that fact particularly relevant for our purposes because we are most interested in the institutional relationships that the different governance models produce, rather than the individual personalities who may serve on a board at any moment in time.

groups. Given these incentives and political cross pressures, public school personnel are "quite literally at a systematic disadvantage" (Chubb and Moe 1988, p. 1067) compared to private schools that have more freedom to organize themselves.

Why should greater democratic control make it more difficult for states to produce desirable policy outcomes in education? We identify two reasons. The first is that greater democratic control implies the presence of more venues for public action (Baumgartner and Jones 1993). Venues are institutional locales possessing authority to act. As the number of venues increases, interested parties have more opportunities to press their concerns or block action. The compromises needed to enact and carry out policy mean that street-level implementers must sort through several potential value conflicts and competing policy goals. More insular policy subsystems, such as the famed iron triangles of interest groups, congressional committees and executive agencies, need not contend with these diverse concerns (Baumgartner and Leech 1998). Thus, they can focus on a more narrow set of policy goals.

As we noted before, essentially all state constitutions and statutes delegate authority over education to governors' offices, legislatures, state education agencies, and state boards. Strictly speaking, then, those venues remain viable options for interests to press their concerns. However, when voters select state school boards or chief state school officers boards and chiefs are likely to be more vulnerable to constituent interests. Conversely, when governors are able to appoint state board members and chief state school officers to their posts, that forges an institutional link between governors' offices and their boards and SEAs. Those connections can limit, but obviously not eliminate, the impact of democratic control because it reduces the independence of boards and SEAs. In short, as voters enjoy greater direct control over boards and the state schools chief position, officials in these positions become more subject to direct political accountability, which, consistent with Chubb and Moe's (1988) theory, we believe will be less likely to produce desired policy outcomes.

We also identify a second, but related, reason why we believe increased democratic control will make it more difficult to achieve policy results. Coordination problems ensue when multiple venues are responsible for designing and carrying out policy. The literature on principal-agent models and policymaking within networks illustrates why. When clear lines of authority relate state institutions to one another, it is more likely that policy principals will be able to control and transmit clear messages to their agents (Bendor, Glazer, and Hammond 2001 533; Miller 1992). Because essentially all agents have some discretion and may possess goals that conflict with their principals', clear lines of authority by no means guarantee policy success. However, when state institutions are designed to minimize the independence of policymaking venues, we would expect it to be easier for a single principal to coordinate relevant actors to achieve policy goals. Conversely, when authority is more dispersed across a network of loosely coupled institutional actors, technical coordination challenges (Milward and Provan 2000) and political problems (O'Toole and Meier 2004) can multiply.

As we described earlier and illustrated in Figure 1, some states have attempted to foster greater coordination by forging tighter institutional links between governors' offices, state boards, and state education agencies. Governors, in fact, have attempted to curtail the power of state education boards and state school chiefs (Elmore and Fuhrman 1994) sometimes by increasing

their appointment powers over these positions (Cohen 1987; NASBE Study Group on Education Governance 1996) or by direct advocacy in state and federal policy debates (Bell 1988). Despite these gubernatorial efforts, institutional control remains dispersed in some states. The need to cooperate exists in all states, to be sure, but it is perhaps more important and difficult to achieve in states where authority is more dispersed. Thus, as state institutions that govern education become more loosely coupled and potentially beholden to dispersed interests, Chubb and Moe's (1988) theory and our extension of it predicts that states will be less likely to produce desired policy outcomes in education.

Overall, we believe our work is important because it will help determine if the reform emperors of the 1980s and 1990s actually wore no clothes. Put another way, one key article of faith of the education reform movements during these decades was that centralizing state power over education policymaking would improve student success. Governors, in particular, made this argument in response to parents and the business community who demanded that students learn more in subjects critical to economic success. Thus, policymakers believed institutional arrangements should matter. To our knowledge, nobody has examined that empirical assumption in a systematic way.

Furthermore, there already exists a research literature documenting the impacts that schools, districts, and state policy can have on student success (Berger 1994; Carnoy and Loeb 2002; Ferguson 1998; Grissmer and Flanagan 2001; Kannapel and Clements 2005; Lee 1998; Meier, O'Toole, and Nicholson-Crotty 2004). We recognize the importance of these factors, but in this paper we consider them intermediate forces that we leave in an analytical black box.⁵ In so doing, our approach helps us identify a sort of baseline level of variation in student results that state institutional arrangements can explain. Substantively, there can be great value in examining the extent to which oversimplified models of the world can still provide explanatory power (Waltz 1979). Once establishing a baseline, specifying more developed analyses that account for institutions and other factors—such as specific state policies regarding standards or teachers, for example—may attenuate the institutional impacts we have uncovered here. We hold off on those complications for now because our main objective is to probe the relationship between institutions, democratic control, and student results. In the next section we describe our particular approach.

Analyzing democratic control and state educational performance

Table 1 presents descriptive statistics of all variables that we describe in this section. For dependent variables, we use several state-level measures from the 2003 National Assessment of Educational Progress (NAEP). Given that results on state-developed proficiency tests can vary significantly, NAEP is a superior metric for cross-state comparisons because it is a national test administered to representative samples of students in each state.⁶ We examine NAEP's 4th and 8th grade reading and math scores in two specific ways.

⁵ Analytically, our approach parallels Chubb and Moe (1988) who assume that school policies, routines, and internal environments are endogenous to the institutional arrangements that produce them.

⁶ Results from SAT or ACT tests are also a possible cross-state metric. We still prefer NAEP over these other tests given the unrepresentative sample of test takers in the college entrance exams and the regional preferences that often exist for one of these two tests. Some state colleges do not require both tests for admission, so students often take one but not the other.

Insert Table 1 about here

First, we analyze the overall percent of state 4th and 8th grade students scoring at proficient levels or better on NAEP's math and reading tests. With two grades and two subjects that provides us with four different dependent variables: overall state NAEP results in 4th and 8th grade reading and 4th and 8th grade math. Beyond these measures, we also recognize that test score performance varies across student groups (Jencks and Phillips 1998).⁷ We therefore estimate a second set of models to differentiate between student achievement among high poverty and low poverty students.⁸ For that analysis we rely on NAEP's reported math and reading scores for 4th and 8th graders that is disaggregated by whether students are eligible for free or reduced cost breakfast and lunches, which is a measure of poverty status. Using these differentiated NAEP scores, we compute the proficiency differences between high poverty and low poverty students for each state. Those gaps, again measured as state percentages, produce four additional dependent variables: 4th and 8th grade reading gaps and 4th and 8th grade math gaps.

Because all eight of our dependent variables are essentially continuous measures, we estimate our models using ordinary least squares regression. Across all models we use the same independent variables to capture different aspects of democratic control. We also include important measures of student characteristics as controls. We expect several of our independent variables to have lagged effects on state NAEP results. In particular, it is likely that the impact of institutional arrangements may accumulate over time. Below we clarify how we incorporated this lagged approach in several of our measures.

Four indicator variables capture how states organize their institutions to govern education. We derive these indicator variables from the governance models in Figure 1; the measures are coded 1 if the state possesses the particular governance model and 0 otherwise.⁹ We include these measures as they existed in 1998. That provides us with a five-year lag, which we believe is a sufficient time to begin seeing possible institutional effects. (The year 1998 also coincides with the previous NAEP test in reading.) If more democratic governance is associated with less student achievement, we would expect states with governance Models II and III to perform worse than those with Models I and IV, which are more insulated from electoral politics. Because governing institutions can change, however, we also include another dummy variable indicating whether a state adopted a different governance structure between 1998 and 2003. That variable is coded 1 if the state changed its governance model and 0 otherwise.

⁷ For example, the No Child Left Behind Act recognizes this by requiring schools, school districts, and states to report student test score data disaggregated by key student characteristics, such as race, ethnicity, poverty status, and whether students are learning English as a second language.

⁸ Initially we had planned to explore student racial subgroups as well, but given data limitations of the NAEP, that became impractical. Because of racial homogeneity in several states, too many states dropped out of our sample to allow us to adequately examine models involving achievement of black and Hispanic students. By focusing on poverty status, which indirectly captures some of these racial dimensions, we are able to retain all 50 states in our models.

⁹ Not all states possess one of these governance models, but most do. States with different arrangements altogether serve as the omitted category. We thank David Kysilko at the National Association of State Boards of Education for these data.

We include two additional variables to provide further insights about the impact of democratic control on state NAEP results. The first measure is the balance of power in education finance between states and local school districts. We expect student achievement to be lower in states where the local financial contribution to K-12 education is relatively large. That is because a more dispersed system of finance increases the potential leverage over school performance that residents and interest groups can have in local venues. Conversely, more centralized systems of state finance should reduce this leverage. To operationalize the state-local balance in education finance we compute a ratio comparing the percent of revenues for K-12 education coming from the state to the percent of K-12 revenues coming from local districts. Larger values, thus, represent more state control. Because the impact of financing arrangements may accumulate over time, we use the average of this ratio during the 1997-98 to 2001-02 school years to predict NAEP results for 2003.¹⁰

The second finance measure captures the influence of federal money in the state. Critics of Washington's involvement in state education frequently lament the distorting influences they believe federal dollars can create. Nearly all federal education grant money flows directly to state departments of education, which can provide chief state school officers with greater independence from other state actors (Hill 2000). The presence of federal grant money also multiplies the number of potential venues (i.e., congressional committees and the U.S. Department of Education) and organized interests that can assert influence in a state. Thus, if our hypothesis about democratic control is correct, we would expect states that rely more on federal education funds to have more difficulty producing strong educational outcomes. To measure this influence of federal money, and to parallel our other finance measure, we include the average percent of federal revenues for K-12 education in a state during the 1997-98 to 2001-02 school years.

Finally, we control for student characteristics by incorporating three other measures. We include the percent of white students and the percent of black students enrolled in the 2002-03 school year, the academic year in which the NAEP was administered. We also include a measure of the percent of state residents in poverty during 2002 as a proxy for the fraction of a state's students who come from disadvantaged backgrounds.¹¹

Impacts of democratic control on state educational performance

Table 2 and 3 present our results. Because our regressions include data from all 50 states, we have organized these tables and our ensuing discussion to appeal to two kinds of readers. Some people consider statistical analyses with state-level data to involve populations. This group argues that standard errors and t-scores associated with model parameter estimates reveal

¹⁰ The education finance measure that we discuss here and our measure of federal spending that we describe in the ensuing paragraph come from the Common Core of Data, which we accessed during July 2004 from <http://nces.ed.gov/ccd/bat/>. The most recent financing data available are from the 2001-02 school year.

¹¹ Initially, we considered including the percent of students qualifying for free or reduced price lunch and breakfast instead of overall state poverty. However, when we examined state data on lunch and breakfast eligibility from the Common Core of Data, located on the Internet at <http://nces.ed.gov/ccd/bat/>, we discovered that a handful of states reported no students in this category. To avoid the measurement errors that such a variable would have created, we opted instead for the overall state poverty rate as a reasonable proxy.

information about the theoretical power and ability of the predictor variables to fit the data. There is no need to infer back to an unobserved population because with all 50 states, that population is in hand (Gill 2001). Other readers consider valuable the inferential tropes (Kritzer 1996) associated with standard errors and their t-scores because even with a dataset containing all 50 states, it is debatable whether one actually possesses a population in a statistical sense. Our tables offer both groups something to consider given that t-scores higher in absolute value represent independent variables that fit the data increasingly well; and t-scores hovering near 2.00 or above reveal variables that possess statistical significance at levels commonly reported in social science research.

Overall NAEP performance

We begin with Table 2, which examines the impact of governance on state NAEP performance for 4th and 8th grade reading and math. The results offer some evidence to support our hypothesis that increased democratic control makes it difficult for states to increase student proficiency.

Insert Table 2 about here

On both of the reading models, the signs and coefficient magnitudes on the governance indicator variables are consistent with our expectations. States with Models II or III performed relatively worse on the reading NAEP than states with Models I or IV. Notice also that the Model IV coefficient, which indicates that governors appoint board members and state school chiefs, is only one with a positive sign. That suggests some support for the governors' claim that increased gubernatorial control in education would produce better outcomes. Comparing the coefficients on Model IV and Model II, which capture the most and least gubernatorial control respectively, supports the view that more centralized gubernatorial control is likely to improve performance. For both 4th and 8th grade reading, the analyses predict a 4 percentage point advantage on the NAEP for states that possess Model IV compared with Model II.

In general, though, we believe these results on reading are merely suggestive. Most of the coefficients associated with these variables demonstrate relatively weak fit (t-values generally do not approach 2.00). The impact of Model II is a notable exception for both 4th grade ($t=-2.03$, $p=.05$) and 8th grade ($t=-1.77$, $p=.09$). Considering the size of the Model II coefficients as well (-3.52 and -3.18 respectively) means that that particular governance model asserts strong statistical and substantive significance in the direction we expected. Greater democratic control is associated with lower levels of student proficiency in reading.

For the math results we see some similarities on the governance indicator variables, but also some differences. Overall, support for our democratic control hypothesis is more mixed. The evidence remains favorable regarding the impact of governance Model II. Compared to the other governance models, the coefficient is the most negative and possesses the largest magnitude. It demonstrates reasonably good fit for the 4th grade analysis ($t=-1.70$, $p=.10$) but relatively weaker fit on the 8th grade one ($t=-1.14$, $p=.26$). Variables for the other governance models behave less consistently across 4th and 8th grade math and their relatively low t-values suggest overall weak fit.

Turning to the finance variables, we find mixed support for our democratic control hypothesis. Across all of the regressions, our measure capturing the ratio of state to local revenues for K-12 education is negatively signed, suggesting that as state control over education finance increases, NAEP proficiency also decreases. Based on our theory of democratic control we did not expect that result. The magnitudes of these four coefficients are quite small, however, and none demonstrates exceptionally strong fit. Thus, substantively speaking, states possessing a tighter grip on education finance relative to their local districts do not appear to perform any better or worse on NAEP.

Our measure of the federal contribution to state education finance generally does support our expectations. For 4th grade reading and math the variable possesses very strong fit (t-values are -2.82 and -2.50 respectively), and on 8th grade reading the fit is moderately strong ($t=-1.45$, $p=.16$). Fit is relatively poor on 8th grade math, but even there, as in the other models, the coefficient is negatively signed. That suggests that as the percent of federal K-12 revenues in a state increases, which we believe would increase the influence of democratic control, state performance on the NAEP is predicted to decline. Substantively, given the size of the coefficients, the impact appears to be most significant for the 4th grade results where a 1 percent increase in the federal contribution would predict a 0.73 percentage point decline in reading and a 0.84 decline in math.

Readers may challenge our interpretation of the federal revenues measure given that federal money for K-12 education, in particular Title I of NCLB, tends to flow to states with the most needy students. Because needy students tend to perform worse on examinations, our results perhaps reveal more about student populations than the amount of democratic control that follows federal influence. In principle we agree with that assessment, but we believe we have accounted for it statistically by controlling for the percent of black students and the percent of state citizens in poverty. Notice that even after accounting for these state population characteristics, which should pick up the effect of needy students on state results, a larger federal contribution still remains associated with lower NAEP performance.¹²

NAEP achievement gaps

Table 3 contains our results for achievement gaps in 4th and 8th grade reading and math. Recall that the gaps we examine here are based on student poverty status. The results suggest many interesting possibilities and provide evidence that advocates and critics of democratic control of education could use to bolster their arguments. Which interpretation one favors depends on the assumptions one is willing to make about the dynamics that produce a lower achievement gap. After reviewing the key statistical results in the table we consider these alternative perspectives in turn.

Insert Table 3 about here

Looking across all four regressions in Table 3, governance Model II continues to assert the strongest statistical and substantive significance. The t-values associated with these

¹² Furthermore, our modeling technique avoids the potential for endogeneity between federal funding and state results. The causal arrow between funding and performance could not run both directions because test results for 2003 could not influence funding decisions during the 1997-98 to 2001-02 school years.

measures are all relatively high and approach (4th grade reading) or exceed (4th grade math and both 8th grade subjects) levels of statistical significance corresponding to $p < .10$. Overall, the regressions predict that states with governance Model II will have lower achievement gaps between rich and poor students. These gaps are predicted to be almost 5 percentage points less in 8th grade math, and between 2.50 and 3.25 points less for the other subjects.

Unlike the previous results from Table 2, the governance Model III and Model IV appear to assert more influence in a statistical sense in Table 3, particularly on 4th and 8th grade math. The coefficients for both of these arrangements are associated with lower achievement gaps; Model III holds a slight advantage for 4th graders and Model IV performs a bit better for 8th grade students. Neither appear to decrease gaps to the degree that Model II does, however.

Next we consider the revenues variables. There we see that federal money continues to have a powerful effect, as it did in Table 2, both substantively and statistically. Across all four regressions a 1 percent increase in federal revenues for K-12 education in a state is associated with declining gaps of between 0.58 and 0.96 percentage points. When varying federal spending from its minimum to maximum value in the dataset, those decreases in achievement gaps range between 0.5 to almost 2.0 standard deviations. In each regression the statistical fit of the federal revenues measure is quite strong with t-values ranging from -2.29 to -3.44 .

Further, unlike the results in Table 2, the variable capturing the ratio of state to local spending begins to assert more statistical and substantive impact. Considering all the regressions in Table 3, the coefficient estimates of these variables possess t-values that begin to approach or exceed conventional levels of statistical significance. The magnitudes of the coefficients still remain relatively low, but are negatively signed in all four regressions. Those results predict that states with more control over K-12 education finance relative to local communities would have lower achievement gaps between rich and poor students.

The question lurking behind all the Table 3 results is whether we should believe that states with greater degrees of democratic control over education are more able to reduce achievement gaps. At first glance, the results from the indicator variables capturing the different governance models, in particular the powerful result associated with Model II, appear to challenge our hypothesis that more democratic control is likely to undermine educational performance. The results on the finance variables are a bit more mixed. Greater federal influence is associated with lower achievement gaps, but increased state centralization over finance is, too.

The view that democratic control appears to reduce achievement gaps between rich and poor depends on what one thinks it means to narrow these gaps. If gaps decline because all students demonstrate high performance, but disadvantaged students appear to be gaining ground, then essentially all observers would surely celebrate. That perspective on narrowing achievement gaps implies that many of our results in Table 3, in particular on the federal funding measure and the governance model indicators, demonstrate some of the virtues of democratic control.

The case is not closed, however, because achievement gaps may be narrow for other reasons, too. Students in poverty may be closer to their more advantaged peers if all students are performing relatively poorly. Over time, gaps could narrow not because everyone gains and some gain more than others, but because students at the top perform worse and the performance of students at the bottom either improves (by itself still a good result, yes), stays the same, or even declines (but not as fast as their advantaged peers). In those scenarios, a small achievement gap should not necessarily trigger praise for systems based on democratic control. Because both interpretations of the achievement gap are plausible there is no way to clearly assess the impact of democratic control based on the Table 3 results alone.

Democratic control and policy outcomes in the United States

In this paper we have offered the first systematic analysis of how the context of state education governance influences student outcomes. Our work leaves us with as many questions as answers. For now, at least, we consider that a good thing. We find some evidence to suggest that the structure of state governing institutions and levels of democratic control can have important impacts on state educational performance. In this final section, we briefly summarize our key results and then offer some more general conclusions.

Recall the regressions in Table 2 that relate governance to overall state NAEP results. In those results, our variables tapping governance Models I, III, and IV demonstrate relatively weak influence judging by standard conventions of fit and statistical significance. This makes it hard to distinguish these arrangements from one another. In contrast, Model II asserts a statistically and substantively significant impact on student achievement. Given that Model II represents a system with relatively more democratic control than the other models, that result is consistent with our hypothesis.

Reviewing the results from Table 3, Model II is also a strong predictor in regressions that relate governance to NAEP achievement gaps between rich and poor students. In these models, the other governing arrangements begin to demonstrate better statistical fit, most notably on the 4th and 8th grade math results. Overall, the more democratic arrangements (Model II and Model III) tend to be associated with lower achievement gaps.

We also examined governance through the lens of financial responsibility for education in the states. States that rely more heavily on federal funding, and are thus subject to greater democratic control, perform worse on overall NAEP achievement but also possess smaller achievement gaps. In terms of statistical fit, compared to other variables this measure had the most consistently strong impact across all eight regressions. Finally, the balance between state and local funding appeared to help predict achievement gaps but not overall state NAEP performance.

What implications do we draw from these findings? Theoretically, by applying Chubb and Moe's (1988) logic about school organization to a higher level of government, we have helped to reveal how the notion of democratic control may mean different things or imply different outcomes depending on the policy venue. If it is true, as our results generally suggest, that different configurations of state governing institutions do not produce wildly different student outcomes, there may not exist an optimal institutional configuration for governing

education at the state level. The emperor may not be wearing any clothes after all. The impact of Model II attenuates this conclusion somewhat given its influence in Table 1. Based on the other state governance models and their accompanying measures of statistical fit, state education systems subject to greater democratic control may perform no better or no worse than states with more centralized arrangements.

Empirically, we see potential for future work on state education governance along at least two lines. First, it would be interesting to extend our analysis by integrating attention to institutions with measures of specific policy outputs. In other words, one could ask to what extent do institutions matter when one controls for the quality of state content standards, the rigor of state assessments, or some other policy metric. As we noted in our initial remarks, our primary goal in this paper was to follow Chubb and Moe (1988) to see if we could explain state educational results using a more reduced institutional model. Across all our models and independent variables, we believe the evidence does suggest that institutional control and student results are related. In future efforts we plan to extend this work by incorporating measures of institutions and policies simultaneously.

A second area that begs for additional attention is the impact of democratic control on student achievement gaps. We have clearly demonstrated that different measures of democratic control are, in fact, associated with lower achievement gaps. Institutional arrangements do appear to matter. But at this point we cannot say whether arrangements grounded in high democratic control are improving educational performance in the American states or whether those results mask underlying problems that democratic control may foster. One way to sort out these relationships would be to look more closely at the dynamics of student achievement gaps within the states.

So what do we ultimately conclude about democratic control and state educational performance? We begin by noting that, by and large, people across the globe love democracy. The idea that citizens and the groups that represent them should be able to wield power in the policymaking process has a certain knee-jerk appeal. Still, it is worth recognizing that policy systems grounded in democratic control may be better at securing some desired outcomes than others. In short, democratic control may not always reveal its influence on policy outcomes in consistent ways. Variation may exist across policy areas or even within them depending on the level of aggregation one is considering.

Sometimes, as Chubb and Moe (1988) have argued, democratic control may facilitate citizen input (which on its face may seem desirable) and have counterproductive impacts on performance. Other times its impact may not be so clear, as our results indicate. Remaining mindful of those differences will help elected officials design better institutions to benefit their constituents. It will also enable political scientists to develop better theoretical insights about the impact of democratic control on policy outcomes.

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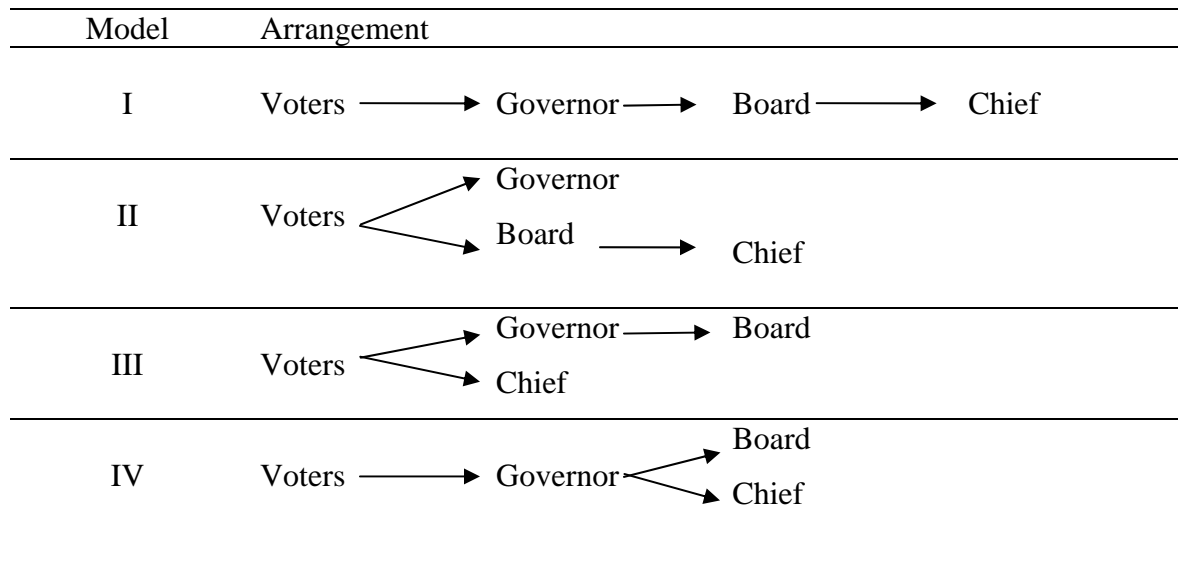
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Figure 1. State education governance models



Note: Some states have different arrangements altogether. In our analysis, we treat all states with some other arrangement as a collective omitted category.

Table 1. Descriptive statistics

	Mean	Std. Dev.	Min	Max
<i>Dependent variables (all from 2003)^a</i>				
Overall NAEP 4th grade math	31.52	6.79	17	43
Overall NAEP 4th grade reading	30.78	5.81	18	43
Overall NAEP 8th grade math	27.98	6.86	12	44
Overall NAEP 8th grade reading	31.32	5.89	20	43
Rich-poor gap in NAEP 4th grade math	26.34	5.58	17	42
Rich-poor gap in NAEP 4th grade reading	23.70	4.61	16	35
Rich-poor gap in NAEP 8th grade math	22.82	4.88	13	33
Rich-poor gap in NAEP 8th grade reading	21.38	4.72	12	32
<i>Independent variables^b</i>				
Governance Model I, 1998	0.18	0.39	0	1
Governance Model II, 1998	0.16	0.37	0	1
Governance Model III, 1998	0.22	0.42	0	1
Governance Model IV, 1998	0.16	0.37	0	1
Governance model changed during 1998-20003	0.08	0.27	0	1
Mean State-Local revenue ratio between 1997-98 and 2001-02	2.23	5.79	0.48	42.00
Mean percent Federal revenue between 1997-98 and 2001-02	7.90	2.67	3.88	14.81
Percent of white students, 2002-03	68.30	17.73	20.39	95.92
Percent of black students, 2002-03	14.45	13.34	0.68	50.87
Percent of state residents in poverty, 2003	11.69	3.13	5.80	19.80

Note: N=50 for all variables.

(a) Dependent variables for overall NAEP scores are the percent of state students scoring proficient or better on the NAEP; rich-poor gaps are the difference between the percent of state students not eligible for free and reduced lunch ("rich" students) who scored proficient or better on NAEP and the percent of state students eligible for free and reduced lunch ("poor" students) who scored proficient or better on NAEP.

(b) Figure 1 describes the governance models.

Table 2. Impact of democratic governance on overall state NAEP scores in 2003

Independent variables	4th grade math		4th grade reading		8th grade math		8th grade reading	
	coef.	t-value	coef.	t-value	coef.	t-value	coef.	t-value
Governance Model I, 1998	-2.40	-1.14	-0.29	-0.18	-1.57	-0.79	-0.68	-0.41
Governance Model II, 1998	-3.87	-1.70	-3.52	-2.03	-2.48	-1.14	-3.19	-1.77
Governance Model III, 1998	-0.91	-0.45	-1.68	-1.09	-0.44	-0.23	-1.47	-0.92
Governance Model IV, 1998	-0.95	-0.44	0.35	0.21	0.15	0.07	0.62	0.36
Governance model changed during 1998-2003	1.03	0.39	-0.08	-0.04	0.89	0.36	-2.13	-1.03
Mean State-Local revenue ratio between 1997-98 and 2001-02	-0.02	-0.14	-0.01	-0.09	-0.14	-1.02	-0.01	-0.12
Mean percent Federal revenue between 1997-98 and 2001-02	-0.85	-2.50	-0.73	-2.82	-0.24	-0.74	-0.39	-1.45
Percent of white students, 2002-03	0.10	2.02	0.14	3.54	0.11	2.21	0.16	3.97
Percent of black students, 2002-03	-0.04	-0.55	-0.03	-0.56	-0.08	-1.39	-0.06	-1.22
Percent of state residents in poverty, 2003	-0.79	-2.56	-0.49	-2.10	-1.09	-3.71	-0.56	-2.30
Constant	42.27	7.67	34.22	8.14	37.43	7.14	31.93	7.31
Adjusted R-square	0.55		0.64		0.60		0.62	
Model F-test (10, 39) (all significant at p<.01)	6.96		9.81		8.35		9.14	
N	50		50		50		50	

Note: Dependent variables are the percent of state students scoring proficient or better on NAEP tests in 2003. Figure 1 describes the governance models. Analyses are OLS regressions run using Stata 8.

Table 3. Impact of democratic governance on state NAEP achievement gaps between rich and poor students in 2003

Independent variables	4th grade math		4th grade reading		8th grade math		8th grade reading	
	coef.	t-value	coef.	t-value	coef.	t-value	coef.	t-value
Governance Model I, 1998	-0.15	-0.09	1.31	0.83	-0.61	-0.37	0.02	0.01
Governance Model II, 1998	-3.17	-1.69	-2.58	-1.51	-4.88	-2.75	-3.24	-1.72
Governance Model III, 1998	-2.14	-1.28	-1.19	-0.78	-2.93	-1.85	-1.98	-1.18
Governance Model IV, 1998	-2.65	-1.50	-1.31	-0.81	-2.29	-1.37	-1.01	-0.57
Governance model changed during 1998-2003	1.38	0.64	0.91	0.46	-0.64	-0.32	-0.79	-0.37
Mean State-Local revenue ratio between 1997-98 and 2001-02	-0.16	-1.42	-0.24	-2.26	-0.18	-1.64	-0.16	-1.34
Mean percent Federal revenue between 1997-98 and 2001-02	-0.88	-3.16	-0.58	-2.29	-0.85	-3.23	-0.96	-3.44
Percent of white students, 2002-03	-0.14	-3.35	-0.10	-2.69	-0.08	-2.02	-0.09	-2.18
Percent of black students, 2002-03	0.10	1.95	0.09	1.86	0.01	0.26	0.03	0.51
Percent of state residents in poverty, 2003	-0.55	-2.18	-0.38	-1.63	-0.47	-1.95	-0.18	-0.71
Constant	49.62	10.92	39.62	9.54	42.69	9.93	38.55	8.45
Adjusted R-square	0.55		0.45		0.47		0.36	
Model F-test (10, 39) (all significant at p<.01)	6.90		4.94		5.33		3.77	
N	50		50		50		50	

Note: Dependent variables are the difference between the percent of state students not eligible for free and reduced lunch ("rich" students) who scored proficient or better on NAEP and the percent of state students eligible for free and reduced lunch ("poor" students) who scored proficient or better on NAEP. Figure 1 describes the governance models. Analyses are OLS regressions run using Stata 8.