JPART 22:675–700

Accountability in Higher Education: Exploring Impacts on State Budgets and Institutional Spending Patterns

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ABSTRACT

In recent years, performance-based accountability regimes have become increasingly prevalent throughout government. One area where this has received considerable attention in recent years is higher education, where many states have adopted funding policies that seek to tie institutional funding to objective measures of performance. To what extent have these policies been effective tools for restructuring financial incentives and exerting influence over administrative behavior? Using data from the Integrated Postsecondary Education Data System, this article finds that performance-funding policies have not had substantial impacts on state budgets but that they have had some limited influence on institutional spending priorities. Furthermore, effects on institutional spending were found to be greater on public research universities than other public colleges.

Research on the increased use of performance information in the public sector has been a dominant theme in the management literature over the past decade and a half. Proponents argue that performance-based accountability structures make it easier for political leaders and the general public to evaluate public agency outputs and to impose sanctions when agencies fail to produce desired results. Critics claim such policies are often short sighted, blind to the practical realities that many public managers deal with, and are implemented in ways that distort agency missions and result in unintended consequences that negatively impact service delivery. Implicit in this debate is the assumption that performance-based mechanisms of accountability will, in some way, reform state budgets and change service delivery.

One area where this discussion has become salient is higher education. In recent years, there have been several initiatives, at both the state and the federal levels, to directly link performance to funding (Aldeman and Carey 2009; Burke 2002; Zumeta 2001). Although there have been a few attempts to uncover the impacts associated with these higher education performance-funding policies (Volkwein and Tandberg 2008), our knowledge about them has thus far largely been based on anecdotal evidence and limited case studies (Banta,

The author would like to thank Joseph Ripberger, Alisa Hicklin Fryar, Matthew Nowlin, Thaddieus Conner, and the anonymous referees for their helpful comments on the manuscript. Address correspondence to the author at trabovsky@ou.edu.

doi:10.1093/jopart/mur069
Advance Access publication on February 29, 2012

Rudolph, Dyke, and Fisher 1996; Doyle and Noland 2006; Sanford and Hunter 2010). As such, there remain serious gaps in our empirical knowledge about the extent to which these policies are having substantive impacts on budgetary processes at the state level and on service delivery at the organizational level. This article uses institutional-level data from public colleges and universities in all 50 states to determine whether the adoption of performance-funding policies corresponds with a better link between student outcomes (graduation rates, retention, and bachelor's degrees produced) and state appropriations and whether these policies have any noticeable effects on the way that public universities prioritize activities related to research and instruction.

ACCOUNTABILITY AND THE PERFORMANCE MOVEMENT

Critics have long complained that public organizations tend to be inefficient and unresponsive to external stakeholder groups relative to their private counterparts (Chubb and Moe 1990; Osborne and Gaebler 1992; Wilson 1989). Many observers blame this apparent dysfunction on the prevalence of incrementalism in the budgetary process and argue that reform efforts aimed at greater utilization of information regarding organizational performance can make budgets less political and more merit based, which will in turn boost cost efficiency gains within the public sector (Moynihan 2008; Radin 2006). By rewarding organizations that perform well and sanctioning those that perform poorly, policymakers can provide strong incentives for public agencies to reduce or eliminate wasteful activities and to employ entrepreneurial strategies in developing new technologies and methods to improve service delivery. Furthermore, by holding public agencies accountable for performance, policymakers are able to get more "bang for the buck" by spending less money on programs that do not work and more on those that do.

Although performance budgeting has become ubiquitous at all levels of government in America over the last 15 years (Kettl 2000; Melkers and Willoughby 1998; Moynihan 2008), empirical research has generally found only limited evidence that performance information has a meaningful impact on budget decisions, particularly at the state and federal levels of government (Gilmour and Lewis 2006a, 2006b; Joyce 1999; Long and Franklin 2004; Moynihan 2008; Radin 2000). Why have policymakers been so apt to adopt performance mechanisms if they do not use the information that these systems generate? Moynihan (2008) argues that performance policies are often symbolic in nature and that many times there is little commitment to true reform on the part of political actors.

Even if reform efforts represent a sincere effort to change government, there are several factors that can limit the influence of performance information in the budgetary process. As Moynihan (2008) highlights, performance information is rarely, if ever, used in a completely neutral or rational way. Performance must be given meaning by human decision makers, which makes it inherently political and subjective. For instance, there is often times significant disagreement within the policy community about the legitimacy of various indicators. This inhibits information use because many actors view the data that performance regimes generate with distrust and are thus unlikely to engage in meaningful learning (Moynihan 2008; Radin 2006).

Second, as both Gilmour and Lewis (2006b) and Moynihan (2008) point out, it can be unclear whether poor performance should be met with reduced or increased funding. Some observers may interpret poor performance as evidence that an organization needs additional resources in order to accomplish important tasks and thus push for more funding. For

example, many critics of K-12 accountability policies, such as No Child Left Behind (NCLB), contend that these regimes are likely to create negative feedback loops that make it virtually impossible for schools serving vulnerable and at-risk populations to close achievement gaps or improve student outcomes (Neill 2003).

Finally, given the potential for budgetary reforms to create new sets of winners and losers, it is reasonable to expect that affected agencies will seek to influence policy design in a way that protects their interests (Moynihan 2008). As such, organizations with resource advantages, particularly in terms of political influence, are more likely to secure performance regimes that emphasize indicators they will score satisfactorily on, and as a result, performance budgeting would be unlikely to dramatically change the funding landscape.

Regardless of their impact on budgetary actors, performance-funding policies ultimately aim to influence public sector service delivery. Proponents argue that public administrators will react to performance-based incentives by adopting management strategies that increase efficiency and improve performance. Furthermore, some argue that performance-based systems, when properly designed and implemented, have the potential to promote organizational learning by helping managers to identify problems and to more systematically assess the strengths and weaknesses of programs (Behn 2003; Moynihan 2008).

Critics, however, warn that performance systems, particularly when they are imposed in a top-down manner with little differentiation to account for important variation in terms of task difficulty or resource availability, can lead to perverse incentives that harm client populations (Radin 2006; Smith 1990). In some cases, administrators may respond to unrealistic accountability requirements by ''gaming the system'' to manipulate data such that indicators are no longer valid measures of performance (Booher-Jennings 2005; Figlio and Getzler 2002; Heilig and Darling-Hammond 2008; Jacob 2005; Jacob and Levitt 2003). In other cases, administrators focus more heavily on tasks that boost scores in the short term, at the expense of developing a long-term strategic plan to improve outcomes (Abernathy 2007). Finally, administrators may react to performance regimes they perceive as illegitimate and unreasonable by adopting a strategy of resistance where they change little, if anything in terms of service delivery, and then attempt to undermine or marginalize the role of performance information in program assessment (Radin 2006). Since many performance reform efforts have historically proven to be short lived and primarily symbolic in nature, public managers often rightly perceive that they can simply wait things out without exerting much time or energy to redesign program activities.

PERFORMANCE FUNDING IN HIGHER EDUCATION

Within the area of higher education, performance-based accountability has become an area of significant attention in the past decade (Huisman and Currie 2004; King 2007; McLendon, Hearn, and Deaton 2006). In an era that has seen tuition rates skyrocket and increased pressure from the international arena, American universities have struggled to satisfy demands for improved performance. According to the most recent data, the average public college in America graduates less than 60% of its students and graduation rates for many minority groups are much lower than that (Carey 2008). This has caused many to call for major reforms that make institutions of higher learning more accountable for student outcomes (Aldeman and Carey 2009; Casper and Henry 2001; Kelly, Schneider, and Carey 2010; Liefner 2003).

Starting in the late 1990s, Joseph Burke began surveying state higher education officials to better understand the landscape of accountability in higher education (Burke 2002). In doing so, he developed a three-tiered classification of accountability policies. At the lowest level, Burke classified states as having performance reporting policies. These states gather data on student outcomes, but there is no substantial link between school performance and funding decisions. Performance budgeting policies are those where the state collects performance data and the legislature/funding agency considers it when crafting the budget but where there are no formally specified benchmarks that result in automatic increases/decreases in financial support. The strongest accountability policies, termed performance funding, are those where some portion (often times a small percentage) of institutional funding is directly linked to the achievement of performance indicators (Burke 2002).

Within this classification, performance-funding policies have been the most controversial. Those in favor of performance funding lament the lack of external pressure on institutions to improve student outcomes and have emphasized the importance of using outcome measures to incentivize improved institutional performance (Aldeman and Carey 2009; Burke and Minassians 2003; Kelly, Schneider, and Carey 2010). On the other hand, some have pointed out that performance funding could potentially result in a narrow focus on a small number of indicators, which could cause institutions to dilute the quality of education via grade inflation in order to improve their scores (and thus their budgets) (Hunt 2008; Wellman 2001; Zumeta 2001).

Performance-funding policies spread rapidly during the late 1990s and early 2000s, but experienced a lull starting in the mid-2000s. The motivations behind adopting these policies have been traced to several key factors. McLendon, Hearn, and Deaton (2006) find that many of the factors that made New Public Management reforms successful in other policy areas and the adoption of accountability mechanisms in K-12 education (particularly with regards to NCLB) helped contribute to the adoption of performance-funding policies in many states.

Despite their popularity during the last decade, performance-funding policies have also proven to be somewhat unstable, with several states quickly abandoning these policies soon after they were adopted (Dougherty, Natow, and Blanca forthcoming). Many states adopted policies that only tied bonus money directly to performance, and thus, fiscal constraints caused by economic recessions eliminated the funding base from which performance money was drawn (Burke and Minassians 2003; Dougherty and Natow 2009). Other causes of declining popularity of performance funding include a lack of support from the higher education community, lackluster involvement of the private sector and business leaders, and political turnover that replaced former champions of performance funding with new leaders that were not interested in maintaining a long-term commitment to these policies (Dougherty and Natow 2009).

During the last 2 years, however, performance funding has resurged as a prominent reform proposal. In 2009, Complete College America, a nonprofit advocacy organization, formed and began to lobby state governments to adopt a series of higher education reforms. These efforts focused on reorganizing governance structures, improving remediation, and increasing the role of performance data in budgeting and strategic planning activities (Complete College America 2010a). As of November 2010, 24 states have pledged to incorporate core principles from the Complete College America agenda, which includes a strong push toward performance funding, into their public systems of higher education (Complete College America 2010b).

Figure 1
Causal Logic of Performance Funding Policies

This article empirically examines two aspects of the debate about performance funding in higher education that have currently received little attention in the literature. First, how effective have performance-funding policies been at reforming state budgets? Underlying the causal logic behind performance funding is the belief that organizations will respond to changes in the funding environment by adopting new strategies and techniques to improve performance. If this assumption is correct, then performance-funding policies must have a meaningful impact on the level of support that institutions receive from state governments, not of other influences (such as the health of the economy or other factors that limit the amount of money that states have to spend on higher education). This article explores whether the adoption of performance funding strengthens the link between student outcomes and state appropriations, as proponents suggest, or whether these policies have been more symbolic with regards to budgetary impacts.

Second, this article seeks to understand whether stronger accountability mechanisms influence the way that institutions allocate resources. In recent years, many universities have sought to expand their capacity to conduct research, partly because doing so increases their ability to secure attractive funding but also because research output is often times associated with higher levels of prestige and reputation (Archibald and Feldman 2008; Gansemer-Topf and Schuh 2006; Grunig 1997; Robst 2001; Ryan 2004). Those concerned about student outcomes and cost containment, however, argue that overly focusing on research at the expense of instructional activities is problematic because often times these research endeavors do not actively involve or affect undergraduate education (Weisbrod, Ballou, and Asch 2008). Thus, some see research as a distraction that public institutions, particularly those with low student achievement, should focus on less heavily. If accountability policies are successful in altering the focus of institutions away from certain activities (such as research) and toward others (such as instruction), then we ought to observe differences in university expenditures on these activities when comparing schools in states with funding policies versus those in states without them.

The causal logic that underlies performance accountability mechanisms (figure 1) implies that incentives will be restructured in a way that results in changes in management that are geared toward improving performance with respect to client outcomes. Unfortunately, much of the research that examines the impacts of these policies, particularly in the area of higher education, skips the intermediate links in the causal chain and focuses exclusively on whether the adoption of performance policies result in improved student success. As a result, we have some limited information about whether accountability policies were successful in bringing about improved performance (Volkwein and Tandberg 2008), but we have very limited systematic analysis that can tell us why (or why not). If we are to understand anything about why these policies work or do not work, we must begin by understanding whether they are successful in changing the incentive structures that public managers face. If they are unsuccessful in doing so, then the causal logic of performance management breaks down and the desired impacts are unlikely to be realized.

DATA

The empirical component of this article proceeds in two stages. In stage one, I examine the link between performance information and the amount of money that public universities receive from state governments. In stage two, I explore the impact of performance-funding policies on institutional behavior. In both stages, I rely on data that are publicly reported in the Integrated Postsecondary Education Data System (IPEDS) for institutional indicators.

STATE POLICIES FOR PERFORMANCE FUNDING

In keeping with Burke's framework, I define states as having adopted a performance-funding policy if they directly and formulaically tie state appropriations to institutional performance with respect to student outcomes. In order to identify which states have adopted performance-funding policies (and when these policies were adopted), I consulted a variety of sources, including reports by academics and policy think tanks (Aldeman and Carey 2009; Burke and Serban 1998; Dougherty et al. 2010) and source documents from state governments. Because I am interested in the effect that these policies have on appropriations, I code policies as starting when they are first funded, rather than when the legislature, governor, or coordinating board adopted a plan to implement performance funding at some point in the future. In a few instances, there were conflicts between some of my sources regarding the content and adoption dates for performance-funding policies; in these cases, I contacted staff members from the state agency responsible for higher education policy to inform coding decisions. Information about the adoption dates and content of these policies is listed in table 1.

Although the content of performance-funding policies varies significantly across the states, there are also a number of notable trends. The most common indicator that states use in measuring performance is graduation rates (15 of 20 policies), followed by retention (9), student outcomes for minority or low-income students (6), number of degrees produced (5), various measures of cost efficiency (5), research productivity and external funding for research (5), student or faculty diversity (4), and student pass rates on exit exams, licensure tests, or national learning assessment exams (4). These findings are generally consistent with earlier studies of performance-funding indicators (Burke 2001).

STAGE ONE—DOES PERFORMANCE FUNDING MAKE APPROPRIATIONS MORE OUTCOME ORIENTED?

In stage one, the amount of money that a university received in state appropriations, measured in constant dollars, is the dependent variable. Traditionally, higher education has been financed primarily in terms of inputs, such as the number of students enrolled or the number of credit hours that students take, so I include several independent variables that measure inputs in my stage one model. First, I include measures for the number of undergraduate and graduate students enrolled at the university, with the expectation that each will be positively related to state appropriations. I also include several indicators for at-risk or vulnerable student populations, such as traditionally underrepresented racial minorities or students from low-income socioeconomic backgrounds. These include percentage of students who are black, percentage of students who are Hispanic, and the percentage of students who receive federal grant aid, which I employ as a measure for low income.

In addition to these input measures, I also include a number of variables that focus on research productivity (measured by the amount of money that the institution received in grants and contracts), selectivity (as measured by Barron's selector rating[1]), and statewide support of higher education (total state spending on higher education per full-time equivalent student). Aside from selectivity, all these measures, in addition to the dependent variable, are reported by the IPEDS, and I have valid data for years spanning from 1998 to 2009. Because I am interested in the impact that these measures have on state budgets and because there is often a delay between when this information is collected versus when it is reported publicly, I have lagged all the independent variables by 1 year (and my dataset thus spans the 1999–2009 time period). Descriptive statistics for stage one are listed in table 2.

I also employ several variables that measure university performance with respect to student outcomes. First, I include the 6-year (150% of normal time) graduation rate. This variable is constructed by taking the revised cohort (removing students who die, are deployed for military service, are part time, etc.) and counting the number of students who earned a degree within 6 years of entering college. For example, graduation rates for 2009 indicate the percentage of students who entered as first time full-time freshmen in the fall of 2003 that had earned a degree by the fall of 2009. Though not a perfect measure of performance, graduation rates have become an increasingly popular indicator among those who advocate the need for performance funding and is the metric most often used in these accountability policies. I have valid data for this measure for the 1991–2003 cohorts. As with the other independent variables, I have lagged this measure 1 year from when the cohort graduated (or 7 years from when students enrolled as freshmen).

In addition to graduation rates, I also include measures for 1-year student retention (the percentage of students who return for their sophomore year) and bachelor's degrees awarded per enrollment, as these are other popular indicators that states employ to track student outcomes. As was the case with graduation rates, these variables are lagged 1 year. Because these three variables are strongly correlated with one another and because the years for which I have valid data for each of them differ (IPEDS did not begin collecting retention rates until 2003), I run separate models for each, in addition to a combined model with all of them included (figure 2).

Finally, while I include a measure for whether or not a state had a performance-funding policy, this variable is, taken on its own, relatively meaningless given the other independent variables that are included in the model. Instead, I am primarily interested in interaction terms for this variable and various measures of performance. If performance-funding policies are effective at causing university appropriations to be based more on student outcomes and less on inputs, then the coefficient for the interaction between performance funding and the outcome variables (graduation rates, retention, and degree production) will be positive and statistically significant, whereas the interactions of performance funding and the two enrollment indicators will be negative and statistically significant. Furthermore, although most performance-funding policies are primarily driven by a concern about student outcomes, some states have also used measures of student diversity, selectivity, and research productivity as dimensions of performance that

1 Barron's selector rating is based on a combination of SAT/ACT scores and the percentage of applicants who are accepted. It ranges from noncompetitive to most competitive.

Table 1
Summary of Performance-Funding Policies and Performance Indicators

State	Years Policy Was in Effect	Performance Indicators
Arkansas	1994–1996 (first funded in 1995)	Graduation rates, retention, minority graduation rates, minority retention, licensure pass rates, exit exams, administrative costs, faculty teaching load, student body diversity, faculty diversity, alumni, and employer surveys
Arkansas	2008–Present	Number credit hours enrolled at the beginning of the term, number of course completions
Colorado	1993–Present (first funded in 1994)	Graduation rates, retention, minority student success, pass rates of graduates on technical exams, institutional support/administrative expenditures per full-time student, class size, number of credits required for degree, faculty instructional workload, and two institution-specific measures
Indiana	2007–Present	Graduation rates, bachelor's degrees produced, degree completion for low-income students, research productivity
Kansas	1999–Present	Indicators are specific to each institution (and are largely selected by the institutions), includes things such as graduation rates, retention, student body diversity, graduates' scores on learning assessment exams, minority student outcomes, participation in study abroad programs, faculty credentials, and external research grants
Kentucky	1996–1997	Graduation rates, retention
Kentucky	2007 (suspended after 1 year due to budget cuts)	Degree production per full-time equivalent student, minority student degree production, one indicator of choice (includes graduation rates, student learning assessments, transfer credits, and other indicators)
Louisiana	2008–Present	Number of degree completers, minority student degree completers, number of completers in science, technology, engineering, and math fields
Minnesota	1995–1997 (first funded in 1996)	Graduation rates, retention, ranking of incoming freshmen, minority student enrollment
Missouri	1991–2002 (first funded in 1993)	Graduation rates, bachelor's degrees produced, bachelor's degrees produced for minority students, scores of graduates on national exams
New Jersey	1999–2002	Graduation rates, cost efficiency, and diversification of revenues
New Mexico	2005–Present (first funded in 2007)	Graduation rates, retention, and research productivity (for research universities only)

Continued

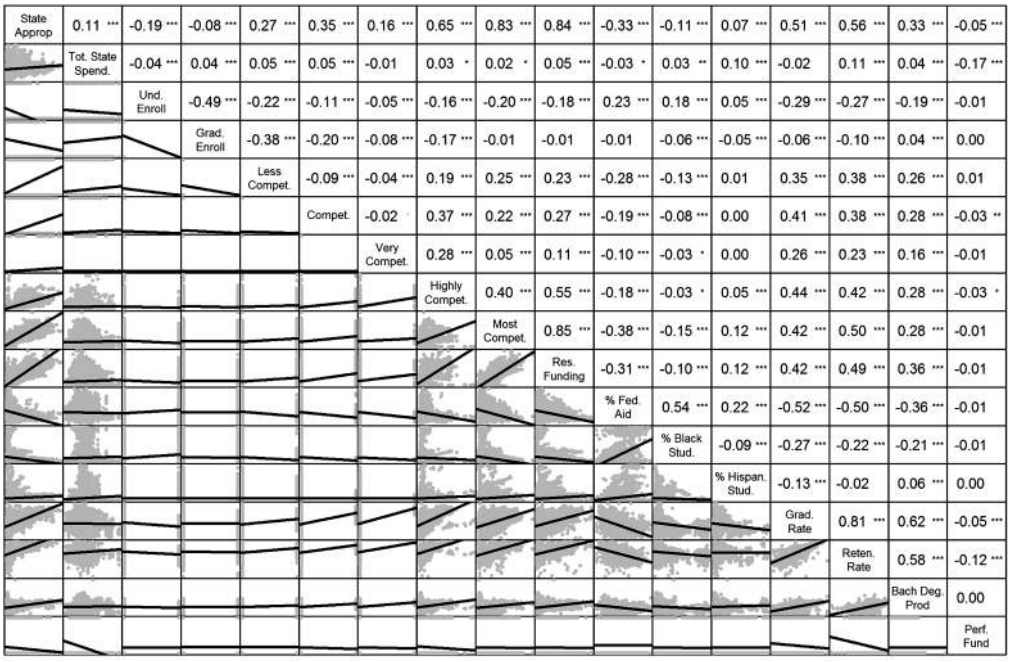
Table 1 *(continued)*
Summary of Performance-Funding Policies and Performance Indicators

State	Years Policy Was in Effect	Performance Indicators
Ohio	1998–Present	Primarily focused on external research grants awarded and tuition, but also contains indicators for time to degree, and degree completion among at-risk students
Oklahoma	1997–Present (suspended for 1 year in 2001 due to lack of funds)	Graduation rates and retention
Pennsylvania (Pennsylvania State System of Higher Education only)	2000–Present	Indicators broken into four categories: (1) student achievement and success, (2) university and system excellence, (3) commonwealth service, (4) resource development and stewardship. Indicators include graduation rates, retention, bachelor's degrees awarded, faculty diversity, faculty productivity, student to faculty ratio, and cost per FTE student
South Carolina	1996–2004	Total of 37 indicators, broken into nine categories: (1) graduate's achievements, (2) quality of faculty, (3) instructional quality, (4) institutional cooperation and collaboration, (5) administrative efficiency, (6) entrance requirements, (7) mission focus, (8) user friendliness, and (9) research funding. Indicators include graduation rates, faculty teaching and research credentials, student to teacher ratios, administrative cost efficiency, SAT/ACT scores of entering freshmen, and external research grants awarded
Tennessee	1979–Present	Several indicators separated into four major categories: (1) student learning and access, (2) student, alumni, and employer surveys, (3) Achievement of state master plan priorities, and (4) assessment outcomes. Indicators and benchmarks are updated and revised on 5-year cycles. Graduation rates, retention, minority student enrollment, and scores on learning assessment tests are generally among the major indicators
Texas	1999–2003	Number of students defined as unprepared for college who successfully complete remedial coursework
Virginia	2005–Present	Retention, access for underprivileged populations, tuition, external research grants, contribution to economic development
Washington	1997–1998	Graduation rates, retention, undergraduate efficiency (ratio of credits taken to credits needed to graduate), faculty productivity, plus one unique indicator for each university

Table 2
Summary Statistics (Stage One)

	Mean	Standard Deviation	Minimum	Maximum
State appropriations (in $ millions)	101.8	114.5	3.11	696.0
State higher education spending per full-time equivalent student (constant $1,000s)	6.83	1.44	2.95	13.7
Noncompetitive (Barron's)	0.091	0.29	0	1
Less competitive (Barron's)	0.17	0.38	0	1
Competitive (Barron's)	0.48	0.50	0	1
Very competitive (Barron's)	0.19	0.39	0	1
Highly competitive (Barron's)	0.06	0.24	0	1
Most competitive (Barron's)	0.012	0.11	0	1
Gifts, grants, and contracts per enrollment (constant $1,000s)	6.77	8.01	0.59	71.5
Undergraduate enrollment (1,000s)	11.2	7.87	0.77	53.3
Graduate enrollment (1,000s)	2.60	2.64	0	15.0
Percent receiving federal aid	31.1	14.8	2	90
Percent black students	12.7	19.3	0.14	97.8
Percent Hispanic students	6.25	10.6	0	88.5
Graduation rates (latest available information)	46.9	16.0	2.53	100
Retention rate	74.3	10.2	16	97
Bachelor's degrees produced per enrollment	0.17	0.043	0.023	0.30
Performance funding	0.21	0.41	0	1

Figure 2
Correlation Matrix for Stage One



*** p<.001, ** p<.01, * p<.05

institutions are rewarded for improving, so I also include interactions for performance funding with these variables.

My dataset includes all public 4-year degree-granting institutions with a Carnegie classification of bachelor's or higher (excluding military academies and universities located in Washington, DC), with data from multiple years for each university. When dealing with data that have both cross-sectional and time-series components such as these, one must be careful to address potential problems with serial autocorrelation and heteroskedasticity between panels (Greene 2003; Wooldridge 2002). Thus, in both stages, I follow the advice of Beck and Katz (1995) and employ panel-corrected standard errors (PCSEs) with panel-specific corrections for AR1 autocorrelation.

The stage one model can be written as:

$$Y_{it} = \alpha + ßStateSpending_{st} + ßSelectivity_{it-1} + ßResearch_{it-1} + ßUndergrad_{it-1} + ßGraduate_{it-1} + ßPercBlack_{it-1} + ßPercHispanic_{it-1} + ßPercAid_{it-1} + ßGradRate_{it-1} + ßRetention_{it-1} + ßDegrees_{it-1} + ßPFunding_{it} + ßPFunding \times Performance_{it-1} + \varepsilon_{it},$$

where Y_{it} is the amount of funding that an institution received in appropriations at time t, α is the constant, $StateSpending_{st}$ is the amount of money that a state appropriated for higher education in year t, $Selectivity_{it-1}$ is a set of variables to reflect institutional competitiveness, PFunding $\times$ Performance represents a vector for the interaction terms for performance funding and each dimension of performance, and ε_{it} is the error term.

STAGE ONE—FINDINGS

Figure 3 provides an exploratory look at the variation that exists among the states when it comes to the relationship between funding and performance. Each dot represents an individual institution within a given state, and the lines show bivariate regression slopes of graduation rates on state appropriations. Observations in years where states have adopted performance funding are gray, whereas those in years without performance funding are black. Although one should be cautious about drawing overly strong conclusions from this display alone, particularly given the lack of controls for confounding variables, there does not seem to be a very strong pattern in terms of performance-funding states having markedly closer connections between student outcomes (at least in terms of graduation rates) and appropriations. Furthermore, in many cases where states had a policy for some of the years but not all of them, there appears to be almost no difference in the strength of the relationship between performance and institutional funding. With this in mind, I now turn to more sophisticated multivariate analysis of my stage one model in order to better understand the factors that shape state appropriations.

Results for stage one are listed in table 3, and there are several important findings. As stated earlier, I ran four models in total (one for each student outcome variable separately and one combined model with all the outcome variables). In terms of the nonstudent outcome-related variables, the findings are generally consistent across all four models; however, because these models incorporate different time spans and because some of the student outcome variables are highly correlated with each other, some of the effects in the first three models are no longer statistically significant in model 4.

First, in terms of performance information, there is a positive and statistically significant relationship between the latest information on each measure of student outcomes and

Table 3
Stage One Results (Dependent Variable, State Appropriations, in Constant $ Millions)

	(1)	(2)	(3)	(4)
State higher education spending per full-time equivalent student (constant $1,000s)	9.159***	10.479***	9.264***	10.179***
	(0.44)	(0.69)	(0.45)	(0.60)
Undergraduate enrollment (1,000s)	7.382***	7.315***	7.519***	7.004***
	(0.34)	(0.38)	(0.36)	(0.37)
Graduate enrollment (1,000s)	8.666***	7.542***	8.601***	7.703***
	(0.96)	(1.12)	(1.02)	(1.05)
Less competitive (Barron's)	1.526	5.285**	1.611	1.970
	(1.60)	(2.01)	(1.55)	(2.04)
Competitive (Barron's)	−3.821*	−2.119	−2.472	−5.253*
	(1.69)	(2.15)	(1.58)	(2.32)
Very competitive (Barron's)	6.069*	6.715*	7.421**	2.247
	(2.67)	(3.28)	(2.45)	(3.36)
Highly competitive (Barron's)	13.632**	7.898	15.309***	2.704
	(4.93)	(6.28)	(4.63)	(6.15)
Most competitive (Barron's)	54.003**	79.143***	59.715***	70.847***
	(18.67)	(19.37)	(17.65)	(19.55)
Gifts, grants, and contracts per enrollment (constant $1,000s)	4.721***	5.072***	4.781***	4.918***
	(0.28)	(0.34)	(0.26)	(0.34)
Percent receiving federal aid	0.090*	0.110*	0.084*	0.198***
	(0.04)	(0.05)	(0.04)	(0.05)
Percent black students	−0.121***	−0.132***	−0.104***	−0.098**
	(0.03)	(0.04)	(0.03)	(0.03)
Percent Hispanic students	−0.583***	−0.721***	−0.667***	−0.695***
	(0.06)	(0.07)	(0.06)	(0.07)
Graduation rates (latest available information)	0.365***	—	—	0.257***
	(0.06)	—	—	(0.07)
Retention rate	—	0.229**		−0.037
	—	(0.07)		(0.06)
Bachelor's degrees produced per enrollment	—	—	131.567***	125.882***

Continued

Table 3 *(continued)*
Stage One Results (Dependent Variable, State Appropriations, in Constant $ Millions)

	(1)	(2)	(3)	(4)
	—	—	(18.36)	(17.63)
Performance funding	8.574^{+}	8.107	9.984^{+}	8.176
	(4.49)	(10.59)	(5.96)	(9.95)
Performance funding × undergraduate enrollment	1.322***	1.183*	1.331***	0.971^{+}
	(0.38)	(0.50)	(0.39)	(0.50)
Performance funding × graduate enrollment	−2.506^{+}	−2.093	−2.497^{+}	−1.790
	(1.28)	(1.86)	(1.34)	(1.89)
Performance funding × gifts, grants, and contracts	−1.115*	−1.372^{+}	−1.235**	−1.195
	(0.48)	(0.70)	(0.46)	(0.73)
Performance funding × less competitive	1.918	3.798	1.646	2.335
	(2.56)	(2.98)	(2.51)	(3.02)
Performance funding × competitive	7.332**	10.393**	5.344^{+}	9.139**
	(2.82)	(3.28)	(2.78)	(3.45)
Performance funding × very competitive	4.274	3.034	1.538	5.447
	(4.39)	(4.81)	(4.37)	(4.86)
Performance funding × highly competitive	−5.417	−8.895	−8.905	−0.061
	(7.69)	(10.89)	(7.72)	(10.27)
Performance funding × most competitive	−22.411	−71.766*	−20.922	−75.237*
	(27.99)	(32.13)	(25.72)	(33.36)
Performance funding × percent receiving federal aid	−0.134*	−0.096	−0.128*	−0.185*
	(0.05)	(0.08)	(0.05)	(0.08)
Performance funding × percent black	0.172***	0.088	0.177***	0.092
	(0.05)	(0.06)	(0.05)	(0.07)
Performance funding × percent hispanic	0.226***	0.248**	0.293***	0.291***
	(0.06)	(0.08)	(0.06)	(0.08)
Performance funding × graduation rate	−0.307***	—	—	−0.211^{+}
	(0.08)	—	—	(0.12)
Performance funding × retention rate	—	−0.186	—	0.046
	—	(0.16)	—	(0.14)

Continued

Table 3 *(continued)*
Stage One Results (Dependent Variable, State Appropriations, in Constant $ Millions)

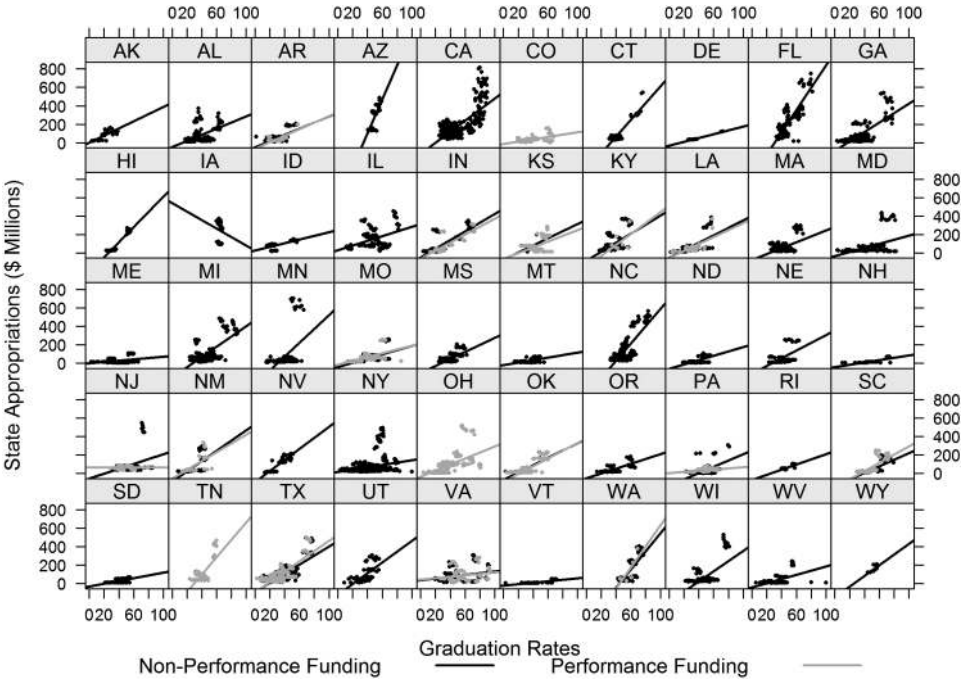
	(1)	(2)	(3)	(4)
Performance funding × degrees per enroll	—	—	−85.386**	−31.335
	—	—	(32.02)	(43.35)
Constant	−106.117***	−119.730***	−114.520***	−126.259***
	(4.93)	(6.75)	(5.53)	(6.88)
No. of observations	3,327	2,280	3,386	2,273
No. of universities	423	398	425	397
Years covered	1999–2009	2003–2009	1999–2009	2003–2009
Wald χ^2	4,168.83***	4,791.36***	4,085.96***	5,641.07***
R^2	0.878	0.926	0.883	0.935

Note: PCSEs in parentheses.
$+p < .10$, $*p < .05$, $**p < .01$, $***p < .001$.

state appropriations (though for retention, this effect does not persist in the combined model). Note that because of the interaction terms, these values represent the relationship between various metrics of performance and appropriations in states that *do not* have performance-funding policies. Given the extent to which proponents of performance funding bemoan the lack of incentives for improving student outcomes, this point is quite meaningful for substantive debates regarding the need for dramatic reforms in funding mechanisms for public universities. Even in states without performance funding, there is a positive and statistically significant relationship between performance information regarding student outcomes and institutional funding.

Second, as expected, highly productive research universities and selective institutions receive considerably more in state appropriations than their peers. With regard to enrollments, both undergraduate and graduate enrollments are positively related to the amount of money that institutions receive from state governments. For undergraduate enrollments, the effect ranges from $7.0 million to $7.5 million per each additional 1,000 students, whereas a similar increase in the number of graduate students yields an expected increase of $7.7 million to $8.7 million. With respect to disadvantaged student populations, the relationships between both the percentage of students who are black and the percentage of students who are Hispanic and state appropriations are negative and statistically significant in all four models. Every 1% increase in black students is associated with $98,000–$132,000 less in state appropriations, whereas a similar increase in the percentage of Hispanic students yields an expected $583,000–$721,000 drop in state support. For percentage of students

Figure 3
Exploring the Relationship between Performance and Funding by State



receiving financial aid, however, the coefficient is positive and statistically significant in all four models.

Turning now to the interaction terms, there are some conflicting results. The interaction for performance undergraduate enrollment is positive and significant in all four models, whereas the term for performance funding and graduate enrollment is negative statistically significant in two of the models (models 1 and 3). As expected, this implies that states with performance funding actually place greater emphasis on undergraduate enrollments than nonperformance states when allocating resources to public universities. Similarly, the interaction terms for percent black and percent Hispanic are also positive and generally significant, which implies that performance-funding states are indeed providing some rewards to institutions that increase student diversity.

With respect to other metrics of performance, however, my findings suggest that performance-funding policies have generally been ineffective. First, note that the interaction for performance funding and research revenues are negative and statistically significant in three of the four models, indicating that many of the states with these policies are less likely to reward highly productive research institutions than their peers. With regards to performance funding and institutional selectivity, there is a positive interaction for schools that are classified as competitive (the midpoint on Barron's selectivity scale); the effect is reversed with those that are most selective. Finally, the interaction terms for graduation rates, retention, and degree production and performance funding are all either insignificant or significant and negative, which suggests that, contrary to what proponents argue, states

with performance funding actually have a somewhat weaker link between student outcomes and institutional funding.

The negative and statistically significant coefficients for the interactions between performance funding and graduation rates bachelor's degree production are particularly surprising given the amount of attention that these policies have received from those who favor outcome-based accountability. One possible explanation for this unexpected result is that states adopt these policies when they perceive that public revenues are not being utilized appropriately but that the policies themselves are ineffective in terms of dramatically changing the budget process.

Another possibility is that less formal mechanisms may be more powerful in shaping state budgets. A closer examination of the relationship between state legislators, particularly those who sit on committees responsible for allocating resources to higher education and university campuses, may be a useful starting place to gain leverage on this topic. For example, McLendon, Hearn, and Mokher (2009) find a positive link between appropriations to research universities within a state and the number of alumni from these institutions that are members of the state legislature. They argue that legislators tend to "privilege" institutions that they have close ties to, and it may be the case that performance-funding policies are simply unable to overcome these political biases. Regardless of the reasons for their ineffectiveness, it appears that performance-funding policies have not been successful in transforming state budgets when it comes to higher education.

STAGE TWO—DO PERFORMANCE-FUNDING POLICIES INFLUENCE UNIVERSITY PRIORITIES?

In stage two, I move from considering the impacts of performance funding on state policymakers to understanding how they influence individual institutions. To do so, I rely on a set of measures that indicate the percentage of education-related expenditures[2] that are allocated to research and instruction. As previously discussed, some observers have argued that research and undergraduate instruction are competing tasks, and many worry that heightened emphasis on research will have negative impacts for student outcomes. Given the fact that student outcomes (graduation rates in particular) play a central role in virtually every performance-funding scheme, one might expect that universities located in performance-funding states will spend less on research and more on instruction than they otherwise would. On the other hand, despite much of the strong rhetoric that has often pitted research against instruction, some performance-funding states actually adopted policies that encourage research productivity in addition to undergraduate education (though the findings from stage one indicate that they have not effectively done so). This would suggest that performance-funding policies might lead institutions to shift more resources to research. Finally, given the multitude of other factors that influence institutional budgets, it may be the case that performance-funding policies have little to no effect on institutional spending in either direction. Descriptive statistics for stage two are listed in table 4.

I use several independent variables to predict the amount of money that institutions spend on research and instruction. First, I include measures for both total enrollment and the

2 Total education-related expenditures include money allocated to the following activities: instruction, research, academic support, student services, public service, institutional support, and expenditures for scholarships and grants.

Table 4
Summary Statistics (Stage Two)

	Mean	Standard Deviation	Minimum	Maximum
% Expenditures on research	7.44	10.34	0	74.48
% Expenditures on instruction	45.11	8.09	1.55	93.87
Noncompetitive (Barron's)	0.11	0.31	0	1
Less competitive (Barron's)	0.21	0.40	0	1
Competitive (Barron's)	0.46	0.50	0	1
Very competitive (Barron's)	0.15	0.35	0	1
Highly competitive (Barron's)	0.05	0.21	0	1
Most competitive (Barron's)	0.01	0.09	0	1
Bachelor's (Carnegie)	0.23	0.42	0	1
Master's (Carnegie)	0.47	0.50	0	1
Research (Carnegie)	0.30	0.46	0	1
Total enrollment (1,000s)	11	9.80	0.18	68.06
% Undergraduate	85.19	11.27	0.07	100
% Students receiving federal aid	33.94	16.33	0	100
% Students who are part time	24	15.72	0.13	96.80
% Full-time faculty	65.45	18.24	0.66	100
Performance funding	0.15	0.36	0	1

percentage of students who are enrolled as undergraduates. Because graduate education is often geared toward the production of research, with many students working as research assistants, while undergraduate education is primarily focused on teaching and instruction, I expect that universities with a larger percentage of undergraduate students will expend more money on instruction and less on research.

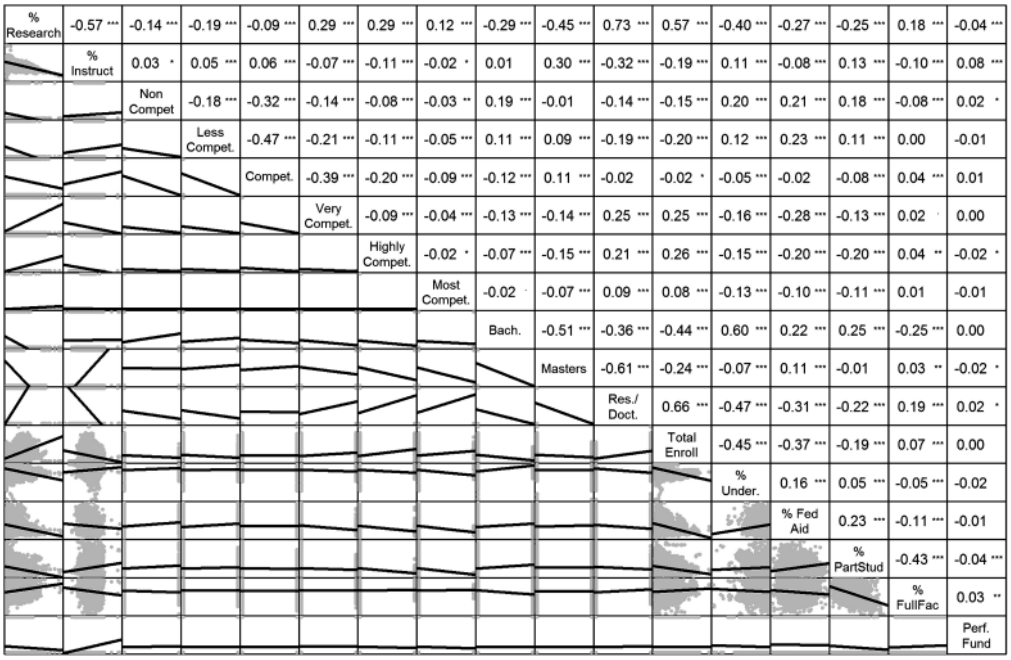
I also include a set of measures for institutional selectivity (the same Barron's selectivity measure that was employed in stage one) and mission (as measured by Carnegie classification), with the expectation that more selective institutions and those that are classified as research universities will spend a larger percentage of their resources on research activities, whereas teaching institutions (those classified as either Bachelor's degree granting or Master's degree granting) will spend more on instruction. Furthermore, I include measures for the percentage of students who are part time and the percentage who receive federal aid. Because these students are generally the most vulnerable, in terms of their risk to drop out of school before they complete a degree, I expect that these variables will be positively related to institutional expenditures on instruction. Finally, in addition to student demographics, I also include a measure for the percentage of faculty who are full-time employees with 9/10-month equated contracts, with the expectation that a higher percentage of faculty members who are full time will be positively related to research and negatively related to instruction (figure 4).

As was the case with stage one, I use PCSEs with panel-specific AR1 terms to correct for autocorrelation within panels and heteroskedasticity between panels. My stage two models can be written as:

$$Y_{it} = \alpha + ßSelectivity_{it} + ßMission_{it} + ßEnrollment_{it} + ßPercUndergrad_{it} + ßPercAid_{it} + ßPercPartTStudents_{it} + ßPercFullTFac_{it} + ßPFunding_{it} + \varepsilon_{it},$$

where Y_{it} is the percentage of expenditures on instruction or research for an institution at time t, α is the constant term, $Selectivity_{it}$ is a set of variables to reflect institutional

Figure 4
Correlation Matrix for Stage Two



competitiveness, Mission_{it} is a vector of variables to reflect Carnegie classification, PFunding_{it} represents a dichotomous variable for whether an institution was subject to a performance-funding policy at time *t*, and ε_{it} is the error term.

STAGE TWO—FINDINGS

Results for stage two are listed in table 5. Turning first to the percentage of expenditures on research, there are a number of interesting findings. As expected, total enrollment is positively related to the research expenditures, and every 10,000 student increase in total enrollment is associated with a 0.89 percentage point increase in expenditures on research. Similarly, institutions that are classified as highly or most competitive spend 1.90 and 1.71 percentage points more on research than their noncompetitive peers, whereas Research and Doctoral degree-granting universities spend 14.78 percentage points more than those classified as baccalaureate colleges. Conversely, the percentage of students who are undergraduates is negatively related to research spending, and every 10 percentage point increase in undergraduate students yields a 0.77 percentage point decrease in research expenditures. A similar increase in the percentage of students who are part time is associated with a 0.61 percentage point decrease. With regard to the variable of interest, performance funding is negatively related to research expenditures, and institutions located in states with performance-funding policies spend 0.34 percentage points less of their educational expenditures on research than they would, all else equal, in nonperformance-funding states.

Table 5
Stage Two Results

	% Expenditure on Research	% Expenditure on Instruction
Less competitive (Barron's)	−0.178	0.429
	(0.17)	(0.29)
Competitive (Barron's)	−0.158	0.688*
	(0.17)	(0.27)
Very competitive (Barron's)	0.283	1.040**
	(0.25)	(0.33)
Highly competitive (Barron's)	1.904***	0.364
	(0.40)	(0.58)
Most competitive (Barron's)	1.710**	0.097
	(0.61)	(0.73)
Master's (Carnegie)	−1.426***	2.183***
	(0.36)	(0.47)
Research (Carnegie)	14.779***	−4.134***
	(0.62)	(0.80)
Total enrollment (1,000s)	0.089***	−0.028
	(0.02)	(0.03)
% Undergraduate	−0.077***	−0.011
	(0.01)	(0.02)
% Students receiving federal aid	0.003	−0.041***
	(0.00)	(0.01)
% Students who are part time	−0.061***	0.007
	(0.01)	(0.01)
% Full-time faculty	−0.006	-0.012^{+}
	(0.00)	(0.01)
Performance funding	−0.342**	0.890***
	(0.12)	(0.21)
Constant	11.062***	47.393***
	(1.47)	(2.07)
No. of observations	5,490	5,490
No. of universities	490	490
Years covered	1998–2009	1998–2009
Wald χ^2	6,673.57***	688.64***
R^2	0.786	0.943

Note: PCSEs in parentheses.
$+p < .10$, $*p < .05$, $**p < .01$, $***p < .001$.

In terms of instructional expenditures, similar patterns emerge. Somewhat surprisingly, competitive and very competitive institutions spend more on instruction than do those on either end of the selectivity scale. Research and Doctoral degree-granting universities spend 4.13 percentage points less on instruction than do other schools, whereas institutions classified as Master's degree granting spend 2.18 percentage points more on instruction than do Bachelor's degree only granting schools. Similarly, as the percentage of faculty who are full time and the percentage of students who receive federal financial aid increase, expenditures on instruction decrease. Finally, performance funding is positively related to the proportion of expenditures that are allocated to instruction, with institutions in

performance-funding states spending about 0.89 percentage points more on instruction than those in nonperformance states, all else equal.

Although performance-funding policies appear to work in the desired direction for both expenditures and instruction, the effects are minimal. In both instances, the differences between institutions with performance funding versus those without are less than 1 percentage point. Given the previously discussed findings that indicate little effect of accountability policies on state budgets (and thus institutional incentives), it is perhaps unsurprising that we observe such minimal effects when examining institutional priorities. As state governments are increasingly incapable of subsidizing higher education in the same capacity as has traditionally been the case (Mumper 2003; Weerts and Ronca 2006), public universities have come to rely more and more on private sources of revenue (including competition for research funding). Nevertheless, given that current performance-funding efforts have largely been ineffective at reshaping state budgets, the fact that these policies have had even minimal impacts on institutional spending is a notable and somewhat surprising finding. These results leave open the potential for these policies to have considerable effects on administrative behavior if policymakers could more effectively tie larger incentives to institutional performance.

One important question that remains about the influence of performance-funding policies on institutional behavior is whether or not there are differential impacts. Given that large research universities are often times considerably more visible than nonresearch universities, one might speculate that performance-funding policies would have a greater impact on their priorities. On the other hand, these institutions have greater access to outside revenues and are often times portrayed as less reliant on state funding than other institutions in their state (Ehrenberg 2006). Thus, performance-funding policies on spending priorities could also conceivably be less influential for research universities than other institutions.

In order to test whether the influence of performance funding was different based on institutional mission, I reran the analysis from stage two separately for research institutions versus nonresearch institutions (tables 6 and 7). In both cases, it appears that the effect of performance-funding policies is greater for research universities than it is for nonresearch universities. In the case of expenditures on research, performance-funding policies have a negative and statistically significant influence on institutional spending, but they are not significant in the model for nonresearch universities. For instruction, performance-funding policies are positive and statistically significant in both cases, but the magnitude of the effect for research universities is more than double that for nonresearch institutions (1.34 versus 0.59). Although performance-funding policies are generally aimed at all public institutions in a state, it appears that they may be more influential on research universities.

CONCLUSION AND DISCUSSION

Overall, the results from both stage one and stage two failed to find any substantial evidence that performance-funding policies have had significant impacts on state budgets or institutional priorities. One interesting finding that has implications for both the performance management literature and the broader literature on performance and public organizations is that the link between performance information and funding may already be more substantial than many observers are currently aware. Performance-funding policies

Table 6
Differential Impacts of Performance Funding on Percentage of Expenditures on Research: Research versus Nonresearch Universities

	Nonresearch Universities	Research Universities
Less competitive (Barron's)	−0.258	−1.251**
	(0.20)	(0.44)
Competitive (Barron's)	−0.382^{+}	−0.106
	(0.20)	(0.40)
Very competitive (Barron's)	−0.568^{+}	0.602
	(0.32)	(0.43)
Highly competitive (Barron's)	−0.356	2.169***
	(0.54)	(0.56)
Most competitive (Barron's)	0.817	1.303^{+}
	(0.81)	(0.78)
Total enrollment (1,000s)	−0.036*	0.151***
	(0.02)	(0.03)
% Undergraduate	−0.058***	−0.148***
	(0.01)	(0.04)
% Students receiving federal aid	0.010**	−0.027***
	(0.00)	(0.01)
% Students who are part time	−0.025***	−0.201***
	(0.01)	(0.02)
% Full-time faculty	0.007^{+}	−0.016^{+}
	(0.00)	(0.01)
Performance funding	0.042	−0.852**
	(0.12)	(0.30)
Constant	7.824***	33.417***
	(1.15)	(3.65)
No. of observations	3,599	1,891
No. of universities	327	163
Years covered	1998–2009	1998–2009
Wald $\chi 2$	125.30***	448.86***
R^2	0.202	0.804

Note: PCSEs in parentheses. Dependent Variable, % expenditures on research.
$+p < .10$, $*p < .05$, $**p < .01$, $***p < .001$.

are largely based on the premise that university administrators do not currently place enough emphasis on student outcomes because they have few incentives to do so. This analysis finds that institutions do face meaningful financial incentives for improving performance and that performance-funding policies have done little (if anything) to make these incentives any more powerful than they already are.

Moreover, Zhang (2009) found that state appropriations have a positive impact on institutional graduation rates, so it may be the case that most institutions are already highly concerned with student outcomes and that they simply need more resources from state governments in order to produce results. If this is the case, then a shift toward funding policies that effectively punish those institutions that are underperforming may actually work to undercut progress toward improving student outcomes and alleviating achievement gaps. Rather than responding with desired shifts in administrative priorities (i.e., smaller

Table 7
Differential Impacts of Performance Funding on Percentage of Expenditures on Instruction: Research versus Nonresearch Universities

	Nonresearch Universities	Research Universities
Less competitive (Barron's)	0.702*	−0.715^{+}
	(0.36)	(0.43)
Competitive (Barron's)	0.848*	−0.093
	(0.34)	(0.38)
Very competitive (Barron's)	1.949***	−0.179
	(0.43)	(0.45)
Highly competitive (Barron's)	2.182**	−1.043
	(0.82)	(0.74)
Most competitive (Barron's)	1.750	−1.308
	(1.72)	(0.84)
Total enrollment (1,000s)	0.200***	−0.154**
	(0.03)	(0.05)
% Undergraduate	0.003	−0.080^{+}
	(0.02)	(0.04)
% Students receiving federal aid	−0.053***	−0.002
	(0.01)	(0.01)
% Students who are part time	−0.021^{+}	0.020
	(0.01)	(0.03)
% Full-time faculty	0.002	−0.017
	(0.01)	(0.01)
Performance funding	0.586*	1.343***
	(0.24)	(0.33)
Constant	45.928***	51.694***
	(1.71)	(4.66)
No. of observations	3,599	1,891
No. of universities	327	163
Years covered	1998–2009	1998–2009
Wald χ^2	227.75***	99.35***
R^2	0.946	0.931

Note: PCSEs in parentheses. Dependent Variable, % expenditures on instruction.
$+p < .10$, $*p < .05$., $**p < .01$, $***p < .001$.

class sizes and more full-time faculty who are heavily involved in undergraduate education), institutions may instead react to these policies by simply raising admissions criteria and reducing access for at-risk students (Fryar 2011).

Second, although performance-funding policies do not appear to have dramatically altered institutional spending priorities, it is interesting to note that they had some minimal influence. If these policies do not effectively restructure financial incentives (as the findings from stage one indicate), why do institutions respond to them at all? One explanation may be that university administrators perceive that accountability policies will potentially have a major impact on their institutions at some point in the near future, even if they are not very effective right now. Given the highly charged political rhetoric that has surrounded these policies, universities may feel that they need to at least give an appearance of doing something proactive, lest their political principals get even more upset and adopt

an aggressive accountability policy in the years ahead. This may also help explain the differential impacts of performance funding across institutional types. Research universities are often the most visible institutions in the state, and thus, they may feel greater pressure from state policymakers to demonstrate a renewed commitment to undergraduate education. Additionally, the fact that these policies have indeed impacted institutional priorities despite their limited scope suggests that future performance-funding efforts might have substantial effects on administrative behavior if policymakers are able to connect more meaningful incentives to various metrics of performance.

Finally, there are considerable variations in the nature and content of the performance-funding policies that states have adopted. For example, some states such as Tennessee and Pennsylvania have developed performance-funding structures that have been lauded as encouraging excellence while maintaining differentiation between institutions with varied missions and student populations. By comparison, other states, like South Carolina, have been criticized for adopting benchmarks that are so easily attainable as to pose no real threat to university budgets (Aldeman and Carey 2009; Zumeta 2001). Understanding the ways in which these differences matter is beyond the scope of the current article but remains a task that warrants considerable attention in the future. As we move forward, these differences in policy design are likely to play a central role in the debate regarding accountability reform and performance funding.

Performance-based accountability is predicated on a causal logic that requires administrators and institutions to alter behavior and activities in ways that improve student outcomes. Although there has been considerable attention paid to the potential implications of these policies and to the ways in which they represent a shift in oversight relationships between higher education and state governments, there has been little empirical work to investigate the impacts that these policies have on either management or student outcomes. This article marks an initial step toward building a better understanding of the ways that these policies impact management and institutions. The findings, which suggest that performance-funding policies have generally been ineffective in their attempts to influence either state budget arrangements or institutional spending preferences, highlight the need to better understand the mechanisms by which accountability operates.

Ultimately, the goal behind performance initiatives is to improve the educational experience for students so that they emerge from college with a degree that adequately prepares them for the challenges of the modern economy. With this in mind, it is vitally important that policymakers pay more attention to the causal linkages between policy design and administrative responses as they seek to devise improved accountability structures and that scholars invest greater resources to empirically investigate these connections as they seek to understand governance and organizational performance.

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