

POLITICS, PERCEPTIONS, AND PERFORMANCE IN HIGHER EDUCATION

A Dissertation

by

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ABSTRACT

This dissertation includes three studies devoted to disentangling the effects of managers—defined as university presidents—in four year institutions of higher education. In the United States, higher education as a whole is experiencing much uncertainty in a consistently changing external environment. State allocations have dropped substantially, forcing many colleges and universities to become more dependent on private funding and student tuition. At the same time, stakeholder groups have called for higher levels of accountability throughout the higher education sector in hopes of improving national standards of access, quality, and affordability. This funding instability and the political saliency of education have forced the leaders of these institutions to become part-politicians while determining how to strategically maintain a share of a competitive market. Drawing from political science and public administration theories, I examine whether and how presidents develop strategy and whether differences in managerial backgrounds have any effect on how institutions are managed using multivariate analysis on cross sectional time series data from research universities in the United States.

The research in this dissertation builds upon organizational-environmental fit literature to determine whether the fit between presidents' former and current institutions has any effect on student retention, graduation, or degree completion. Findings imply that some fit is good but too much fit has negative consequences for performance. Additional analyses focuses on determining whether presidents implement strategic

change or simply manage incremental shifts in institutional revenues, expenditures, and pricing given the current demands of the external environment. Interestingly, little strategy is detecting, suggesting that decision making aggregated at the institutional-level is perhaps random. Finally, this research explores the nonlinear determinants and effects of administrative intensity, a non-monetary phenomena often determined by presidents. Some types of administrative intensity can be helpful for boosting student performance but, this type of staffing can also have a negative effect on performance if it exceeds at given threshold.

DEDICATION

To Kelsey Kennedy. May your legacy of faith and love be one that can be continued
through the many lives you touched.

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I have more people to thank than I can possibly hope to fit into a few pages of written acknowledgements. I feel blessed to have been surrounded by mentors throughout my life. I can recall transformative elementary school teachers, athletic coaches, and dear friends. In an effort to maintain brevity, I will focus on a few individuals who have invested in my success over my four years at Texas A&M University.

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Second, the wonderful Ken Meier cannot be compensated enough for all of the time he spent training me as an apprentice in how to conduct strong, meaningful research, how to deal with people of all shapes and sizes, and how to receive and to give mentoring to others. Ken might think that I don't need a mentor, but I know he will always be at the top of my list. And while I will not follow his recommendations for

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1. INTRODUCTION: MANAGEMENT AND CHANGE IN HIGHER EDUCATION

1.1 Environmental Change in U.S. Higher Education

Questions of educational equity continue to be at the forefront of scholarly research as K-12 and higher education systems evolve in response to economic, environmental, and cultural shifts in societies around the world. In the United States, recent recessions have created an environment for educators characterized by tightening budgets and limited resources. The market for higher education now includes public schools, private non-profit schools, and for-profit online schools; given this competition, institutions must prioritize some goals over others to survive and potentially benefit from a market-based system. Though this industry was largely viewed as a private good for more privileged socioeconomic classes when higher education first became available in the states, it has since become viewed as a publicly available good that should be accessible to all traditional and non-traditional students (Priest and St. John 2006).

Maintaining postsecondary education as an available good, however, has become more challenging in the twenty-first century (Toutkoushian and Hillman 2012). Following the escalation of tuition prices and uncertainty in the quality of outcomes in higher education, state and federal governments have implemented a number of mechanisms to regulate these organizations more than ever before. In addition to coping with federal regulations regarding employees, the environment, and finance, institutions of higher education must meet federal requirements concerning tax purposes and charitable giving, immigration rules, data reporting, campus safety, the Drug-Free

Schools and Communities Act, the Family Educational Rights and Privacy Act (FERPA), and Title IX. These federal regulations are further compounded by a host of state-level mandates that include admission requirements, scholarship programs, elaborate reporting systems, and smoking bans.

These changes have introduced unprecedented environmental instability in institutions of higher education, challenging the decision-making abilities of administrators in their efforts to balance the multiple, often competing demands of policymakers. While similar challenges have been studied in reference to K-12 organizations, higher education may provide a more compelling arena to study the decision making processes of administrators facing environmental uncertainty owing to the compounding of increased regulation with greater market pressures. While K-12 schools must compete, in a sense, with charter or private schools, colleges and universities are now dependent upon revenue from core education, research, and service functions to sustain market pressures (Bok 2003, Slaughter and Rhoades 2004, Rhoads and Torres 2005). As the trend towards privatization continues, institutions have become more dependent on finding new sources of revenue (i.e. student tuition, patents and royalties, and alumni donations). Scholars and policymakers alike have gone so far as to argue that public universities have gone from state-supported to state-assisted to simply state-located (Morphew and Eckel 2009).

While scholars have provided descriptive accounts of the trend towards privatization in postsecondary education and have investigated the causes of organizational reform in these institutions (Nicholson-Crotty and Meier 2003;

McLendon, Heller, and Young 2005; McLendon, Hearn, and Deaton 2006), there remains a need for understanding the linkages between managerial responses to greater regulation and the consequences for equity, quality, and affordability of educational opportunities for students. How do administrators prioritize institutional goals? What drives the variance observed in managerial strategies across institutions? How do decisions by these administrators affect performance across different groups of students? I argue that the strategies pursued by managers in universities and colleges to buffer their organizations from external changes are shaped by individual values that are formed through previous experience, expertise, and socialization processes. For example, a president hired from another institution of higher education or from an industry outside of education is likely to manage institutions differently as compared to internally promoted candidates. Likewise, an individual socialized in a PhD program and who has created an academic research record may have priorities that vary from those who have worked up the ladder solely through administrative roles. These differences in values can create drastically different priorities and action plans that have a variety of implications for performance, defined broadly, in these institutions, particularly when performance and accountability are paramount.

1.2 Organizational Decision Making and Performance

This dissertation is situated at the intersection of theories related to environmental turbulence and managerial values. Empirical chapters will draw primarily from person-environment fit, upper echelons theory, and the direction of causality between bureaucracy and performance to illustrate that current assumptions

about management-performance relationships do not hold. While the following empirical chapters focus primarily on the variance in internal management, this introduction also discusses the broader role of external shifts that affect internal decision making processes.

Upper-level administrators are responsible for assessing their organization's environment and responding with appropriate strategies to meet a variety of goals (performance, efficiency, equity). The ability of (public) managers to correctly assess the environment varies but can be vital for the survival of the organization. At times, the external environment may shift rapidly, making managerial assessments and responses even more important for organizational stability and success. These rapid shifts are most commonly associated with the term "turbulence" in existing literature (Dess and Beard 1984, Eisenhardt and Bourgeois 1988, Meyer 1982). Further, Glazer and Weiss (1993) define a market with environmental turbulence as "one with (1) high levels of interperiod change (in magnitude and/or direction) in the 'levels' or values of key environmental variables *and* (2) considerable uncertainty and unpredictability as to the future values of these variables." From these two factors, the terms "environment" and "uncertainty" can also be defined. First, as noted by Hall (1977), organizations operate in two environments. The task environment is specific to the organization while the general societal environment consists of multiple factors that affect all organizations. Though the differences between these two environments are not always evident, turbulence often includes the influence of the general societal environment on the task environment (Kast and Rosenwig 1979). When this occurs, uncertainty can threaten the

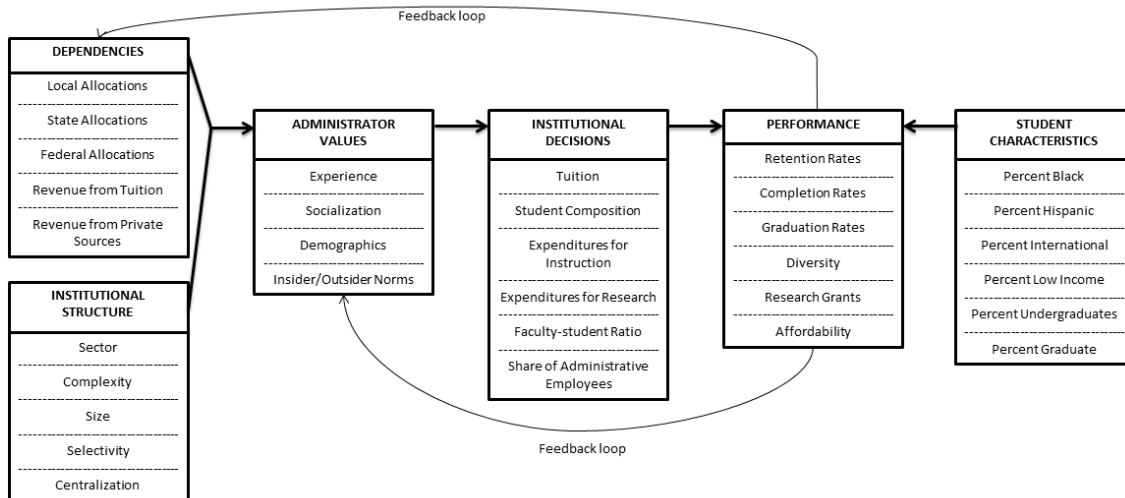
stability and performance of the organization. Second, organizational theorists have identified three primary sources of uncertainty (Duncan 1972, Leblebici and Salancik 1981)—the lack of information about factors in the environment that may affect decision making, the lack of knowledge about the effects of a decision, and the inability of the decision maker to determine whether an environmental factor will affect the success of the organization. This dissertation will focus on the second source of uncertainty, namely the inability of the manager to know how a decision will affect the success of the organization in a complex setting with multiple goals.

Theories of decision making have evolved from the normative expectation that managers will rationally consider all options and consequences (Braybrooke and Lindblom 1963) to a model of satisficing (Simon 1947). I argue that especially in times of turbulence, managers satisfice and make decisions rapidly. Though these decisions can be costly, the failure to determine strategies quickly (i.e. no action) may become more costly than a decision that is not the “best” option. As related to theories of resource dependencies, I assert that changes in the external environment causes a shift in resources. This leads to a strategic decision by managers to do nothing, seek new resources, or change internal operations to support the new level of resources received. Each of these three options can be implemented in a number of ways which may or affect the ability of the organization to meet performance goals.

Figure 1 displays an overarching conceptual model of organizational decision making as applied to institutions of higher education. While this dissertation will focus primarily on the linkages between managerial values, decision making, and

organizational performance, it is nevertheless important to understand the full scope of the environment in which an organization operates.

Figure 1: Factors that Effect Organizational Decision Making and Performance in U.S. Higher Education



Institutional Dependencies

The ability of organizations to adapt to changing environments has been a consistent interest of scholars studying both public organizations and private firms (Pfeffer and Salancik 1978, Hrebiniak and Joyce 1985, Leslie and Slaughter 1997). In order to adapt to change, organizations participate in repeated interactions with their surrounding environment on a day-to-day basis, often seeking to acquire more capital. As part of these interactions, each organization has some degree of dependency on the environment for vital resources such as raw materials, profits, and personnel (Gornitzka 1999). Dependencies require that the strategic plans and actions of organizations are limited by changes in the demands of other groups that supply needed resources. Even

the most stable organization must be able to react and adjust to changes in the environment in order to survive. For public agencies, many resources are provided by policymakers. The ability of policymakers to increase or decrease the level of provisions to public organizations can serve as a mechanism to control the agency. Altering budget allocations is often a central strategy for policymakers to ensure that public organizations implement the policy priorities preferred by legislatures and other policymakers. When capital provided by policymakers shifts, organizations must be creative in how they acquire new or additional resources while still meeting performance goals. Whether agencies can continue to achieve performance goals while pursuing new resources in light of ongoing state and federal budget allocation, however, remains an important question across disciplines.

For higher education, the balance between equity and efficiency could be challenged by the prioritization of budget stabilization over efforts to ensure equal educational opportunities for all student groups. One of the most salient consequences of shifting dependencies has been the increase of tuition and fees; between 2002 and 2012, tuition and fees at public four year institutions had an annual rate of growth of 5.2 percent (inflation-adjusted dollars), higher than the growth in the two previous decades (College Board 2012). Public two-year schools were not far behind with an average growth rate of 3.9 percent. This may place great limitations on access to education for a number of minority groups who tend to be more highly concentrated in lower socioeconomic classes. In addition to changing dependencies, institutions are often subject to performance funding policies that make current shifts in dependencies even

more undesirable. Yet, while these policies may frame the decisions made by institutions to better a number of performance indicators, research has shown that these policies have not been a reliable tool for realizing performance improvements but could become useful in newer policies that attribute a larger portion of funding to performance outcomes.

Institutional Structure

Across both higher education and public administration literatures, scholars have shown that the structure of institutions matters for determining policy outcomes (Knott and Payne 2004, Lowry 2001, Van Ginkel 2001, Moe 1990). Some states enforce highly centralized systems while others grant great autonomy to each institution. These differences lead to variances in bureaucratic discretion (Epstein and O'Halloran 1999, Huber and Shipan 2002) that are likely to affect decision making processes and, subsequently, organizational performance. Individual universities also vary widely in complexity and size, with some institutions offering a limited number of associate's degrees while others boast over 400 undergraduate and graduate programs. Likewise, the number of students may range from less than 500 to more than 50,000, presenting a wide range of additional management issues. Many differences in these institutional missions may be detected in the selectivity of the institution, measured by the percentage of students admitted from the applicant pool. Selectivity affects the goals of the institution and thus administrative decision making on curriculum, budgets, target student populations, and more. For example, much research has shown that without affirmative action policies, a large share of African American students would attend less

selective institutions, which would have great implications for their future social opportunities (Arcidiacono 2006, Kane 1998).

Administrative Values

Managers each have values and beliefs that play a critical role in shaping managerial strategy and decision-making for organizations (Lowi 1979, Kettl 1993). Indeed, the role of values in shaping managerial behavior and organizational outcomes has been a prevalent discussion in public administration since at least the Friedrich-Finer debate on how to maintain democratic processes (Finer 1941, Frederich 1940). This values discussion has also developed among theories of political control of the bureaucracy and assessments of the differences between politics and administration (for example, Goodsell 1983, Lowi 1979, Kettl 1993). However, the ability of any branch of government to control bureaucratic actors can be quite limited and may also depend on the bureaucrat's "inner check" (Dahl 1970). This disconnect can be seen in explanations of goal conflict or adverse selection. In fact, Meier and O'Toole (2006) argue that political control mechanisms are only successful when political officials get bureaucrats to act in a way that they would not have acted otherwise. However, as information about values is rarely collected, empirically determining how values affect decisions related to strategic change can be somewhat challenging (for one exception pertinent to this research, see Rutherford and Meier 2014 on presidential goal setting).

Institutional Decisions

Public management literature has widely documented the importance of managers in public organizations. Management includes motivating and coordinating

actors towards performance goals, leveraging inputs to achieve outputs, creating organization structures, and taking advantage of environmental changes to improve performance (O'Toole and Meier 1999). Decisions by administrators in institutions of higher education are highly salient, though research is mixed on whether these decisions have a direct effect on organizational performance (Cohen and March 1986). Further, while administrators often invest time and energy in creating strategic plans (Bryson 2004), little is known about whether and how these plans are implemented as well as whether the implementation of change is generally successful in improving organizational performance (see Poister, Pitts, and Edwards 2010; but see Poister et al. 2013).

Student Characteristics

While environmental context and administrative decision making can both be connected to student performance in education, student characteristics are just as important for understanding differences in educational outcomes across student groups. Family income and social class, performance at the K-12 level, and peer effects among groups in an institution's student body may lead to advantages or disadvantages in the ability of an individual student to enroll in and attend a university (Astin and Oseguera 2005; Mortenson 1997; Scott, Bailey, and Kienzl 2006). This line of research has found that student outcomes vary by gender as well as by race/ethnicity such that institutions with higher levels of women tend to have higher performance indicators while institutions with high concentrations of minority students tend to have lower rates of student success. While the characteristics of the student profile of colleges and

universities will not be the central focus of this research, it is essential to recognize the importance of these characteristics and to control for them in models to ensure analyses are fully specified.

Performance Feedback Loops

While performance is the key dependent variable in this research, it also provides feedback information for administrators and their political principals (in other words, it is also an important independent variable in many models of decision making and performance). This information has become increasingly salient among stakeholder groups who desire to hold public organizations accountable. In reference to higher education policy, student outcomes such as graduation and retention rates provide information to state and institutional level policymakers. At the state level, this information may influence the decision to implement performance budgeting or performance funding policies (Rabovsky 2012). At the institutional level, administrators may use performance gaps as related to past performance or peer performance to determine priorities (Rutherford and Meier 2014).

Because decisions can be expected to be partially determined by performance, this general model and associated specifications in the chapters that follow face the challenge of endogeneity. This will be explicitly recognized in this research and will be addressed through models that include past performance and specification that help control for the autoregressive nature of these organizations.

1.3 Three Essays on Management in Higher Education

The purpose of this dissertation is to examine whether managerial differences lead to changes in decision making, strategic changes, and, ultimately, organizational performance. While these questions may be studied in a number of ways, the three empirical chapters that follow provide an interesting assessment of current literature and provide many avenues for moving research in public management forward.

The first empirical chapter, *High Risk, High Reward? The Role of Managerial Fit in Organizational Performance*, builds upon organizational-environmental fit literature to determine whether the fit between presidents' former and current institutions has any effect on student performance, measured by graduation and retention rates as well as degree production. Findings suggest that high levels of fit are not always good and that some level of misfit may actually contribute to increasing organizational performance. This supports the notion that misfits can introduce new to organizations, which may be especially helpful in context of a changing external environment.

Second, *Where the Rubber Meets the Road: The Influence of Presidential Characteristics on Strategic Fiscal Change*, focuses on whether presidents implement strategic change or manage incrementalism in revenues, expenditures, and pricing given the current demands of the external environment. While strategic plans are normatively associated with more efficient management and are assumed to bolster performance, analyses in this essay shows that presidents of various backgrounds are rarely different from one another in a systematic way. Instead, presidents are much more likely to follow paths of incremental change on average such that no single type of president, with

the potential exception of individuals with high h indices, acts differently than others in strategic decisions for the institution.

The third essay, *Reexamining Causes and Consequences: Does Administrative Intensity Matter for Organizational Performance?*, explores the nonlinear determinants and effects of administrative intensity, a non-monetary phenomena often determined by presidents. This study reasserts that the structure of an institution can drive administrative intensity but that administrative intensity can negatively affect student performance if it extends beyond a certain size of total employees. In other words, some administrative intensity is helpful for managing the institution, but too much can take away resources from other areas of the organization.

2. HIGH RISK, HIGH REWARD? THE ROLE OF MANAGERIAL FIT IN ORGANIZATIONAL PERFORMANCE

2.1 Overview

The question of managerial fit—the congruence between a manager and her environment—has become widely debated by policymakers, practitioners, and scholars from a number of fields as the occurrence of hiring outsiders to lead public agencies has increased over time. While many assume that higher levels of fit in an organization will generate better performance, others argue that misfits may be better suited at leading organizations as motivated change agents. In this study, a measure of person-organization fit is created using original cross-sectional time-series data on U.S. university presidents from 1993-2013. Findings indicate that high levels of fit are not ideal and that fit has a nonlinear relationship with organizational performance such that some fit is healthy but high fit is detrimental for organizational performance.

2.2 Introduction

Recent research in public administration has expanded large-N data in a manner that can more accurately pursue generalizations in management-performance questions across a number of contexts including cross-organizational and cross-national analyses (Akkerman and Torenvlied 2011, O'Toole and Meier 2014). These studies commonly focus on how and when changes in principal-agent relationships or variance in management styles are able to have some degree of observed effect on autoregressive public agencies that are responsible for meeting multiple, competing performance goals (Chun and Rainey 2005; Walker, Boyne, and Brewer 2010). The importance of developing a systematic, fully-specified model of organizational performance cannot be overemphasized, yet many questions about the ability of managers to influence performance have yet to be addressed. Recent literature has given more attention to the theoretical effect of a manager's background on performance (Petrovsky, James, and Boyne 2014), but little is known empirically about how the fit, or congruence, of managers in their organization can influence organizational performance.

It is theoretically and substantively important to understand how a manager aligns with an organization because this congruence is likely to affect the ability of a manager to accurately assess what strategies will work best for the organization. All managers are likely to strive to improve the organization, but differences in socialization and values will lead to divergence in decision making processes; the results of these decisions will then carry different implications for the organization such that some decisions are more appropriate than others for realizing performance gains. If, as much

literature assumes, it is the case that a manager's decisions and actions influence the performance of an organization, then understanding this causal story is an important discussion currently missing from the argument that "management matters" in organizations.

This study provides three unique contributions to current literature. First, the analyses presented here expand current fit theories from focusing on the alignment of subjective values to consider the importance of how socialization in previous roles can inform managers' decisions in their current organizations. This can help to avoid problems of common source bias (see Favero and Bullock 2014) that can arise when a manager is estimating both his own values and those of his organization. Second, while much literature on fit centers on individual-level performance outcomes, there has been little discussion of the ability of managerial fit to influence overall organizational performance. Theoretically, there should be some effect of managerial fit on overall performance because the fit of a manager will directly determine what plans are implemented in the organization in an effort to maintain or improve performance outputs. Third, a new, large-N dataset capable of testing fit theories in the context of higher education in the United States is introduced to this line of research. The market of higher education presents a strong test of fit theories because it includes organizations that widely vary along a number of structural and managerial dimensions but that are held responsible for similar performance outputs such that multiple congruence dimensions can be directly tested.

2.3 Person-Environment Research in Public and Private Sector Literature

Person-environment fit can be broadly defined as the degree of overlap, or level of congruence, between the capabilities and values of a manager and her environment (Chatman 1989; Kristof-Brown, Zimmerman, and Johnson 2005). Theories of fit originated in interactional psychology (e.g., Katz and Kahn 1978) but also have roots in earlier private sector literature regarding the match between individuals and broad sectors of work (what now take the form of personality tests and career assessments) (Parsons 1909, Lewin 1935). Discussions of congruence among individuals and their surroundings have since been the source of much interest among management and behavioral scholars, generating hundreds of articles and thousands of citations.

Theories of fit, however, have not developed without controversy. Person-environment fit (PE) as a general notion of the congruence between an individual and her surroundings is often said to be an umbrella for several other categories of managerial fit. Within existing strands of literature, at least four domains of congruence related to person-environment interactions have been articulated—person-group, person-supervisor, person-job, and person-organization (Kristof-Brown et al. 2005 provide a more detailed description of each of these types). As related to interactions with individuals, person-group (PG) fit focuses on the relationships between a manager and the entire team of individuals with whom the manager is expected to work (Judge and Ferris 1992, Riordan 2000). Similarly, person-supervisor (PS) fit focuses explicitly on the relationship between an individual and her supervisor or between a supervisor and one or more subordinate employees (Adkins, Russell, and Werbel 1994; Van Vianen

2000). Less dependent on the ability of individuals to cooperate, person-job (PJ) fit focuses on the pairing of the skills of an individual employee and the tasks required to perform a specific job. This type of fit has often been described as a demands-abilities fit or as a needs-supplies fit (Edwards 1991). In other words, the abilities of the individual must fulfill the demands of the job or, similarly, the skills an employee can supply to the organization must adequately address its needs. Finally, and perhaps most important to this study, is person-organization fit (PO). Research on PO fit focuses on the degree of congruence between an individual and the entire organization in terms of values, preferences, and goals (Tom 1971).

Within public management literature, theories of fit have recently gained attention in discussions of public service motivation (PSM) (Bright 2007; Christensen and Wright 2011; Gould-Williams, Mostafa, and Bottomley 2013). These studies have identified “PSM fit” as a specific type of congruence that may mediate the relationship between PSM and self-reported measures of individual performance, job choice, work attitudes, or performance information use. These studies generally argue that the positive relationship between PSM and performance is strengthened when fit is taken into account.

While applying theories of fit to the PSM literature is valuable for creating testable hypotheses that can expand current theories, fit should be applicable more broadly than PSM to additional aspects of management-performance relationships. Current management models commonly focus on how and when various actions of managers can affect performance (networking and buffering are two examples), but

these theories have often placed less emphasis on the importance of the socialization and training that a manager brings to an organization and whether these traits suit the needs of the organization (though see the consideration of managerial quality in Meier and O'Toole 2002). Individuals may acquire managerial roles with an array of socialization experiences that will generate variance in decision making processes, even when two or more managers are operating under similar circumstances. Analyzing the underlying drivers of this variance and determining how and when managerial fit relates to performance can allow for a more robust approach to identifying management-performance linkages.

2.4 Measuring Fit: Subjective and Objective Assessments

Measuring a multifaceted concept such as fit has been perhaps one of the largest challenges of this line of research; the compatibility between an individual and their organization can be captured in many different ways. Some have conceptualized *perceived* fit by directly asking individuals about their fit in an organization (Judge and Cable 1995). More commonly, scholars concerned with capturing commensurate measures at the level of the individual and organization and who wish to measure *objective* fit have asked more indirect questions such as “What do you value?” and “What does your organization value?” or “How much do you get paid?” and “How much would you like to get paid?” (James et al. 1984, James et al. 1988). Further, responses from individuals within a single organization are often compared to establish a level of sufficient consensus for organizational-level characteristics (though individual goals, values, and priorities are naturally assumed to vary). For both direct and indirect

questions, some type of index is calculated by using algebraic $(X-Y)$, absolute $|(X-Y)|$, or squared $(X-Y)^2$ differences (Kristof 1996).

While these calculations include a number of problems (loss of information about directionality and weighting, for example) that have been debated in existing literature (Edwards 1993, Edwards and Harrison 1993), less concern has been raised over whether the objective measures of fit are really objective at all. Defining organizational values based on individual responses, even while noting congruence among individuals in the same organization, limits research to organizations with a strong, unified culture and, more problematically, means that analyses are subject to common source bias. Common source bias, a problem that has attracted much attention in recent public administration research (Meier and O'Toole 2013, Favero and Bullock 2014), occurs when two variables have similar measurement error. Parallel errors are often the case when models use one or more answers from the same survey to measure different concepts. While some methods have been discussed to correct for this bias (Podsakoff et al. 2012), many solutions either fail to correct the root problem of related error structures or over correct such that results are still invalid (Richardson, Simmering, and Sturman 2009).

One way to address the problem of common bias in subjective measures of fit is to compare a manager's current organization to her previous organization. While goals and values cannot be measured directly in this type of comparison, similarly structured organizations are likely to encounter analogous challenges and should thus socialize managers in similar ways, especially if they are located within the same industry. For example, a large hospital is likely to be more similar to another large hospital than a

small hospital; the large hospitals are likely to have more complex organizational structures and larger, more diverse pools of stakeholders as compared to the small hospital. The same argument can be applied to other organizational characteristics such as diversity, administrative intensity, centralization, or clientele.

When organizational characteristics and structures are compared, indices like those in existing literature can be calculated to create a single measure of PO fit such that higher values indicate that a manager comes from a highly similar organization and is therefore trained and socialized to make strategic decisions that fit the organization. After reviewing hypotheses for relating fit to organizational performance, this type of structural fit will be operationalized and used for the analyses in this study.

2.5 Connecting Fit to Organizational Performance

Dependent variables in current private sector fit literature are largely measured in terms of individual-level outcomes such as work attitudes, social behavior, and work performance (Schneider 1987; Tziner 1987; Vancouver, Millsap, and Peters 1994) but do not include the overall performance of the organization. When organizational performance has been considered, only cautionary hypotheses have been postulated. Yet, following the notion that managers matter, fit should not only affect individual-level outputs but should also affect organizational-level outputs.

Within public management research, the importance of PO fit has long been implied in a number of discussions of how managerial values shape organizational performance. For instance, Boyne and Dahya (2002) and Hill (2005) illustrate the ways in which managerial motives, means, and opportunities are likely to shape performance.

Parallel literature on the differences between internal and external managers as well as career civil servants and political appointees (Hambrick and Mason 1984; Hamidullah, Wilkins, and Meier 2008; Lewis 2007) also reflects some concern for the ability of a new manager to sufficiently align with an organization in order to maintain or improve performance. Further, the recent work of Petrovsky et al. (2014) provides one of the few explicit discussions of linkages between fit and organizational performance in current public management literature. This study, related to managerial turnover, defines the term “publicness fit” as the comparison between the publicness of a manager’s experiences with the publicness of the organization.¹ The authors provide some intuitive hypotheses that may be used in a more general notion of person-organization fit (in other words, we can measure congruence based on characteristics that include but are not limited to the publicness of the organization), but they do not provide an example of any dataset in which fit can be empirically assessed to confirm their propositions.

A large body of research on fit is based on the premise that positive outcomes will result from scenarios in which individuals match the current context and needs of an organization (O’Reilly, Chatman, and Caldwell 1991). According to this line of thought, a high level of congruence between a manager and her organization should boost the ability of the manager to correctly assess and interpret the environment of the organization and should, therefore, be linked to appropriate decision making (Westerman and Vanka 2005, Morley 2007). The implementation of these decisions

¹ The authors define publicness through dimensions of public ownership, degree of public funding, and public regulation.

should boost, or at least maintain, organizational performance. For instance, a manager from an organization with a homogenous clientele group may not be able to adapt to an organization with more diverse clientele if she simply transfers the same strategies from one organization to the other. In other words, differences in environments (clientele, funding, hierarchical structure) of the two organizations may prohibit the translation of strategies and managerial skill from one organization to the next. However, when a manager understands the constraints under which an organization operates (a move from a highly diverse organization to another highly diverse organization), she can select those strategies that are most applicable in order to maintain or improve performance.

However, it is also plausible that a high level of fit is undesirable and can have negative consequences for organizational performance. Argyris (1957), for instance, argues that organizations with too many people of one type may lead the organization to become stagnant, ineffective, and less willing to experiment with innovation. This proposition is largely related to the negative connotations that accompany concepts such as group think where too much consensus dampens healthy levels of conflict and innovation. Walsh (1987) adds that managers with lower levels of congruence (i.e. misfits) may actually stimulate organizational development, which can be particularly useful should the organization be on the verge of decline or face a significant level of competition from other organizations. More recently, Simmering et al. (2003) found that poor fit stimulated self-development and encouraged individuals to change their work environments for the better, and Voelpel et al. (2006) find that organizations situated in

highly volatile environments can benefit from hiring a misfit who is willing to innovate in order to adapt to external shifts.

Finally, it may also be possible that the relationship between fit and performance is not strictly linear. Some fit may be helpful in understanding the context of the organization, but some degree of misfit may also bring new, innovative ideas to the organization. This would produce an inverted-U with an ideal level of fit. Should this hypothesis prove fruitful, determining the optimal level of fit will be important not only for scholars of organizations but also for practitioners making hiring decisions.

2.6 Research Context: Higher Education in the United States

To determine whether fit helps or hinders organizational performance, a structural measure of PO fit is examined in the context of higher education in the United States. Institutions of higher education provide a timely test of fit as this sector consists of a large variety of organizations that can be compared on the basis of consistent performance indicators but, at the same time, operate according to differing norms and structures.

The recent shift to more competitive markets in higher education has been accompanied by an increase in regulation by state and the federal governments focused on accountability and efficiency (Zumeta 2001) as well as an environment characterized by tightening budgets and limited resources. These changes challenge managers' ability to balance goals of equity, accessibility, and affordability with accountability. For example, colleges and universities have been pressured to both improve the affordability of degrees for all students while quantitatively illustrating that high quality of learning

occurs in their institution. Presidents, caught in a quality-quantity conundrum, argue that it is costly to improve quality such that higher rates of performance for both goals cannot be achieved simultaneously. In fact, many believe that access, affordability, and quality are positioned on an “iron triangle” in which a change to improve one axis will inevitably effect the others in a negative way (Rodriguez and Kelly 2014). Institutions of higher education in the U.S. must continue to cope with these environmental changes in order to show that post-secondary degrees are necessary for individual social gains and state and national economic growth (Altbach, Gumport, and Berdahl 2011; Slaughter and Rhoades 2004).

As the policy landscape of higher education has shifted over the past thirty years, the expectations of managers in these organizations have greatly shifted. Managers are pressured to seek additional sources of revenue while also becoming part-time politicians through interactions with state and federal actors who seek to decrease funding to higher education while holding the sector more accountable for meeting controversial performance goals (Tamburri 2007). Attempting to meet these many demands, colleges and universities have hired presidents from a variety of backgrounds (while industry norms exist, no specific certification or training is required to be hired as a university president). The majority of institutions hire a president or provost from within the higher education industry, but others have employed former lawyers, bankers, politicians, and military personnel to lead their institutions through times of change.

2.7 Data

Data to test person-organization fit come from two sources. First, public data on university presidents² was collected from colleges and universities rated by the Carnegie classification system—a system used as the basis for the highly salient U.S. News rankings—as doctoral/research universities, research universities-high research activity, or research universities-very high research activity across a twenty-one year period (1993-2013).³ The universe of institutions within these classification includes 292 public and private institutions.⁴ Data for 282 schools were coded for this study because ten schools did not provide over-time information on their president in a publicly accessible format. Data were collected on length of managerial tenure, start and end dates of service, previous employment, educational background, and demographics (see summary in Table 1). This data set was then merged with institutional data from the National Center for Education Statistics (NCES) IPEDS Delta Cost Project. These data are reported from universities to the NCES on an annual basis. Variables, explained in detail below, include revenues and expenditures, staffing, and enrollment profiles, among other variables.

² By president, I mean the individual who serves as the executive manager of a university campus, not the manager for a system with multiple campuses. For example, data is coded for each University of California campus, not for the University of California system. Note that some systems (Colorado, for example) use the term chancellor for executives at the institutional level and president for the system level. In this case, chancellors were coded as “presidents.”

³ As university presidents are public figures, all data was collected from publicly available information on university websites. No surveys were conducted to collect this data.

⁴ Public and private institutions are not largely differentiated here. In many cases, a public and private university may look more alike than two public universities due to organizational mission, size, and reputation.

Table 1: Profile of Presidents, 1993-2013			
Demographics	1993-2013 Percent	1993 Percent	2013 Percent
Women	14.66	10.42	17.56
Black	6.7	4.26	7.53
Latino	2.51	1.55	3.23
Interim	3.34	2.3	4.66
Years of Experience	5.89	5.61	5.96
Years since Bachelors	37.42	34.31	40.3
Age	59.42	56.31	62.3
Education			
Has JD	11.69	10.16	13.26
Has MD	2.97	2.35	3.94
Has PhD	84.14	87.5	82.01
Top PhD fields			
social sciences	22.18	22.23	26.66
Humanities	19.73	20.37	12.00
Education	12.85	13.89	15.11
Engineering	12.02	12.5	12.44
Prior Position Overall			
Prior Internal	28.12	23.23	33.09
Prior Other University	61.94	68.11	55.76
Prior Private	3.82	3.54	3.96
Prior Public (Non-HE)	6.08	5.06	6.81
Prior Position in HE			
President	23.92	23.62	19.42
VP/Provost	42.79	42.13	50.36
Dean	14.48	14.96	14.39
Professor	6.57	7.48	4.32
Other	2.85	4.72	1.08
Top producers of presidents			
University of Washington	7 presidents		
University of North Carolina	7 presidents		
University of Michigan	7 presidents		
University of New Mexico	6 presidents		
University of Iowa	6 presidents		

Dependent Variables

At the state and federal level, a number of factors have been used as indicators of institutional performance in terms of quality, accessibility, and affordability, among other goals. For the present study, I focus on student performance because it is the focus of the majority of performance funding policies currently being implemented by states (Rabovsky 2012). Among indicators of student performance, graduation and retention rates as well as degree production have been used most commonly to rate the performance of colleges and universities. Degree production is measured as the number of degrees conferred per 100 full-time equivalent students and provides some indication of efficiency. The standard conceptualization of an institution's graduation rate is the percent of full-time first-time students who graduate within six years of enrollment. Somewhat related to graduation rates, an institution's retention rates captures the percent of first-time full-time freshman who re-enroll for their second year of courses. Each of these performance indicators is used in the analyses below to assess whether the relationship between fit and performance is consistent across multiple student-level outputs. As these variables are available at different points in time (graduation and retention rates were not collected by IPEDS until the early 2000s), the number of institution-years will vary according to the dependent variable.

Measuring Fit

For each component of PO fit, the current organization of a manager was compared to her most recent organization along eight dimensions: total enrollment, the percent of black students, the percent Hispanic students, the percent of graduate students,

the percent of part-time students, sticker price tuition and fees, total revenue (logged), and revenue from private gifts, investment returns, and endowment earnings (logged).⁵

Total student enrollment represents the mechanism through which colleges and universities have traditionally received funding from the state. As enrollment is also an indicator of size and complexity, it should specify some of the demands on the university president in terms of the scope of issues that must be handled on a daily basis. Diversity of the student body was also used to calculate fit for a variety of reasons. Historically black colleges and universities (HBCUs) and Hispanic Serving Institutions (HSIs) often have specific institutional histories and missions that vary from other organizations to which they might be compared. As such, a president's responsibilities in these organizations is likely to include tasks that differ from the role of other presidents in this sample. Further, diversity at any university may signal the degree to which access and equity are general goals of the organization (as compared to affordability, quality, or accountability).

Additional enrollment status indicators were included to measure task complexity. Higher levels of graduate students require a president to pay more attention to research initiatives while higher levels of part-time students will require more attention to retention and graduation efforts. Both types of students will define, to some degree, how the president is expected to allocate her time and resources; these measures may also help to differentiate between research-intensive universities and regional

⁵ Geographic regions may also be related to how well a president is able to manage her institution, as culture norms and politics may shift. However, coding for geography of the previous institution may not tap this dimension as the individual may be linked to a similar or different part of the country than where they were previously employed.

schools that offer but do not prioritize graduate education in the same way. Next, controlling for price differences may be an important indicator of student quality and access. As tuition and fees rise, more students will struggle to finish their degree, which can affect organizational performance. However, higher levels of tuition may also raise the quality of students, as only those willing to pay and graduate will select to attend such an institution.

Finally, including total revenue and revenue from private sources as components of fit provides a way to determine whether the president will be expected to spend more or less of her time looking for new resources. For example, Ivy League schools are likely to care less about finding new revenue streams than determining how to maximize and manage the revenue streams they already possess. Regional schools, on the other hand, must give more attention to raising money from alumni and securing research grants to ensure that the organization will remain competitive in the larger market.

The calculation of each component of fit follows four steps that are largely similar to previous private sector research (Kristof 2006). First, the value of each characteristic for the former organization was subtracted from that of the current institution to create a difference measure. Second, the absolute value of each difference was calculated so that all distances were positive. Next, each difference was adjusted to a 0-1 scale by subtracting the minimum value from each absolute value and then dividing by the maximum absolute value. This rescaling allows all characteristics to be compared in a similar manner where no single component is weighted more or less than others. These values were then reverse coded so that higher values signal high fit while

lower values translate to low fit. Finally, to create a single congruence measure, each of the fit components were added together.⁶ As there were eight individual components, the final variable can theoretically range from a value of 0 to 8.

Because the performance of a president's prior institution is linked to clear directional hypotheses (e.g., that a president coming from a higher performing school should signal high quality management and have some ability to improve organizational outputs), prior performance is included as a separate variable and is not part of the PO fit index. Here, prior performance is assessed by controlling for the absolute level of performance, defined as degree production, graduation rate, or retention rate as appropriate, in the president's prior institution from the year prior to her transition. If a president's first year at her current institution was 2005, for example, the prior institution's performance in 2004 will be included in the model.

Three types of presidents were excluded from the main analysis below. First, interim presidents are excluded because they are largely tasked with maintaining the institutional until a new president is hired; they generally are not expected to substantively change either the institution's strategies or performance outcomes. Second, internal hires are excluded from organizational fit models to keep this population from unintendedly biasing the direction or significance of fit.⁷ Finally,

⁶ A measure closer to a Euclidean distance was also created in which the squared values of each fit component were added together, and the square root was taken of the sum. This did not produce substantially different results.

⁷ It is plausible in this study to assume that individuals promoted internally have the highest level of congruence with the organization, as they have already gained some awareness of the organization's needs as well as additional constraints that may be in the environment. Table 15 in the Appendix contains organizational fit models that incorporate this assumption. For these models, internal hires received a

presidents who were hired by a university from outside of higher education (fifty five individuals in this sample were hired either from the private sector or a public agency) are not included in the organizational fit analyses. These individuals theoretically may be coded as absolute misfits (a value of 0), but this assumption may not always hold. Some private organizations may socialize managers to understand institutions of higher education better than others, and performance is not easily comparable across these institutions. For example, an individual who previously served as a four star general may align with the goals of a university differently than a former lieutenant governor or a state superintendent of K-12 education.⁸

Summary statistics of the key variables and all controls are displayed in Table 2. Despite having a large range of values, it is clear that the average fit of university presidents in this sample of institutions is quite high. The presence of high levels of fit may be due to the decision to focus solely on one type of university (four year, doctoral and research universities). Even so, this provides some descriptive evidence that organizations generally prescribe to the notion that higher levels of fit will be better for the organization.

maximum value of 8 for the summative fit index. As shown below, findings with or without the inclusion of the internal hires are consistent.

⁸ Appendix Table 16 offers some evaluation of presidents hired from outside of higher education. In Models 1, 3, and 5, bivariate measures capture whether an individual was hired from a public agency or a private firm. In these models, individuals from public agencies actually appear to do worse than those hired from within the higher education industry while those from private firms do slightly better, though coefficients do not reach a suitable level of significance. Models 2, 4, and 6 take a slightly different approach, measuring outside hires as coming from agencies or firms that are related to education broadly. Again, while no results reach significance, those with some type of linkage to education tend to do better than their peers.

Table 2: Descriptive Statistics, Person-Organization Fit in Higher Education				
	Mean	SD	Min	Max
<i>Fit Characteristics</i>				
Organizational Fit (summation)	7.193	.464	5.826	7.796
<i>Performance and Decision making</i>				
Prior University Performance, Degrees	26.631	7.643	0.228	105.952
Prior University Performance, Graduation	65.985	18.289	15.917	97.926
Prior University Performance, Retention	84.117	11.152	0	100
Change in President	0.102	0.302	0	1
President Experience	6.015	5.444	0	34
<i>Institutional Level Control Variables</i>				
Percent Black Students	9.972	15.751	0	98.103
Percent Hispanic Students	5.319	7.241	0	63.496
Instructional Spending/FTE Student (logged)	9.188	0.598	2.035	11.637
Sticker Price Tuition and Fees (logged)	8.878	0.903	6.122	10.629
Percent Undergraduate Students Enrollment (logged)	70.251	15.134	0.531	96.064
Percent Part-time Students	9.517	0.891	4.828	12.25
Percent Part-time Faculty	25.7	14.297	0.076	91.696
Percent Part-time Faculty	20.317	17.878	0	97.561
<i>State-Level Control Variables</i>				
State Performance Funding Policy	0.189	0.392	0	1
State Appropriations (Constant 2009 dollars, millions)	1639.238	1363.182	52.327	6315.971
State Unemployment Rate	5.803	1.952	2.267	17.733

Control Variables

For the purposes of this study, control variables are focused primarily on the level of the institution. From data collected on presidents, variables are included for a change in management (first year of a president) and a president's years of experience at the institution to test for short or long-term effects on performance over the course of presidents' acculturation to the institution. I account for the student enrollment profile at each institution by including measures of student diversity (percent black students, percent Hispanic students). Next, I include several institutional characteristics. Total

student enrollment (logged) captures institutional size and represents the traditional mechanism through which colleges and universities have often received funding from state policymakers. I control for student access through logged in-state tuition and fees (“sticker price”), and overall resources to students through a logged measure of the instructional spending per full-time student. Task difficulty is measured through the percent of undergraduate students, the percent of part-time students, and the percent of part-time faculty at the institution; all should be negatively correlated with performance.⁹

To capture state-level variance, I control for the presence of a performance-funding policy, state appropriations for higher education in millions (held constant at 2009 dollars), and the state unemployment rate. Performance-funding policies are largely touted by policymakers as a mechanism by which universities will improve student performance (though this is not always empirically supported; see Rutherford and Rabovsky 2014). Controlling for the presence of this policy may also capture the attention given to the accountability of higher education in the state. Appropriations are a measure of resources, and unemployment rates may measure competition for higher education funding (in times of lean economic years, less money is generally given to higher education while more funding is focused on welfare programs). To control for drifts in performance over time, I include year fixed effects. Thus, neither time (year) nor place (state) should substantially alter or threaten the validity of the findings below. Further, when dealing with time-series cross-sectional (TSCS) data for highly

⁹ A control for whether the organization has a hospital was also tested in these models. However, as this variable lowered the number of cases in the sample and was not significant, this variable was not included in final models.

autoregressive organizations, it is also essential that scholars be cognizant of problems such as serial autocorrelation and heteroskedasticity. Following prescriptions for the use of panel data, all models are general least squares estimates with clustered errors and lagged dependent variables.¹⁰

2.8 Findings

Table 3 includes tests of organizational fit as applied to degrees per 100 full-time equivalent students, graduation rates, and retention rates. Fit variables are significant above and beyond the highly significant lagged dependent variables. In Models 1, 3, and 5, fit has a negative relationship with performance, though only in the case of degree production is the coefficient significant. More importantly, across all dependent variables, models generate support for the notion that fit has a nonlinear relationship with performance (though this relationship fails just short of significance in Model 2). Models 2, 4, and 6 produce turning points of 6.602, 6.812, and 6.706, respectively. As the average value of fit in this sample is just over 7, the turning point occurs rather quickly. This implies that hiring a president who would be considered moderate to high, but not extreme, misfit to manage the institution can boost performance, perhaps through the introduction of new ideas and strategies or new socialization and norms among mid and lower level employees (this dataset does not allow further investigation of this relationship at the micro-level).

¹⁰ Models with panel-corrected standard errors (PCSEs) and panel-specific corrections for AR1 autocorrelations were also tested and found to produce parallel results.

Interestingly, while higher levels of performance in a president's previous organization were expected to boost performance in the current organization (as a proxy for the ability of a manager to be associated with ideas and strategies that work), this only appears to matter in the case of retention rates. It may be that adapting knowledge from one organization to another is complex and difficult to achieve. In terms of additional control variables for the president, mixed support is provided for managerial experience, and no relationship is detected for presidential turnover. This may be due to the highly autoregressive nature of these organizations. Among institutional structures, instructional expenditures help performance while higher tuition costs are positively associated with degree efficiency and size tends to be positively related with graduation and retention rates.

Robustness Checks

Several additional tests were conducted on this data to determine whether the nonlinear and largely negative relationship between fit and organizational performance was robust. First, the experience of the past president was added to the model and was interacted with fit, as we might expect that the longer the prior president serves, the longer her legacy will last in the organization (making it harder to change in future years). Unsurprisingly, in the case where the prior president was in power for more than ten years (this occurs in approximately 1 of 3 cases in the sample), the effect of fit on performance dissipates.

Table 3: The Effect of Person-Organization Fit on Student Performance						
	Degrees/100 FTE					
	Students		150% Graduation Rate		FTFT Retention Rate	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Organizational Fit	-0.2000+	4.0882	-0.1461	10.0334+	-0.6785	20.4825+
	(0.1158)	(2.7452)	(0.2087)	(5.3476)	(0.4524)	(12.4647)
Organizational Fit ²		-0.3096		-0.7364+		-1.5271+
		(0.1977)		(0.3903)		(0.9014)
Prior Organization Performance (Degrees)	0.0016	0.0024				
	(0.0130)	(0.0131)				
Prior Organization Performance (Grad)			0.0095	0.0089		
			(0.0068)	(0.0065)		
Prior Organization Performance (Ret)					0.0502*	0.0499*
					(0.0231)	(0.0217)
Change in President	0.1156	0.1185	0.0409	0.0464	0.3238	0.3876
	(0.2176)	(0.2177)	(0.4191)	(0.4162)	(0.7119)	(0.7124)
President Experience (years)	0.0238	0.0242	0.1092*	0.1136*	0.0334	0.0457
	(0.0191)	(0.0193)	(0.0374)	(0.0368)	(0.0412)	(0.0422)
Percent Black Students	-0.0092+	-0.0090+	-0.0191+	-0.0201+	-0.0119	-0.0132
	(0.0051)	(0.0049)	(0.0112)	(0.0114)	(0.0174)	(0.0174)
Percent Hispanic Students	0.0012	0.0000	-0.0344	-0.0351	-0.0153	-0.0178
	(0.0103)	(0.0102)	(0.0369)	(0.0382)	(0.0455)	(0.0451)
Percent Part-time Students	0.0156*	0.0141*	-0.1129*	-0.1223*	-0.1425*	-0.1563*
	(0.0066)	(0.0066)	(0.0251)	(0.0269)	(0.0530)	(0.0570)
Instructional Expenditures/FTE Student (log)	0.6284*	0.6479*	0.5558+	0.6282*	2.0148*	2.1162*
	(0.1633)	(0.1652)	(0.2886)	(0.3018)	(0.7184)	(0.7250)
Sticker Price Tuition and Fees (logged)	0.3329*	0.3206*	0.4176	0.3859	0.5671	0.4581
	(0.1248)	(0.1239)	(0.2732)	(0.2602)	(0.4365)	(0.4229)

Table 3 Continued						
Enrollment (log)	-0.0876 (0.0966)	-0.0819 (0.0972)	0.7099* (0.2033)	0.7126* (0.2019)	1.1296* (0.4460)	1.1164* (0.4435)
Percent Part-time Faculty	0.0043 (0.0029)	0.0043 (0.0029)	0.0008 (0.0084)	0.0005 (0.0081)	0.0291+ (0.0160)	0.0273+ (0.0157)
State Performance Funding Policy	-0.2895* (0.1218)	-0.2949* (0.1231)	-0.0798 (0.2370)	-0.1067 (0.2347)	-0.1906 (0.4940)	-0.2555 (0.4991)
State Appropriations (Constant 2009 dollars, millions)	0.0001+ (0.0001)	0.0001+ (0.0001)	0.0001 (0.0001)	0.0001 (0.0001)	0.0002 (0.0002)	0.0001 (0.0002)
State Unemployment Rate	-0.0262 (0.0548)	-0.0374 (0.0545)	-0.1637+ (0.0927)	-0.1801* (0.0913)	-0.0061 (0.1477)	-0.0264 (0.1476)
Lagged DV	0.8155* (0.0350)	0.8132* (0.0351)	0.8978* (0.0238)	0.8938* (0.0245)	0.6750* (0.1051)	0.6661* (0.1070)
Constant	-1.2943 (1.8829)	-16.0628+ (9.6755)	-5.5961 (4.0314)	-40.3816* (19.5701)	-6.0717 (7.9695)	-77.5049+ (42.7840)
Year FE	1994-2009	1994-2009	2003-2009	2003-2009	2005-2009	2005-2009
N	1229	1229	623	623	400	400
R2	.85	.85	.95	.95	.91	.91
Chi2	7149.853	6943.872	54957.201	58235.881	3484.168	4222.140

+ p<0.10, * p<0.05

Second, it might be that fit only matters for the first few years of a president's term. In other words, after some number of years, the president is socialized and seen as an integral part of the organization regardless of past experiences. Thus, the sample was truncated by years of experience as president to see if some breaking point emerged that changed the negative relationships detected in the models presented above. For example, models were conducted for presidents that had less than 2 years of experience, less than three years of experience, and so on. The relationship between fit and performance become significant at year six. As this is the average tenure of university presidents, most presidents were leaving their institution by the time that fit was no longer connected to performance.

Finally, a control was added for the total number of presidents each institution had over the twenty year period in this dataset. A greater number of presidents might indicate some type of volatility that would prevent presidents from improving performance with any ease. However, this variable was insignificant and did not explain any additional variance in models.

2.9 Implications

This study attempts to measure a general, objective concept of fit through a public management perspective. Findings indicate that while some low level of fit is needed, high fit can have negative consequences for organizational performance. This would imply that organizations might be better off hiring managers from outside of their own institution. These individuals may indeed bring new ideas to the institution that can be effective in improving performance. Those hired from the inside may be less likely to

challenge current norms such that the organization does not keep up with the changing demands of the environment in which it operates (Hill 2005). In other words, the organization may become stagnant and unable to maintain student performance. It should, of course, be noted that fit is not necessarily bad for all managers across all policy arenas, but findings from this sample of organizations certainly suggest that some distance is a good thing.

While this research contributes the questions of fit in organizations, it does not come without notable limitations that require additional research. The importance of specific components of fit may be under or over specified and may change in relative importance over time. In other words, components of fit might be weighted differently by individual hiring committees even though they are given equal weight in this analysis. The question of which aspects of fit matter most is likely to have important practical and theoretical implications for principal-agent relations and the ability of managers to oversee their organizations. Further, the direction of fit, only considered here for performance of the previous institution, is also likely to matter, though it is unclear currently what theoretical expectations should exist here. For example, is there a difference between transitioning from a small to large school compared to leaving a large school for a small school? Do adjustments in different directions have the same effects on organizational performance? Further, while this study has focused on absolute levels of change between institutions, it may be the rate of change that matters. For example, the rate of change of a president's previous institution may affect how well he is able to influence both the rate of change and absolute level of performance at her

current institution. This relationship may also depend on the rate of change at the current institution. If the hiring institution is experiencing declining or increasing rates of change in performance, this trend may be difficult to change if the new president does not come with the skills needed to address this shift.

Next, while organizational performance at the clientele-level is important for the accountability of the organization to many stakeholder groups, managers in this setting may be expected to influence other performance indicators such as revenues and expenditures, the ratio of administrators to front-line workers, or pricing strategies of the organization. Fortunately, these questions can be investigated not only within the context of higher education but in other organizational settings such as health, welfare, and criminal justice. Context will matter significantly in determining both the causes and consequences of managerial fit in an organization. While the case of higher education is certainly an interesting one, the generalizability of this context to other agencies certainly is limited.

Even if findings in this research are specific to higher education, the theoretical questions are broadly generalizable to public and private organizations, non-profits, federal agency heads, and even elected officials if the right type of data are available. Tests of fit can be applied in each of these environments to determine what theoretical expectations hold across all contexts and what relationships may be more specific to certain types of organizations. Fit should affect the ability of managers (broadly defined) in each of these settings and may have a variety of effects on priorities, decision making, and outcomes in the form of policy effects and client services. While few

datasets that are capable of testing theories of fit are not common in public management, the construction of such datasets will have much value to future research.

3. WHERE THE RUBBER MEETS THE ROAD: THE INFLUENCE OF PRESIDENTIAL CHARACTERISTICS ON STRATEGIC FISCAL CHANGE

3.1 Overview

A general maxim of public organizations is that managers should engage in strategic planning and action. A review of the literature finds extensive examination of the determinants of strategic management but few studies on the link between strategic management processes and organizational outcomes. Strategies are not self-implementing, and managers need to make a variety of decisions to translate a strategic plan into action. This study uses a panel data base of U.S. universities to examine whether or not university presidents seek to change the attainment and use of institutional resources. That few managerial characteristics can predict strategy indicates a lack of large scope strategic planning in higher education.

3.2 Introduction

A general maxim of public organizations is that managers should engage in strategic planning and action. Although the literature contains work that outlines basic strategies (e.g., Miles and Snow 1974) and has elaborate prescriptive work on how to engage in strategic planning (Bryson 2004), there has been little work on the *implementation* of strategic management. The general perception in the world of practice is that strategic plans are placed on a shelf to gather dust until the next round of strategic planning. A recent review of the literature finds extensive examination of the determinants of strategic management, but few studies on the link between strategic management processes and organizational outcomes (Poister et al. 2010; but see Poister et al. 2013 and private management literature such as Boeker 1997). Even those studies that link specific organizational strategies to organizational outcomes (Boyne and Walker 2004, Meier et al. 2007), take strategy as indicated by managers as a given but do not determine if specific decisions are made to implement the strategy. Strategies are not self-implementing, and managers need to make a variety of decisions to translate a strategic plan into action. As such, subjective judgments made by managers are central to the implementation of strategic changes.

This study uses a panel database of four year U.S. universities to examine whether or not different types of university presidents seek to change the fiscal characteristics (revenues, expenditures, pricing) of their institutions. Fiscal changes can be directly controlled by university presidents, are often the first step in the implementation of strategic plans, and are indirectly connected to variation in

performance outcomes in future time periods. Further, monetary actions to change the organization are a necessary condition for implementing a strategic plan. An absence of noticeable changes in the analyses in this study suggests that decisions are incremental, at best, and cannot be linked definitively to characteristics (experience, expertise, new appointee) of a college or university president.

The remaining sections first review literature on strategic stances, planning, and change through the lens of public administration research. The importance of managers and managerial characteristics in the development and implementation of strategic change is proposed as a puzzle that has not been adequately addressed by current theories of change in public organizations. The importance of strategic change in higher education is reviewed and then tested with an original cross-sectional times-series dataset on presidents in four year public colleges and universities.

3.3 Purpose of Strategic Plans and Changes

A large share of recent research in public administration relies on the fundamental assumption that more effective (better) management will lead to higher levels of performance in public organizations. This assumption provides a foundation for general management models that have produced a wide variety of studies connecting management and performance in multiple countries and organizational contexts (for example, Akkerman and Torenvlied 2009; Lynn, Heinrich, and Hill 2001; Avellaneda 2009; Andrews, Boyne, and Enticott 2006). Alongside the persistent concern with generating a general theory of public management to predict organizational performance, scholars have also become interested in understanding the development and

implementation of strategic changes and the effect that strategy and change has on organizational processes and outcomes (Boyne 2001, Bryson 2004, Bryson et al. 2009, Nutt and Backoff 1993, Poister et al. 2010).

Strategic plans and changes can provide clarity concerning the overall goals of the organization. These plans are especially important for organizations to maintain long-term viability in the context of constantly changing environments that produce some level of uncertainty and instability. In these environments, strategic changes help to set precedents and define institutional norms. Further, many strategies can be updated according to shifting internal and external pressures and the availability of new information. Existing literature, often in the context of UK local governments or Texas schools, has explored general categories of strategic stances following the typology introduced by Miles and Snow (Boyne and Walker 2004, Meier et al. 2007, Meier and O'Toole 2008, Walker et al. 2010). This line of research has consistently found that prospectors are related to higher levels of performance as these organizations are inclined to be proactive in defining and implementing mechanisms by which to improve performance. Reactors, on the other hand, are generally linked to lower levels of performance; these institutions essentially lack strategic plans or changes that allow the organization to keep up with shocks in the larger environment.

While this research has contributed to theoretical advancements in public administration, these broad stances do not consider the details of strategies. Instead, questions related to how strategies are formed and implemented is largely ignored. Research focused on a more micro-level approach to strategic planning has presented

two competing hypotheses. On the one hand, advocates provide a number of reasons why strategic planning—tactics to address SWOT analyses, performance gaps, and environmental uncertainty—should theoretically have a positive effect on organizations (Olsen and Eadie 1982, Bryson and Roering 1987, Bryson 2004). This view follows the classic notion that rational planning and coordination should improve performance. Planning has been conceptually linked to unifying complex organizations, maintaining competitiveness in a market setting, reducing uncertainty following environmental shocks, and socializing employees to specific norms and actions (Boyne 2001, Lathan 2004, Poister 2010), though many of these hypotheses have not been directly tested in public administration literature. On the other hand, a number of existing studies suggest that strategic planning does not work for a number of reasons. For example, while the assumption that strategic planning should work has some surface level validity in theoretical terms, real world challenges increase the likelihood that strategic changes will fail. In other words, an array of structures, norms, and attitudes have to be in place for strategies to work as intended (Bryson and Roering 1989). Additionally, if managers or front-line employees are resistant to change, then planning is likely to go awry or be ignored (Tushman and Romanelli 1985). Next, plans may be created with a one-size-fits-all mentality such that strategic changes do not fit the context of the organization well. The case of performance accountability reforms are a prime example of this type of strategic planning fault; a growing body of research has shown that accountability mechanisms that are not adjusted to the context of an organization may, at best, be ineffective and, at worst, be connected to a host of unintended consequences (Heinrich

2007, Radin 2006). Finally, many studies on strategic planning and strategic change have treated strategy as a fixed object when it is not (Mintzberg 1978). Strategy is a fluid process that can be influenced by a number of factors in the internal and external environment of the organization. Because plans can be updated as more information becomes available, it is difficult to fully assess whether strategies can be related to statistically significant improvements in the organization.

Aside from assessing whether strategic planning improves an organization, research has sometimes questioned whether managers actively pursue strategic change at all (Wildavsky 1973, Mintzberg 1993). It may be that managers do not pursue larger strategic changes but, instead, make incremental changes to the system with hopes of producing some type of improvement to the organization. For example, as the result of conducting a series of interviews with managerial executives, Quinn (1978, 1982) argues that organizational strategies are rarely written down and disseminated through an organization but are simply produced through fragmented, intuitive decision making processes. Quinn contends that this “logical incrementalism” does not consist of muddling through but is a purposeful way to integrate the behavioral aspects of planning. Perhaps most recently, arguments by Quinn and Wildavsky have been expanded by Baumgartner, Jones, and colleagues who seek to provide a better understanding of the limits of incrementalism through punctuated equilibrium theory (Baumgartner and Jones 1991, Jones and Baumgartner 2005a). Among other findings, this line of research suggests that managers partake in both strategic changes and

incremental decision making processes at different points in time (Jones and Baumgartner 2005b).

Research on both strategic planning and incrementalism has contributed to the expansion of multiple streams of research but contains many notable limitations. First, while public administration research continues to discuss the impact of strategy *formation* on organizational performance (Boyne 2001, Bryson 2004, Niven 2003, Nutt and Backoff 1992), few have examined the *implementation* of strategic plans in organizations (but see Govindarajan 1989 and Boeker 1997 on private firm strategies). Recent studies in the context of UK local governments (Andrews et al. 2009, Walker et al. 2010) and U.S. transit agencies (Poister et al. 2013) have tested links between formal planning and incrementalism with performance, but neither of these cases has looked at what drives the decision to pursue certain strategies. Further, empirical tests using large-N datasets are still lacking in research related to strategic change. Case studies and small-n data do not allow for generalizability across time or space. Second, it is important that scholars integrate the human side of strategic change into this line of research; top managers and the values they hold are key to understanding strategies. In other words, strategic changes are decisions and actions created and implemented by real people. By focusing on managers and the values that shape their decision processes, we can more precisely develop models that can explain the antecedents of strategy and change.

3.4 Connecting Managers to Strategic Change

Strategic change is primarily a function of the executive in an organization.¹¹ Managers each have values and beliefs that play a critical role in shaping managerial strategy and decision-making for organizations (Lowi 1979, Kettl 1993). Indeed, the role of values in shaping managerial behavior and organizational outcomes has been a prevalent discussion in public administration since at least the Friedrich-Finer debate on how to maintain democratic processes (Finer 1941, Frederick 1940). This values discussion has also developed among theories of political control of the bureaucracy and assessments of the differences between politics and administration (for example, Goodsell 1983, Lowi 1979, Kettl 1993). However, the ability of any branch of government to control bureaucratic actors can be quite limited and may also depend on the bureaucrat's "inner check" (Dahl 1970). This disconnect can be seen in explanations of goal conflict or adverse selection. In fact, Meier and O'Toole (2006) argue that political control mechanisms are only successful when political officials get bureaucrats to act in a way that they would not have acted otherwise. However, as information about values is rarely collected, empirically determining how values affect decisions related to strategic change can be somewhat challenging.

To study managerial values, hypotheses and empirical models in this study follow the assumptions made by upper echelons theory. Developed by Hambrick and Mason (1984), upper echelons theory argues that top managers make decisions and

¹¹ In many public organizations, policymakers or other political principals may also play a role in developing organizational strategies. However, the executive of the organization is still tasked with the implementation of strategies and may have some level of autonomy in terms of how and when to implement changes.

implement actions according to their individual perceptions of the strategic opportunities and challenges they face and that the individual perceptions of managers are created through their experiences, values, and socialization. Proponents of this theory argue that the demographic characteristics of managers, while imperfect and sometimes blunt measures, can be used as valid proxies to measure an individual's underlying goals and values. Characteristics considered here include managerial turnover, internal and external hires, managerial experience, and socialization.

First, change in the executive of an organization may help to overcome inertia so that strategic plans are implemented at higher rates. Much of the discussion on managerial turnover and strategic change has been applied in the context of private firms (Brickley 2003, Furtado and Karan 1990); boards of directors and policymakers use reorganization and replacement as an opportunity to advance a corporation (Daily 1995). Research on public organizations generally assume that turnover is an indication of ineffective leadership and that a new manager may be able to transform the organization in order to improve outcomes (Hill 2005, Wright and Pandey 2010; Andrews, Boyne, and Walker 2011). In other words, a new manager can bring with her a new perspective that can revitalize performance through innovation and change.

H₁: Executive management turnover will increase the implementation of strategic change.

Existing literature has also found experience (tenure) to have important implications for managerial decision making. On the one hand, a longer tenure can allow a manager more time to stabilize the organization and establish strategic networks

(Jeunke 2005). Additionally, tenured managers are more likely to successfully resist external pressures and threats to the organization (Meyer 1975). While the momentum of the organization can overwhelm new managers, those with longer tenure can be more capable of enacting change within an organization (Hill 2005).¹² Over time, a longer serving manager is able to better influence the organization due to established relationships and understanding of the organization (Miller 1991).

H_{2A}: Longer managerial tenure will be associated with higher levels of strategic change.

However, another line of research suggests that longer tenure in top-level management means that executives are more insulated and will be more cautious about deviating from current strategies (Goodstein and Boeker 1991). In other words, managerial experience is often linked to higher levels of rigidity and the maintenance of established practices (Katz 1982). An executive may process information differently (i.e. more selectively) from less experienced managers which may translate into missed opportunities to adjust to changes in the external environment in order to maintain long-term viability.

H_{2B}: Longer managerial tenure will be associated with lower levels of strategic change.

Next, managerial perceptions and cost-benefit analyses that determine strategies are likely to vary by whether a manager is promoted from inside or hired from outside of

¹² Though not tested here, it is possible that a long serving leader may become resistant to change, resulting in a decline in performance. This may point to a nonlinear relationship between managerial experience and performance.

the organization. An inside hire may be socialized to understand the environment of the organization in a way that aligns with the norms of the organization. These internal hires are more likely to conform to existing values and norms which may subsequently lead to decisions that support the status quo (Kanter 1977, Wiersema 1992). Further, inside hires may have less knowledge of strategies that have been successful in other agencies, which may increase uncertainty about pursuing new changes. Conversely, external hires are less familiar with the norms of the organization and may be more likely to pursue strategic changes according to their different perspectives of the needs of the organizations.

H₃: Managers hired from outside the organization will pursue higher levels of strategic change.

Finally, the socialization of a manager to a specific industry (as opposed to a specific organization) may affect her cost-benefit assessments, which will lead to different approaches in defining organizational strategies (and thus organizational performance). Socialization is defined here as the process by which an organization's context, culture and norms shape a manager's individual values and expectations. In other words, while different managers may want to achieve the same end result (a better organization with higher levels of performance), managers may have different means by which to achieve these goals following the norms to which they are accustomed. A manager's experience within a certain organizational environment is likely to guide her evaluations of the context of the organization (Berlew and Hall 1966; Louis 1980). Ultimately, the professional norms associated with a certain industry can lead to different approaches in policy implementation (Teodoro 2014).

H₄: Higher levels of socialization to the industry will lead to higher levels of strategic change.

3.5 Strategic Change in the Context of Higher Education

The analysis below focuses on the effect of university presidents on fiscal strategies in four year public colleges and universities. Data to test the influence of managerial executives on strategic change come from three sources. First, data on university presidents¹³ was collected from public U.S. colleges and universities rated by the Carnegie classification system as doctoral/research universities, research universities-high research activity, or research universities-very high research activity; data reported here spans the time period of 1993-2010. The universe of these classifications consists of 175 institutions, though data for 155 schools were coded (twenty schools do not provide over-time information on their president in a publicly accessible format). Data were collected on length of managerial tenure, start and end dates of service, previous employment, educational background, and demographics.¹⁴ This dataset was then merged with h-indices for each university president from the Publish or Perish program that analyzes academic citations through Google Scholar and a series of metrics.¹⁵ The h-index is based on both the number publications an individual has produced as well as the number of citation these publications have received. Finally, individual-level data was merged with institutional data from the National Center for Education Statistics (NCES) IPEDS Delta Cost Project. Virtually all public, private

¹³ All data was collected from publicly available websites.

¹⁴ It should be noted that not all 21 years could be coded for each of the colleges/universities due to the occasionally lack of information provided by the institution.

¹⁵ See Harzing (2007) for more details on metrics and measures.

non-profit, and private for profit colleges and universities in the United States are required to report data on a yearly basis in exchange for the receipt of federal funding (primarily in the form of student financial aid). Variables include revenues and expenditures, staffing, and student enrollment profiles, among other variables.

Measuring Strategic Management

Institutions must constantly adjust strategies and priorities in order to survive in an ever-changing environment. Organizations that fail to adapt to these environmental shifts in a market setting such as that of higher education may experience a drop in overall performance and a decline in clientele interest in goods and services the organization provides. In this study, three types of resource strategies are examined—revenues, expenditures, and pricing.¹⁶ The pursuit and allocation of resources should tap how executives are setting priorities and enacting change in the organization. Resources are required to spur improvements, so changes in revenues, expenditures, and pricing strategies should each led to additional changes in performance (equity, affordability, efficiency). Here, measures of strategy are calculated as a change variable, or the percent change from time t to time $t+1$ (i.e. $(\text{strategy}_t - \text{strategy}_{t-1}) / (\text{strategy}_{t-1})$). Because some cases generated outliers that are likely to produce inaccurate findings, the values of outliers are replaced with maximum or minimum values that corresponded with a three standard deviation from the mean for the variable of interest. This solution requires a

¹⁶ It could be argued that revenues are a measure of performance as opposed to strategy. Still, the measures of revenues here also reflect decisions to pursue specific types of resources.

slight drop in cases but also allows for a better general assessment of strategies in these organizations.

Institutions of higher education must monitor incomes and expenditures in order to achieve any non-financial goals or priorities (i.e. accountability, equity, or affordability) as each actionable goal requires some type of resource. First, presidents are often expected to generate revenues from a variety of sources (state allocations, private donations, etc.); these revenue streams have become increasingly important as state allocations continue to decline at a somewhat rapid pace. If presidents are unable to maintain a certain level of revenue, uncertainty is likely to affect the organization as some units may receive budget cuts or even be closed (one example would be that a university cuts a major from curriculum options). Three measures are used here to capture changes in revenues—change in revenue from private gifts and contracts, change in revenue from federal grants and contracts, and change in total revenue. Change in total revenue may indicate turbulent environments in which universities are coping with declining appropriations or other type of income. Alternatively, an increase in revenue can tap the ability of the institution’s managers to play to their advantage in finding additional sources of revenue. This may be related to gaining additional funds from government sources, alumni, student tuition and fees, or various types of commercial sales. Within total revenue, change in revenue from federal grants and contracts and change in endowment are two specific sources of funding that schools emphasize to a varying degree. The former will be larger when the president places priority on acquiring national grants that are often seen as means to improving the financial

stability, reputation, and scholarly output of the institution. The latter focuses on building relationships with alumni constituency groups and raising private money. This strategy is often targeted to very specific audiences and can generate funds for a variety of purposes (scholarships, infrastructure, beautification, etc.).

After generating funding from a variety of sources, a university president must then determine how to allocate resources internally in a manner that will help the institution realize its performance goals. Change in total expenditures often captures overall change in strategy as related to how the president wants to allocate the institution's limited resources. Institutions might choose to spend more in one year to try to gain additional revenues from new programs or services in later years, or they may restrict overall expenditures to focus more narrowly on some services over others. Beyond considering the overall change in expenditures, a change in the share of expenditures related to educational purposes versus research purposes provides a measure of a clear trade-off that can provide some indication of the president's underlying goals and values. More funding towards education-related expenses may indicate a strategy to increase the quality of instruction offered to students, which is a core task of the organization. Increasing or decreasing the share of education-related expenditures also requires some trade-off with auxiliary costs such as supplementary student services that are not always explicitly linked to salient student outcomes. Additional funding to research-related programs, on the other hand, could suggest that a president believes that improving research can result in better in-classroom experiences and higher levels of student outcomes.

Finally, pricing strategies present an important strategic lever in the context of higher education. Though not traditionally considered in public management literature, pricing strategies can be quite important for many organizations that operate in market environments. In the case of higher education, two pricing measures have important effects on overall revenue. First, change in student sticker price (measured as the in-state tuition and fees for full-time undergraduates) captures the decision to increase revenues directly through students. This change variable is rarely negative; the negative values that do exist in this data are usually due to small adjustments in state regulations. Pricing strategies extend beyond changes in sticker price, however, and must also account for discount rates, or the ratio of total institutional grant aid relative to gross tuition revenues at a college or university. In other words, tuition discounting is price discrimination in which different students pay different prices for the same educational opportunities. Discounts are commonly focused on low-income students who may not be able to attend the university without adequate assistance. If a college relies heavily on discounting, a change in tuition may not generate any additional revenue. For this sample, the absolute sticker price and discount rate have a correlation of .53, but the change in these measures from year to year have little in common (-.02).

Predicting Strategy

While many factors may drive strategic change, this study will focus on whether managerial characteristics and the underlying values these characteristics reflect have any effect on change. Models include controls for previous employment, presidential turnover, the total years of a president's term, the president's h-index, whether the

presidents has a Ph.D., whether the president's prior organization was outside of higher education, and whether the president is black, Latino, or female.

Dichotomous variables are included for whether the president's most recent managerial role was within another institution of higher education, was in a private firm, or was in a public agency (as opposed to being an internal hire); while these three categories are broad and contain a variety of backgrounds, they should still provide insight on whether differences exist between internal and external hires. For example, some individuals in the sample become presidents after serving as a governor, lawyer, CEO of a private business, or director of a non-profit organization. These individuals may have a different effect on performance compared to presidents hired from another higher education role because of differing values, norms, and expectations for what the institution can or should do.

To further control for individual values, variables are included in all models for whether a president has a Ph.D. and the strength of the president's h-index. Both measures should capture the propensity of the president to value research initiatives. As mentioned above, the h-index is a measure of academic reputation that is designed to be comparable across disciplines. An index of ten means that the individual has ten publications with each cited at least ten times. The higher the h-index, the more a president might focus on core institutional functions related to classroom instruction and research, which will influence the composition of revenue and expenditures.

Next, controls are included for demographics—whether a president is Black, Latino, or female.¹⁷ Each of these groups is likely to have experiences and career patterns that differ from the modal white, male manager (Jacobsen, Palus, and Bowling 2010; Karnig 1980, Saint-Germain 1989, Lublin 1999). These differences can then translate into different perceptions of environmental stressors and the types of strategies that the organization should pursue. It should also be noted that Black and Latino presidents are more likely to oversee HBCUs and HSIs that have higher levels of underrepresented student populations. This context may require presidents to seek strategic change in specific ways.

Presidential turnover is measured as a dichotomous variable noting a president's first year in office. Presidents might alter strategies little during their first year in office because they are adjusting to a new organization and determining what strategies to prioritize in order to improve the organization. Alternatively, presidents could choose to start their terms with sweeping changes if they perceive large problems that need to be addressed with some immediacy or if they do not agree with the strategies of the outgoing president.

Total tenure, measured as the number of years an individual has served as president of the institution, captures the adjustment of the president to the organization over time. On one hand, this may be associated with an increase in changes as the president gains more power and expands her network. On the other hand, it is possible

¹⁷ Other racial and ethnic categories were not included due to the rare occurrence of these presidents.

that longer tenures are associated with less change if inertia and an unwillingness to pursue innovation occur.

Controls

Though not the focus of this study, controls for organizational performance, task complexity, institutional structures, and environmental turbulence have been included to avoid the pitfalls of underspecification. Past research has shown that poor performance often acts as a driver of strategic change in order to turn around organizations (Cyert and March 1963, March and Simon 1958). When organizations are not performing as expected, managers will be pressured to change the organization in order to keep it from failing. Managers overseeing these institutions are also more likely to take larger risks in order to maintain some level of stability in the organization. On the other hand, organizations performing at or above expectations may feel little pressure to pursue large changes. These organizations can continue to do well, at least in the short-term, by making changes at the margins. Performance in this study is measured through efficiency, or the number of degrees produced per 100 full time students. While many specifications of performance may be examined in this sample, this indicator is available across the entire span of the dataset and is one of the most commonly cited measures across state performance accountability systems. This variable is lagged such that performance two years ago is linked to strategy in the current year. The additional lag is included as the availability of this data can take some time to organization at the end of each academic year.

Task complexity is captured through three measures of diversity in the student enrollment profile—the percent of black students, the percent of Hispanic students, and the percent of part-time students. Each of these variables serve as an indicator for at-risk and vulnerable student populations that often require additional support and resources from the institution. Many of these students must find employment while attending school, and many have greater support demands from family and friends (London 1989, Thayer 2000). They may take longer to graduate and may not attend school in a continuous manner. Institutions with large at-risk populations must develop methods (summer programs, learning communities, counseling services) to help these students progress towards graduation.

Additional institutional structures have also been included to ensure that models are not underspecified. Student access is measured through logged in-state tuition and fees, or “sticker price” (this measure is excluded when tuition is used as a dependent variable). Total student enrollment (logged) captures institutional size and represents the traditional mechanism through which colleges and universities have often received funding from state policymakers. The percent of full-time faculty may influence the demands of faculty constituent groups on the university in terms of benefits, spending, and student support. Finally, the level of overall resources to students is measured through instructional spending per full-time equivalent student (logged).

To assess whether turbulence in the external environment affects organizational strategy, I control for the change in state appropriations to higher education, the change in state unemployment, and the presence of a state-mandated performance funding

policy. Appropriations are a measure of resources that has been declining at alarming rates in most states (i.e. a “race to the bottom”). Mortenson (2010), for example, estimates that average state support for higher education will reach zero by 2059, with many states zeroing out much sooner (such as Colorado in 2019, Iowa in 2029, and South Carolina in 2031). These trends have forced many colleges and universities to reconsider how to maintain current levels of revenue and spending. Second, state unemployment rates provide a measure of competition for state allocations. In times of lean economic years, higher education is one of the first budget categories cut while more funding is focused on welfare programs (see the recent discussion of the balance wheel hypothesis in Delaney and Doyle 2011). Rises in unemployment rates are also associated with increases in enrollments in higher education (Betts and McFarland 1995); these changes in enrollments create a need to alter institutional strategies. Performance-funding policies are largely touted by policymakers as a mechanism by which universities will improve student performance, but these policies have also produced some uncertainty for administrators who must adjust to new expectations. Though research is at best mixed on whether these policies work to improve student outcomes, many recognize that the presence of these policies is likely to generate some type of response or reaction from university presidents (see, for example, Rutherford and Rabovsky 2014).

Methods

When dealing with time-series cross-sectional (TSCS) data, it is essential that scholars be cognizant of problems such as serial autocorrelation and heteroskedasticity.

Following prescriptions for the use of panel data, three models are provided for comparison for each dependent variable—ordinary least squares (OLS) models with clustered errors, OLS models with clustered errors and a lagged dependent variable, and fixed effects models with lagged dependent variable. While fixed effects models may absorb a large share of the variance, variables that maintain significance across all models should provide higher levels of confidence in findings. Further, all models include year fixed effects to further control for the autoregressive nature of these institutions. Finally, all models use independent variables from time t to predict changes in the dependent variable in time $t+1$. This follows the assumption that decisions related to strategic change for next year are made by considering the performance and needs of the organization this year.

Descriptive statistics for variables pertinent to this study are shown in Table 4 below. Though NCES data are available through 2010, there exists a small percentage of nonsystematic missing observations (all data are self-reported and therefore may occasionally be missing from institutional reports). As each dependent variable presented below is measured as change, one year of observations is absorbed in order to create the variables of interest. Finally, the analyses provided below also exclude any institution years in which an organization had an interim president in office. These presidents are tasked with maintaining the institution until the next president is hired and are largely not involved with implementing strategic changes.

All factors considered, tables include 2205 organization-years for 155 institutions between 1993 and 2009. Almost ten percent of university presidents were hired from

outside of the higher education industry while over half were hired from provosts' offices. The average tenure of presidents in this sample is between five and six years (the average tenure has decreased over time). Both minority racial and ethnic groups and women are underrepresented in the president's office, through the representation of these groups has increased somewhat over time. The majority of presidents have a PhD (these degrees come from a wide variety of fields), and the average h-index is just under ten.¹⁸

Table 4: Descriptive Statistics, Predicting Strategic Change				
	Mean	SD	Min	Max
<i>Strategic Change</i>				
Δ Private Gifts	.106	.478	-1.000	2.189
Δ Federal Funding	.094	.249	-.914	3.812
Δ Total Revenue	.058	.087	-.889	1.000
Δ Education-Related Expenditures	-.003	.043	-.430	0.480
Δ Research-Related Expenditures	.027	.284	-.991	8.878
Δ Total Expenditures	.056	.064	-.476	.864
Δ Sticker Price	.071	.075	-.541	1.069
Δ Discount Rate	.044	.249	-.997	.997
<i>Inside/Outside Characteristics</i>				
Most recent position- other university	.645	.479	0	1
Most recent position- private firm	.027	.162	0	1
Most recent position- public agency	.057	.233	0	1
<i>Socialization Characteristics</i>				
PhD	.852	.355	0	1
H-index	9.388	10.849	0	85
Female	.138	.341	0	1
Black	.089	.284	0	1
Latino	.024	.155	0	1
<i>Managerial Turnover and Experience</i>				

¹⁸ This measure is imperfect, as it may vary by field. In the social sciences, the average h-index can range from 2.8 (law) to 7.6 (economics), while STEM fields may expect h-indices of 12 or more for promotion to associate professor.

Table 4 Continued				
First Year of Presidency	.111	.315	0	1
Experience (years)	5.485	5.091	0	34
<i>Controls</i>				
Degrees per 100 FTE Students	23.761	3.689	4.769	48.930
Percent Black Students	11.070	17.650	.214	95.917
Percent Hispanic Students	5.099	7.908	0.000	62.645
Percent Part-time Students	19.090	11.823	1.198	60.349
Instruction per FTE Student (logged)	8.861	.390	7.247	10.346
Enrollment (logged)	9.908	0.620	7.398	12.250
Sticker Price (logged)	8.281	0.479	6.983	10.043
Percent Full-time Faculty	49.607	16.757	0.000	95.461
State Performance Funding Policy	.206	.404	0	1
State Funding for Higher Education (2009 millions)	1413.10	1209.04		6315.97
State Unemployment Rate	6	7	52.327	1
	5.545	1.858	2.267	13.733

3.6 Findings

Results for all revenue, expenditure, and pricing models are provided in Tables 5, 6, and 7 below. Overall, models show that little strategic change appears to be taking place in these organizations; changes vary from year to year (the sign of the lagged dependent variables is negative) such that shifts are piecemeal. No model appears to explain a significant amount of variance in change, even when lagged dependent variables are included. One explanation may be that higher education presents a hard test of the general expectations about strategic change simply because these institutions are highly autoregressive and difficult to change over short periods of time (see Cohen and March's 1986 discussion of higher education as organized anarchies with problematic goals, unclear technology, and fluid participation). In other words, it is challenging for any shift in strategic goals to change the performance outcomes of the

organization quickly. Substantial literature in higher education argues that the changes that do take place are only evident at the margins with an unchanging center (Leslie and Fretwell 1996; Tierney 1998, 1999). However, there are still several significant relationships that suggest managers with specific backgrounds approach change differently than others.

In Table 5, outside hires from private firms are associated with negative changes in private revenue streams. Conversely, executives with higher h-index scores, or a higher propensity to value research, are linked to higher levels of change in increasing private sources of revenue. That these two opposite types of presidents have different effects on private revenues may also be related to what types of perceptions they generate among private donors and alumni. For example, a renowned scholar may generate higher levels of trust and buy-in, while a former firm executive may generate some level of uncertainty. As related to federal grants and contracts, presidents with a Ph.D. are associated with higher levels of increases, while female presidents and first year presidents are associated with decreasing funding (this may be viewed as a suboptimal type of change). Presidents with a Ph.D. may have higher levels of awareness of various federal grant programs that can provide resources to various units within the university. The link between female presidents and federal grants is less clear. It may be that female presidents are less assertive in encouraging faculty to pursue that grants, or it may be that females are hired at institutions that have historically placed less value on this type of revenue. Presidents are likely to see this source of revenue drop following the first year in office, as the president is likely to be occupied with

adjusting to a new work environment. Interestingly, while some characteristics are related to the two key sources of funding examined here, no type of president appears more or less likely to create change in the total revenue of the institution. Instead, individuals may only be able to focus on various shares of total revenue in order to maintain overall revenue and, consequently, stability in the organization in the presence of declining state appropriations.

In Table 5, organizational performance appears to contribute to positive changes in private and federal grants and contracts but does not appear to influence overall revenue. Instruction per student drives some negative changes but, again, does not generate change in total revenue. Finally, the percent of part-time faculty is related to negative changes in federal grants. This is likely due to the fact that part-time faculty may have teaching responsibilities that overshadow research initiatives.

Table 5: Effect of University Presidents on Changes in Institutional Revenues						
	Δ Private Gifts (t+1)		Δ Federal Funding (t+1)		Δ Total Revenue (t+1)	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Most Recent Position- Other University	-0.0331 (0.0248)	-0.0407 (0.0378)	-0.0059 (0.0103)	-0.0103 (0.0180)	0.0052 (0.0039)	0.0061 (0.0061)
Most Recent Position- Private Firm	-0.0802* (0.0271)	-0.0748 (0.1080)	0.0055 (0.0187)	0.0075 (0.0524)	0.0042 (0.0074)	0.0090 (0.0179)
Most Recent Position- Public Agency	-0.0287 (0.0364)	-0.0158 (0.0827)	0.0155 (0.0190)	0.0341 (0.0363)	0.0014 (0.0057)	0.0118 (0.0124)
PhD	-0.0046 (0.0215)	-0.0225 (0.0555)	0.0185+ (0.0094)	0.0131 (0.0259)	-0.0053 (0.0056)	-0.0092 (0.0088)
H-index	0.0018* (0.0008)	0.0025 (0.0016)	0.0004 (0.0005)	-0.0001 (0.0007)	0.0002 (0.0001)	0.0001 (0.0003)
Female	-0.0301 (0.0277)	0.0248 (0.0540)	-0.0161+ (0.0084)	-0.0197 (0.0248)	0.0023 (0.0043)	0.0019 (0.0085)
Black	-0.0139 (0.0394)	0.0701 (0.0772)	-0.0134 (0.0128)	-0.0088 (0.0367)	-0.0050 (0.0054)	-0.0034 (0.0125)
Latino	-0.0071 (0.0493)	0.0091 (0.1274)	-0.0271 (0.0243)	-0.0084 (0.0591)	-0.0157 (0.0097)	-0.0175 (0.0202)
First year	-0.0327 (0.0332)	-0.0289 (0.0395)	-0.0218+ (0.0116)	-0.0207 (0.0186)	-0.0066 (0.0042)	-0.0025 (0.0064)
Experience	-0.0013 (0.0018)	-0.0023 (0.0030)	-0.0008 (0.0009)	-0.0010 (0.0014)	0.0003 (0.0003)	0.0005 (0.0005)
Lag Degree Efficiency	0.0074+ (0.0040)	0.0217* (0.0068)	0.0039* (0.0017)	0.0045 (0.0031)	0.0007 (0.0004)	-0.0005 (0.0011)
Percent Black Students	0.0019 (0.0012)	0.0196* (0.0088)	0.0001 (0.0002)	-0.0098* (0.0039)	0.0002+ (0.0001)	-0.0012 (0.0013)

Table 5 Continued						
Percent Hispanic Students	0.0009 (0.0011)	0.0160 (0.0171)	0.0001 (0.0005)	0.0076 (0.0068)	0.0005* (0.0002)	-0.0022 (0.0023)
Percent Part-Time Students	0.0005 (0.0008)	0.0030 (0.0037)	0.0007+ (0.0004)	0.0033* (0.0017)	-0.0000 (0.0001)	0.0006 (0.0006)
Instruction/FTE Student (logged)	-0.1295* (0.0334)	-0.3764* (0.1380)	-0.0857* (0.0357)	-0.5834* (0.0638)	-0.0118 (0.0112)	-0.1289* (0.0222)
Sticker Price (logged)	0.0060 (0.0289)	-0.0536 (0.1074)	0.0103 (0.0137)	0.0807 (0.0496)	0.0014 (0.0060)	0.0238 (0.0169)
Total Enrollment (logged)	-0.0224* (0.0107)	0.2595 (0.2036)	0.0099 (0.0078)	-0.3224* (0.0927)	0.0022 (0.0019)	-0.1347* (0.0318)
Percent Part-Time Faculty	-0.0004 (0.0005)	0.0011 (0.0012)	-0.0008* (0.0004)	-0.0018* (0.0005)	0.0000 (0.0001)	-0.0004* (0.0002)
Performance Funding Policy	0.0193 (0.0225)	0.0876* (0.0419)	0.0066 (0.0095)	0.0043 (0.0197)	0.0030 (0.0038)	0.0126+ (0.0067)
State Appropriations to Higher Education	0.0000 (0.0000)	0.0000 (0.0001)	0.0000* (0.0000)	0.0000 (0.0000)	0.0000 (0.0000)	0.0000* (0.0000)
State Unemployment Rate	-0.0044 (0.0088)	-0.0090 (0.0175)	0.0005 (0.0032)	0.0042 (0.0080)	0.0001 (0.0019)	-0.0007 (0.0027)
LDV		-0.2138* (0.0233)		-0.1905* (0.0214)		-0.2783* (0.0239)
Constant	1.2152* (0.2734)	0.3985 (2.7765)	0.5279* (0.2040)	7.5642* (1.2756)	0.1005 (0.0712)	2.3258* (0.4394)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Institutional FE	No	Yes	No	Yes	No	Yes
N	2039	2029	2205	2205	2205	2205
R ²	0.050	0.022	0.084	0.084	0.090	0.112

+ p<0.10, * p<0.05

Table 6: Effect of University Presidents on Changes in Institutional Expenditures						
	Δ Share of Educational- Related Expenditures (t+1)		Δ Share of Research- Related Expenditures (t+1)		Δ Total Expenditures (t+1)	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Most Recent Position- Other University	0.0031+ (0.0017)	0.0068* (0.0034)	0.0109 (0.0166)	0.0052 (0.0223)	-0.0004 (0.0027)	0.0042 (0.0044)
Most Recent Position- Private Firm	-0.0094 (0.0074)	-0.0135 (0.0097)	0.0035 (0.0098)	-0.0112 (0.0643)	0.0004 (0.0061)	-0.0023 (0.0128)
Most Recent Position- Public Agency	0.0023 (0.0022)	-0.0011 (0.0068)	0.0030 (0.0133)	0.0234 (0.0452)	0.0041 (0.0042)	0.0154+ (0.0089)
PhD	-0.0006 (0.0023)	0.0015 (0.0049)	-0.0033 (0.0116)	-0.0138 (0.0322)	-0.0003 (0.0033)	-0.0006 (0.0063)
H-index	-0.0000 (0.0001)	-0.0000 (0.0001)	0.0002 (0.0008)	0.0005 (0.0009)	0.0003* (0.0001)	0.0001 (0.0002)
Female	-0.0012 (0.0024)	-0.0006 (0.0046)	-0.0127 (0.0170)	0.0032 (0.0308)	0.0017 (0.0035)	-0.0019 (0.0061)
Black	-0.0014 (0.0029)	0.0059 (0.0068)	-0.0098 (0.0148)	-0.0040 (0.0452)	-0.0028 (0.0044)	0.0001 (0.0090)
Latino	-0.0017 (0.0037)	-0.0171 (0.0116)	-0.0279 (0.0375)	0.0317 (0.0772)	-0.0199* (0.0075)	-0.0194 (0.0145)
First year	-0.0043 (0.0032)	-0.0039 (0.0034)	-0.0068 (0.0117)	0.0086 (0.0228)	0.0020 (0.0039)	0.0044 (0.0046)
Experience	0.0000 (0.0001)	0.0003 (0.0003)	0.0001 (0.0016)	0.0023 (0.0017)	0.0000 (0.0002)	-0.0001 (0.0003)
Lag Degree Efficiency	-0.0002 (0.0002)	-0.0003 (0.0006)	0.0023 (0.0020)	0.0012 (0.0038)	0.0006+ (0.0004)	0.0011 (0.0008)
Percent Black Students	-0.0000 (0.0000)	0.0009 (0.0007)	0.0002 (0.0004)	-0.0118* (0.0048)	0.0002* (0.0001)	-0.0015 (0.0009)

Table 6 Continued						
Percent Hispanic Students	-0.0000 (0.0001)	0.0001 (0.0013)	-0.0006 (0.0008)	0.0061 (0.0085)	0.0005* (0.0001)	-0.0023 (0.0017)
Percent Part-Time Students	-0.0002* (0.0001)	-0.0003 (0.0003)	0.0002 (0.0005)	0.0034+ (0.0020)	0.0001 (0.0001)	0.0013* (0.0004)
Instruction/FTE Student (logged)	0.0022 (0.0046)	0.0040 (0.0118)	-0.0927+ (0.0545)	-0.6562* (0.0785)	-0.0166+ (0.0088)	-0.2027* (0.0160)
Sticker Price (logged)	-0.0044 (0.0032)	-0.0037 (0.0092)	0.0064 (0.0176)	-0.0061 (0.0609)	0.0019 (0.0042)	0.0348* (0.0121)
Total Enrollment (logged)	0.0001 (0.0012)	-0.0245 (0.0171)	0.0028 (0.0124)	-0.1453 (0.1136)	0.0011 (0.0018)	-0.1294* (0.0227)
Percent Part-Time Faculty	-0.0000 (0.0000)	0.0000 (0.0001)	-0.0003 (0.0003)	-0.0004 (0.0007)	0.0000 (0.0001)	-0.0003* (0.0001)
Performance Funding Policy	0.0002 (0.0018)	0.0001 (0.0036)	0.0213 (0.0148)	0.0061 (0.0241)	0.0020 (0.0025)	0.0106* (0.0048)
State Appropriations to Higher Education (Constant 2009 Millions)	0.0000 (0.0000)	0.0000+ (0.0000)	0.0000+ (0.0000)	-0.0001* (0.0000)	0.0000+ (0.0000)	0.0000* (0.0000)
State Unemployment Rate	-0.0003 (0.0008)	-0.0004 (0.0015)	0.0032 (0.0060)	0.0027 (0.0099)	-0.0023* (0.0011)	-0.0050* (0.0020)
LDV		-0.1831* (0.0229)		-0.2139* (0.0288)		-0.1547* (0.0213)
Constant	0.0203 (0.0288)	0.2169 (0.2350)	0.6442+ (0.3391)	7.2080* (1.5671)	0.1632* (0.0538)	2.7979* (0.3151)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Institutional FE	No	Yes	No	Yes	No	Yes
N	2157	2157	2153	2151	2205	2205
R ²	0.019	0.022	0.006	0.013	0.103	0.145

+ p<0.10, * p<0.05

Table 7: Effect of University Presidents on Institutional Pricing						
	Δ Sticker Price (t+1)			Δ Discount Rate (t+1)		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Most Recent Position- Other University	-0.0040 (0.0032)	-0.0040 (0.0031)	-0.0036 (0.0057)	-0.0122 (0.0105)	-0.0131 (0.0115)	-0.0174 (0.0194)
Most Recent Position- Private Firm	-0.0056 (0.0058)	-0.0052 (0.0055)	-0.0012 (0.0165)	-0.0099 (0.0267)	-0.0299 (0.0225)	0.0012 (0.0582)
Most Recent Position- Public Agency	-0.0029 (0.0059)	-0.0030 (0.0056)	-0.0038 (0.0114)	-0.0257 (0.0198)	-0.0282 (0.0207)	-0.0077 (0.0397)
PhD	0.0121* (0.0042)	0.0113* (0.0041)	0.0078 (0.0081)	0.0061 (0.0112)	0.0038 (0.0122)	0.0304 (0.0280)
H-index	-0.0003* (0.0001)	-0.0002* (0.0001)	-0.0002 (0.0002)	0.0000 (0.0006)	0.0001 (0.0006)	0.0002 (0.0008)
Female	-0.0064+ (0.0036)	-0.0058+ (0.0034)	-0.0048 (0.0078)	-0.0023 (0.0136)	-0.0012 (0.0148)	-0.0003 (0.0268)
Black	-0.0029 (0.0062)	-0.0023 (0.0058)	0.0121 (0.0116)	0.0245 (0.0197)	0.0260 (0.0210)	0.0052 (0.0396)
Latino	-0.0257* (0.0091)	-0.0240* (0.0088)	-0.0094 (0.0186)	-0.0718+ (0.0409)	-0.0707+ (0.0420)	-0.0994 (0.0640)
First year	-0.0012 (0.0065)	-0.0009 (0.0066)	0.0019 (0.0059)	0.0105 (0.0176)	0.0117 (0.0176)	0.0000 (0.0202)
Experience	-0.0003 (0.0003)	-0.0002 (0.0003)	0.0004 (0.0004)	-0.0008 (0.0011)	-0.0008 (0.0011)	-0.0027+ (0.0015)
Lag Degree Efficiency	-0.0001 (0.0005)	-0.0001 (0.0004)	0.0007 (0.0010)	-0.0002 (0.0015)	-0.0005 (0.0016)	-0.0042 (0.0035)
Percent Black Students	0.0001 (0.0001)	0.0001 (0.0001)	0.0005 (0.0012)	0.0000 (0.0004)	0.0001 (0.0004)	0.0040 (0.0042)
Percent Hispanic Students	0.0005* (0.0005)	0.0005* (0.0005)	0.0035 (0.0035)	0.0014+ (0.0014)	0.0012 (0.0012)	-0.0139+ (0.0139)

Table 7 Continued						
	(0.0002)	(0.0002)	(0.0021)	(0.0008)	(0.0009)	(0.0074)
Percent Part-Time Students	-0.0001	-0.0001	0.0001	0.0003	0.0003	0.0056*
	(0.0001)	(0.0001)	(0.0005)	(0.0004)	(0.0004)	(0.0019)
Instruction/FTE Student (logged)	-0.0037	-0.0037	-0.0209	-0.0246*	-0.0304*	0.0625
	(0.0045)	(0.0042)	(0.0201)	(0.0122)	(0.0134)	(0.0690)
Sticker Price (logged)				-0.0155	-0.0162	-0.0806
				(0.0142)	(0.0154)	(0.0539)
Total Enrollment (logged)	0.0063*	0.0060*	0.0491+	-0.0101	-0.0050	0.0308
	(0.0024)	(0.0022)	(0.0291)	(0.0064)	(0.0076)	(0.1010)
Percent Part-Time Faculty	0.0000	0.0000	-0.0000	-0.0001	-0.0002	-0.0006
	(0.0001)	(0.0001)	(0.0002)	(0.0003)	(0.0003)	(0.0006)
Performance Funding Policy	0.0089*	0.0077*	0.0105+	0.0071	0.0097	0.0095
	(0.0040)	(0.0039)	(0.0062)	(0.0118)	(0.0129)	(0.0214)
State Appropriations to Higher Education (Constant 2009 Millions)	-0.0000+	-0.0000+	-0.0000	0.0000	0.0000	-0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
State Unemployment Rate	0.0036*	0.0033*	0.0066*	-0.0015	-0.0019	0.0020
	(0.0013)	(0.0013)	(0.0025)	(0.0040)	(0.0044)	(0.0087)
LDV		0.0693*	0.0129		-0.0935*	-0.1376*
		(0.0326)	(0.0223)		(0.0352)	(0.0220)
Constant	0.0109	0.0101	-0.3161	0.5259*	0.5508*	-0.1021
	(0.0443)	(0.0413)	(0.3785)	(0.1530)	(0.1633)	(1.3891)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Institutional FE	No	No	Yes	No	No	Yes
N	2198	2198	2198	2194	2194	2194
R ²	0.116	0.119	0.051	0.006	0.014	0.047

+ p<0.10, * p<0.05

Significant relationships are even scarcer for institutional expenditures (Table 6). This is somewhat surprising, as presidents should have more power to change how the institution allocates dollars compared to efforts to change revenue streams (in other words, efforts to change revenue streams may or may not result in actual changes, but the president is directly able to influence expenditures). This may be due to the fact that these institutions are very slow to change, and units generally receive similar funding from year to year unless dramatic change is implemented (an entire program of study is eliminated). Presidents hired from other universities (outside of the organization but within the industry) are associated with positive changes to education-related expenditures. This may be connected to classroom or technology-related innovations and the adoption of new course requirements, but determining micro-level explanations would require information beyond the limitations of this dataset.

While no single type of president strategically increases or decreases research-related funding, two patterns do appear for overall expenditures. Presidents with higher h-index scores significantly and positively institute change in overall spending while Latino presidents strategically decrease overall spending. These two relationships are indicative of two approaches to improving an organization. On the one hand, spending more may facilitate innovation and outreach. On the other, decreasing spending may help an institution save money and focus on its core mission. Further, these two strategies may be more appropriate for the types of schools that are inclined to hire different types of leaders.

In terms of control variables, only the state unemployment rates is significantly related to negative changes in overall spending. It is likely that these changes are related to lower funding from states (allocations that would go to higher education are instead given to welfare programs) which require institutions to spend less money in order to stay in the black.

Finally, pricing strategies are increasingly important for institutions of higher education in order to maintain both revenue and enrollment stability. In Table 7, one clear relationship appears to matter in terms of connecting managerial values with strategic change. Latino presidents are more likely to change pricing strategies by lowering both the sticker price as well as the discount rate (though this finding does not hold for institutional fixed effects models). This may be one way to increase the transparency of actual costs, or it may be that these presidents are more attuned to the financial burdens on students and their families. Interestingly, among control variables, the percent of Latino students also drives some change in pricing and discount rates. Total enrollment and the presence of a state performance funding policy appear to increase changes to sticker prices. Finally, state unemployment rates also appear to drive up sticker price; this again is likely a direct effort to address lower allocations from the state.

3.7 Implications

Findings in this study indicate that university presidents engage in little strategic planning that is evident through aggregate revenues, expenditures, and pricing at the institutional level. This implies a bleak picture for other types of strategies, as most

strategies are likely to need monetary resources in order to be effective.¹⁹ Not only did individual managerial characteristics lack power in predicting strategic change well, but controls for organizational structure, organizational performance, and external pressures tested here also did not appear to have consistent relationships with strategic change. Still, a few exceptions provide some potential indicators of when strategic change might take place in a more systematic manner. University presidents with higher h-index scores (who are likely to have values related to research that are significantly different from other presidents) may make decisions that are most different from other presidents. Likewise, presidents from underrepresented groups appear to manage institutions differently than their majority white counterparts. Findings related to this group are largely tentative, as they may be asked to manage institutions that have different missions than other public four year universities.

In terms of more general theories of strategic planning and strategic change, findings here suggest that incremental change is, indeed, the norm to which managers comply. It may be that larger strategic changes are only implemented in more extreme cases. Further, the question of generalizability is also somewhat uncertain. Institutions of higher education often move slowly; this might compare to large federal agencies. On the other hand, these educational organization are under great pressure from policymakers and consumers to change and improve, which would suggest some type of a more dynamic context similar to more versatile public agencies. Ultimately, research

¹⁹ Figures 5, 6, and 7 in the Appendix also attest to the prevalence of incremental changes across monetary and non-monetary processes. Perhaps this is most clear in Figure 6, where universities clearly hire some part-time faculty to handle teaching loads and then back off of this strategy before hiring additional personnel in this area.

on the implementation of strategic change should be examined in additional settings, specifically in other types of agencies or in other countries.

While this study provides a point of departure for additional research on strategic change, this data may also be leveraged to study change in the context of managerial teams. Data on university provosts/chief academic officers can be matched with data on presidents to determine how these two individuals work together to influence organizational strategy and performance outcomes. Finally, private organizations can be considered and directly compared to public universities to determine if strategic change occurs with more frequency in one of the two contexts.

In sum, evidence in public administration is lacking on whether strategic plans are implemented, and whether these changes are related to changes in various indicators of organizational performance. While strategic stance may be an important predictor of outcomes, much can be gained from teasing apart what causal mechanisms serve as antecedents of strategy as well as how strategy, once formed, changes over time.

4. REEXAMINING CAUSES AND CONSEQUENCES: DOES ADMINISTRATIVE INTENSITY MATTER FOR ORGANIZATIONAL PERFORMANCE?

4.1 Overview

This study examines, the relationship between organizational structure (size and complexity) and administrative intensity and, subsequently, the effect of administrative intensity on organizational performance in the context of four year institutions of higher education in the United States between 2003 and 2009. Organizational size has a negative effect on administrative intensity and supports the notion of economies of scale. Size and complexity also interact such that complexity has a greater effect on total administrative intensity in larger organizations. While administrative intensity has a nonlinear relationship with degree productivity, suggesting a tipping point of 30% total administration, it has little direct effect on graduation rates.

4.2 Introduction

Considerable theoretical and empirical literature has developed on the link between organizational structure and performance. Gulick (1937) championed the argument that structural principles existed by which organizations might obtain some optimal level of performance. These assertions, however, were challenged by Simon (1946) as being both contradictory and vague. Simon's critique was generally accepted by later scholars despite empirical research providing support for such structural-performance relationships (see the summary in Hammond 1990). Recently, scholars have revisited Gulick's call for research that links structural variables to performance in research on span of control (Meier and Bohte 2000; Woodward 1980), specialization (Romzek and Dubnick 1994; Thompson 1965), and centralization (Andrews et al. 2009; Moon 1999).

Despite popular debate on bureaucratic bloat, less scholarly attention has been given to the concept of administrative intensity, or the bureaucratic component of organizations. Though research on identifying the determinants of administrative intensity was popular between the 1950s and 1980s, it was quickly overshadowed by a concern with the size of bureaucracy more broadly.²⁰ While some public administration scholars suggest that more bureaucracy within an organization is linked to inefficiency and lower levels of performance (Bohte 2001; Chubb and Moe 1990), others hypothesize that bureaucracy can work to address coordination problems while freeing front-line

²⁰ Here, "bureaucracy" can be defined as a way of administratively organizing groups of people in some type of organized hierarchy. The notion of bureaucracy includes but is not limited to administrative intensity.

employees to focus on clientele needs (Smith and Meier 1994, 1995; Meier, Polinard, and Wrinkle 2000). The purpose of this study is to determine which of these two hypotheses is supported in the case of administrative intensity. In other words, are higher levels of administration indeed negatively related to performance, or is a certain level of administration good for managing performance?

This study provides an empirical assessment of the causes and consequences of administrative intensity, with a specific focus on three contributions. First, in the context of institutions of higher education, the concept of administrative intensity will be measured in two ways to determine what type of administration matters. This can have implications for the robustness of hypotheses related to organizational structure and performance, and will encourage scholars to be more precise in defining and measuring concepts. Second, current theoretical expectations about the relationships among size, complexity, and administrative intensity are tested to determine more accurately the functional form of these relationships following conflicting evidence in existing literature. Finally, the primary contribution of this research is to examine whether administrative structures matter for organizational performance. It is important to understand how administrative intensity can affect performance in terms of evaluating when and how administration may be helpful or hurtful. For example, some administration may help an organization manage and even improve performance through coordination and cooperation. However, this advantage may disappear should the size of administration in an organization pass a tipping point in which adding an additional administrator detracts from other needs within the organization.

In the discussion below, the progression of theory linking organizational structure, administrative intensity, and performance is first reviewed to generate empirically testable hypotheses. Relationships are explored in the realm of U.S. higher education, a sector that has often received criticism for both perceived, and real, administrative personnel and cost increases (Bergman 1991; Greene, Kisida, and Mills 2012). Findings indicate that organizational size and structural complexity have little effect on the share of executive management in these organizations. For total administration (upper and mid-level management), support is found for a curvilinear U-shaped relationship between size and administration. Complexity has little independent effect but does have a significant effect on total administration when interacted with organizational size. When analysis turns to administration-performance relationships, executive administrative intensity has no effect on performance. The more inclusive specification reveals an inverted U-shaped relationship and a tipping point of thirty percent with one of two salient student performance measures. Implications of these limited but informative findings suggest that additional contextual factors may influence administrative intensity such that administrative intensity may be meaningful for some performance indicators over others.

4.3 Identifying the Determinants of Administrative Intensity

Attention to organizational structure began with the work largely through a sociological perspective of scholars such as Weber (1946, 1947), Merton et al. (1952), Selznick (1949), and Blau (1955). Following the realization that organizational structures could be strategically manipulated to produce certain outcomes (Scott 1975),

this line of research quickly accelerated; over eighty articles were produced on the relationship between organizational size and administrative intensity between 1950 and 1975 (see summaries in Kimberly 1976 and Scott 1975). These studies, not without theoretical and empirical problems,²¹ produced a foundation for understanding the linkages among organizational size, complexity, and administrative intensity.

Organizational size has commonly been defined as either the total number of employees or the total size of assets in an organization. The relationship between size and the bureaucratization of agencies generated a sizeable line of research, as many claimed that larger organizations operated inefficiently by containing too many administrators (Caplow 1957; Parkinson 1957). Empirical studies testing this hypothesis, however, produced an array of findings. Some scholars found a positive relationship between size and administrative intensity (Terrain and Mills 1955; Tsouderos 1955), while others detected a strong negative relationship (Bendix 1956; Melman 1951). The latter group proposed that instead of a disproportionate growth in administration, economies of scale may be realized such that the addition of employees undertaking tasks resembling the existing employee pool could be achieved without a need for additional administrators to manage coordination. Instead, organizations could be more efficient in producing additional goods and services by increasing the number of employees tasked with production while holding the number of managerial employees constant. Even though this proposition appeared logical, it was not found to be robust,

²¹ While Kimberly (1976) provided a summary of this research, he also criticized a number of conceptual and empirical problems that prevented direct comparability across studies. Though this may remain a problem, it does not diminish the importance of linking structure to performance.

as further research continued to detect an array of positive, negative, and null relationships between organizational size and the proportion of administrative employees (Baker and Davis 1954; Rushing 1966).

Models of size and administration evolved with the introduction of a measure of structural complexity in a study of hospitals by Anderson and Warkov in 1961. Organizational complexity generally encompasses the division of labor and degree of differentiation among employees such that greater specialization requires more administrative coordination. Though most agree that complexity is distinct from size, a precise definition of this concept remains to be established. Perhaps one of the clearest descriptions of complexity can be found in Hall (1982), who defines three types of complexity—horizontal differentiation, vertical differentiation, and spatial dispersion. Horizontal differentiation describes the variance in tasks among different positions and subunits, while vertical differentiation focuses on the number of hierarchical levels in the organization. Spatial dispersion, on the other hand, is related to the physical geography of organizational facilities. The operationalization of complexity generally uses the number of vertical layers or the number of subunits (i.e., number of different tasks) in organizations; spatial measures are less frequent in this line of research, and the degree of specialization (i.e., difficulty of tasks) is often quite difficult to measure. This study will focus on horizontal differentiation, because the number of vertical layers may be misleading in the context of higher education. A higher number of vertical components may be an indication of red tape and bureaucracy, but may not measure how many types of goods or services an organization is responsible for producing. Adding an additional

subunit to an organization, however, requires a new set of processes as well as additional employees to coordinate them.

Previous work has suggested a positive correlation between size and complexity, as well as a positive relationship between complexity and administration. Explanations for these two relationships follow the logic that higher levels of complexity create more challenging coordination problems and, subsequently, a need for additional administration in the organization (Blau 1970; Rushing 1967). Organizational scholars largely hypothesize that organizational size, while positively related to complexity, should be indirectly and negatively related to administrative intensity as expected under economies of scale principles.

Early interest in the structural determinants of administrative intensity provided few answers to theoretical propositions and generated many unanswered questions. Reliance on case studies and cross-sectional data in this line of research did not allow for the tracking of changes over time or tests of causality (but see Holdaway and Blowers 1971; Freeman and Hannan 1975). Further, scholars have recognized but not fully addressed the need to measure size, complexity, and administrative intensity as heterogeneous concepts. Rushing (1966) was among the first to produce multiple measures of administration by including six ratios of administrative categories to personnel in a study of manufacturing firms. Additionally, the concept of administrative intensity was used solely as a dependent variable such whose effect on the general performance of organizations scholars failed to determine empirically.

Greater interest in pinpointing the determinants of administrative intensity has accompanied concepts like New Public Management, along with calls for accountability, efficiency, and managerial cutbacks in public organizations. Recent studies test for an inverted U-shaped relationship between size and administrative intensity but find, overall, that the relationship supports the notion of economies of scale (Andrews and Boyne 2009; Boyne and Meier 2013; Ting, Dollery, and Villano 2013). In other words, as the size of an organization grows, administrative intensity will decline at a diminishing rate that will approach zero but does not become positive. Andrews and Boyne (2014) also examine the effect of complexity, while Boyne and Meier (2013) and Ting et al. (2013) examine the effect of turbulence on administrative intensity.

These studies are notable for expanding nonlinear and interactive effects in large-N panel data that can provide greater consensus on the determinants of administrative intensity. However, they do not consider whether varying levels of administration are necessarily good or bad for the performance of organizations. In other words, while we might be able to identify why levels of administration or bureaucracy vary by organization, we have little empirical information on the effects of this administrative variance on the organization. Differences in organizational performance, however, are perhaps the single most important dependent variable among organizational theories to date. Are higher levels of administration burdensome and inefficient, or can administrative intensity aid coordination efforts that can streamline processes to produce higher levels of performance?

4.4. Bureaucracy and Performance

Within the private management setting, the most common research on the link between administrative intensity and performance is related to labor productivity in manufacturing firms.²² Melman (1951) argued that administrative intensity and labor production were separate processes, such that greater administration does not increase performance. Supporting this claim, Bidwell and Kasarda (1975) found administrative intensity to be negatively correlated to performance in school districts, though no direct comparison was empirically assessed. Other studies (Holland 1963; Delehanty 1968; Pandy 1969) found that greater administrative intensity can boost performance for manufacturing firms. The findings of these positive relationships have been called into question, however, due to the use of problematic assumptions about the direction of relationships and model misspecification (Dalton et al. 1980; Dogramaci 1977). Further, it is also the case that the effect of administrative intensity of organizations is likely to vary across and within industries. For example, higher levels of administration with police departments may have implications that are far different than those in nursing homes. Even so, there should still be some patterns that emerge and can inform general organizational theories and the discussion of the multiple relationships between institutional contexts, managerial decisions and actions, and organizational performance. Unfortunately, the discrepancies in early findings have not since been addressed in order

²² Connections between administrative intensity and performance have also been conducted in reference to productivity, or production per employee, in the financial service industry (Forrester 1980, Carillo and Kopelman 1991) and effectiveness, measured as goal attainment, in achievement in K-12 schools (Bidwell and Kasarda 1975).

to provide consensus on whether the size of administration in an organization has any general, significant effect on organizational performance.

Within public administration, an explicit discussion of the administrative intensity-performance link is rarely present. Largely limited to the discussion of school choice and performance, much of this argument has revolved around the direction of causality between bureaucracy, a concept that encompasses administrative intensity, and organizational performance. Chubb and Moe (1990) argued that poor performance in schools was linked to the expansion of centralized bureaucracy and the subsequent limitation of discretion at the school level to address the needs of individual students. Defining performance as standardized tests scores, Bohte (2001) found support for this argument across multiple grades in Texas schools. Smith and Meier (1994, 1995) and Meier, Polinard, and Wrinkle (2000), however, found that greater bureaucracy was caused by poor performance. These authors argued that their finding might be related to the possibility that bureaucracy can work to address coordination problems while freeing front-line employees to focus on clientele needs. In other words, the decision to increase bureaucracy may be a specific strategy taken to improve performance.²³

These opposing theories can be directly tested in the case of administrative intensity. On the one hand, low levels of administration may be inadequate to coordinate street level employees to ensure satisfactory levels of organizational performance. As administrative intensity increases, additional administrative slack may

²³ Related research on managerial capacity (O'Toole and Meier 1999, O'Toole and Meier 2010) has also found that sufficient managerial capacity can mitigate the effects of shocks to the organization. In other words, additional administrative intensity, as part of the bureaucracy in an organization, may help buffer the organization from shocks in the internal and external environment.

be introduced to the system and the burden of coordination problems dispersed such that performance is expected to increase. However, it may be the case that adding additional administrators will require some trade-off among resources that will lead to a decline in organizational performance. For example, the decision to hire an additional administrator may come at the cost of hiring a front-line employee who can contribute to the volume and quality of output for a good or service. It is also possible that these opposing expectations explain pieces of a nonlinear relationship. When administrative intensity is low, increases may help to distribute the tasks of coordination and management among a more reasonable number of individuals so that the organization can function well. However, moving beyond some optimal level of administrators may come at the cost of needed resources that are central to the mission of the organization. In this case, administrative intensity may either have diminishing marginal returns on organizational performance or may be related to outcomes in an inverted U form.

4.5 Administrative Intensity in Higher Education

Though the general discussion of administrative intensity has waned over the past thirty years in academic scholarship, the discussion of “administrative bloat” continues to be a contentious point of debate in higher education (Bergman 1991, Greene et al. 2012, Hedrick et al. 2009). The growth in the size and cost of administration in this sector has been noted since at least Veblen’s (1918) widely cited criticism of the business-like nature of these organizations. As evident in the discourse of state legislatures across the country, disagreements continue today as to what level of administration is most efficient in these organizations (Martin and Hill 2012).

Similar to many policy arenas, the concern over the size of administration in institutions of higher education has increased in conjunction with greater attention by policymakers to regulation and accountability. The 1980s saw a 46 percent average increase in administrative costs in institutions of higher education in the U.S., as well as gains in each type of non-faculty employees other than service and maintenance personnel. During the same period, administrative expenditures climbed to 45 cents per instructional dollar, up from 19 cents in 1930 (Bergmann 1991). State legislatures and coordinating boards launched studies of administrative costs, and some mandated administrative ceilings (Halfond 1991). Among several descriptive accounts of changes in administrative size and cost, Leslie and Rhoades (1995) consider theoretical reasons for growth and provide eleven testable hypotheses linking administrative growth to structures, regulations, and managerial decisions. For example, the authors propose that greater levels of complexity, operationalized in terms of mission, would lead to greater shares of resources being devoted to administration. Similarly, Gander (1999), examining both internal structural components and external dependencies, found the administrative/faculty ratio within universities to be most influenced by size, complexity, and external funding.

This study will address the limitations of current research in three ways. First, while previous studies have focused on institutions of higher education in several countries, conducting an empirical test within the United States should be more interesting because of the influence of market forces on the industry in the states. U.S. institutions often compete for students under Tiebout-like assumptions, and strategic

choices may have immediate effects on the student inputs, processes, and outputs in these organizations. Second, instead of creating a single or indirect measure of administrative intensity, this study presents multiple measures of administrative intensity to determine if findings hold across different conceptualizations of administration. As Rushing (1966) illustrated, the relationships among these variables may change based on how employees are classified as either administrators or front-line staff. Some ranks of managers may have a larger effect on performance than others; likewise, organizational growth may require the addition of one type of administrator but may decrease another. Finally, by testing the link between administrative intensity and performance, this study can inform current debates about the effects of growing bureaucracies, while also providing an impetus for theoretical growth in the study of organizations.²⁴

4.6 Data and Measures

This study focuses on administrative intensity in U.S. higher education between 2003 and 2009. Institutions of higher education have received negative attention in terms of the rising size and cost of administrative employees. Further, colleges and universities have become more familiar with increasing accountability and performance pressures from state and federal governing bodies over the last decade. Thus, ensuring acceptable levels of administration and performance are salient issues to the leaders of these organizations.

²⁴ Organizational size and complexity may also be considered strategic decisions. Though outside of the scope of this analysis, both structural components may directly affect organizational performance. To test this, both are included as control variables in models of organizational performance.

Data were collected through the Integrated Postsecondary Education Data System (IPEDS) in the National Center for Education Statistics (NCES). The vast majority of public, private non-profit, and private for profit colleges and universities in the United States are required to report data to the NCES on a yearly basis in exchange for receipt of federal funding (primarily in the form of student financial aid). Because data are self-reported by organizations, however, information on administration is not available for the universe of four-year institutions. As such, this study focuses on a sample 1,365 of the total 2,351 public and private non-profit four-year institutions. When the two groups are compared, the institutions in the sample are slightly larger in size (enrollment), contain a higher level of complexity, and are more likely to be public (35 percent of the sample compared to 27 percent in the total population). However, most other common characteristics such as student diversity, the share of expenses for education-related services, and degree production are similar to the overall population. Still, there is some potential that a degree of bias may be introduced by using only the available sample of four-year institutions that report administrative data, and findings should be interpreted with caution.

Dependent Variables

In the analyses below, I first examine the factors that influence administrative intensity to test whether this sample of organizations confirms theoretical expectations related to size and complexity. For these models, administrative intensity, or the bureaucratic component of an organization, will be the dependent variable. As Rushing (1966) argued, definitions of administration are more operational than theoretical which

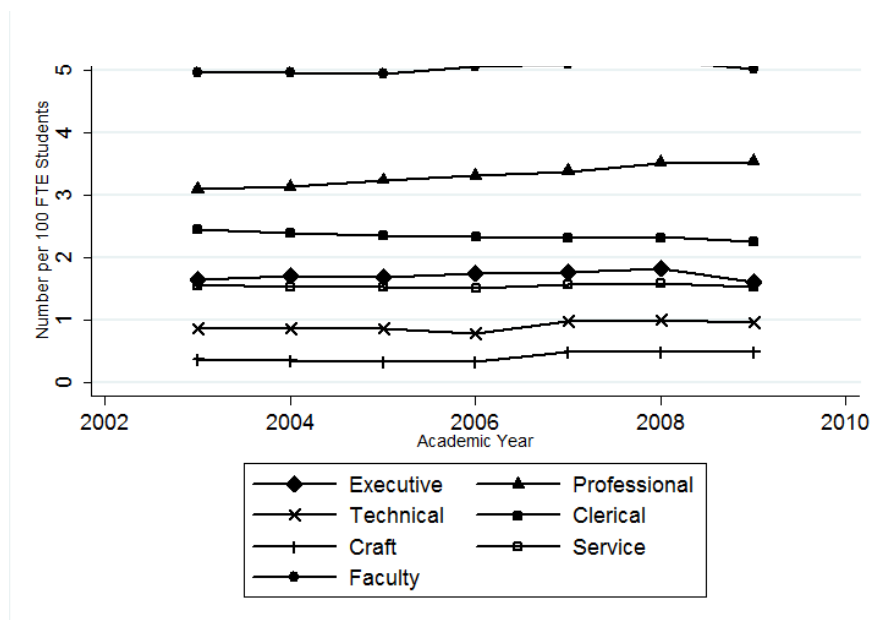
can present many challenges to understanding the significance of administrative personnel in organizations. For example, some administrative categories may increase with size while others may decrease. In defining “administration,” a more narrow scope might contain only the highest level of administrators while a broader concept might include clerical and maintenance employees.²⁵ Within higher education, several types of staff are reported on a yearly basis: executive/managerial, other professional, technical and paraprofessional, clerical and secretarial, craft, service/maintenance, and faculty (see Table 17 in the Appendix for definitions of each).

Figure 2 shows the growth of each category between 2003 and 2009. While the highest level of administrators experienced little to no change on average, employees classified as “other professionals” appear to experience a modest level of growth across time. These employees include individuals working in admissions and recruitment, graduation and retention, health services, disciplinary review, and a host of other offices. Because the inclusion of multiple groups may have different implications for empirical analysis, two measures of administrative staff will be used that align with previous research (Ginsberg 2011; Desrochers and Kirshstein 2014). Administrative staff will be defined first as executive/managerial staff only and then as executive/managerial and other professional staff. To create a ratio of administrative staff to other employee groups, administrative staff will be divided by the total number of employees in each organization.

²⁵ Since the dependent variables used in this study are bound at 0 and 100 and are skewed to the right, a robustness check was conducted using the number of administrators (top level managers only) per 100 FTE students and the number of administrators (top level managers plus “other professionals”) per 100 FTE students. Findings for these measures are consistent with those reported below.

This approach is similar to measuring management as only executive managers as opposed to measuring management as both executive level and mid-level managers. While individuals at the top and in the middle both hold some discretion in decision making that can shift organizations, the effects of the two groups may be more or less effective in terms of overall outcomes. For example, mid-level managers may have less overall power to make changes, but they are also closer to street-level processes that directly affect the outputs and outcomes of the organization. Similarly, executive managers and administrators may be able to have more say in the general direction of the organization broadly, but they are not as likely to affect implementation and supply chain processes that have the ability to adjust to such visions. As such, it is important to test these categories for differential effects on performance in the analyses below.

Figure 2: Average Employee Groups per 100 FTE Students



In examining the effect of administrative intensity on organizational performance, 150% normal time graduation rates and degrees conferred per 100 full-time equivalent (FTE) students will be used as dependent variables to measure student performance.²⁶ The former measure is arguably the most common indicator of performance for colleges and universities, and it is often a key factor in performance-funding decisions made by policymakers (Rabovsky 2012). Graduation rates are calculated by dividing the number of students who earned a degree within six years of entering college by the revised cohort (total students minus those who passed away, left for military service, attended part time, etc.). For example, a graduation rate reported in 2012 indicates the percent of students who entered a college or university as first-time, full-time freshmen in fall of 2006 and graduated by the fall of 2012. However, these rates exclude a number of student groups (transfer students and part-time students, for example) and can be manipulated by either decreasing the size of the freshman class or by raising admission standards to admit students who are more likely to graduate within six years. The number of baccalaureate degrees conferred per 100 FTE students, commonly referred to as degree production, provides an alternative means to measure performance that encompasses several student groups that may not be included in graduation rate calculations. This performance indicator is viewed as a measure of efficiency and productivity. This measure is not highly correlated with graduation (.21)

²⁶ Other performance measures include retention rates, student diversity, or external funding. These measures, however, may be prioritized in different ways by different types of institutions in this study, such that it is most logical to focus on graduation and degree production.

and provides another source of salient performance information for institutions and state policymakers.

Independent Variables

In the first stage of analysis, organizational size and complexity will be key independent variables. Organizational size can be measured either by the total number of employees or the total enrollment of students; the correlation for the two variables in this dataset is .754. Though the former is used for analysis in some studies, the latter is more appropriate in the context of higher education (Gander 1999). This also avoids the problem of definitional dependency between the dependent and independent variables, as the total number of employees is used to calculate administrative intensity. As the distribution of total enrollment is skewed, the log of total enrollment is used in the analyses below (the use of logged size is similar to other studies such as Klatzky 1970; Simon 1999; and Boyne and Meier 2013).

Structural complexity is calculated through the use of the Carnegie classification scheme.²⁷ The complexity measure presented here is scaled from 1-4 based on groupings of similar Carnegie school types ranging from baccalaureate colleges to doctorate-granting universities (see Table 18 in the Appendix for full listing). Baccalaureate colleges and master's colleges each comprise forty percent of the

²⁷ Data was also collected for the number of majors, excluding certificates, each public institution currently offers. The number of associate, bachelor, and graduate degrees were totaled to create another test of complexity, as each degree requires some type of administrative coordination. Though this measure represents the current year only and does not extend to private institutions, it was merged with the panel data as a constant over time. Results with this measure are similar to the findings described here, though the interaction of size and complexity did not reach significance. The correlation between the two measures of complexity is 0.75 for all public institutions.

institution-years while fifteen percent are research universities and five percent are doctorate-granting universities. Though this broad classification scheme may present a suboptimal measure of complexity, it stems from a reputable source that has consistently classified schools over time. Further, this approach should present enough power and differentiation across organizations to indicate whether complexity is a significant determinant of administrative intensity independent of size.²⁸ For instance, a college that grants only bachelor's degrees may be smaller or larger than a college that grants doctoral degrees. The latter organization would be more complex because it must administer multiple types of degrees that contain different requirements for students, regardless of the size of the institution.

In testing the determinants of organizational performance, the key independent variable is administrative intensity. Both measures of administrative intensity mentioned above will be used to model student performance to determine if administrative intensity has any linear or nonlinear effect on graduation rates and degree production. Using both measures of administration will also indicate what types of administrators are correlated with higher performance (Smith and Larimer 2004).

Control Variables

Existing studies of administrative intensity in higher education provide a set of control variables for factors internal to the organizations as well as for external dependencies. In addition to the key independent variables of size and complexity, the

²⁸ Complexity and size have a correlation of .70 for the institutions in this study. While they are expected to be correlated (and increase in one is likely to lead to an increase in the other), the two should measure somewhat different concepts.

percent of employees who are faculty provides an indication of the resource trade-off between administrative and front-line employees (a more detailed discussion of this trade-off can be found in Ginsberg 2011 and Carlson 2014). To control for organizational dependencies, models include student pricing mechanisms (gross tuition and fees revenue),²⁹ government dependency (the percent of funding from government sources), and the percentage change in revenue from the previous to the current year.³⁰ The higher the revenue share the university receives from government entities, the more responsive it may be to the state's interest in limiting administrative intensity. When total revenues decrease, institutions should feel some pressure to limit administrative intensity; if the organization experiences an increase in overall revenue, it may have higher levels of slack that can support additional administrators. Finally, it is important to control for organizational type. A dichotomous variable is included to differentiate public and private universities. Public universities may have lower levels of administrative intensity as these organizations are likely subject to greater pressure from political principals at the state and federal level to comply with a variety of rules and regulations.³¹

²⁹ The measure of revenue for tuition and fees revenue used here includes student aid applied to tuition and fees.

³⁰ Large negative values occurred for a set of universities in 2009, and large positive values occurred for a set of universities in 2004. Note that by including the latter change variable, one year of observations will not be included in analyses.

³¹ A control for historically black colleges and universities (HBCUs) is not included here because there is no theoretical reason to expect that these institutions will be substantively different. Models that include a control for this dummy variable (not shown) show no difference between HBCUs and other institutions as related to the link between organizational structure, administrative intensity, and performance.

Similar to studies of administrative intensity, the literature provides a set of institutional structure and student characteristics needed to model student success in the second portion of the analysis (Scott, Bailey, and Kienzl 2006). In addition to administrative intensity, structure and resource controls include enrollment, tuition and fees, instructional spending per full-time-equivalent student, and full-time-equivalent faculty per 100 full-time-equivalent students. As tuition and fees increase, access for students of lower socioeconomic status may decline while graduation rates may improve. Finally, as both instructional spending and the number of faculty increase, we should expect graduation rates to increase. Student characteristics included in performance models include student commitment (full-time undergraduates), race and ethnicity (the percent of black and Hispanic students), and students with financial need (the percent of full-time, first-time undergraduates receiving aid).³² Higher portions of full-time students are expected to increase graduation rates, while higher shares of minority students have often been linked to lower graduation rates and lower degree production. Additionally, financial need is often correlated with the presence of students who either may not persist in college or may take more time to finish a degree. Both of these factors are likely to decrease degree production and graduation rates.

Table 8 contains descriptive statistics for the variables in this study. A clear difference stands out between the two measures of administrative intensity. When only executive/managerial positions are included in this variable, the average percent of

³² Measures of ability (75th percentile SAT math and critical reading) were also tested but not included in final models as many schools do not report these scores.

administrators is 8.19 with a standard deviation of 4.95 percentage points. However, when other professionals are considered, the average size of administrative employees triples to 27.71 percent with a standard deviation of 7.68 percentage points. The two dependent variables are both skewed to the right and are not highly correlated (0.39).³³

Variable	Mean	S. D.	Minimum	Maximum
Percent Administrative Staff (Executive/Managerial)	8.19	4.95	0.21	41.16
Percent Administrative Staff (Executive/Managerial and Professional)	27.71	7.68	1.52	74.38
Total Enrollment (logged)	8.23	1.14	5.30	12.41
Complexity	1.93	1.01	1	4
Faculty Percent	44.85	10.41	11.91	95.77
Public University	0.35	0.48	0	1
Government Reliance	27.51	28.31	0	97.55
Change in Revenue	5.02	24.47	-290.99	260.45
150% Graduation Rate	53.48	18.28	5	100
Completions per 100 FTE Students	25.49	8.49	3.09	107.39
HBCU	0.05	0.23	0	1
In-state Tuition and Fees (\$1000)	14.34	9.03	0	42.14
Instructional Spending/FTE Student (\$1000)	7.81	6.41	0.02	129.60
FTE Faculty per FTE 100 Students	5.77	3.07	1.00	91.52
Percent Full-Time Undergraduates	69.68	19.77	0.78	100
Percent Black Students	12.45	20.26	0	100
Percent Hispanic Students	6.25	12.94	0	100
Percent Full-Time, First-Time Undergraduates				
Receiving Aid	85.46	15.00	0	100

³³ Granger tests were conducted to determine if one type of administrative intensity caused the other or if the two variables were independent. Test with both one and two lags suggest that these two measures are independent from each other.

Methods

Separate methods of analysis will be utilized for each stage of this study. When testing the determinants of administrative intensity, OLS regression with errors clustered by institution will be used because the observations within each school may be related in some way that is not controlled for directly.³⁴ The inclusion of clustered standard errors will prevent bias in inferences by grouping observations in each organization. Finally, because these institutions are autoregressive and change slowly over time, lagged dependent variables are also tested. In stage two, OLS models with school fixed effects will be used to determine how administrative intensity affects performance. Using fixed effects in this portion of the analysis will focus on within-institution variance over time. In these models, constant variables such as institution type (public-private, HBCU) and complexity will be absorbed by the fixed effects. In other words, the fixed effects will soak up across-institution differences, leaving only within-group variance. This will result in a much lower likelihood of omitted variable bias. Lagged dependent variables are not used for these fixed effects models, as this specification may introduce Nickell bias. For all models throughout the analyses present below, year fixed effects are also

³⁴ The use of a fixed effects model is not appropriate in this stage for several reasons. Fixed effects analysis does not allow for the presence of structurally important constants—including whether the university is public or private or if it is a historically black college or university—that have no within-unit variance. More importantly, the use of fixed effects would not allow for a clear analysis of the effect of complexity on administrative intensity, as the measure of complexity does not change for a single institution in the time period included in this study. The Hausman-Taylor estimator was also tested (table not shown) to allow for the correlation between individual effects and regressors while allowing the inclusion of time invariant regressors. These findings were not substantially different from those presented here.

included as to minimize the threat of serial correlation (Stimson 1985); this should control for any general increases in any variables over time.

4.7 Findings

Table 9 tests the linear and nonlinear effects of size and structural complexity on administrative intensity.³⁵ When focusing on executive managers alone, the effect of size has a linear negative effect on administrative intensity. This finding, dissipates when a lagged dependent variable is added to the model; this is perhaps not surprising as the lagged dependent variable predicts about 85 percent of the current level of executive management, all else equal. While complexity is certainly correlated with this tier of administration ($P=.179$ in Model 1), it has no significant effect. Overall, these organizations appear to follow the theory of economies of scale as related to size, but no other findings support any notion of curvilinear relationships as suggested in previous literature (but see similar linear findings in Andrews and Boyne 2009).

Evidence for curvilinear relationships, however, is provided when both upper and mid-level administrators are included in the dependent variable. Organizational size appears to have a strong nonlinear relationship with administrative intensity in these models. Plotting this relationship suggests that the slope does not change signs but only approaches zero. This notion of diminishing returns is parallel to other recent research on administration in public schools (Boyne and Meier 2013) and local governments

³⁵ Similar findings to those presented in Table 9 were also detected in a fixed effects model (not shown). As complexity cannot be included in the fixed effects model, the sample was split by complexity, and size was included as the primary independent variable. Organizational size had a nonlinear U-shaped relationship in one of three models on executive administration and two of three models for all administration.

(Ting et al. 2013). Beyond size, complexity has a positive relationship with administrative intensity that is initially significant but substantively small (a one unit increase in complexity, or a one unit shift in Carnegie classification, in the base model is associated with a one percentage point increase in administrative intensity). This would imply that, at least in terms of size, administration may not be as bloated as popular media might suggest.

Though not the primary focus of this study, control variables also merit note. Revenue dependencies do not appear to have a strong effect on administrative intensity, but public institutions have significantly lower levels of administrative intensity as compared to their private counterparts. As expected, higher shares of faculty in the total employee pool are linked to lower levels of administration. Finally, adding a lagged dependent variable to these models subsumes much of the explained variance as these organizations are highly autoregressive over time.

Table 9: Determinants of Administrative Intensity in Higher Education, 2003-2009						
	Executive/Managerial			Executive/Managerial and Professional		
Internal Factors						
Total enrollment (logged)	-0.855*** (0.165)	-2.195* (1.189)	0.253 (0.338)	-1.190*** (0.265)	-9.017*** (0.473)	-2.245*** (0.706)
Total enrollment (logged) ²		0.080 (0.067)	-0.018 (0.019)		0.473*** (0.133)	0.122*** (0.042)
Complexity	-0.193 (0.144)	0.332 (0.836)	-0.138 (0.152)	1.187*** (0.230)	0.642 (0.894)	0.176 (0.254)
Complexity ²		0.173 (0.611)	0.019 (0.028)		0.074 (0.178)	-0.004 (0.050)
Faculty percent	-0.069*** (0.010)	-0.069*** (0.010)	0.019*** (0.003)	-0.409*** (0.017)	-0.403*** (0.018)	-0.108*** (0.012)
External Dependencies and Control						
Government Dependency	0.006 (0.009)	0.006 (0.009)	-0.004 (0.002)	0.018 (0.014)	0.013 (0.015)	-0.005 (0.004)
Change in Revenue	0.007*** (0.002)	0.007*** (0.009)	0.004*** (0.001)	0.002 (0.003)	0.002 (0.003)	-0.001 (0.002)
Public	-3.046*** (0.538)	-3.095*** (0.543)	-0.242* (0.141)	-3.509*** (0.846)	-3.377*** (0.878)	-0.115 (0.257)
Administrative Intensity lag			0.859*** (0.010)			0.809*** (0.017)
Constant	19.653** * (1.170)	24.851** * (5.015)	1.316 (1.446)	53.456** * (1.756)	85.797** * (8.905)	19.923** * (3.254)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
R ²	.24	.24	.81	.40	.40	.83
Schools	1341	1341	1341	1341	1341	1341
N	7307	7307	7307	7287	7287	7287

***p<.01, **p<.05, *p<.10

Errors clustered by institution

The results thus far provide only limited support for nonlinear hypotheses related to organizational size and largely reject hypotheses related to organizational complexity. The former findings are consistent with the logic of economies of scale while the latter suggests that there are likely to be other contextual factors that influence the growth (or decline) of administrative intensity in this sample of organizations. The results should not be interpreted to mean that organizational complexity is completely unrelated to administrative intensity, only that it has little to no direct impact. It is quite possible that organizational complexity may influence a number of internal characteristics of the organization that have a stronger link to administration. It may also be possible that complexity has little independent effect but that it interacts with organizational size to affect administrative intensity (as suggested by Blau 1970 and empirically detected by Andrews and Boyne 2014). An interaction between size (logged) and complexity is included in Table 10 below. Perhaps unsurprisingly, the interaction is not significant for the restricted definition of administrative intensity. The persistent null findings related to this dependent variable may be related to the lack of change in the share of these employees over the range of time in this study.

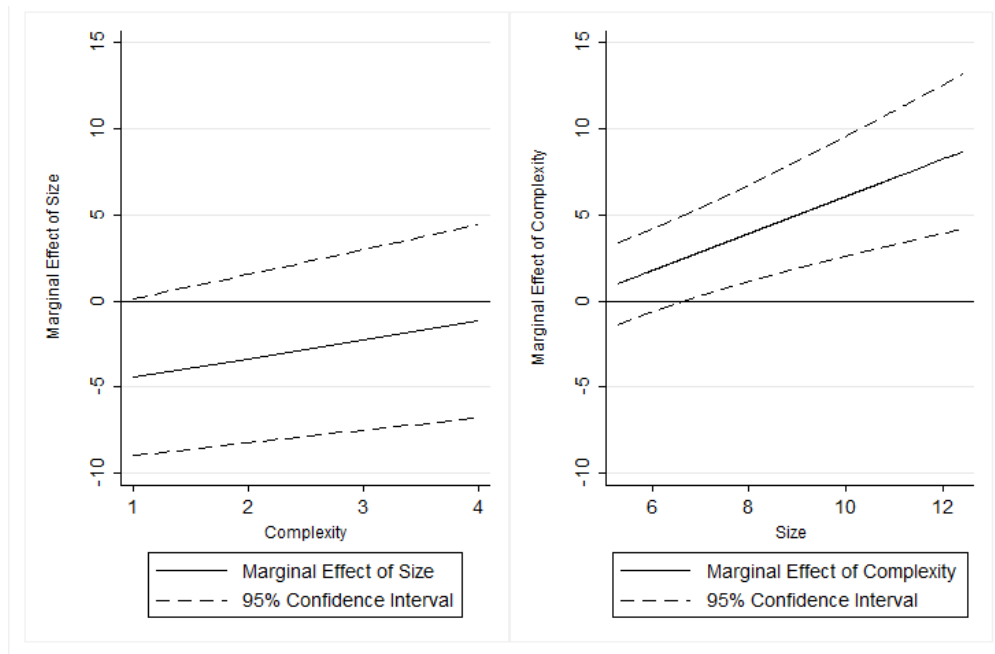
Table 10: Determinants of Administrative Intensity in Higher Education, Interactive Effects				
	Executive/Managerial		Executive/Managerial and Professional	
Internal Factors				
Total enrollment (logged)	-2.054*	0.284	-5.506**	-1.524
	(1.264)	(0.389)	(2.188)	(0.728)
Total enrollment (logged) ²	0.064	-0.021	0.073	0.040
	(0.084)	(0.027)	(0.159)	(0.051)
Complexity	0.124	-0.220	-4.718**	-0.898*
	(1.113)	(0.327)	(1.879)	(0.553)
Complexity ²	-0.105	0.013	-0.562**	-0.135**
	(0.141)	(0.034)	(0.220)	(0.063)
Enrollment X Complexity	0.043	0.009	1.080***	0.223***
	(0.145)	(0.043)	(0.273)	(0.081)
Faculty percent	-0.069***	-0.019***	-0.398***	-0.108***
	(0.010)	(0.003)	(0.018)	(0.012)
External Dependencies and Control				
Government Dependency	0.006	-0.004	0.018	-0.003
	(0.009)	(0.002)	(0.015)	(0.004)
Change in Revenue	0.007***	0.004***	0.002	-0.001
	(0.002)	(0.001)	(0.003)	(0.002)
Public	-3.106***	-0.244*	-3.649***	-0.178
	(0.145)	(0.143)	(0.867)	(0.254)
Administrative Intensity lag		0.859***		0.808***
		(0.010)		(0.017)
Constant	24.328***	1.395	74.694***	18.129***
	(5.260)	(1.619)	(8.817)	(3.313)
Year FE	Yes	Yes	Yes	Yes
R ²	.24	.24	.40	.40
Schools	1341	1341	1341	1341
N	7307	7307	7287	7287

***p<.01, **p<.05, *p<.10

Errors clustered by institution

For total administration, however, there exists a much stronger interactive effect of size and complexity. To better understand this interaction while accounting for the linear and nonlinear terms in the model, marginal effects can be plotted to determine the influence of one structural variable on administrative intensity as the other changes (Brambor, Clark, and Golder 2006). The left portion of Figure 3 provides a graphical illustration of the moderating influence of organizational size as complexity increases. While increasing complexity appears to lessen the negative effect of size, the confidence intervals suggest that this change is not significantly different from zero and does not cause the effect of size to change sign. The right portion of Figure 3 shows that organizational size accelerates the positive effect of complexity on administrative intensity. The effect of complexity in large organizations will be greater than in smaller organizations as it is likely that more administrators will be needed to coordinate a larger group of front-line staff. In other words, in two organizations of equal complexity, differences in size will affect how many administrators are needed to oversee each sub-unit. This may relate to the absolute number of employees one administrator has the capacity to oversee at any given time.

Figure 3: Marginal Effect of Size and Complexity on Administrative Intensity



Taken together, organizational size and structural complexity seem to be poor causal predictors of executive managerial positions in four-year institutions of higher education in the United States. One explanation is that every university needs a similar set of executives to run the organization (each university, regardless of size or complexity, needs a president, provost or chief academic officer, and a vice president of research, for example). These positions may change little in the short-term such that variance in size and complexity are not causally linked to this portion of administration. On the other hand, size and complexity have a much greater impact on the share of total administrative intensity (top and mid-level managers). Executives likely have more discretion to determine the need for mid-level management such that the demand for these administrators may be driven by organizational growth and the specialization of

subunits. These administrators are not only making strategic plans and developing visions of future organizational performance, but they are the individuals overseeing front-line employees and clientele needs. Thus, more difficult and more specialized tasks that also require increased interactions with a larger body of front-line employees and clientele create larger demands on the limited time and resources of each administrator. Additional micro-level mechanisms should be explored in multiple organizational contexts to determine how generalizable the linkages among size, complexity, and administration are and what other factors may be an important part of this organizational calculus.

While the determinants of administrative intensity should not be overlooked, the primary focus of this study is to determine whether the size of administration has any significant impact on organizational performance. Existing literature rarely tests whether administrative intensity has substantive effects on performance, but much research in public management finds that the characteristics of and strategic actions taken by upper and mid-level managers matter for the performance of public organizations (O'Toole and Meier 1999, 2000; O'Toole, Meier, and Nicholson-Crotty 2004; Hicklin, O'Toole, and Meier 2008). This literature largely agrees that those at the top of the organization have an important effect on performance (O'Toole and Meier 1999; Juenke 2005; Fernandez 2005; Jacobson et al. 2010). However, the effect of middle managers, many of which are included in the broader definition of administrative intensity here, is widely debated. As priorities shifted to quality, efficiency, and speed during the era of New Public Management, middle managers were seen as unnecessary

in organizations that needed to “trim the fat” (Cohen and Brand 1993). In the case of higher education, additional administrators, especially those classified as other professional, may provide higher levels of student services that bolster the well-being and performance of the student body as a whole (this may occur through health services, academic tutoring, or some other provision). However, further increases in these types of personnel may have diminishing returns. These additional positions may also require trade-offs with other needs (most prominently faculty hires).

To test the effect of administrative intensity on organizational performance, both measures of administrative intensity will be used to model student success, measured by graduation rates and degree production. These performance indicators are often used by political principals and other stakeholder groups to determine whether institutions of higher education are performing above or below expectations. Table 11 shows the relationship between administrative intensity and graduation rates.³⁶ Neither measure of administration has a significant direct effect on performance in these models. In fact, the only factors that are consistently related to graduation rates in these models are student profile characteristics. Though not assessed in this study, it is possible that while administrators have no direct effect on graduation rates, they are likely to make decisions (related to price setting, financial aid and scholarship packages, admissions standards, and transfer credits) that have some influence on the profile of the student body. Thus, there may still be some channel by which the share of administrators may

³⁶ A model with clustered standard errors and a lagged dependent variable was also examined. In this model, total administration (executive/managerial and other professionals) had a nonlinear relationship with graduation rates and produced a tipping point of approximately 26 percent administration.

influence strategic decisions which will produce some indirect effect on organizational performance.

Table 11: The Effect of Administrative Intensity on Graduation Rates				
DV: 150% Graduation Rates	Executive/Managerial		Executive/Managerial and Professional	
Institutional Structure and Resources				
Administrative Intensity	-0.019 (0.032)	0.017 (0.080)	-0.024 (0.022)	0.058 (0.075)
Administrative Intensity ²		-0.001 (0.002)		-0.001 (0.001)
Total Enrollment (logged)	0.776 (0.958)	0.788 (0.959)	0.432 (0.955)	0.499 (0.957)
In-state Tuition and fees (\$1000)	0.035 (0.062)	0.034 (0.062)	0.023 (0.061)	0.021 (0.061)
Instructional spending/FTE student (\$1000)	0.095 (0.063)	0.095 (0.063)	0.105 (0.072)	0.105 (0.072)
FTE Faculty per FTE 100 students	-0.033 (0.083)	-0.033 (0.083)	-0.056 (0.083)	-0.050 (0.083)
Student Characteristics				
Percent full-time undergraduates	-0.015 (0.023)	-0.015 (0.023)	-0.016 (0.023)	-0.016 (0.023)
Percent black students	0.137*** (0.052)	0.136*** (0.052)	0.090* (0.052)	0.089* (0.052)
Percent Hispanic students	0.295*** (0.093)	0.294*** (0.093)	0.276*** (0.092)	0.277*** (0.092)
Percent full-time, first-time students w/ aid	-0.022* (0.011)	-0.022* (0.011)	-0.018 (0.011)	-0.018 (0.011)
Constant	44.592*** (8.787)	44.353*** (8.801)	48.434*** (8.827)	46.701*** (8.955)
Year FE	Yes	Yes	Yes	Yes
R ²	.06	.06	.05	.05
Schools	1381	1381	1379	1379
N	8937	8937	8874	8874

***p<.01, **p<.05, *p<.10

Includes institutional fixed effects

It may also be possible that administrative intensity affects some types of performance but not others due to trade-offs among multiple organizational goals (Smith and Larimer 2004). Table 12 examines whether any impact of administration is detected when performance is measured by degree production (the number of baccalaureate degrees per 100 full-time equivalent students), a performance indicator that is only moderately correlated with graduation.³⁷ Models for the limited measure of administration find, once again, that this type of administrative intensity is unrelated to student performance. However, the more encompassing measure of administration provides the first support for the nonlinear hypotheses that the share of administration is related to performance. Similar to research on cost efficiencies by Martin and Hill (2012), an inflection point occurs at 30 percent of administrative intensity in Model 4. This means that for increases in administration below 30 percent, more administrative intensity may help improve this performance output. However, once the share of administration surpasses this tipping point, the relationship shifts so that increasing levels of administration are negatively related to degree production. This implies that if too many resources are diverted from instruction, research, or other student services to administration, organizational performance will suffer. In the sample of institutions used in this study, 65 percent were below this turning point while the remaining 35 percent have surpassed this point. Findings here suggest that the latter group can improve degree production by decreasing administrative intensity in favor of using these resources on other programs aimed at helping student performance (of course, there may

³⁷ A model with clustered standard errors and a lagged dependent variable produced similar findings.

be countless unintended consequences or complications that make this type of recommendation impractical as a best practice).

Table 12: The Effect of Administrative Intensity on Degree Production				
DV: Degrees/100 FTE Students	Executive/Managerial		Executive/Managerial and Professional	
Institutional Structure and Resources				
Administrative Intensity	-0.021 (0.014)	-0.022 (0.036)	-0.016* (0.009)	0.060* (0.034)
Administrative Intensity ²		0.00002 (0.001)		-0.001** (0.001)
Total Enrollment (logged)	-7.911*** (0.432)	-7.911*** (0.432)	-7.702*** (0.435)	-7.641*** (0.436)
In-state Tuition and fees (\$1000)	-0.125*** (0.028)	-0.125*** (0.028)	-0.104*** (0.028)	-0.105*** (0.028)
Instructional spending/FTE student (\$1000)	0.321*** (0.028)	0.321*** (0.028)	0.188*** (0.033)	0.188*** (0.033)
FTE Faculty per FTE 100 students	0.083** (0.037)	0.083** (0.037)	0.088** (0.038)	0.094** (0.038)
Student Characteristics				
Percent full-time undergraduates	-0.201*** (0.010)	-0.201*** (0.010)	-0.197*** (0.010)	-0.198*** (0.010)
Percent black students	-0.072*** (0.023)	-0.072*** (0.024)	0.082*** (0.024)	-0.083*** (0.024)
Percent Hispanic students	0.107** (0.042)	0.107** (0.042)	0.088** (0.042)	0.089** (0.042)
Percent full-time, first-time students w/ aid	-0.002 (0.005)	-0.002 (0.005)	-0.002 (0.005)	-0.002 (0.005)
Constant	102.922*** (3.961)	102.926*** (3.968)	102.080*** (4.023)	100.495*** (4.080)
Year FE	Yes	Yes	Yes	Yes
R ²	.12	.12	.10	.10
Schools	1381	1381	1379	1379
N	8937	8937	8874	8874

***p<.01, **p<.05, *p<.10
Includes institutional fixed effects

In Tables 11 and 12, the control variables have slightly different levels of influence on performance. While size (enrollment) and the percent of undergraduates are highly significant for estimating degree production, these variables are insignificant in graduation models. For both performance indicators, the percent of full-time undergraduates is negatively related to performance, while higher levels of Hispanic students helps to boost performance. At the institutional level, instructional spending per FTE student is positive, though this variable is only significant for degree production.

4.8 Implications

This study has focused on questions of the determinants of administrative intensity and the subsequent effect of administrative intensity on organizational performance. The findings in this study provide support for theories of economies of scale related to organizational size but lack support for an independent effect of complexity on administration. Size and complexity have an interactive effect on total administrative intensity in these organizations such that complexity has a strong positive relationship with administrative intensity in larger organizations. Multiple definitions of administration clearly illustrate that structural relationships depend on measurement and specification that must consider the internal and external context of the organization. In the context of U.S. higher education, top level administration is more stagnant than the total size of administration, so the latter is more like to be affected by organizational structures, all else equal.

Unlike previous research, this paper tested the link between administrative intensity and organizational performance and found it to be significant for one of two student performance indicators. When administration includes staff classified as “other professionals,” administrative intensity has a nonlinear, inverted U-shaped relationship with degree production and suggests that optimal levels of administrative intensity occur when administrative employees comprise approximately 30 percent of all employees in the organization. However, a similar relationship is not found in the case of graduation rates. Such mixed findings suggest that administration directly affects some performance goals but may not have the same relationship with others. Practically, this implies that determining the size and scope of administration in these organizations may be a complex task.

Theoretically, this study emphasizes the need to expand current theories of organizational structure to incorporate a stronger understanding of the relationship among organizational structures as well as how structural components like administrative intensity influence organizational performance. The nonlinear relationship reported here, while previously absent from the literature, is perhaps not surprising. Increasing resources for one component of an organization requires trade-offs among other services and priorities and can have negative implications for other organizational needs. On the other hand, as arguments provided by Smith and Meier (1994, 1995) suggest, organizations with too few administrators are also linked to lower performance. However, the lack of consistent nonlinear findings across performance indicators underscores the need for scholars and practitioners alike to consider when and

why administrative intensity might matter but also when it might have no relationship or indirect relationships with performance. Tracing out the linkages that connect administration to performance theoretically can then allow for a better understanding of when we should expect administration to matter.

Much additional work is needed in this line of inquiry. First, definitions of key concepts remain problematic. This study provides an illustration of how relationships may vary based on which employees are classified as administrators. When the size and complexity of an organization increase, some types of administrative employees may decrease while others increase; this is seen in higher education when executive/managerial employees remain relatively stable in number over time, while those classified as other professionals experience more movement and growth. Here, employees encompassed our limited measure of administration are likely in charge of decisions to hire other professionals and mid-level managers. While those at the top remain steady over time, they may choose whether to increase the share of other administrators as the size, complexity, or other components of the organization shift over time. As existing literature contains a number of approaches to defining size (number of employees, number of students/clients), complexity (number of departments, client composition), and performance (for education these may include standardized tests, graduation rates, retention, dropouts), identifying some level of consensus in measurement across policy areas may limit the consistency of findings.

Second, tests are needed to verify whether findings from institutions of higher education are generalizable to other contexts. The organizations in this study vary in the

components of interest (size, structure, administrative intensity) as well as in terms of centralization, formalization, and control by political principals across all U.S. states, which may allow the findings to hold across agencies in other policy areas. Higher education, however, may have more or less flexibility to manage levels of administrative intensity than other organizations which may limit the extension of the conclusions made in this study. Third, while this study focuses on the concentration of administrators, it does not extend to the change in the cost of these employees. Holding the size of administration constant, the cost of these employees may change over time and have positive or negative implications for organizational processes and performance outcomes.

Despite these potential limitations, the notion that an ideal level of administration can be identified to maximize performance should influence how scholars consider managerial priorities and decisions. Determining when and why managers deter from setting administration at a level conducive for maximizing performance may relate to political relationships, managerial quality, or managerial fit. Further, these optimal levels may vary for low and high performing institutions and may be strategically maneuvered in order to achieve goals that may work in conjunction or compete with the goals examined here.

5. CONCLUSION: ARE ALL MANAGERS ALIKE?

5.1 Introduction

Understanding when and how managers affect the performance of their organizations is a question that will continue to drive a large share of public administration research. In the context of higher education, this question is highly salient as the value of U.S. higher education is no longer solidly positioned at the top of the world market. How is this so? In global rankings, eight of the top ten universities are located in the United States. American institutions produce the most scientific output and gain attention for a plethora of Nobel laureates (“Not what it Used to be” 2012). Yet, rising tuition and fees mean higher levels of debt and uncertainty about opportunity costs and future returns. Further, not all who begin a college education will finish, as the typical graduation rate for an institution of higher education is no higher than promising a degree for two out of every three students. Unfortunately, those living in lower socioeconomic levels and those of minority racial and ethnic groups are among the first to lose out, which contributes to widening and already large gap between the haves and have-nots. Connecting education to economic development and job creation is no longer seen as a robust assumption by many stakeholders who call for vast changes in state institutions.

In a recent policy brief by the American Association of State Colleges and Universities (AASCU) identified the number one issue facing higher education as boosting institutional performance (AASCU 2013). States have begun to work with one another or with third party organizations to boost degree production, and many have

implemented policies focusing on strengthening STEM education. State performance-funding policies continue to expand rather than contract, which may further test the waters of institutional-state relationships when disagreement occurs over which outcomes are rewarded and whether these outcomes apply equally to all schools.

As policies continue to push institutions to improve access, quality, and affordability simultaneously, university presidents are caught in an iron triangle of competing goals that necessarily include trade-offs. And while presidents may all want to improve performance, many do not know which strategies will lead to improvements or how long it will take to experience such improvements once a new policy is implemented. These managers are now public figures who have become associated with politics in many states, which adds additional pressure to decision making processes.

In this dissertation, I have examined three linkages of the model presented in the introduction—managerial fit, the drivers of decision making, and administrative intensity. Managerial fit, financial changes, and administrative intensity all have the capacity to affect organizational performance in direct and indirect ways. Findings here suggest that change is generally incremental but that presidents can affect performance under certain circumstances. Interestingly, moderation appears to be important in this context—some, but not too much fit and some, but not too much administrative intensity.

5.2 Implications for Theory

The community of education scholars and administrators often give little direct attention to policy issues that affect institutional structures, decisions, and performance

feedback loops. When policy is considered, education scholars generally focus on drivers of state-level change without considering institutional-level consequences. Studying these phenomenon at the institutional level through the lens of public administration and political science theories in this work demonstrate that much can be gained for scholars in multiple fields for explaining organizational performance for complex systems that are experiencing some level of uncertainty in external environment. And while volumes of research exist on organizational performance, we know relatively little about how the individual characteristics and values of managers shape decision making, change, and performance in a general way.

More specifically, one of the primary takeaways from these studies is that the fit of managers can have a number of consequences throughout the organization. Here, I focused on a single conceptualization of fit for a specific set of performance outcome indicators. This should be the tipping point of exploring other measures of fit and additional dependent variables (throughput and output measures). Scholars in public administration and political science have yet to maximize the potential of this theoretical discussion.

Next, scholars should have a renewed skepticism of the role of strategic plans. While plans may be normatively good, they may be less useful in practice when a wide network of individuals must support the implementation of such a plan. However, it must also be noted that the findings in this paper may lead to at least two conclusions—that strategic plans are rarely more than incremental shifts that are hard to predict or that strategic plans are difficult to measure with macro-level data. Further, as the second and

third empirical chapters illustrate, change may occur through monetary and non-monetary means. Capacity and change in some areas may be more flexible than others (especially in light of state and federal regulations).

5.3 Implications for Practice

The research presented here can also speak to practitioners and policymakers. First, the hiring process for university presidents is one that is complex and full of political processes. Findings in the first empirical chapter suggest that governing boards should consider thinking slightly outside of the box, but doing so may also have a number of additional political implications. Additionally, the role of board is one that has not yet been addressed in this research due to data limitations. Yet, governing boards often consist of members that are appointed by a governor and who have a wide range of knowledge about higher education. The role of these individuals and how they align with a presidential candidate is also likely to be important.

Second, research on the connection of fit and performance in the case of higher education should also be extended to provosts and chief academic officers. As these individuals are tasked largely with managing internal affairs while presidents handle external relations and fundraising, determining who to hire in these positions and whether there is a similar fit-performance link can also be quite informative for university boards and administrators.

Next, while this research may provide useful points of information for avid readers, it stops short of promising to provide best practices that can or should work at any individual institution. Context will be largely important here as significant

differences may exist between public and private institutions, high and low performance institutions, and institutions in states with unified versus diverse governing systems. Further, this study does not consider all four year schools and does not address two years schools at all. These systems often have widely different missions (though some of these missions are shifting). Finally, while mentioned in passing throughout this research, fit, strategic change, and administrative intensity, among many other aspects of higher education, may have distributional consequences for different student groups. Administrators should be aware of how decisions affect each of these groups and should take caution to avoid unfairly disadvantaging any single groups of students.

5.4 Limitations

A few additional limitations should also be considered in this research. While policymakers and stakeholders often call for performance improvements that should occur quickly, institutional change resulting from many managerial decisions may not be seen for a number of years. Many administrators are acutely aware that some of the more strategic changes in their institutions may not be measurable for 4-6 years as old cohorts of students complete their degrees and incoming classes, experiences all of the potential benefits of the changes, get through the system. This long wait time may drive much of the incremental changes that were detected in the second empirical chapter and may explain why large, more risky shifts are much less common. Of course, salient discussions of the need for drastic, prompt changes can also encourage administrators to take actions that have faster results but also include challenges for goals such as equity and accessibility.

In terms of theory, there is a need to duplicate and expand these studies in other areas of higher education (other four year institutions, two year institutions, non-US institutions) to see how robust findings are across time and space. Replication is also useful in other sectors (health, welfare, public safety, local governments) to determine if findings here apply only to the case of higher education or if they can accurately be applied in a more general sense to models of management and performance.

To conclude, no easy answers exist for understanding management questions generally or for maximizing performance, affordability, and accessibility in higher education specifically. Still, this research can help to move both fronts forward to increase knowledge among scholars, practitioners, and policymakers alike.

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APPENDIX

Table 13: Determinants of Performance, Internal Hires Included						
	Degrees/100 FTE Students		150% Graduation Rate		FTFT Retention Rate	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Organizational Fit	-0.0669 (0.0955)	-1.4272 (1.6860)	-0.1997 (0.1874)	9.1166+ (4.7956)	-0.6701+ (0.3925)	15.0325+ (8.9236)
Organizational Fit ²		0.0941 (0.1176)		-0.6690+ (0.3471)		-1.1247+ (0.6381)
Prior Organization Performance (Degrees)	0.0176 (0.0169)	0.0171 (0.0168)				
Prior Organization Performance (Grad)			0.0082 (0.0067)	0.0081 (0.0064)		
Prior Organization Performance (Ret)					0.0496* (0.0229)	0.0528* (0.0232)
Change in President	0.0982 (0.1501)	0.0947 (0.1503)	0.0086 (0.3641)	0.1174 (0.3835)	0.2618 (0.6162)	0.4939 (0.6559)
President Experience (years)	-0.0106 (0.0098)	-0.0119 (0.0101)	0.1098* (0.0375)	0.1120* (0.0363)	0.0314 (0.0396)	0.0394 (0.0399)
Percent Black Students	-0.0118* (0.0038)	-0.0122* (0.0040)	-0.0191+ (0.0101)	-0.0188+ (0.0101)	-0.0129 (0.0164)	-0.0126 (0.0159)
Percent Hispanic Students	0.0083 (0.0076)	0.0082 (0.0076)	-0.0323 (0.0290)	-0.0303 (0.0307)	-0.0065 (0.0336)	-0.0007 (0.0355)
Percent Part-time Students	0.0234* (0.0091)	0.0236* (0.0092)	-0.1138* (0.0232)	-0.1205* (0.0235)	-0.1238* (0.0460)	-0.1322* (0.0477)
Instructional Expenditures/FTE Student (log)	0.4982* (0.1765)	0.4909* (0.1735)	0.5753* (0.2800)	0.6421* (0.2799)	1.8509* (0.6818)	1.9507* (0.6837)
Sticker Price Tuition and Fees (logged)	0.3705* (0.1295)	0.3767* (0.1293)	0.3752 (0.2624)	0.3339 (0.2495)	0.4266 (0.3912)	0.3362 (0.3898)

Table 13 Continued						
Enrollment (log)	-0.1693 (0.1280)	-0.1712 (0.1284)	0.6946* (0.1941)	0.6868* (0.1919)	0.9491* (0.3814)	0.9341* (0.3850)
Percent Part-time Faculty	0.0035 (0.0031)	0.0034 (0.0031)	0.0014 (0.0080)	0.0014 (0.0077)	0.0288* (0.0142)	0.0270+ (0.0140)
State Performance Funding Policy	-0.0651 (0.1272)	-0.0651 (0.1270)	-0.0686 (0.2320)	-0.0864 (0.2286)	-0.0575 (0.4383)	-0.0823 (0.4413)
State Appropriations (Constant 2009 dollars, millions)	0.0001 (0.0000)	0.0001 (0.0000)	0.0001 (0.0001)	0.0001 (0.0001)	0.0002 (0.0002)	0.0001 (0.0001)
State Unemployment Rate	-0.0172 (0.0396)	-0.0154 (0.0395)	-0.1555+ (0.0923)	-0.1684+ (0.0920)	-0.0033 (0.1415)	-0.0083 (0.1427)
Lagged DV	0.8390* (0.0302)	0.8389* (0.0302)	0.9003* (0.0226)	0.8975* (0.0227)	0.7114* (0.0967)	0.7027* (0.0980)
Constant	-1.7563 (1.5557)	3.1718 (6.1141)	-5.0412 (3.7209)	-37.0840* (17.4995)	-4.7942 (6.8859)	-58.5508+ (31.5839)
Year FE	1994-2009	1994-2009	2003-2009	2003-2009	2005-2009	2005-2009
N	2113	2113	642	642	411	411
R2	.86	.86	.95	.95	.91	.92
Chi2	9613.629	10259.462	59275.535	64299.403	3993.022	4625.565

+ p<0.10, * p<0.05

	Table 14: Determinants of Performance, Presidents from Outside Higher Education					
	Degrees/100 FTE		150% Graduation Rate		FTFT Retention Rate	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Prior Public Agency	-0.1954 (0.1546)		-0.0427 (0.2852)		0.4929 (0.7942)	
Prior Private Firm	0.0566 (0.2481)		0.9510 (0.7391)		5.0513 (3.3777)	
Prior Public/Private with Ed Experience		-0.1705 (0.2323)		0.9812 (0.6806)		4.1131 (2.5902)
Prior Public/Private without Ed Experience		-0.1018 (0.1632)		0.0144 (0.2933)		0.6569 (0.9562)
Change in President	0.0795 (0.1150)	0.0792 (0.1143)	-0.3357 (0.3222)	-0.3592 (0.3231)	0.3065 (0.4462)	0.3347 (0.4538)
President Experience (years)	-0.0066 (0.0059)	-0.0067 (0.0060)	0.0081 (0.0219)	0.0078 (0.0217)	0.1342* (0.0467)	0.1436* (0.0458)
Percent Black Students	-0.0082* (0.0024)	-0.0079* (0.0024)	-0.0233* (0.0069)	-0.0239* (0.0069)	-0.0574* (0.0241)	-0.0611* (0.0241)
Percent Hispanic Students	0.0035 (0.0044)	0.0027 (0.0043)	-0.0156 (0.0111)	-0.0158 (0.0111)	-0.0414 (0.0609)	-0.0452 (0.0615)
Percent Part-time Students	0.0160* (0.0055)	0.0168* (0.0056)	-0.0596* (0.0136)	-0.0592* (0.0128)	-0.3342* (0.0692)	-0.3277* (0.0688)
Instructional Expenditures/FTE Student (log)	0.2005 (0.1254)	0.1878 (0.1222)	0.7725* (0.2389)	0.7914* (0.2338)	3.9161* (0.9452)	4.0709* (0.9383)
Sticker Price Tuition and Fees (logged)	0.3994* (0.0808)	0.4036* (0.0804)	0.5229* (0.1936)	0.4867* (0.1822)	2.9555* (0.7821)	2.8394* (0.7332)
Enrollment (log)	-0.1325 (0.0865)	-0.1339 (0.0847)	0.4507* (0.1892)	0.4013* (0.1770)	4.2717* (0.8112)	4.0713* (0.7579)
Percent Part-time Faculty	0.0004	0.0002	0.0063	0.0074	0.0054	0.0075

Table 14 Continued						
	(0.0022)	(0.0023)	(0.0078)	(0.0077)	(0.0230)	(0.0230)
State Performance Funding Policy	0.0037	0.0156	-0.1489	-0.1568	-1.6031*	-1.6021*
	(0.0977)	(0.0952)	(0.1943)	(0.1929)	(0.6744)	(0.6922)
State Appropriations (Constant 2009 dollars, millions)	0.0001*	0.0001*	0.0001+	0.0001+	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0001)	(0.0001)	(0.0002)	(0.0002)
State Unemployment Rate	-0.0548+	-0.0510	-0.1068	-0.0977	-0.3176*	-0.3010*
	(0.0311)	(0.0313)	(0.0725)	(0.0708)	(0.1500)	(0.1428)
Lagged DV	0.8696*	0.8724*	0.9137*	0.9144*	0.1600*	0.1562*
	(0.0187)	(0.0182)	(0.0146)	(0.0141)	(0.0599)	(0.0598)
Constant	-0.1984	-0.2003	-8.4042*	-7.8830*	-28.2330*	-26.6877*
	(1.1054)	(1.0669)	(2.4151)	(2.2228)	(9.7805)	(9.4053)
Year FE	1994-2009	1994-2009	2003-2009	2003-2009	2005-2009	2005-2009
N	3492	3515	1500	1510	980	986
R2	.87	.87	.96	.96	.72	.72
Chi2	18565.566	19088.084	73623.409	73897.965	947.341	940.225

+ p<0.10, * p<0.05

Figure 4: Average Research-Related Share of Expenditures over Time



Figure 5: Average Part-Time Faculty/100 FTE Students over Time

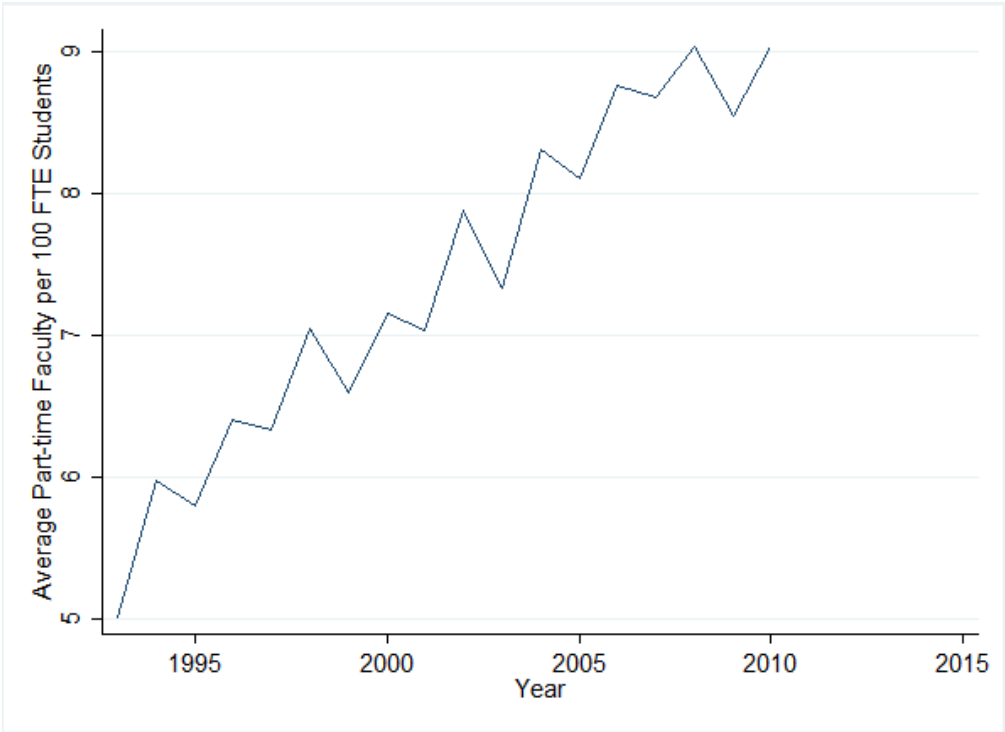


Figure 6: Average Discount Rate over Time

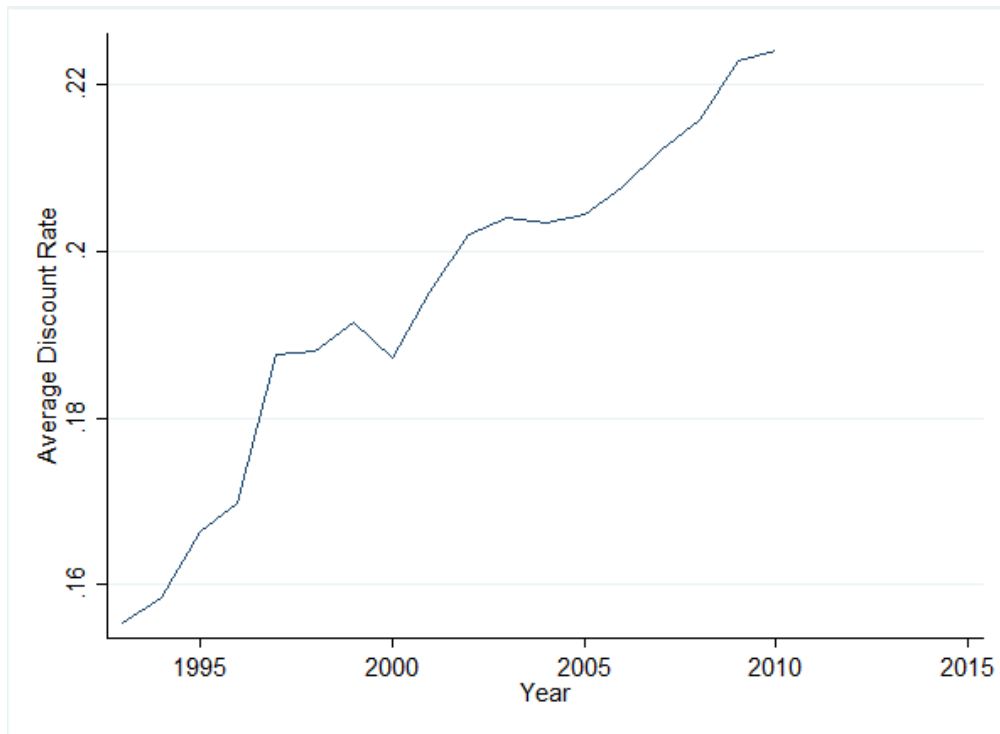


Table 15: Description of Staff Categories	
Variable	Definition
Executive and Managerial Employees	A primary function or occupational activity category used to classify persons whose assignments require management of the institution, or a customarily recognized department or subdivision thereof. Assignments require the performance of work directly related to management policies or general business operations of the institution, department or subdivision. Assignments in this category customarily and regularly require the incumbent to exercise discretion and independent judgment.
Other Professional Employees	A primary function or occupational activity category used to classify persons employed for the primary purpose of performing academic support, student service, and institutional support, whose assignments would require either a baccalaureate degree or higher or experience of such kind and amount as to provide a comparable background.
Technical and Paraprofessional Employees	A primary function or occupational activity category used to classify persons whose assignments require specialized knowledge or skills which may be acquired through experience, apprenticeship, on-the-job-training, or academic work in occupationally specific programs that result in a 2-year degree or other certificate or diploma.
Clerical and Secretarial Employees	A primary function or occupational activity category used to classify persons whose assignments typically are associated with clerical activities or are specifically of a secretarial nature. Includes personnel who are responsible for internal and external communications, recording and retrieval of data and/or information and other paperwork required in an office.
Craft Employees	A primary function or occupational activity category used to classify persons whose assignments typically require special manual skills and a thorough and comprehensive knowledge of the processes involved in the work, acquired through on-the-job-training and experience or through apprenticeship or other formal training programs.
Service/Maintenance Employees	A primary function or occupational activity category used to classify persons whose assignments require limited degrees of previously acquired skills and knowledge and in which workers perform duties that contribute to the comfort, convenience, and hygiene of personnel and the student body or that contribute to the upkeep of the institutional property.

Table 18: Carnegie Codes by Level of Complexity	
Complexity Level	Carnegie Classifications
1	21 = Baccalaureate Colleges--Arts & Sciences 22 = Baccalaureate Colleges--Diverse Fields 23 = Baccalaureate/Associate's Colleges
2	18 = Master's Colleges and Universities (larger programs) 19 = Master's Colleges and Universities (medium programs) 20 = Master's Colleges and Universities (smaller programs)
3	17 = Doctoral/Research Universities: Doctorate-granting Universities
4	15 = Research Universities (very high research activity) 16 = Research Universities (high research activity)