

**Policy Adoption, Innovation, & Performance Management:
The Case of Performance Funding Policies in State Postsecondary Education**

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Abstract

In one of the more controversial public sector applications of performance management, several states are adopting policies that allocate a portion of funding for public higher education on the basis of institution performance. In addition to support from state-level officials, the policy is gaining support from key governmental and higher education organizations and the Obama administration. The enthusiasm for performance funding, however, comes in the absence of empirical evidence supporting its effectiveness and several states have abandoned and subsequently readopted policies, raising questions about the factors influencing adoption. This study empirically analyzes the factors associated with adoption of performance funding among the states using the Cox conditional gap time model for repeating events. Results indicate that state higher education governing structures, increases in public tuition, and educational attainment increase the likelihood that a state adopts the policy.

Introduction

More than 70 years ago, V.O. Key (1940, p.1138) posed a seemingly simple question that practitioners and researchers of public administration continue to debate: “On what basis shall it be decided to allocate resources to activity A rather than activity B?” In recent years, practitioners are increasingly using performance measurement to aide resource allocation decisions, improve decisionmaking, and hold public agencies and bureaucracies accountable (Behn 2003; Moynihan et al. 2010). Since the 1980s, nearly every state government has implemented some form of performance management (Melkers & Willoughby 1998; Moynihan 2006). It is now one of “the most important tools by which governments structure relationships, state values, and allocate resources with employees, third-party providers, and the public” (Moynihan et al. 2010).

Performance management continues to dominate many of the scholarly and policy-focused debates over public sector reform, and the addition of higher education into this space has created new opportunities for scholarly work. State performance funding policies for public higher education allocate a portion of an institution’s funding on the basis of student achievement, institution efficiency, and productivity. The policy signals a dramatic shift in the relationship between state governments and public higher education, as the traditional enrollment-based allocation models afforded institutions considerable autonomy (Alexander 2000). By tying funding to specific measures and outcomes, state governments are reducing university autonomy and asserting their desire to shift university priorities away from non-outcome-oriented activities, such as research, toward outcomes relating to undergraduate education (Rabovsky 2014).

While performance funding is relatively popular among the states, its implementation has been volatile and controversial. A period of rapid adoption in the 1990s was followed by a period of stagnation in the early 2000s as diffusion slowed and several states abandoned their policies (Dougherty et al. 2012). In recent years, however, the policy is making a comeback as several states that once abandoned the policy have readopted it, while others are adopting the policy for the first time or transitioning to more stringent variations (NCSL 2014).

This somewhat turbulent pattern of the adoption of performance funding policies among the states provides an opportunity to explore the factors that lead some states, but not others, to adopt (and readopt) policies. That several studies suggest the policy does not improve, and may hurt, institution performance (e.g., Fryar 2011; Rutherford & Rabovsky 2014; Tandberg & Hillman 2014) provides further reason to investigate why states continue adopting performance funding. Thus, this paper explores the factors influencing states to adopt performance funding policies for public higher education.

This paper uses the Cox conditional gap time model for repeating events and state-level panel data to test hypotheses about the factors associated with the adoption of performance funding policies for public higher education. The following sections provide a background on performance management and its application in the higher education context, and outline the theoretical framework used to develop hypotheses about policy adoption. The hypotheses draw on the public management literature on performance, literature relating to organizational theory, the literature on public higher education policy and politics, and the policy innovation and diffusion literature in political science. Later sections describe the dataset and analytical method, and report findings and discuss their implications for research and practice.

Performance Management and the Accountability Movement

Researchers associate the rise of performance management in the United States with the reinventing government movement of the early 1990s, when public concern about government performance and demand for accountability reached new heights (Joyce & Tompkins 2002; Radin 2006). In the seminal document of the movement, *Reinventing Government*, Osborne and Gaebler (1993) stressed, “we are no longer in ordinary times. Today’s citizens refuse to pay higher taxes for services whose prices skyrocket while their quality declines” (p.140). To make government compatible with the times, they argue, requires a focus on outcomes rather than inputs, and a customer-driven approach to governing (Osborne & Gaebler 1993). Maxims in *Reinventing Government* such as “if you can’t see success, you can’t reward it” (Osborne & Gaebler 1993, p.149), and “if you can’t reward success, you’re probably rewarding failure” (Osborne & Gaebler 1993, p.149), are illustrative of the seemingly simple logic that has made the notion of performance management so appealing for many policymakers.

While there is little doubt about the level of enthusiasm for measuring performance, researchers have raised a number of concerns about how performance information is used in the public sector, particularly as it is used to make decisions about resource allocations. They have challenged whether the performance measures used in the public sector accurately depict program and organization performance (Heinrich 1999; Joyce 1993), and demonstrated that in many cases where performance information is available it is not even used (Joyce & Tompkins 2002; Melkers & Willoughby 2005; Moynihan 2004; Radin 2000).

Researchers have also questioned whether the availability of performance information is associated with objective and impartial decisionmaking in the budget process. A question posed by Gilmour and Lewis (2006, p.743) succinctly illustrates the ambiguity that limits its potential

as a basis for impartial decisionmaking: “If a program performs poorly, does that mean it should be cut because it is wasting money or increased so that it can do better?” Thus, how actors interpret performance information and reach conclusions about budget allocations will vary according to factors such as constituency concerns, ideology, and political party (Moynihan 2005).

While considerable research has been dedicated to understanding how performance management is implemented and whether it improves performance, much less has been dedicated to understanding why performance management policies are adopted (Moynihan 2004). The lack of research in this area may be attributable to the fact that the adoption of performance management policies among governments, in general, was so rapid and so complete that it appeared there was little opportunity to study the differences between adopters and non-adopters (Melkers & Willoughby 1998). Given the arguably sharp divide between scholarship and practice regarding the wisdom of public sector performance management (Moynihan 2008), however, why governments adopt performance management policies is still a question worth asking. Where Osborne and Gaebler (1993, p.140) lamented, “why did we ever do it this way?” after describing the problems associated with input-based budgeting, performance management and budgeting scholars might ask why we have decided to do it this way instead. This paper attempts to answer this question in the context of public higher education. The next section briefly describes the history of performance funding policies for higher education.

The Empirical Context: State-Provided Postsecondary Education

The adoption and implementation of performance management in public higher education has generated considerable interest and controversy among both practitioners and researchers. State governments historically have allocated funding to public colleges and universities based

on enrollment. Performance funding directly ties a portion of state funding to institution performance according to a variety of indicators relating to student success, and institutional efficiency and productivity (Burke 2002). The allocation of funding based on performance has typically been a bonus over the normal input-based appropriation, amounting to no more than ten percent of the total state appropriation for higher education (Dougherty & Reddy 2011; NCSL 2014). Recently, however, some states have begun transitioning to a more stringent variation of the policy, the so-called “performance funding 2.0,” where performance funding is no longer a bonus but an embedded component of the normal appropriation (Dougherty & Reddy 2011). Not only are these states making performance funding an embedded component of the normal state appropriation, they are significantly increasing the percentage of funding that will be allocated based on performance. Tennessee, for example, plans to transition to a formula that allocates 100 percent of state appropriations based on performance (NCSL 2014).

While the policy is not new—Tennessee adopted the first policy in 1979 (Burke 2002)—the parallel emergence of the new politics of public higher education and the reinventing government movement in the early 1990s opened a window of opportunity for performance funding policies (Kingdon 1984). In 1993 state financial support for public higher education saw an unprecedented decline after decades of consistent increases, as the national average for state appropriations for public higher education was less than the previous year for the first time (Burke 2002). As state budgets tightened in response to a national recession, public higher education institutions became an attractive target for cuts, as they were seen as uniquely capable of replacing lost revenues through other means, such as tuition increases, grants, and private donations (Zumeta 2001). Thus, public higher education’s share of state funding fell disproportionately compared to healthcare, welfare, corrections, and public schools (Burke

2002). When institutions responded to weaker state support by raising tuition, however, policymakers and the public reacted strongly. It was perceived that, rather than raise tuition, institutions ought to use existing funds more efficiently, and public demand for accountability in spending on public higher education increased (Zumeta 2001). A quote in a 1992 article in the *Chronicle of Higher Education* offers a telling example of the new political rhetoric surrounding funding for public higher education in the 1990s:

Senator Parker of Texas says the public is tired of ivory-tower explanations of what universities do. “Educators need to become attuned to the fact that, whether they like it or not, they are public employees and accountable to the great unwashed,” he says (Lively 1992).

Across the country there was a perception that while costs and tuitions continued to rise, productivity, efficiency, and quality in public higher education were in decline (Burke 2002; Dougherty et al. 2013). In particular, it was believed that undergraduate education was being neglected—partially at the expense of graduate studies and research—as schools admitted too many unqualified students, graduated too few, and left too many of those who did graduate without the skills and knowledge necessary to succeed in the emerging knowledge and information driven economy (Burke 2002). Thus, performance funding policies became the favored response for public officials to satisfy public demand for accountability and improved performance in public higher education.

As Moynihan (2004) has pointed out, inadequate resources and weak commitment to performance management reforms often lead to their demise. This appears to have been the case with performance funding for public higher education polices, as several states in the early 2000s abandoned their policies due to strong opposition in the academic community, and waning support on the part of governors (Burke & Modarresi 2001; Dougherty et al. 2012). The decline of performance funding policies, however, was short-lived, as states that once abandoned

policies are readopting them, several more states are enacting legislation—or are in formal discussions—to adopt the policies for the first time, and some states with well established policies are in the process of transitioning to more stringent variations (NCSL 2014). Some scholars credit this resurgence to the efforts of Complete College America (CCA), a nonprofit advocacy organization that formed in 2009 and began lobbying state governments to adopt higher education reforms, including performance funding (Fryar 2011; Rabovsky 2012). The organization boasts 32 members in their “Alliance of States” who are “ready to take bold actions to significantly increase the number of students successfully completing college and achieving degrees and credentials with value in the labor market and close attainment gaps for traditionally underrepresented populations” (CCA 2012), and presumably implement performance-based funding policies.

The next section describes the policy adoption and diffusion method of analysis used for answering the research question.

The Policy Adoption and Diffusion Method of Analysis

Researchers have examined patterns of state policy adoption and innovation since the 1960s, but Berry and Berry’s (1990) paper on state lotteries sparked renewed interest in this topic across a variety of policy areas. Berry and Berry’s event history analysis (EHA) approach improved the methodology used to understand policy adoption by exploiting temporal and cross-sectional variations in behavior to test both internal determinants and regional diffusion. Internal determinants models test a combination of political and socioeconomic characteristics of a state as a function of policy adoption, while regional diffusion models focus on the impact of previous adoptions by neighboring states (Berry & Berry 1990).

A previous paper using Berry and Berry's (1990) framework to study the adoption of performance funding policies found that the presence of a consolidated governing board and the percentage of Republicans in a state's legislature were statistically significant predictors of adoption (McLendon, Hearn, & Deaton 2006). Since 2002, the final year of data used in their study, however, several states have adopted or readopted policies. This paper extends their analysis by incorporating more recent data and accounting for the readoption of abandoned policies using the Cox conditional gap time model for repeating events. The next section describes hypotheses about the adoption of performance funding relating to institutional arrangements, past institution performance, and state politics.

Hypotheses

Higher Education Governing Structures: Centralization and Autonomy

Previous research has found that variation in governance structures for public higher education has important implications for the relationship between state government and public higher education institutions (Lowry 2007; Knott & Payne 2004; Nicholson-Crotty & Meier 2003). In particular, variation in public higher education governing structure determines the degree to which there is autonomy or centralization in governance (Nicholson-Crotty and Meier 2003). The degree of autonomy affects a bureaucracy's ability to implement policy without political interference, while centralization affects the transactions costs for political institutions seeking to influence it.

Higher education governing structures vary among the states, but are conceptualized in the literature as either consolidated governing boards or statewide coordinating boards (Lowry 2007). Consolidated governing boards are centralized, have high autonomy, and play an active

role in developing and implementing policy. They develop budgets, manage the allocation of resources between campuses, are generally responsible for the governance of individual public institutions, and have professional staffs to assist in exercising these responsibilities, as well as to collect and disseminate information about the activities of public higher education institutions (Lowry 2001). Coordinating boards, on the other hand, are decentralized and have little autonomy, with the scope of their responsibilities essentially limited to acting as an interface between individual public higher education institutions and state government (Nicholson-Crotty & Meier 2003).

That consolidated boards are both highly autonomous and highly centralized has led to confusion in the literature about whether their structure enhances or mitigates influence from political actors. On the one hand, it might be expected that the autonomy of consolidated boards mitigates attempts by political actors to influence the activities of public higher education institutions. On the other hand, high centralization would seem to reduce the transactions costs associated with attempts to influence a bureaucracy (Nicholson-Crotty & Meier 2003). In either case, the presence of a consolidated governing board may be expected to reduce the likelihood a state adopts performance funding.

Tandberg's (2013) conceptualization of governing boards as boundary-spanning organizations may help shed further light on why states with consolidated boards may be less likely to adopt performance funding policies. As boundary spanning organizations, higher education governing boards act as a conduit of information between state government and public higher education administrators (Tandberg 2013). More centralized governing boards may provide better communication between political principals in state government and agents in the state higher education bureaucracy, reducing information asymmetry. Enhanced communication

may also facilitate dialogue that eases tensions associated with divergent goals and interests. The greater analytic capacities afforded by the professional staffs of consolidated boards may also help reduce information asymmetries that spur the use of performance funding.

Thus,

H₁: States with consolidated governing boards are less likely to adopt performance funding policies for higher education than states with coordinating boards.

Symbolic Benefits: Responding to increases in tuition?

As Moynihan (2004) points out, an important symbolic benefit of passing performance management reform is creating a perception that something is being done to control bureaucracies that appear to be spending too much public money without accountability for performance. Tuition increases at public higher education institutions arouse concern among the public and elected officials and invite greater scrutiny of how institutions use their resources (Zumeta 2001). Thus, spikes in public tuition may increase the likelihood of policy adoption as elected officials seek policy alternatives for responding to public demand for accountability in public higher education. Stated as a hypothesis:

H₂: States experiencing increases in tuition are more likely to adopt performance funding policies.

Past Performance: Degree Attainment

One of the drivers of the performance funding movement in public higher education is concern over degree attainment (Fryar 2011). Officials in states that adopt performance funding policies may be motivated by perceptions of poor performance by their public higher education institutions, which can be captured by institutions' historical ability to graduate students.

Stated as hypotheses:

H_{3,1}: States with lower degree completion rates are more likely to adopt performance funding policies than states with higher rates.

H_{3,2}: States with lower educational attainment are more likely to adopt performance funding policies than states with higher educational attainment.

State Partisan Composition

Burke (2002) has suggested that partisan politics play little role in the adoption of performance funding policies for public higher education, as there has been considerable variation in party control of state government when policies were adopted. While the literature on performance management demonstrates that partisan politics and ideology are important predictors of how performance information is interpreted (Gilmour & Lewis 2006; Moynihan 2005), there is little discussion of whether partisan politics predict support or opposition to the adoption of performance management policies. In the context of public higher education, however, recent research has found a preference among Republican elected officials for performance funding policies (Dougherty et al. 2013; McLendon, Hearn, & Deaton 2006). In general, studies of policy diffusion and innovation have found partisan control of state government to be an important predictor of policy choices (Berry 1994). Thus,

H_{4,1}: States with higher percentages of Republicans serving in the legislature are more likely to adopt performance funding policies than states with lower percentages.

H_{4,2}: States with a Republican governor are more likely to adopt performance funding policies than states with a governor from another party.

Legislative Professionalism

An additional factor that may be an important predictor of policy adoption is legislative professionalism. States with greater staff capacity, longer legislative sessions, and higher legislator pay may have more educated legislators, a greater capacity to deal with complex policy issues, and are generally thought to be more likely to innovate (Berry 1994; Squire 2007). In the context of performance funding policies, however, two factors suggest more professionalized legislatures may be less likely to adopt performance funding policies. First, more professionalized legislatures tend to exhibit greater sympathy for public higher education and appropriate greater shares of their states' budgets to public higher education (Tandberg 2010). While legislators sympathetic to public higher education may not necessarily be opposed to policies that promise to improve institution performance, they may be less inclined to support a policy that has been intensely criticized by the academic community (Burke 2002; Dougherty et al. 2012). Second, legislative professionalism may reduce information asymmetries, as greater staff resources and longer sessions will enhance the ability of legislators to interact with public higher education bureaucracies and become informed about their activities (Nicholson-Crotty & Meier 2003). Thus,

H₅: States with more professionalized legislatures are less likely to adopt performance funding policies than states with less professionalized legislatures.

Data

To test these hypotheses, a longitudinal dataset was constructed using data from multiple sources to identify when states adopted and abandoned performance funding policies and construct explanatory variables. This section describes the data sources used to construct the final dataset, the specific variables and measures, and descriptive statistics.

The study primarily relies on data from the National Conference of State Legislatures (NCSL), previous research (Burke & Serban 1998; Burke & Modarresi 2000; Burke & Modarresi 2001; Burke, Minassians, & Nelson 2003; Dougherty et al. 2012; Dougherty et al. 2013; Rabovsky 2012), and source documents from state governments to determine whether and when a state adopted a performance funding policy. A list of states compiled by Dougherty, et al. (2012) is used for determining whether and when states terminate their policies.

The final dataset includes 1,078 observations, with data for 48 states over the period of 1990-2011. Nebraska was omitted because its unicameral, non-partisan legislature precludes measurement of the effect of partisan strength on the likelihood of policy adoption. Tennessee was omitted because it adopted the policy in 1979, which is too early to be included in the study with sufficient data. The specific sources for these data, the operationalization of the variables, and descriptive statistics are discussed below. Descriptive statistics appear in table 1.

[Table 1]

Dependent variable

The dependent variable is dichotomous and coded 1 if a state adopts performance funding for the first time or readopts the policy after abandoning it. States are considered to adopt a policy if they begin funding all, or a segment of, their public higher education institutions based on performance. The dataset includes 29 total adoptions among 23 states over the period of 1990-2011. State adoptions by year appear in table 1.

Independent Variables

Consolidated governing board. Data indicating whether a state has a consolidated governing board are drawn from McGuinness (1988, 1994, 1997) and Tandberg (personal communication, 2015). While McGuinness (1997) identifies several variations of governing

boards for higher education, this study follows previous research using a binary variable coded as 1 if a state has a consolidated governing board and 0 if it has a coordinating board (Lowry 2001; Nicholson-Crotty & Meier 2003; McLendon, Heller, & Young 2005; McLendon, Hearn, & Deaton 2006).

Growth in tuition. This variable measures the 3-year average percent change in tuition for each state's flagship institution, and is lagged one year. The variable was constructed using data compiled by researchers at Postsecondary Education Opportunity. The average 3-year average growth in tuition among the state-year observations in the dataset is 4.36 percent. The largest 3-year average tuition increase, 25.752 percent, occurred in Texas in 1997, while the lowest, a 6.833 decrease, occurred in Virginia in 2002.

Completion rate. This variable measures degrees awarded as a percentage of total enrollment across all public 4-year and higher colleges and universities in a state, and is lagged one year. The average completion rate among the state-year observations in the dataset is 18.471. The highest completion rate is 26.390 in 1997 in Washington, while the lowest is 6.87 in Alaska in 1991. The variable was constructed using data from the Integrated Postsecondary Education Data System.

Educational Attainment. This variable measures the percentage of each state's population age 25 and over that has at least a Bachelor's degree, and is lagged one year. The average educational attainment rate among the state-year observations is 24.692. Among the state-year observations, the lowest level of educational attainment is 11.1 percent in 1990 in West Virginia, while Massachusetts has the highest at 44.408 percent in 2007. The data were collected from the U.S. Census Bureau.

Percent Republicans. This variable measures the total percentage of Republican members in a state's legislature. The average percent Republican members in the legislature among the state-year observations is 46.442. The lowest percentage of Republican legislators is 8.850 in Rhode Island in 2010, while the highest is Idaho in 2001 at 21.2 percent. The variable was constructed using data from Klarner's State Partisan Balance dataset.

Republican governor. This is a binary variable indicating whether a state has a Republican governor. The variable was constructed using data from Klarner's State Partisan Balance dataset.

Legislative professionalism. This is a measure of the capacity of a legislature to deal with complex policy issues that incorporates factors such as session length, member pay, and staff resources (Squire 2007). States are scored on their similarity with Congress according to these characteristics on a scale where 1 represents perfect resemblance to Congress and 0 indicates no resemblance. The average level of legislative professionalism is 0.197. New Hampshire, from 2003 to 2008, has the lowest level at 0.027, while New York, from 1990 to 1995, has the highest level at 0.659. These data come from Squire (2012).

State support for higher education. This variable measures state expenditures on higher education as a percentage of GSP, lagged one year. The average level of support for public higher education is 2.445 percent of GSP. Nevada in 2003 has the lowest level among the state-year observations at 0.055 percent, while Vermont in 2010 has the highest at 6.114 percent. These data were collected from Postsecondary Education Opportunity.

Change in PCI. This variable measures the three-year average percent change in per-capita personal income, and is lagged one year. The variable is meant to control for changes in short term economic conditions, which previous research has found is an important predictor of policy innovation (Berry & Berry 1990). The average among the state-year observations is 1.353

percent. Nevada in 2011 has the lowest among the state-year observations at -4.089 percent, while Wyoming in 2007 has the highest at 5.984 percent. The variable was constructed using data from the U.S. Department of Commerce, Bureau of Economic Analysis.

Unemployment. This variable measures the percentage of unemployed work-seeking residents in a state. The average unemployment rate among the state-year observations is 5.453 percent. Connecticut and Virginia in 2001 have the lowest unemployment rates in the dataset at 2.3 percent, while Nevada in 2011 has the highest at 13.7 percent. The data were collected from the U.S. Department of Labor, Bureau of Labor Statistics.

[Table 2]

Methodology

Following previous research on state policy adoption, this study uses event history analysis (EHA) to examine the factors that influence states to adopt performance funding for higher education policies. Researchers of state policy adoption have predominately used logit and probit EHA models due to the binary nature of the dependent variable, but in recent years scholars have pointed out several drawbacks to the method and demonstrated the benefits of using the Cox proportional hazards model (Box-Steffensmeier & Jones 2004; Box-Steffensmeier, De Boef, & Joyce 2007; Box-Steffensmeier & Zorn 2002; Buckley & Westerland 2004; Jones & Branton 2005).

The Cox proportional hazards model is used to estimate the relative shift in the baseline hazard caused by the covariates. The model has several advantages over logit, probit and other parametric models commonly used in event history analysis. First, it leaves the particular distributional form of the duration dependency unspecified, allowing the hazard rate to take any form the data suggest (Box-Steffensmeier & Jones 2004). Logit, probit and other parametric

methods in EHA require researchers to have strong, theoretical reasons for their choice of one particular distribution function over another. Such assumptions are expected and common in biosciences and engineering, but social science theory seldom provides researchers guidance on what distributional form the baseline hazard rate should take (Jones & Branton 2005). Second, the model is able to accommodate right censoring, where cases do not experience the event in the period of time observed (Box-Steffensmeier & Jones 2004). Furthermore, the Cox model is able to accommodate “ties”, where events occur simultaneously (Box-Steffensmeier & Jones 2004). This is especially important for state policy adoption studies, as time is measured in years and it is common for more than one state to adopt a given policy in the same year.

EHA models of state policy adoption typically treat policy adoption as a nonrepeatable event, with states exiting the risk set once they have adopted the policy. Jones and Branton (2005), however, point out that this is only the simplest of theoretical event models and it is possible a state might adopt multiple policies in the same legislative domain over several years, making it at risk of adopting a policy beyond the first event. In the context of performance funding for higher education policies, states have adopted and subsequently abandoned and readopted policies (Dougherty et al. 2012).

A single event model omits instances of readoption of performance funding policies, which may contribute important information about the factors that influence states to adopt the policy. To accommodate instances of readoption of performance funding, an extension of the Cox model called the conditional gap time model is used (Box-Steffensmeier & Zorn 2002; Jones & Branton 2005). The model stratifies based on event sequence, controlling for the ordering of adoptions and allowing the baseline hazard to vary between adoptions (Jones & Branton 2005). Allowing the baseline hazard to vary acknowledges that the baseline hazard for

adopting the policy is likely to be different if a state adopted it previously. Thus, states enter a second risk set if they abandon the policy after adopting, as they are again at risk of policy adoption.

To estimate the effects of the covariates on the likelihood of a given state adopting a performance funding policy, this study uses the Cox conditional gap time model, stratifying by event number and clustering on state. I use the Efron method to handle ties, when several states adopt performance funding in the same time period (Box-Steffensmeier & Jones 2004). The model is specified as:

$$h_k(t) = h_{0k}(t) \exp(\beta x_{kj})$$

where $h_{0k}(t)$ is the baseline hazard function for the k th adoption and βx_{kj} are the covariates and regression parameters.

Findings

The results of the single event Cox model and the Cox conditional gap time model are presented in table 3 with exponentiated coefficients. The results change considerably using the conditional gap time model, illustrating the implications of including additional information from repeated adoptions. As Jones and Branton (2005) point out, it provides a richer and more realistic model of the adoption process. Several variables behave as expected, supporting the hypotheses. State higher education governing structure, changes in public tuition rates, educational attainment, state support for public higher education, and change in per-capita income are statistically significant predictors of state adoption of performance funding policies. The results

of Grambsch and Therneau tests indicate that both models satisfy the proportional hazards assumption.¹

[Table 3]

The results suggest that states with consolidated governing boards are considerably less likely to adopt performance funding policies than states with coordinating boards, supporting H₁. Specifically, states with consolidated governing boards face a hazard of policy adoption that is only 31.3 percent of the hazard faced by states without consolidated governing boards, holding other covariates constant. Figure 1 shows that the survival probability (probability of not adopting the policy) for states with coordinating boards drops considerably over the period of the study compared to states with consolidated governing boards, though the gap narrows in the final year of the analysis.

Research on the politics of state public higher education frequently emphasizes the importance of state higher education governing boards, but precisely how they moderate or enhance state government's role in higher education policymaking remains unsettled. The characteristics of consolidated boards may help reduce information asymmetries and the likelihood that a performance funding policy would be considered in the first place. As boundary-spanning organizations, consolidated governing boards provide a single outlet through

¹ Proportional hazards refers to the effect of an independent variable having a proportional and constant effect that is invariant to when in the process its value changes. If a proportional hazard model is not correctly specified, the impact of variables whose associated hazards are increasing will be overestimated, while coefficient estimates for variables in which the hazards are converging will be biased toward zero. According to Box-Steffensmeier and Jones (2004), this assumption is the primary concern when fitting a Cox model, but is often untested.

which elected officials and university administrators may communicate their goals and values. The greater analytic capacities of governing boards may also be important in this regard.

In general, the findings suggest the importance of the structure of inter-organizational relationships in predicting policy choices relating to performance accountability. Improving or creating formal channels of communication between organizations in principal-agent relationships may be a viable first alternative to creating a stringent performance accountability system. In cases where governments do adopt performance accountability systems, the presence of boundary-spanning organizations may help improve the quality of policies. The growing body of research producing evidence that performance-funding policies for public higher education do not improve, and may reduce institution performance, suggests that policymakers would do well to focus attention on this phase of the policy process.

[Figure 1]

The results also show that tuition increases at a state's flagship university increase the likelihood of policy adoption, supporting H₂. The exponentiated coefficient shows that a 1-percentage point increase in tuition is associated with a 7 percent increase in the hazard of adopting a performance funding policy, holding the other covariates constant. The result suggests the political potency associated with increases in the cost of public higher education, and the propensity of elected officials to respond by adopting performance funding policies. Spikes in tuition may increase demand for accountability and greater efficiency and effectiveness on the part of public higher education institutions. As Zumeta (2001) has pointed out, the general perception among elected officials and the public has been that, rather than raise tuition, public higher education institutions ought to find more revenues by improving efficiency and

effectiveness, suggesting a lack of fiscal responsibility on the part of public higher education administrators. Thus, imposing stringent performance accountability policies on organizations the public perceives as fiscally irresponsible may be an attractive prospect for elected officials seeking to secure symbolic benefits.

Results were mixed for measures of past performance of state public higher education institutions. The results show that a 1-percentage point increase in state educational attainment is associated with a 5.9 percent decrease in the hazard of adopting a performance funding policy. A statistically significant association was not found for aggregate completions rates of public higher education institutions. The finding that states with lower educational attainment are more likely to adopt performance funding policies provides some evidence that elected officials are influenced to adopt by the potential instrumental benefits of the policy. Officials in states with low educational attainment may see performance funding as a way to increase educational attainment and enhance their economic position relative to other states.

The educational attainment result may also indicate, however, that socioeconomic factors are at play. Specifically, it may be that stringent performance accountability policies for public higher education are more attractive to legislators and citizens in states where smaller proportions of the adult population hold a college degree. A previous study found that states with higher median income levels were less likely to adopt finance innovations for public higher education (Lacy & Tandberg 2014). Thus, this result may be picking up on a similar pattern of adoption, as educational attainment and median income are highly correlated.

The results suggest that partisan politics do not play an important role in the adoption of performance funding policies, as neither the percentage of Republicans in a state legislature nor the presence of a Republican governor are associated with changes in the hazard of adoption.

While previous research has suggested and empirically demonstrated an association between the percentage of Republicans in the legislature and the adoption of performance funding policies (McLendon, Hearn, & Deaton 2006; Dougherty et al. 2013), the results of this study suggest that, even if partisan politics are behind the adoption of performance funding policies in certain cases, there is not a systematic difference between the parties in terms of their preference for the policy in general.

The results do not support the hypothesis that legislative professionalism is negatively associated with the adoption of performance funding policies. While the result is in the expected direction, it is not statistically significant. Legislative professionalism, in general, may improve the quality of performance accountability systems, but it does not appear to be a predictor of adopting performance funding in the first place.

Discussion and Conclusions

The findings of this paper suggest the importance of institutional arrangements to accountability relationships between political principals and public higher education bureaucracies. The findings also provide evidence that officials may be influenced by the prospect of securing symbolic benefits associated with holding institutions accountable for performance during periods of high tuition increases, which increase public scrutiny of spending on public higher education. The findings also provide some evidence that the performance of state public higher education institutions influences the decision to adopt a performance funding policy.

The findings have several limitations. First, the findings on state higher education governing boards are limited by the dichotomous nature of the variable used in this study. Factors that may affect inter-institutional relationships—such as board member tenure, composition, and

appointment processes—are not directly captured by this measure. These attributes may be important for understanding whether consolidated boards insulate public higher education from political influence, or if they negate the perceived need for performance accountability by reducing information asymmetries. Future research should further investigate the role of higher education governing boards as boundary-spanning organizations that potentially improve the relationship between state government and public higher education institutions.

The findings that past performance of public higher education institutions may factor into decisions to adopt performance funding are limited in several ways. First, the more direct measure of performance, degrees awarded as a percentage of total enrollment, did not yield a statistically significant result. Second, state educational attainment, which did yield a statistically significant result, is not necessarily indicative of the performance of a state’s public higher education system. Private institutions or public colleges and universities in neighboring states may boost a state’s educational attainment, for example. Additionally, educational attainment may be more an indicator of socioeconomic differences between adopting and non-adopting states than an indicator of the performance of a state public higher education system.

While the lack of statistically significant findings for the political variables provides evidence that preference for performance management may be nonpartisan, it is limited due to intraparty ideological variation between states (Berry et al. 2010). Future research may consider using measures of citizen and government ideology, rather than—or in addition to—measures of partisan composition.

Why governments impose performance-accountability systems is an important question that may have implications for their quality and longevity. Specifically, whether it is in pursuit of symbolic or instrumental benefits may be important. As Moynihan (2004) points out, these are

not necessarily mutually exclusive. If, however, symbolic benefits are the overriding goal, it may affect the extent to which policymakers are committed to the policy in the long term, as well as how and whether the subjects of the policy cooperate and make changes to increase organization performance.

This paper presents evidence that, in the context of public higher education, both considerations may factor into policymakers' decisions to pursue a policy. Several papers attempt to evaluate the effectiveness of performance funding policies for public higher education, but little consideration is given to the structure of the policies and the circumstances of their adoption. Thus, an important contribution for future research is investigating whether the antecedents of the adoption of performance funding policies are associated with their effectiveness.

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Tables

Table 1: Descriptive Statistics

	Mean	S.D.	Min.	Max.
Consolidated Governing Board	0.500	0.500	0	1
Growth in Tuition	4.364	4.070	-6.833	25.752
Completion Rate	18.472	2.846	6.865	26.388
Educational Attainment	24.692	5.450	11.1	44.408
Percent Republicans	46.442	15.813	8.850	88.571
Republican Governor	0.517	0.500	0	1
Legislative Professionalism	0.197	0.129	0.027	0.659
State Support for Higher Education	2.445	0.929	0.055	6.114
Change in PCI	1.353	1.413	-4.089	5.984
Unemployment	5.453	1.745	2.3	13.7
Observations	1,056			

Table 2: State Adoptions of Performance Funding Policies

Year	Adoptions
1991	Missouri
1993	Kentucky^
1994	Colorado^, Florida
1995	Arkansas^, Ohio
1996	Minnesota^, South Carolina
1997	South Dakota, Washington^
1998	Illinois^
1999	Kansas^, New Jersey^, Texas
2000	Oregon^, Pennsylvania
2003	Indiana
2007	Kentucky*, New Mexico, Washington*, Virginia
2008	Louisiana*
2011	Arizona, Arkansas*, Colorado*, Minnesota*, Nevada, Texas*
^Subsequently abandoned policy; *Readoption	

Table 3: Results

	Single Event Cox Beta [SE]	Cox Conditional Gap Time Beta [SE]
Consolidated Governing Board	0.224** [0.121]	0.313* [0.153]
Growth in Tuition	1.040 [0.046]	1.070** [0.023]
Completion Rate	1.057 [0.090]	1.051 [0.086]
Educational Attainment	1.007 [0.054]	0.941* [0.026]
Percent Republicans	1.025 [0.018]	1.011 [0.013]
Republican Governor	0.988 [0.473]	1.124 [0.442]
Legislative Professionalism	0.018 [0.040]	0.232 [0.350]
State Support for Higher Education	0.559 [0.212]	0.653** [0.092]
Change in PCI	1.364 [0.302]	1.357* [0.189]
Unemployment	1.493 [0.307]	1.199 [0.144]
Observations	804	1056
Log-likelihood	-73.549	-138.770
Chi-squared	18.243	30.503

Exponentiated coefficients; Standard errors in brackets; Efron method for ties

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

Figure 1: Survival Probability by Governing Structure

