2019

University President Compensation: A Complex Examination of its Determinants and Consequences

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UNIVERSITY PRESIDENT COMPENSATION: A COMPLEX EXAMINATION OF ITS DETERMINANTS AND CONSEQUENCES

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at Virginia Commonwealth University.

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August, 2019

Acknowledgement

I want to thank everyone who has helped and supported me through this endeavor. First and foremost, I want to thank my husband, Caleb, who has been an unending source of love, support, and encouragement. Without him, I would not have had the courage to leave my job and go back to school nor would I have been able to persevere through the personal and professional challenges I have faced over the past four years. Words cannot express how integral he has been to my success (and happiness) or how thankful I am for everything he has done for me.

Our pup, Ryder, also deserves thanks for being a world champion snuggler and for always being happy to see me when I come home. He is a constant reminder of how important it is to live in the moment and enjoy life's little pleasures.

I also want to thank my parents, Jeannette and William List, as well as my siblings, for their love and support not only in the past four years, but throughout my life. They have each been wonderful role models and have been there for me and inspired me in more ways than they could know. Without them, I would not be the person I am today and could never have earned this degree.

I also could not have made it through this process without the guidance and encouragement of my committee members (Drs. Sven Kepes, Michael McDaniel, Jose Cortina, Andra Serban, and David Harless) and countless other faculty members and fellow students. In particular, I want to thank Dr. Sven Kepes for putting up with me for the past four years and being a great mentor.

Without the help and support of these individuals, as well as many others, I could not have made it through this process.

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Abstract

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A dissertation submitted in partial fulfillment of the requirements for the Doctor of Philosophy at Virginia Commonwealth University.

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Major Director: Dr. Sven Kepes, Professor of Management, Department of Management and Entrepreneurship

This dissertation examined the controversy surrounding the high levels of compensation paid to university presidents. To do this, the first half of this dissertation includes a systematic review of the existing literature regarding the relation between university performance and university president compensation in nonprofit universities. The second half of this dissertation attempts to replicate the findings from the systematic review with more current data. Several gaps identified in the literature, including the effects of analyzing specific compensation components, the effect of university president compensation on subsequent university performance, potential nonlinear relations, and how relations between university performance and university president compensation change over time, are examined as well. Specific hypotheses and research questions are derived from compensation and motivation theories used in the for-profit context as well as findings from both the for-profit and nonprofit executive compensation literature. Results indicated that university performance had a weak effect on compensation in private universities and no effect in public universities. Findings suggested that there may be differences in this effect depending on the component of compensation examined. Compensation appears to have a negative or nil effect on subsequent university performance. Evidence of differential

effects over time were not observed. Although some nonlinear effects were detected, they did not take the form expected. Potential reasons for these findings, as well as their implications for research and practice, are discussed.

CHAPTER 1

Problem Statement

The compensation of university[1] presidents has been an increasingly controversial topic over the past several years (Dillon, 2004; Ginsberg, 2011; Glater, 2007; Krupnick & Marcus, 2015; Stripling & Fuller, 2011). During this time, total public funding per full-time equivalent student for colleges and universities has steadily decreased (Mitchell, Leachman, Masterson, & Waxman, 2018; Woodhouse, 2015). To make up for the lack of funding, universities have opted to raise tuition (American Association of University Professors, 2017). This has resulted in higher net costs of attending college and, therefore, increased student loan debt (Federal Reserve Bank of New York, 2013; Seltzer, 2017). Yet, although reduced funding has negatively impacted students, the compensation of university presidents has continued to rise (Bauman, Davis, Myers, & O'Leary, 2017). This has led many to speculate about whether the presidents are being overcompensated (Dillon, 2004; Krupnick & Marcus, 2015; Saul, 2017; Stripling & Fuller, 2011).

The situation in academia is similar to that of executive compensation as a whole. Adjusting for inflation, the pay of CEOs from the 350 largest U. S. firms grew by 937% between 1978 and 2016 (Mishel & Schieder, 2017). Just as in academia, the rising compensation of executives has led many people to believe that executives are overpaid (Kiatpongsan & Norton, 2014; Walsh, 2008, 2009). However, there are also many who suggest that university presidents and CEOs are not overpaid and that their high levels of compensation are necessary to attract high-quality individuals as well as to incentivize their future performance (Agarwal, 1981; Gomez-Mejia & Wiseman, 1997; Kaplan, 2008a, 2008b; Vroom, 1964; Worstall, 2014). This

[1] The terms “university” and “college” are used interchangeably; thus, university president compensation refers not only to the compensation of presidents employed at universities, but also to presidents employed at colleges.

suggests that current levels of pay may be justified if they result in comparable future performance increases. Others have argued that high levels of pay are acceptable if they are commensurate with past organizational performance (Jensen & Meckling, 1976). If future pay is contingent on performance, it is reasoned that university presidents and other executives will be motivated to perform at high levels. These arguments suggest that the rising pay of university presidents and other chief executives can be justified, beneficial, and, because of the increases in motivation resulting from the performance-compensation linkage, may lead to future high performance.

Unfortunately, although executive compensation research has flourished over the past several decades (Agarwal, 1981; Devers, Cannella, Reilly, & Yoder, 2007; Gomez-Mejia & Wiseman, 1997; Tosi, Werner, Katz, & Gomez-Mejia, 2000; van Essen, Otten, & Carberry, 2015), our current understanding of the extent to which executive compensation and organizational performance are actually related is incomplete. This is particularly true within the context of academia where there has been a relative dearth of research exploring how president compensation and university performance are related and almost no research examining the complexities and nuances of these relations. The lack of research in the nonprofit educational context is particularly problematic because there are important differences between the for-profit context typically studied by executive compensation researchers and the nonprofit educational context. Thus, the extent to which even the limited knowledge gained from for-profit context generalizes to the nonprofit educational context is largely unknown.

Specifically, agency theory (Jensen & Meckling, 1976), the dominant theory used in the for-profit executive compensation literature, includes assumptions and suggestions that may not be upheld in the nonprofit educational context. For instance, agency theory assumes that

executives are self-interested and will attempt to shirk their duties if steps are not taken to align their interests with the ones of the owners of the organization (Jensen & Meckling, 1976). However, some have argued that university presidents are not self-interested, but rather, they are intrinsically motivated to perform to the best of their ability due to their commitment to the goals of their organization (Handy & Katz, 1998; see also, Bai, 2014). If true, it would not be necessary to provide performance incentives to university presidents and there would be no relation expected between university president compensation and university performance.

However, even if university presidents are self-interested and it is necessary to take steps to align their interests to the performance of their universities, it may be, practically, very difficult to do so. This is because performance is defined differently in for-profit contexts and nonprofit educational contexts and the control mechanisms available to university Boards of Visitors/Trustees/Regents (hereafter the term "Board" is used to refer to Boards in general as well as specific Boards) are different than those available to Boards of for-profit organizations (e.g., universities do not have stock options). These substantive differences between the for-profit and nonprofit educational contexts make it necessary to thoroughly study the extent to which theories from the for-profit literature generalize to the nonprofit educational context.

Thus, the objective of this dissertation is to explore similarities and differences between the for-profit context and the nonprofit educational context to gain a better understanding of the nature of the relation between university president compensation and university performance. In so doing, this dissertation will fill many of the gaps that currently exist within the literature regarding university president compensation and university performance. Filling these gaps will shed light on the controversy surrounding the pay of university presidents and help to determine whether their high average levels of pay are justified.

The first step in attempting to fill existing gaps within the literature is to determine the current state of our cumulative knowledge of the relation between executive compensation and organizational performance in both the for-profit and nonprofit educational contexts. The first way in which this dissertation aims to address the controversy surrounding president compensation is to conduct a systematic review of the existing literature on the relation between university performance and subsequent university president compensation. After providing a thorough review of the existing literature, this dissertation will also examine a series of open questions in the literature. First, although there has been a substantial amount of research aimed at determining the effect that financial organizational performance has on future pay in the for-profit context (e.g., Tosi et al., 2000), there has been relatively little research that attempts to explore the effect of university president compensation on future performance. Given that different theories support both the link between performance and future pay (e.g., agency theory; Jensen & Meckling, 1976) and pay and future performance (e.g., expectancy theory; Vroom, 1964), it is important to test both sets of relations.

Second, because relatively few studies have examined the relation between executive compensation and organizational performance, researchers have also failed to integrate findings and theories across literature areas. Thus, little is known about the potential reciprocal effects that pay and performance may have on each other (Devers et al., 2007) and how these relations evolve over time. Third, the existing studies assessing the relation between performance and pay have been overly simplistic. For instance, few studies have examined the potential that nonlinear effects exist between these two variables due to, for instance, the diminishing marginal utility of compensation (i.e., additional increases in pay do not result in similar increases in motivation after a given point; see Aaron, Harris, McDowell, & Cline, 2014 for an exception).

Considering the nonprofit educational context, the same set of questions exist. In fact, although there have been a handful of studies that have assessed the impact of university performance on pay (e.g., Bai, 2014; Bartlett & Sorokina, 2005; Cheng, 2014; Ehrenberg, Cheslock, & Epifantseva, 2001), only three studies have assessed the impact of president compensation on future university performance (Hunt, Tandberg, & Park, 2019; Parsons & Reitenga, 2014; Tang, Tang, & Tang, 2004). Consequently, there has also been no attempt to integrate the various theories which suggest that the relation between pay and performance may go in either direction (Jensen & Meckling, 1976; Vroom, 1964). Also, there has been no consideration of potential reciprocal relations involving these two variables. Additionally, there are no studies in the nonprofit educational context that have examined potential nonlinear effects between president compensation and university performance.

These unanswered questions, present in both academia and the broader literature of executive compensation, highlight the limitations of our current understanding of the relation between executive compensation and organizational performance and could have significant practical implications. Thus, another goal of this dissertation is to gain a better understanding of the potentially complex relation between university president compensation and university performance over time. Given that these same gaps exist in the larger for-profit executive compensation literature, the findings of this study may also provide a starting point for future for-profit executive compensation research.

In sum, this dissertation will address several open questions, grouped into two overarching gaps, in the university president compensation and university performance literature. In so doing, this dissertation not only aims to shed light on the continuing controversy surrounding the growing levels of president pay in universities, it may also help to address this

controversy as it exists in the broader area of executive compensation, which has many of the same open questions. Specifically, I explore the following research questions aimed to address the open questions noted previously.

Gap 1: Systematic review of university performance and university president compensation studies

Research question 1: *What impact, if any, does university performance have on president compensation?*

Gap 2: A comprehensive assessment of the complexities in the relation between university president compensation and university performance

Research question 2a: *Does university performance predict future university president compensation?*

Research question 2b: *Is there a reciprocal relation between university president compensation and university performance?*

Research question 2c: *How does the link between university performance and university president compensation change over time?*

Research question 2d: *Is the relationship between university performance and university president compensation linear?*

CHAPTER 2

Is Pay Influenced by Past Performance? A Systematic Review of the Antecedents of University President Pay

The rising levels of compensation paid to university presidents has received increasing attention and scrutiny over the past several years from both the popular press (Dillon, 2004; Sonnenberg, 2017; Stripling & Fuller, 2011) and researchers (Bai, 2014; Bartlett & Sorokina, 2005; Cheng, 2014; Parsons & Reitenga, 2014). While public funding for universities has decreased, the compensation of university presidents has continued to rise (Bauman et al., 2017; Woodhouse, 2015). Considering that average costs to attend college increased by 57% between 2007 and 2017 (Boyington, 2017) and student loan debt increased by 250% during a similar time period (2004 and 2014; Martin, 2017), many have claimed that university presidents are being paid too much (Dillon, 2004; Krupnick & Marcus, 2015; Saul, 2017; Stripling & Fuller, 2011). For instance, Richard Vedder, the director of the Center for College Affordability and Productivity at Ohio University stated, “Schools are resisting changes [to reduce the cost of attending college], but they’re going ahead and continuing to make these large payments to university presidents, and I think it’s the height of irresponsibility” (cf. Binkley, 2016, para. 8).

However, many Boards and presidents have argued that the compensation of university presidents is based on the requirements of the job as well as the performance of the president, and, therefore, is quite reasonable. For instance, referring to Arizona State University’s President, Michael Crow (the highest paid public university president in 2017), Board of Regents Vice Chairman, Bill Ridenour said, “Crow is an entrepreneur, a visionary and a leader […] My thoughts are you can’t pay Dr. Crow enough” (cf. Ryman, 2017, paras 9-10). This suggests that

some Boards do not feel as though presidents are overcompensated, but rather that their high salaries and benefits are reflective of the value they add to the university.

Yet, in spite of the claim by many that presidents are fairly and reasonably compensated and that their high level of compensation reflects the value that they add to universities (e.g., Cotton, 2012; Roediger, 2005), there is very little convincing evidence to support such claims. For instance, the evidence suggesting that the actual *performance* of the university factors into the level of president compensation is mixed. Results of one study indicated that president total compensation was positively related to performance variables such as student SAT scores (Tang, Tang, & Tang, 2000). In contrast, another study found that there was no statistically significant relation between university president compensation and SAT scores (or any other performance variable that was used; Cheng, 2014). Still another study showed that, although some measures of performance were related to president compensation, the results depended on whether the president was employed at a top-tier university (Bartlett & Sorokina, 2005). Specifically, Bartlett and Sorokina (2005) found that SAT scores were only positively related to university president compensation in top-tier universities, yet SAT scores had no effect on compensation at tier 2, 3, or 4 universities. Mixed results have been reported for several other performance variables as well, including endowment (Bartlett & Sorokina, 2005; Huang & Chen, 2013; Parsons & Reitenga, 2014; Pati & Lee, 2016), alumni giving rate (Langbert, 2006; Langbert & Fox, 2013; Sorokina, 2003), and retention rate (Bartlett & Sorokina, 2005; Cheng, 2014; Langbert, 2006). These mixed results make it difficult to determine what, if any, effect university performance has on president compensation.

If university president compensation is determined by the actual performance of the university, the notion that university presidents are compensated appropriately is more credible.

Conversely, if the compensation of university presidents is not responsive to university performance, the concern that presidents are overcompensated would have more credence. This study aims to help settle this controversy. To do this, I conduct a systematic review of primary studies that have examined determinants of university president compensation, including various dimensions of university performance (e.g., financial performance, academic performance, university selectivity). In so doing, this study will be able to identify the factors which influence university president compensation and the extent to which they do so.

The results of this study, by providing an overall assessment of the current literature on the relation between university performance, and other potential determinants, on president compensation, will help to address the continuing controversy regarding the appropriateness of the high levels of president compensation. Thus, the findings of this study could have a significant impact on compensation policies at universities. For instance, if the results indicate that president compensation is not related to university performance, Boards may want to consider ending the practice of providing large compensation increases to university presidents. Furthermore, the decision by some states to limit the amount of a president's compensation that can come from public funds would be supported (e.g., Fla. Stat., 2017). If, however, evidence suggests that presidents are paid commensurate with the performance of the university, state policies which limit the amount of money that university presidents can be paid should be eliminated because the high levels of compensation paid to university presidents is money well-spent.

Background

Executive Compensation

The broader field of executive compensation can be used to gain insight into university president compensation as the field of executive compensation faces many of the same controversies and attempts to answer many of the same questions that exist regarding university president pay. For instance, adjusting for inflation, CEO compensation grew by up to 937% between 1978 and 2016 and the median compensation of CEO from the 350 largest organizations in the U. S. was $15.6 million dollars in 2016 (Mishel & Schieder, 2017). Although average CEO compensation has dropped slightly since its peak in 2000, it is still an average of 270.5 times the compensation of the average worker (Mishel & Schieder, 2017). Perhaps unsurprisingly, 74% Americans believe that CEOs are overpaid compared to average workers (Miller, 2016) while 75% of CEOs and directors of *Fortune* 500 companies feel that CEOs are fairly compensated.

Consequently, there has been extensive investigation of the determinants of CEO compensation (e.g., Devers et al., 2007; Gomez-Mejia & Wiseman, 1997; Tosi et al., 2000; van Essen et al., 2015). Two narrative reviews highlight that firm performance has been the most frequently studied variable in relation with executive compensation (Devers et al., 2007; Gomez-Mejia & Wiseman, 1997). However, both reviews also highlight other variables that have been examined as predictors of executive compensation. For instance, in addition to organizational performance, variables such as CEO behavior, firm size, CEO personal characteristics, CEO role responsibilities, governance influences/failures and equity considerations have been examined. The relation between each of these predictors and executive compensation is supported by several theories, including agency theory (Jensen & Meckling, 1976), managerialism (e.g., Aoki, 1984; Herman, 1981), human capital theory (e.g., Agarwal, 1981; Becker, 1962), social

comparison theory (O'Reilly, Main, & Crystal, 1988), managerial power theory (Bebchuk & Fried, 2004, 2006), neoclassical labor market theory (e.g., Boyer & Smith, 2001), and tournament theory (Lazear & Rosen, 1981). Table 1 provides a brief overview of the aforementioned determinants of executive compensation, example operationalizations of these predictors, and the theories used to support the relations between these variables and executive compensation. Table 1 also includes examples of studies that have examined the relation between each of these determinants (e.g., organizational performance, CEO behavior, firm size, governance influences/failures) and compensation.

Although each of these predictors has received empirical attention, some avenues have been more fruitful than others. Specifically, the relations between firm performance, firm size, governance influences/failures, and CEO compensation have garnered the most attention and empirical support (e.g., Devers et al., 2007; Gomez-Mejia & Wiseman, 1997; Tosi et al., 2000; van Essen et al., 2015). Furthermore, as can be seen from Table 1, three meta-analyses have been conducted on these relations (Deutsch, 2005; Tosi et al., 2000; van Essen et al., 2015). Using agency theory (Jensen & Meckling, 1976) and managerialism (e.g., Aoki, 1984; Herman, 1981), Tosi et al. (2000) examined the effects of organizational performance and organizational size on executive compensation and found that both variables were positively associated with executive compensation, with organizational size accounting for more variance. Another meta-analysis used managerial power theory (Bebchuk & Fried, 2004, 2006) to examine the relation between multiple governance-related variables (e.g., CEO duality[2], Board size, Board independence) and compensation (van Essen et al., 2015). They found that CEO duality, Board size, and Board independence were positively associated with total compensation, whereas ownership

[2]CEO duality refers to a situation where the CEO is also the chairman of the Board (van Essen et al., 2015).

concentration and institutional ownership were negatively related to total compensation. No statistically significant association was found between CEO tenure and total pay. Finally, Deutsch (2005), using agency theory (Jensen & Meckling, 1976), examined the effect of the proportion of outside directors on a firm's Board (one example of a governance-related variable) on executive compensation. He found no statistically significant relation between the proportion of outside directors on a firm's Board and total pay. The remaining predictors (e.g., CEO behavior, CEO personal characteristics, CEO role responsibilities, labor market influences, equity considerations) have received less attention and support (Devers et al., 2007; Fulmer, 2009; Gomez-Mejia & Wiseman, 1997).

Although each of the variables that have been examined in the executive compensation literature (e.g., organizational performance, organizational size, CEO behavior, equity considerations) could potentially influence university president compensation, there has been less extensive examination of the relations between these variables and university president compensation. Table 2 provides an overview of the variables that have been examined, along with example operationalizations and the theories used to support the relations between these variables and university president compensation. As can be seen from the table, none of the existing studies concerning the determinants of *university president* compensation have examined the role of president behavior, president role responsibilities, governance influences/failures, or equity considerations. Rather, studies examining university president compensation have focused on university performance, university size and complexity, and university president personal characteristics (e.g., educational background, gender). Therefore, this systematic review focuses on the influence of these three sets of variables: university

performance, university size and complexity, and president personal characteristics on university president compensation.

In the following sections, I review the ways in which each of these variables (i.e., performance, size and complexity, and personal characteristics) has been operationalized in the existing literature on university president compensation. I also discuss the most frequently used theories that explain why each of these factors is theoretically related to executive compensation (i.e., agency theory, managerialism, human capital theory). In addition, I provide an overview of the current state of evidence regarding the extent to which each of these variables is predictive of executive compensation. Lastly, I highlight how these theories may inform predictions regarding the potential relations between university performance, non-performance institutional characteristics (including size and complexity), president personal characteristics, and university president compensation and discuss existing evidence on these relations. The predicted relations are displayed in Figure 1. This figure suggests that each of these factors (i.e., university performance, non-performance institutional characteristics, president personal characteristics) are positively associated with the level of president compensation. In addition, Figure 1 shows that the extent of the impact of each of these factors on president compensation may be moderated by the type of university (public or private).

In the following sections, I first review performance and its relation to executive compensation. I then consider how non-performance institutional characteristics, including size and complexity, may influence executive compensation. Lastly, I discuss the relation between personal characteristics and executive compensation.

Performance

Operationalizations of University Performance. University performance has been operationalized inconsistently throughout the existing primary studies. This makes it difficult to draw definitive conclusions regarding the nature of the relation between university performance and university president compensation. Depending on the study, performance has been defined and measured as, for instance, total revenue, total enrollment, endowment per student, average SAT score, freshman retention rate, acceptance rate, operating surplus, average professor salary, and/or amount of alumni giving, among many other metrics (e.g., Bai, 2014; Bartlett & Sorokina, 2005; Cheng, 2014). With so many different operationalizations of university performance, it is difficult to determine what *performance* actually is, or consists of, let alone whether or not it affects president compensation. Therefore, I provide an overview of the different operationalizations of university performance before addressing other factors in the current literature that contribute to the difficulty of drawing definite conclusions regarding the relation between university performance and president compensation.

A review of the university president compensation literature reveals that two studies (i.e., Banker, Plehn-Dujowich, & Xian, 2009; Parsons & Reitenga, 2014) created categories into which they sorted the various measures of performance previously used. Banker et al. (2009) had one category of performance (e.g., *university stature*), which included average professor salary, tuition, endowment, and average SAT score[3]. Parsons and Reitenga (2014) sorted their measures into four categories of performance (i.e., *student quality/reputation*, *academic environment*, *resources*, *attract and retain faculty*). The *student quality/reputation* dimension included

[3] Banker et al. (2009) also included one dimension meant to measure the experience level of the president, termed *Experience*. This dimension included measures such as university tenure, president tenure, number of working years, and age.

measures such as SAT score, acceptance rate, the proportion of students who graduated in the top 10% of their high school class, and peer assessment scores. The *academic environment* dimension included the following measures: the proportion of classes with fewer than 20 students, the proportion of classes with greater than 50 students, freshman retention rate, and graduation rate. Enrollment, tuition, and endowment were included in the *resources* dimension. Lastly, the *attract and retain faculty* dimension included average faculty salary. Note that although Parsons and Reitenga created performance categories, their results were reported at the measure-level, not the category-level.

The remaining studies used other measures that could also be sorted into categories, even though the authors of those studies did not do so. Thus, when creating categories for this study, it was necessary to consider the totality of measures used across all studies of determinants of president compensation. During this process it became necessary to create new dimensions, rename dimensions to make them more descriptive and to divide categories used by the previous authors (i.e., Banker et al., 2009; Parsons & Reitenga, 2014) into multiple categories. When creating new dimensions, I considered the broader executive compensation literature (e.g., Devers et al., 2007; Tosi et al., 2000), particularly for the development of a financial performance dimension.

Table 3 presents an overview of measures that I categorized into the various dimensions of performance. As can be seen from the table, a total of seven different performance dimensions were developed: *financial performance, academic and research performance, faculty quality, reputation, academic and research quality, selectivity, and other performance measures*. Although each of these dimensions includes different types of measures (discussed in the following sections), they can all be considered measures of performance because they represent

how well universities are doing at meeting their core goals (i.e., research and teaching) rather than reflecting personal characteristics of the university president or non-performance related institutional characteristics, such as the number of academic departments.

Financial performance. There are 14 measures categorized into the *financial performance* dimension: alumni giving rate, cost efficiency, endowment, equity ratio, fundraising/gifts, grants received, gross margin, investment revenues/returns, bond rating, operating surplus, other revenues, financial risk, total assets, total liabilities (see Table 3)[4]. Each of these measures involve financial resources that the university receives or illustrates how efficiently/effectively the university uses these resources.

For instance, alumni giving rate was categorized into the financial performance dimension. Alumni giving rate is the percentage of graduates who donate to the university post-graduation. Because higher rates of alumni giving are indicative of the number of donations made to the university by alumni, it is reasonable to categorize this measure into the financial performance dimension. Alumni giving rate has been used in several primary studies (e.g., Bartlett & Sorokina, 2005; Langbert, 2006; Sorokina, 2003).

Endowment was also categorized into the financial performance dimension. An endowment represents the amount of wealth available to the university, which could be considered analogous to financial assets in the executive compensation literature. Financial assets are typically considered a measure of performance in the executive compensation literature (Tosi et al., 2000).

[4] Note that each of these measures, as well as those in the remaining categories, could be operationalized as either the level of a measure (e.g., alumni giving rate of 12%) or change in the level of a measure (e.g., a 1.5% increase in alumni giving rate from the previous year). Because all of these measures can be conceptualized this way, no distinctions were made between these two conceptualizations when reviewing the literature.

Another example of a measure of financial performance is gross margin, which is typically measured as revenue minus expenses (Langbert, 2006). Therefore, this measure is similar to profit margin, which is a financial performance measure in the executive compensation literature (Tosi et al., 2000). Table 3 displays the remaining measures that I categorized into the financial performance dimension of university performance.

Academic and research performance. The second performance dimension is *academic and research performance*. Two measures were categorized into this dimension. They include graduation rate and retention rate. The graduation rate represents the percentage of enrolled students who graduate within 150% of the expected amount of time. The retention rate indicates the percentage of first-year students who return for a second year at the university. Because one of the primary goals of universities is to educate students, graduation and retention rates provide an indication of how well universities are performing their duties; therefore, both can be considered measures of academic performance. These rates were used in several studies (Cheng, 2014; Langbert & Fox, 2013; Parsons & Reitenga, 2014; Sorokina, 2003, see Table 3).

Academic and research quality. I identified seven measures of *academic and research quality*: academic support expenses, instructional and research expenses, research and development expenses, faculty resource rank, student/faculty ratio, proportion of classes with less than 20 students, and proportion of classes with more than 50 students. Although the academic performance dimension included student outcomes, such as graduation rate, measures in the academic and research quality dimension reflect the amount of resources that universities devote to student instruction and to research. For instance, academic support expenses are "the sum of all operating expenses associated with activities and services that support the institution's primary missions of instruction, research, and public service" (Cheng, 2014, p. 591). Therefore,

this measure represents how much money universities invest to promote instruction and research. In this way, academic support expenses are similar to instructional and research expenses as well as research and development expenses. These measures were used in two studies (Cheng, 2014; Ehrenberg et al., 2001).

The student/faculty ratio is also representative of the amount of resources universities devote to student education. A high student/faculty ratio indicates that there are more students per faculty member than when the ratio is low, which means that students receive less individualized attention (Friedman, 2016). Therefore, this ratio is an indicator of academic quality, with a lower ratio indicating higher quality.

Faculty quality. One measure was categorized as an indicator of *faculty quality* – faculty salaries. High faculty salaries are used to attract and retain high-quality faculty members (Fisher & Govindarajan, 1992; Kroll, Simmons, & Wright, 1990; Nguyen, 2012). Furthermore, faculty salary is, in large part, determined by the number of top-tier publications that a faculty member has (Gomez-Mejia & Wiseman, 1997). Therefore, higher salaries are indicative of higher quality faculty members, as measured by their research productivity. Because research productive faculty tend to work for more prestigious universities, faculty salaries is likewise then an indicator of the quality of faculty and thus, the performance or prestige of the university. See Table 3 for studies that have used this measure (e.g., Bai, 2014; Cheng, 2014; Monks, 2007).

Reputation. The fourth performance dimension is *reputation* and includes a total of four measures: number of applicants, peer assessment score, whether or not the university was on Princeton review's best college list, and university ranking according to U.S. News and World Report. Each of these measures represents the standing of the university in the academic community which affects students' likelihood of applying. For instance, high school students

would like to apply to universities with good reputations, ceteris paribus (Luca & Smith, 2013); therefore, as a university gains a better reputation, more individuals are likely to apply. Thus, I categorized the number of applicants as a measure of reputation. Number of applicants was used as an indicator of performance in one study (i.e., Cheng, 2014).

Peer assessment scores reflect the perceptions that top academics outside of a given university have about that university's quality. These scores are gathered through *U. S. News and World Report* and allow top academics to provide ratings of other universities that are not easily measured, including faculty dedication to teaching (Morse, 2017). Therefore, such assessment scores reflect universities' reputations. Several studies used such measures (e.g., Langbert, 2006; Langbert & Fox, 2013; Parsons & Reitenga, 2014).

Whether or not a university made it onto *Princeton Review*'s list of best colleges and other college rankings was also considered a measure of reputation. *Princeton Review*'s list of best colleges is based on student responses to subjective questions on a number of issues (The Princeton Review, 2018). When these responses are combined in a holistic manner to determine which universities make it onto the "best colleges" list, they reflect the university's reputation. The same is true for other rankings, as they are also a holistic measure of reputation (Bastedo & Bowman, 2010; Huang & Chen, 2013). These college rankings were used in several studies (e.g., Bai, 2014; He & Callahan, 2017; Saunders, 2007; Tang et al., 2000). Table 3 shows each of the measures in the reputation dimension and the studies in which they were used.

Selectivity. Past research has used several measures of *selectivity*: acceptance rate, admission rating, freshman in the top of their class, percentage of students who graduate in the top 10% of their high school class, SAT scores, and student quality. These measures provide an indication of the quality of the students in the university. For instance, the acceptance rate is a

measure of selectivity because it represents how many students were admitted to the university compared to how many had applied. A higher acceptance rate signifies that a university is less selective about whom gets admitted, whereas a lower acceptance rate suggest that the university is more selective. Higher quality universities are generally more selective because they have greater numbers of applicants and thus, can afford to select only the best students. Therefore, the acceptance rate should be related to the overall quality of the students. This measure was used in four studies (Bartlett & Sorokina, 2005; Cheng, 2014; Langbert & Fox, 2013; Parsons & Reitenga, 2014).

Similarly, the number of students who graduated in the top of their class, the percentage of students who graduated in the top 10% of their high school class, and SAT scores also each provide an indication of the quality of enrolled students. Specifically, universities with a higher percentage of students who graduated in the top of their high school class are expected to have, generally, more high-quality students. Likewise, universities with high average SAT scores are expected to have higher quality students than universities that have lower average SAT scores. These measures were used in several primary studies (e.g., Banker et al., 2009; Bartlett & Sorokina, 2005; Cheng, 2014; Parsons & Reitenga, 2014; Sorokina, 2003). Table 3 displays the remaining measures that I categorized into the selectivity dimension of university performance.

Other performance measures. Three measures were categorized in the *other performance measures* dimension, including student service expenses, environmental sustainability score, and social sustainability score (see Table 3). The measures in this category either did not fit into the other dimensions or were not clearly defined. For instance, although research output could be a measure of academic and research performance, it was not clearly defined by He and Callahan (2017), and therefore, was categorized into the “other” dimension.

Although student service expenses were clearly defined by Cheng (2014), this measure did not fit into any other dimension. Specifically, student service expenses reflect the amount of money spent to "contribute to students' emotional and physical well-being and to their intellectual, cultural, and social development outside the context of the formal instruction program" (Cheng, 2014, p. 591). Because these expenses are not specifically directed at instruction or research, they do not fit into the academic and research quality dimension. Yet, this measure does represent part of the investment universities make into their students, and, therefore, may still influence president's compensation. Similarly, although both environmental sustainability and social sustainability scores were defined by Pati and Lee (2016) and were considered by these authors to be measures of performance, they do not fit into any of the previously discussed performance dimensions.

Summary. The preceding discussion and an examination of Table 3 demonstrates the diversity of university performance measures that have been used in the university president compensation literature. With so many different performance dimensions and measures, it is difficult to determine what performance is and how it is best measured. This increases the difficulty in drawing conclusions regarding the relation between university performance and university president compensation. In the next section, I discuss why a relation between performance and compensation may be expected.

Overview. Performance is the most frequently studied variable related to compensation (Devers et al., 2007; Finkelstein & Hambrick, 1996). Although there are several theories that can be used to justify a relation between performance and compensation (e.g., equity theory [Adams, 1965]; expectancy theory [Vroom, 1964]), in the context of executive compensation (including university president compensation), agency theory (e.g., Jensen & Meckling, 1976) is the most

prominent one. In fact, an examination of the three meta-analytic reviews on executive compensation (Deutsch, 2005; Tosi et al., 2000; van Essen et al., 2015) and two narrative reviews (Devers et al., 2007; Gomez-Mejia & Wiseman, 1997) shows that equity theory and expectancy theory are rarely mentioned. Although each review addresses agency theory in depth, equity theory is only mentioned twice and expectancy theory is only mentioned once across all of the five papers reviewed. Furthermore, neither equity theory nor expectancy theory are mentioned in any of the primary studies that have examined determinants of university president compensation. Therefore, I will provide a relatively thorough explanation of agency theory in the following sections.

Agency theory. Agency theory is relevant to situations where one individual (the principal) delegates work to another individual (the agent; Jensen & Meckling, 1976). This type of relationship, although possible in any situation where work is delegated, is particularly relevant to most modern organizations. Ownership in modern organizations is frequently separated from control of the organization (Berle & Means, 1932). Stated differently, the owners of most organizations are now shareholders (i.e., principals) and the heads of organizations are professional managers, also called executives (i.e., agents), hired by the owners of the firm, or their representatives (i.e., the Board of Directors). This has the potential to lead to several problems. Agency theory attempts to addresses two of these problems (1) the agency problem; and (2) risk sharing (Eisenhardt, 1989).

The agency problem. The first problem, referred to as the agency problem, exists because principals and agents have conflicting goals resulting from the desire to maximize one's own benefits (Eisenhardt, 1989; Jensen & Meckling, 1976). In essence, principals' and agents' goals are often diametrically opposed. For instance, principals generally want agents to work as hard as

possible to increase the success of the organization. Agents, however, want to pursue their own goals, even if actions taken in the pursuit of those goals may not be in the best interest of the organization. In addition to conflicting goals, there is also information asymmetry between the principals and agents (Eisenhardt, 1989). This exists because agents have more direct access to relevant organizational information than principals do just by the fact that principals have delegated the work. Although there are many potential issues stemming from the agency problem, the two most common ones are *adverse selection* and *moral hazard* (e.g., Eisenhardt, 1989; Shapiro, 2005). Both issues result from the conflicting goals of principals and agents and information asymmetries between the parties; however, they arise at different stages of the contracting process.

Adverse selection. Adverse selection occurs during the selection stage where a principal is selecting the agent from a pool of potential candidates (Eisenhardt, 1989). At this stage, the principal would like to delegate work to the most qualified candidate who will ultimately provide the most benefit to the principal. Each potential agent would like to be awarded the work because it is associated with some other desirable outcome (e.g., a higher paycheck) (Eisenhardt, 1989; Shapiro, 2005). Therefore, while the principal is trying to determine a potential agent's qualifications as accurately as possible, each potential agent is trying to show himself or herself in the best possible light, regardless of whether it is an accurate portrayal. Unfortunately for the principal, it can be difficult to know which agent is best qualified because the principal does not have complete access to information and it may be difficult to verify information presented by the potential agents (Eisenhardt, 1989). Considering the information asymmetry between the principal and potential agents, and the difficulty that the principal may have in verifying information provided by potential agents, it is possible that potential agents misrepresent their

level of experience and capabilities (Eisenhardt, 1989; Shapiro, 2005). Thus, the principal must decide which potential agent to hire based on incomplete, and potentially inaccurate, information. If the position an agent is being hired for is that of a CEO of a large organization, it presents a very costly problem. In fact, *Forbes* estimates that it can cost up to 52 million dollars to replace a bad CEO hire (Stoddard & Wyckoff, 2009).

Moral hazard. Even if the best candidate is chosen, moral hazard can still be an issue. Moral hazard occurs because of conflicting goals between the principal and agent (Eisenhardt, 1989; Shapiro, 2005). For example, a principal wants an agent to work very hard to maximize beneficial outcomes for the principal (e.g., profit, long-term health of the organization), whereas the agent wants to work as little as possible, but still receive high levels of compensation. Furthermore, there is information asymmetry between the parties (Eisenhardt, 1989; Shapiro, 2005). Specifically, the principal does not know if the agent is working hard and pursuing the principal's goals, or, if instead, the agent is shirking his or her duties and pursing self-interested goals at the expense of the success of the organization. This is problematic because, for example, if a CEO's compensation is fixed, regardless of the performance of the organization, the compensation risk is squarely on the principal. Stated differently, in this instance, regardless of whether the organization's performance or market value drops significantly (to the financial detriment of principals) or increases significantly (to the financial benefit of principals), the CEO's compensation remains the same. Thus, because there is no risk to the CEO's compensation, and principals do not have access to all relevant information, the CEO may choose to pursue his/her own goals without fearing any negative financial consequences. This can be very costly for organizations. For instance, CEO shirking (as measured by the amount of

golf played) has been shown to reduce the market value of a firm's assets by up to 10% (Biggerstaff, Cicero, & Puckett, 2016).

Risk sharing. The second problem that agency theory addresses is financial risk sharing. This problem occurs because principals and agents may be comfortable with different levels of financial risk, and therefore, may prefer different policies and actions (Dalton, Hitt, Certo, & Dolton, 2007; Eisenhardt, 1989; Shapiro, 2005). The general assumption is that agents are more risk-averse than principals because principals are able to diversify their investments (i.e., they disperse their level of risk), while agents are not able to spread out their risk as they are only working for one organization (Dalton et al., 2007; Eisenhardt, 1989). The risk sharing problem is particularly important to consider when developing ways to manage agency problems, such as adverse selection and moral hazard, because the ways in which these problems are mitigated (discussed in the next section) often involve the transfer of financial risk from the principal to the agent. Given that agents are generally risk averse, they may engage in undesirable behaviors to mitigate this increased risk (Shapiro, 2005). For instance, CEOs may manipulate the earnings of their organization to artificially inflate the value of their stock options (Zhang, Bartol, Smith, Pfarrer, & Khanin, 2008). Therefore, it is important to consider the impact of this transfer of risk when determining the optimal way to manage agency problems.

Managing the agency problem. There are two ways to manage the agency problem. The first way to deal with this problem is to reduce information asymmetries by increasing the monitoring of the agent (Eisenhardt, 1989; Jensen & Meckling, 1976). Corporations attempt to do this by having a Board that is supposed to monitor the CEO. Monitoring may have two benefits. First, monitoring is intended to allow principals to have access to the same information that the agent has and to more accurately determine what the agent is actually doing. Second,

there is evidence to suggest that, just by monitoring managers, they perceive themselves to be more accountable, which tends to increase their level of performance (Mero, Guidice, & Werner, 2014). However, monitoring may not always be feasible, and is sometimes virtually impossible, as it may be too costly and/or time consuming for principals. Also, if Board members do not have the necessary expertise, they may not be able to effectively monitor the CEO. Therefore, monitoring is often supplemented with incentives.

Using incentives allows principals to bring the goals of agents into alignment with their own goals (Dalton et al., 2007; Eisenhardt, 1989; Jensen & Meckling, 1976). For example, a CEO's compensation package may include stocks and stock options. Because the ultimate value of these options depends on the market value (e.g., stock market performance) of the organization, the CEO should, theoretically, work hard and make good management decisions to increase the value of the stock as it will increase his/her wealth. This is also the goal of the principal (assuming the stock price is due to genuine high levels of performance rather than by manipulation by the agent). In essence, by using stocks and stock options, agents are becoming principals; thus, their goals are, theoretically, perfectly aligned (Dalton et al., 2007; Eisenhardt, 1989; Jensen & Meckling, 1976). However, agents are generally risk averse. Therefore, because there are aspects of the organization's performance which are out of their control (e.g., unanticipated setbacks or changes in laws that negatively affect an organization's stock price), it is expected that agents will be less comfortable with tying their compensation to organizational performance (Eisenhardt, 1989). To balance out this increased risk to the agent, principals may use a combination of compensation methods (e.g., fixed salary, stocks, stock options, bonuses). However, although there may be stable components to the agent's compensation, it is still beneficial to have part of the agent's total compensation tied to performance (Eisenhardt, 1989).

In addition to the consideration of agents' risk tolerance, there are two other factors that influence the extent to which compensation is tied to performance: task programmability and outcome measurability (Eisenhardt, 1985, 1989). Task programmability is the extent to which the correct course of action for high performance is known (Govindarajan & Fisher, 1990). Generally, task programmability of any management position, including a CEO or university president, is low because it is difficult to know what the *best* course of action is in any given situation. When task programmability is low, agency theory suggests that it is best to tie compensation to organizational performance more strongly (Eisenhardt, 1989). This is due to the fact that monitoring is virtually impossible when task programmability is low because one does not know what to monitor. Further, because the best behavior is not always known, incentives may not be able to be effectively tied to behavior, and thus, must be tied to performance outcomes. In sum, agency theory suggests that because the job of executives has very little task programmability, their pay should be more strongly tied to organizational performance.

It is also important to consider outcome measurability, which refers to the extent to which outcomes (e.g., performance) can be easily and accurately measured (Anderson, 1985; Eisenhardt, 1985, 1989). Outcome measurability at the individual level is unlikely to be high for executives as it can be difficult to quantify their individual performance. Furthermore, some results of the executives' decisions and action may not be realized for a long period of time (i.e., they have a long time horizon; Eisenhardt, 1989). When outcome measurability at the individual level is low, individual performance tends to have a minimal effect on compensation, but rather compensation will be relatively stable and mainly based on a fixed salary (rather than having a large performance-based component) (Baker, 1992; Eisenhardt, 1989). Alternatively, when outcome measurability at the individual level is low, principals may choose to tie agents'

compensation to performance at a higher level (e.g., at the organizational level, especially organizational performance). Performance at this higher level is easier to measure because there are commonly accepted metrics used to quantify performance (Richard, Devinney, Yip, & Johnson, 2009; Tosi et al., 2000). Therefore, agency theory suggests that when outcome measurability at the individual level is low, an agent's compensation may be more strongly tied to performance at a different level (e.g., organizational performance). However, because agents may not be able to directly and fully control performance at a higher level of abstraction, their compensation is likely to include non-performance components (e.g., tenure) as well as performance components (e.g., profit).

Agency theory in the context of for-profit executive compensation. Agency theory is frequently used as the theoretical basis for examining the relation between organizational performance and CEO compensation (e.g., Devers et al., 2007; Tosi et al., 2000). On its face, agency theory appears to suggest that "outcome based [i.e., performance based] compensation contracts solve the agency problem" (Bloom & Milkovich, 1998, p. 285; see also, Baker, Jensen, & Murphy, 1988). This statement highlights how the use of incentives, particularly for executives whose positions have low levels of task programmability, helps align the interests of executives and owners, represented by the Board. However, this statement does not consider the influence of outcome measurability on the feasibility of using performance-based compensation (which, in this context, refers to using incentives to align the principals' and agents' goals). As previously stated, when outcome measurability is low, it is expected that performance-based compensation will be used less frequently (Eisenhardt, 1985, 1989). However, Boards may also choose to use a performance measure, or set of measures, at a higher level of abstraction (i.e., organizational performance) to set CEO compensation. In the executive compensation literature,

there are commonly accepted metrics of organizational financial performance, including net income, profits, return on equity, return on assets, and stock price (Richard et al., 2009; Tosi et al., 2000). Therefore, one may expect a positive association between organizational performance and CEO compensation. Yet, it would be unlikely for organizational performance to account for the majority of CEO compensation because the CEO does not have complete control over the performance of the organization. If CEO compensation were to be completely determined by organizational performance, CEOs may not see their compensation as fair and, because their compensation is at greater risk, they may engage in undesirable behaviors (Zhang et al., 2008). Taken together, this suggests that organizational performance is likely related to executive compensation, but, due to risk considerations, it may not comprise most of the compensation package.

Evidence from the executive compensation literature generally supports this. For instance, Jensen and Murphy (1990) found that CEO compensation was related to one measure of organizational performance (i.e., stockholder returns), albeit weakly. Specifically, they found that for every $1,000 in increased stockholder returns, CEO compensation grew by $3.25. However, some more recent studies, also relying on stock market indicators, have found a stronger relation between executive compensation and performance (Aggarwal & Samwick, 1999, 2003; Hall & Liebman, 1998; Nyberg, Fulmer, Gerhart, & Carpenter, 2010). In fact, Aggarwal and Samwick (2003) found that CEO compensation grew by $13.78 for every $1000 increase in shareholder wealth, which is more than four times greater than the amount found by Jensen and Murphy (1990). Importantly, however, the strength of the relation between executive compensation and performance may depend on the design (e.g., mix of stocks and stock options provided) of the CEO's compensation package (Zhang et al., 2008).

Considering other measures of financial performance besides stockholder returns, a meta-analysis found that short-term return-on-equity accounted for 4.5% of the variance in CEO compensation, whereas return-on-assets only accounted for 1.4% of the variance in CEO compensation (Tosi et al., 2000). Thus, Tosi et al. (2000) found that different measures of performance had distinct effects on future compensation. Considering all of the measures they included in their study, however, they found that organizational performance only accounted for about 5% of the variance in CEO compensation. Furthermore, examining only the changes in performance and compensation, change in performance only accounted for about 4% of the variance in changes in CEO compensation (Tosi et al., 2000). Taken together, evidence from the executive compensation literature seems to support the notion that organizational performance does influence executive compensation. However, the influence of performance on executive compensation seems to be relatively minor.

***Agency theory in the context of university president compensation*.** Considering the predictions of agency theory and the results of empirical studies on executive compensation (e.g., Aggarwal & Samwick, 2003; Jensen & Murphy, 1990; Tosi et al., 2000) helps one make predictions regarding the potential association between university performance and university president compensation. For instance, as with executives in the for-profit sector, task programmability for university presidents is likely to be low because it is difficult to know what the best course of action will be in any given situation. This suggests that university president compensation will be associated with university performance. Outcome measurability for university presidents' individual performance is also likely to be low; therefore, Boards may choose to use university-level performance to determine president compensation, rather than individual-level performance. Yet, as this results in more risk for university presidents, it is

unlikely that the majority of president compensation would be performance-based. This suggests that university president compensation will be related to university performance, albeit weakly.

However, there are two additional considerations that are worth addressing. First, although outcome measurability at the individual level is similarly low for university presidents and for-profit executives, it may be easier to measure organizational performance in for-profit settings than in university settings. Although, there are commonly accepted metrics of organizational performance in the for-profit setting (Richard et al., 2009; Tosi et al., 2000), there are no universally agreed-upon metrics of university performance (Langbert, 2006; Oster, 1998; Sorokina, 2003). This is evidenced by the highly varied and inconsistent operationalizations of performance across primary studies assessing the impact of university performance on president compensation (see Table 3). Therefore, it may be, at least initially, more difficult to measure performance in the context of higher education. Yet, despite this initial difficulty, once Boards decide how they want to measure performance, it is easy to obtain the necessary data. In fact, universities are required to report extensive amounts of data to the U. S. Department of Education's National Center for Education and Statistics ("Higher Education Act of 1965", 1965). Therefore, a positive association is still expected between university performance and university president compensation.

The second consideration is related to whether moral hazard even exists in universities. It has been suggested that the assumption of goal misalignment, which is a central tenet in agency theory and the concept of moral hazard (Dalton et al., 2007), is unlikely to be as relevant in nonprofit organizations (Bai, 2014; Handy & Katz, 1998; Jobome, 2006). For instance, Handy and Katz (1998) proposed that presidents of nonprofit organizations are more willing to accept lower compensation (at least by comparison to for-profit organizations) because they are

intrinsically motivated to perform to the best of their ability due to their commitment to the goals of the organization (see also Bai, 2014). If this is the case, the use of performance-based compensation would be less desirable. Stated differently, if agents are intrinsically motivated, moral hazard may not be an issue because the goals of the principals and agents are already aligned. If one assumes that tying pay to performance undermines intrinsic motivation (Deci, Koestner, & Ryan, 1999), it would then be unwise to make compensation sensitive to organizational performance because this would result in decreased levels of intrinsic motivation. However, there is no robust evidence to support the claim of an undermining effect (List, Kepes, & McDaniel, 2017).

Yet, although it may not harm intrinsic motivation, linking compensation to performance may still be undesirable if university presidents are intrinsically motivated. In the absence of goal misalignment, performance-based compensation unnecessarily transfers risk to the risk-averse agent (i.e., by making the agent's compensation variable and partially outside of the agent's control; Eisenhardt, 1989). When risk is high, individuals are more likely to engage in behaviors to artificially increase their level of compensation (Shapiro, 2005; Zhang et al., 2008). Therefore, if intrinsic motivation is high and there is no goal misalignment, using performance-based compensation may have negative effects on long-term organizational performance. Despite this potentiality, it is important to note that although many have suggested that executives of nonprofit organizations, including universities, are intrinsically motivated (e.g., Bai, 2014; Handy & Katz, 1998; Jobome, 2006), there is no empirical evidence to support this claim.

Furthermore, even if these executives *are* intrinsically motivated, there is still likely to be goal misalignment between principals and agents in the university context. Unlike in the context of a for-profit corporation where the primary goal is to increase shareholder value, university

presidents have many potential stakeholders, including members of the Board of Visitors/Trustees/Regents, students, faculty members and other employees, alumni, the federal, state, and local governments. (Ehrenberg et al., 2001). It is highly unlikely that members from each group of these constituents have the same goals. Therefore, although the Board may, for all intents and purposes, function as the principal in this relationship, what they value as high performance may not be what other stakeholders' value. Thus, regardless of whether university presidents are intrinsically motivated or not, it is unlikely that their goals will perfectly align with the goals of all members of the Board and all other stakeholders. Therefore, Boards may still prefer the use of performance-based compensation to help align their goals with the ones of the university president.

Taken together, the goal misalignment that is likely to exist in university contexts as well as the low level of task programmability suggests that university performance will be positively related to university president compensation. Considering outcome measurability, the situation is likely to be similar to the for-profit context. Specifically, because linking compensation to university performance results in more risk for presidents, performance-based compensation components are unlikely to comprise the majority of the compensation package. However, a positive association is still expected. Stated formally,

Hypothesis 1: *University performance will be positively related to president compensation.*

As previously mentioned, it is possible that there are differences between public and private universities in terms of how university performance influences university president compensation. For instance, public and private university presidents may have, on average, different levels of goal misalignment with their respective Boards. Although no study has

assessed the level of intrinsic motivation among private and public universities, public university presidents *may* be more intrinsically motivated than private university presidents. Public university presidents earn, on average, $178,125 less per year than their private university counterparts (Parsons & Reitenga, 2014). Given the size of this discrepancy, one could make the argument that public university presidents must be intrinsically motivated if they are willing to serve as the president of a public university. If this is, in fact, the case, the goals of public university presidents would be more aligned with their Boards than private university presidents. Thus, moral hazard would be less of an issue for public universities, which, in turns, results in less performance-based compensation. Based solely on this argument then, one would expect the relation between university performance and university president compensation to be stronger in private universities than in public ones.

However, only three studies have *directly* compared the effects of various measures of performance on university president compensation by university type (Huang & Chen, 2013; Monks, 2007; Parsons & Reitenga, 2014). Two of these studies found a positive association between university performance and university president compensation for both private and public universities (Monks, 2007; Parsons & Reitenga, 2014), whereas one found an association between performance and compensation in private universities, but not public ones (Huang & Chen, 2013). Unfortunately, it is difficult to determine if there are differences between public and private universities based on the few number of studies that have made these direct comparisons. Therefore, I ask,

> ***Research question 1:*** *Are there differences in the strength of the relation between university performance and university president compensation in private and public universities?*

The relation between for-profit organizational performance and executive compensation has primarily focused on financial performance indicators (e.g., Aggarwal & Samwick, 2003; Jensen & Murphy, 1990; Nyberg et al., 2010; Tosi et al., 2000), which makes sense because the primary goal of for-profit organizations is to make money. However, as can be gleaned from Table 3, there are several other non-financial indicators of performance in the nonprofit educational context. Thus, it is possible that, even if president compensation is related to university performance, the strength of this relation may differ across different performance dimensions. For instance, given the risk associated with performance-based compensation, Boards may base compensation on measures of performance that are more directly under the control of the university president. This would suggest that performance dimensions such as academic and research quality as well as selectivity are likely to have the strongest relation with future president pay. Measures in these dimensions may be easier for a president to impact since they can, for example, hire more instructors to reduce class sizes (academic and research quality) or raise SAT score requirements (selectivity). In addition, presidents may have control over other specific measures (e.g., fundraising). In fact, fundraising is considered a primary responsibility and an absolutely essential part of the university president role (Cote, 1985). Thus, the relation between fundraising performance and university president compensation may be stronger than it is for other performance measures. In fact, a recent survey of university presidents indicated that fundraising takes up a majority of university presidents' time (Gagliardi, Espinosa, Turk, & Taylor, 2018). Alternatively, Boards may also choose to focus on performance measures that are more aligned with the mission of a university and its continued success, regardless of the compensation risk to the university president. If this is the case, one would expect that the

relation between performance dimensions such as financial performance and academic and research performance would have the strongest association with future president pay.

However, despite these reasons to believe that there are differences in the strength of the association between university performance and university president compensation depending on the performance measure used, it is difficult to determine what those differences are from the primary studies. Therefore, one goal of this systematic review is to determine if the various dimensions of performance, on average, have disparate effects on university president compensation. Furthermore, given the potential differences between public and private universities (see Research question 1), university type may influence the relative influence of the various performance dimensions on executive compensation as well. Stated formally, I ask:

> ***Research question 2(a):*** *What is the relative influence of the seven different performance dimensions on executive compensation?* ***(b)*** *Is the pattern of strength of these relations different between public universities and private universities?*

Non-performance Institutional Characteristics

Operationalizations of Non-performance Institutional Characteristics. Now that I have provided a review of organizational performance as a determinant of executive compensation, I discuss non-performance institutional characteristics, including organizational size and complexity. In the broader executive compensation literature, organizational size includes measures such as number of employees, assets, or sales, whereas organizational complexity refers to the degree of diversification in the organization, such as the number of business lines, plants, departments, etc. (Finkelstein & Hambrick, 1989; Nagar, Nanda, & Wysocki, 2003). Table 4 presents an overview of how these, and other measures of non-performance institutional characteristics, have been operationalized in primary studies of

determinants of university president compensation. The non-performance institutional characteristics factor includes three dimensions: *size*, *complexity*, and *other institutional characteristics*.

***Size*.** Nine previously used measures were categorized into the *size* dimension: enrollment, total expenditures, institutional support expenses, administration expenditures, other expenditures, number of employees, number of administrators, total revenue, and tuition revenue. Enrollment was used as a measure of performance in some studies (Cheng, 2014; Langbert & Fox, 2013; Parsons & Reitenga, 2014), but as an indicator of university size in others (Banker et al., 2009; Huang & Chen, 2013; Langbert, 2006). To determine what category enrollment may belong to, I considered the executive compensation literature where number of sales is used as an indicator of firm size (Tosi et al., 2000). Because enrollment reflects the number of students using the services provided by the university (i.e., taking classes), it can be considered analogous to sales and was, therefore, categorized as a measure of size rather than performance. Enrollment was used in several primary studies (e.g., Bai, 2014; Huang & Chen, 2013; Saunders, 2007; Tang et al., 2000).

Total revenue and tuition revenue can each be considered similar to sales and/or revenue in the executive compensation literature. Sales and revenue are both considered indicators of size (Tosi et al., 2000). Therefore, total revenue and tuition revenue are both indicative of university size. These measures have been used by several researchers (e.g., Bai, 2014; Langbert, 2006; Monks, 2007; Parsons & Reitenga, 2014; Pati & Lee, 2016).

***Complexity*.** A total of three previously used measures were included in the *complexity* dimension: university tier, Carnegie classification, and number of degree-granting programs. All of these measures are supposed to reflect the difficulty that the president is likely to encounter

due to the complex nature of the university. For instance, university tier and Carnegie classification provide information that indicates whether a university is undergraduate-focused or if it is a doctoral-granting research institution. More research-intensive universities, including doctoral-granting institutions, are considered more complex environments whereas baccalaureate colleges, or universities that focus mostly on undergraduate education, are typically considered less complex (Parsons & Reitenga, 2014). These measures were used by several researchers (see Table 4; e.g., Bartlett & Sorokina, 2005; He & Callahan, 2017; Sorokina, 2003; Tang et al., 2000). The number of degree-granting programs was only used in one study and can be considered a measure of complexity because fewer degree-granting programs are likely easier to manage than many (see Table 4; Huang & Chen, 2013).

Other institutional characteristics. The last dimension contains measures that did not fit into either of the previous dimensions. A total of 17 measures were categorized as *other institutional characteristics*: percent of aliens enrolled, percent of students who receive financial aid, percent of students who receive grant aid, average graduate tuition, ratio of administrative staff, ratio of instructional and research staff, average graduate tuition, tuition cost, net tuition cost, tuition discount rate, presence of business school, presence of law school, presence of medical school, religious affiliation, member of the Council for Christian Colleges and Universities, geographic location, size of surrounding community, and year the university was founded. Each of these measures is a characteristic of an institution but does not fall into the size or complexity dimensions. For instance, although the presence of a business, law, or medical school *may* reflect complexity, if the school is just one of a few in the university, these measures are not necessarily indicative of complexity. Similarly, neither religious affiliation nor whether or not the university is a member of the Council for Christian Colleges and Universities can be

categorized as an indicator of size or complexity. Yet, it is still possible that these variables will influence university president compensation. For instance, evidence suggests that religious institutions provide compensation packages that are, on average, less generous than non-religious institutions (Langbert, 2006). This is consistent with the notion that some university presidents may be intrinsically motivated, and thus, aligning compensation with university performance may be unnecessary (Bai, 2014; Handy & Katz, 1998). Table 4 includes a list of the studies that included these measures in their studies (e.g., Cheng, 2014; Langbert, 2006).

Overview. Both size and complexity variables have been shown to affect executive compensation (e.g., Finkelstein & Hambrick, 1989; Gomez-Mejia & Wiseman, 1997; Tosi et al., 2000; van Essen et al., 2015). A relation between size/complexity and executive compensation is predicted by both the managerialist perspective (e.g., Tosi et al., 2000) and human capital theory (e.g., Agarwal, 1981; Becker, 1962), although the reasoning for the association between these variables is different depending on the theory used. Therefore, the following sections will provide an explanation of both theories/theoretical perspectives and highlight evidence provided by the executive compensation literature on the relation between organizational size/complexity and compensation.

Managerialism. The managerialist perspective is related to agency theory in that it highlights many of the same issues addressed by agency theory, namely, goal misalignment and a risk-averse agent[5]. However, unlike agency theory, which addresses how principals deal with agency problems (e.g., by using incentives to align the goals of principals and agents), the managerialist perspective addresses how agency problems create power imbalances that agents can use to influence their compensation. For instance, executives may be able to use their power

[5] Note that the "principal" and "agent" terminology is typically not used outside of agency theory, but I use it here for consistency and clarity of argument.

to influence the Board to base their compensation on organizational size or complexity, which is less risky for them (i.e., results in less volatility in CEO compensation) than organizational performance.

The key concept within managerialism is that of entrenchment (e.g., Combs & Skill, 2003). Entrenchment occurs when agents are able to use their power to pursue their own self-interest, rather than the goals of the principals because they have power over the Board (i.e., the de facto principals; Combs & Skill, 2003; Grabke-Rundell & Gomez-Mejia, 2002). There are many reasons why an executive can become entrenched. For instance, shareholders have become increasingly dispersed such that no individual shareholder has enough power to effectively monitor executives (Berle & Means, 1932; Grabke-Rundell & Gomez-Mejia, 2002). Furthermore, because there are so many shareholders, it is expected that individual ones will not perceive it to be worth their effort to attempt to monitor executives (Grabke-Rundell & Gomez-Mejia, 2002). Although agency theory suggests that Boards can account for this by monitoring executives and using incentives, the managerialist perspective proposes that the lack of monitoring by these dispersed shareholders allows executives to have more power than they would have otherwise, which leads to entrenchment (Grabke-Rundell & Gomez-Mejia, 2002).

In addition to shareholder dispersion, executives can become entrenched when Board members do not maintain their objectivity. Although Boards are supposed to exert their influence over executives to ensure they are not shirking their duties, they are often closely allied with CEOs. This occurs for a variety of reasons. For instance, CEOs are able to provide benefits to Board members in the form of compensation, charitable contributions, continued seats on the Board, etc. (Main, O'Reilly, & Wade, 1995; van Essen et al., 2015). Therefore, Board members

who want to receive any of these benefits are likely to design the compensation package in a manner which benefits the CEO (Bebchuk & Fried, 2006; Nguyen, 2012; van Essen et al., 2015).

Thus, the result of entrenchment, occurring for any reason (e.g., shareholder dispersion, alignment between the CEO and the Board), is that the CEO has increased power which can be used to influence compensation strategy and decisions. Because, like agency theory, the managerialist perspective assumes that agents are risk averse, it is expected that entrenched CEOs will use their power to decrease the sensitivity of their pay to organizational performance (Tosi et al., 2000). Rather, CEOs would prefer to have their compensation tied to measures such as organizational size and complexity (Tosi et al., 2000). Organizational size/complexity is preferred by CEOs over organizational performance as the primary determinant of their compensation because it is less risky for them than tying their compensation to organizational performance (Finkelstein & Hambrick, 1989; Grabke-Rundell & Gomez-Mejia, 2002; Kroll et al., 1990; Tosi et al., 2000). Specifically, CEOs have substantially more direct control over the size and complexity of their organization than they do over its performance, especially market-based measures of performance (Finkelstein & Hambrick, 1989; Grabke-Rundell & Gomez-Mejia, 2002; Kroll et al., 1990; Tosi et al., 2000). Additionally, organizational size and complexity are less variable than organizational performance, so CEO compensation is more likely to be stable (Kostiuk, 1990; Tosi et al., 2000). Taken together, this means that using organizational size and complexity as the primary determinants of executive compensation would result in CEO's compensation being less risky and volatile.

Human capital theory. In addition to CEOs' preference to base compensation on organizational size/complexity, Boards may also prefer this because it is easy to justify a link between compensation and organizational size/complexity because larger and more complex

organizations arguably require higher levels of human capital (Agarwal, 1981; Becker, 1962; Combs & Skill, 2003; Fulmer, 2009). Human capital is the collection of individuals' knowledge, skills, and abilities that contribute to their productivity (Agarwal, 1981; Becker, 1962; Fulmer, 2009). According to human capital theory, pay differences between individuals can be traced to differences in their respective levels of human capital (Agarwal, 1981; Becker, 1962). Theoretically, leading a large and complex organization requires a high level of human capital. Thus, it can be argued that the fair pay associated with leading such an organization is higher than the one associated with leading a smaller, less complex organization (Agarwal, 1981; Becker, 1962; Fulmer, 2009; Kostiuk, 1990). This is important because there is a theoretical link between fairness perceptions and effort (e.g., equity theory [Adams, 1965]; and the fair wage-effort hypothesis [Akerlof & Yellen, 1990]). Specifically, it is expected that if individuals feel that they are not receiving fair compensation for their effort, they will reduce the amount of effort they exert in the future (Adams, 1965; Akerlof & Yellen, 1990). Stated differently, when compensation is perceived to be too low, the opportunity cost of engaging in work-related behaviors, rather than other desired behaviors, increases. This may result in individuals engaging in those other behaviors rather than work-related behaviors. Therefore, it may be desirable for Boards to make executive compensation commensurate with the size and complexity of the organization. This should avoid any decrease in effort by the CEO in response to perceived inequities in the level of human capital required for the position and the associated compensation.

Managerialism and human capital theory in the context of executive compensation. Both managerialism and human capital theory have been used extensively within the context of executive compensation to justify a relation between organizational size/complexity and

executive compensation (e.g., Combs & Skill, 2003; Tosi et al., 2000). Given the dispersion of most shareholders (i.e., the lack of influence of shareholders on Board decisions due to not voting their shares) and the closeness between the Board and the CEO in many organizations (Bebchuk & Fried, 2006; Nguyen, 2012; van Essen et al., 2015), it is likely that CEOs will be able to exercise their influence to align incentives to the size and/or complexity of the organization. Furthermore, because of the relation between perceived fairness and effort (Adams, 1965; Akerlof & Yellen, 1990), it is also likely that Boards will compensate CEOs based on the required level of human capital for the CEO position (judged on the basis of organizational size and complexity; Agarwal, 1981; Becker, 1962; Combs & Skill, 2003). The relation between organizational size and executive compensation has been established meta-analytically. In fact, meta-analytic research indicates that organizational size is by far the strongest predictor of executive compensation; it accounts for about 40% of the variance in executive compensation (Tosi et al., 2000). A positive association has also been found between organizational complexity and executive compensation (e.g., Finkelstein & Hambrick, 1989).

Given the difficulties associated with monitoring CEOs and measuring their performance (as discussed in the agency theory section), it is likely that the relation between organizational size/complexity and executive compensation is stronger than the relation between organizational performance and executive compensation. This notion has also received support. Although organizational size accounted for around 40% of the variance in executive compensation, organizational performance only accounted for about 5% of the variance (Tosi et al., 2000). Focusing on just the change in size and compensation, it was found that approximately 5% of the variance in change in compensation was related to change in organizational size (roughly 4% was related to change in organizational performance; Tosi et al., 2000).

Managerialism and human capital theory in the context of university president compensation. Considering the managerialist perspective, human capital theory, and evidence from the broader literature of executive compensation, one may anticipate a positive association between university size/complexity and university president compensation. Specifically, because there are so many different constituencies that university presidents are beholden to (Ehrenberg et al., 2001), but little direct way for these constituents to hold university presidents accountable, it is likely that university presidents will have considerable power. This would allow them to become entrenched and, ultimately, affect the way in which they are compensated (Bebchuk & Fried, 2006). Because a central job of university presidents is to set the strategic vision of the university (Cote, 1985), they have a fair amount of control over the size and complexity of their organization. For instance, they can develop more online programs and thus, enroll more students, which increases the size of the organization, or they can decide to expand the number of departments and/or degree-granting programs, which results in more organizational complexity. Therefore, it is possible that university presidents may also prefer to tie their compensation to the size/complexity of their university. However, it is also possible that any observed relation between university size/complexity and university president compensation is due to the level of human capital needed to lead the university. Stated differently, rather than any observed relation between university size/complexity and university president compensation being wholly due to university president entrenchment, it may also be reflective of the required level of human capital.

As none of the primary studies examining university president compensation have attempted to assess the reasoning for any potential relation between university size/complexity and university president compensation (i.e., entrenchment versus reflecting the amount of human

capital needed to lead the university), it will not be possible to make this determination in this study. However, both theories predict a positive association between university size and complexity and university president compensation. Furthermore, just as with the executive compensation (explained previously), I expect that university size/complexity will account for more variance in university president compensation than university performance. Stated formally,

> ***Hypothesis 2(a):*** *Non-performance institutional characteristics related to university size and complexity will have a positive relation with university president compensation; and,* ***(b):*** *university size and complexity will account for more variance in university president compensation than university performance.*

Although there is theoretical reasoning to suggest that there is a positive association between university size and complexity and president compensation, there is no consistent theoretical reasoning to suggest a relation between the measures in the "other" category and president compensation. Yet, it is still possible that these measures do influence compensation. For instance, universities with a religious affiliation tend to pay their presidents less than non-religious universities (Langbert, 2006; Saunders, 2007). In addition, the presence of a business school, law school, or medical school *may* be related to university complexity *if* these schools are just one of many different schools in the university. Therefore, the presence of these schools may lead to increased levels of compensation for university presidents. However, if the presence of these schools does not reflect complexity, managerialism and human capital theory would not provide an explanation as to why these characteristics would be related to president compensation. Similarly, there is also no theoretical explanation for why many of the other measures in this category (e.g., percentage of students who receive grant aid, year the university

was founded) would affect university president compensation. However, because these measures have been used in other studies, I ask,

Research question 3: *Is there a relation between other non-performance institutional characteristics and university president compensation?*

Differences between private and public universities in the extent to which university size/complexity influences president compensation may also exist. The managerialist perspective suggests that the relation between size/complexity and compensation will be stronger when executives are entrenched and can use their power to influence the Board (e.g., Tosi et al., 2000). Thus, it is important to consider whether or not differences are expected between private and public universities in the likelihood that presidents will become entrenched. Previously, I discussed two antecedents of entrenchment, shareholder dispersion and the alignment between the CEO and the Board.

First, considering shareholder dispersion, it is likely that public universities have greater shareholder dispersion than private ones because there are a greater number of stakeholders for public universities (e.g., taxpayers, state and federal governments) than there are for private ones (Ehrenberg et al., 2001). Because dispersed shareholders are less likely to effectively monitor presidents, presidents are able to use their power to reduce the sensitivity of their compensation to university performance, and, instead, tie their compensation to measures that they have more control over (e.g., university size/complexity). Based solely on this, the managerialist perspective suggests that the association between university size/complexity and compensation will be stronger for public universities than for private ones.

In addition to higher levels of monitoring associated with having less shareholder dispersion, there are also more monitoring constraints for private universities. Private, nonprofit

universities are subject to legislation that directly bans excessive compensation. Specifically, the government can impose tax penalties on presidents and Board members of private universities if it is determined that presidents received excessive compensation (Hyatt & Johnston, 2015). Due to the possibility of these sanctions, private university Boards may be motivated to have a stronger association between university performance and the compensation of their presidents than their public university counterparts. This also supports the notion that there may be a stronger association between university size/complexity in public universities than in private ones.

Considering the second way that presidents may become entrenched (i.e., the degree of alignment between the Board and the university presidents), however, suggests that university presidents at private universities are likely to have more power than presidents at public ones. In both private and public universities, Board members generally do not receive compensation (Nason, 1982). Therefore, university presidents are not able to leverage their influence on Board members' compensation to impact Board compensation decisions. However, in public universities, Board members are typically appointed by government agencies or officials, whereas in private universities, Board members are typically nominated and elected by the university or its alumni (Price, 2018). Because of this, Board members for public universities may be more objective (i.e., less beholden to universities presidents) than Board members in private universities. If true, this would result in university presidents at public universities having less power over their Boards than presidents at private universities. Thus, for private universities, the relation between university size/complexity and compensation would be stronger than the relation between university performance and compensation.

Taken together, based on the influence of shareholder dispersion, it is reasonable to expect that there will be a stronger link between university president compensation and university size/complexity in public universities. However, considering the degree of alignment between the Board and the university president, it is also reasonable to expect that this relation will be stronger in private universities. To address these conflicting perspectives, I ask,

> ***Research question 4:*** *Are there differences in the strength of the relation between non-performance institutional characteristics (including university size and complexity) and university president compensation among private universities and public universities?*

There are also likely differences among the non-performance institutional characteristics dimensions (see Table 4) regarding the strength of their association with president compensation. Specifically, considering only the size and complexity dimensions[6], one may reasonably expect that university size has a stronger impact on president compensation than university complexity. The managerialist perspective suggests that university presidents will use their power to link their compensation to measures that they have control over and that are relatively stable (Combs & Skill, 2003; Tosi et al., 2000). University size is arguably more easily influenced by a university president than university complexity. It is likely easier to, for instance, hire additional staff or admit additional students (i.e., increase size) than it is to, for example, create a new degree program or add a new department (i.e., increase complexity). This may also explain the relatively recent increase in administrators across universities (Greene, Kisida, & Mills, 2010). Thus, entrenched presidents are expected to have a greater preference for tying their compensation to university size than to university complexity. This is consistent with evidence from the executive compensation literature that found a stronger association between

[6] Drawing conclusions from the "other" dimension is likely to be difficult because there is no consistent theme among these variables.

organizational size and compensation than between organizational complexity and compensation (Finkelstein & Hambrick, 1989).

Conversely, it is also possible that university complexity has a stronger impact on compensation. Considering human capital theory, it is reasonable to expect that the impact of university complexity on university president compensation would be greater than the impact of university size on compensation. Complex universities require more human capital to run than universities that are large, but not complex (Berry, Bizjak, Lemmon, & Naveen, 2006). Therefore, the fair level of compensation for two universities that are of equal size, but have different levels of complexity is different, with the fair compensation being larger for the more complex university. This would result in the relation between university complexity and president compensation being larger than the relation between university size and president compensation. Because each of these differing perspectives suggests a different pattern of relations, I ask,

> ***Research question 5(a):*** *What is the relative influence of the university size and complexity dimensions on president compensation?* ***(b):*** *Is the pattern of strength of these relations different between public universities and private universities?*

University President Personal Characteristics

In addition to performance and institutional characteristics, human capital and personal characteristics are also frequently included as predictors of compensation, or as control variables. Therefore, I also provide an overview of human capital and other personal characteristics (see Table 5). A total of four dimensions are included in this table: *demographics*, *professional experience*, *tenure-related variables*, and *other personal characteristics*.

Demographics. There were four different measures categorized into the *demographics* dimension: age, gender, race, and marital status. Each of these demographic measures, particularly age and gender, are used frequently in the executive compensation literature, typically as control variables (Hall & Liebman, 1998). These measures are also used in the university president compensation literature (e.g., Bartlett & Sorokina, 2005; Cheng, 2014; Langbert & Fox, 2013; Monks, 2007) and there is evidence indicating that they are associated with compensation. For instance, there is some evidence to suggest that gender is related to president compensation (Saunders, 2007; Sorokina, 2003). Age can also be used as a proxy for length of working experience, and thus, may also be related to performance (Fulmer, 2009). Table 5 includes an overview of these measures and the studies in which they are used.

Professional experience. A total of eight measures were categorized as measures of *professional experience*: past experience as a tenured professor; past experience in educational administration; law, business, or economics degree holder; J.D, M.D., or other professional degree holder; field of highest degree; and, prior presidency. Each of these measures reflect the background and level of human capital the president has, including past educational experience and past job experience, and may, therefore, be related to compensation. These variables were used as predictors of compensation in several studies (see Table 5; e.g., Banker et al., 2009; Bartlett & Sorokina, 2005; Cheng, 2014; Ehrenberg et al., 2001; He & Callahan, 2017; Monks, 2007).

Tenure. Seven measures were categorized into the *tenure* dimension: job tenure, university tenure, years on faculty before becoming president, number of working years, years of experience at prior presidency, seniority, and aggregate experience. Each of these measures provide an indication of how much experience presidents have, which may affect their

compensation. Tenure is a common measure in the executive compensation literature (e.g., Devers et al., 2007; Gomez-Mejia, Larraza-Kintana, & Makri, 2003; Young & Buchholtz, 2002) and is also often used in the university president compensation literature (e.g., Banker et al., 2009; Ehrenberg et al., 2001; Monks, 2007; Pati & Lee, 2016) because it reflects the amount of working experience an individual has and thus, may influence compensation. Table 5 shows the other measures categorized into this dimension, as well as the studies that used these measures.

Other personal characteristics. As before, some measures could not be categorized into the previous dimensions. Therefore, a total of 10 measures were categorized as *other personal characteristics*: whether the president was in their first or last year as president, if the president was an interim president, an internal hire, hired from outside of academia, president alumni status, if they were listed on Who's Who, a member of the clergy, member of an external Board, and what their performance was at their past university. These measures are personal characteristics of the president that cannot be categorized as demographic variables, professional experience variables, or tenure-related variables. However, it is still possible that these measures influence compensation. For instance, clergy members are expected to have lower compensation than non-clergy members (Ehrenberg et al., 2001), interim presidents are expected to receive less compensation than permanent presidents (Cheng, 2014), and presidents who have appeared on the Who's Who list are likely to receive more compensation than those presidents who have not been on this list (Saunders, 2007; Sorokina, 2003).

Overview. Personal characteristics of CEOs have also been examined as an antecedent to their compensation. Using human capital theory, CEO personal characteristics are predicted to be related to CEO compensation (e.g., Agarwal, 1981; Fulmer, 2009). As mentioned previously, human capital theory suggests that differences in pay are partly due to differences in levels of

human capital (Agarwal, 1981; Combs & Skill, 2003). Therefore, it may be expected that CEO compensation is related to CEO characteristics that are indicative of human capital (e.g., education, experience, network connections). Although there is evidence to support the notion that human capital variables are associated with higher levels of pay in the non-executive workforce (e.g., Fisher & Govindarajan, 1992), there is less evidence to support this notion in samples of executives. This may be due to the fact that there is less variance in human capital variables among executives than there is in the working population (e.g., Agarwal, 1981). That being said, there is some evidence that certain human capital variables are related to CEO compensation. For instance, work experience was found to be positively associated with CEO compensation, whereas educational variables such as educational level and field of study (i.e., major) were not significantly associated with executive compensation (Agarwal, 1981). Similarly, Fulmer (2009) reported that CEO age, used as a proxy for experience, was positively related to CEO base salary; however, she also found no statistically significant relation between CEO age and total compensation (which included bonus and other incentives). These results were consistent with the claim that human capital variables, such as experience, are more likely to influence base salary because they, like salary, are relatively stable (Fulmer, 2009).

Human capital in the context of university president compensation. President personal characteristics are likely to influence university president compensation in much the same way that they influence for-profit executive compensation. For instance, there is also likely to be little variance in some human capital variables among university presidents. Specifically, 89% of university presidents hold a doctoral degree, 75% have only been the president at their current institution, and 58% are 61 years of age or older (Gagliardi et al., 2018). However, there is evidence to suggest that some personal characteristics (e.g., gender, reputation [appearance in

Who's Who], tenure, alumni status) are positively associated with university president compensation (e.g., Bartlett & Sorokina, 2005; Sorokina, 2003).

For instance, being a female was associated with receiving higher compensation among top-tier universities (Bartlett & Sorokina, 2005). This may be due to market forces. Because there are fewer females in top positions, females, particularly those with prior experience, may be in high demand and, therefore, receive a higher level of compensation (Bartlett & Sorokina, 2005). Similarly, appearance in issues of *Who's Who in America* may indicate a university president's level of social capital (Sorokina, 2003). A significant portion of a president's job is to be the figurehead of the university and to fundraise; therefore, social capital may be an important factor for success (Sorokina, 2003). It is reasonable then that this measure would be related to compensation. Tenure has also been shown to be positively related to compensation (Banker et al., 2009; Sorokina, 2003). Tenure is reflective of an individual's level of experience, and, thus, may indicate a president's ability to handle his or her job duties (Banker et al., 2009; Sorokina, 2003).

In sum, although some individual measures of president personal characteristics may have a stronger association with university president compensation, the majority of measures are likely to lack any significant variance among university presidents. Therefore, the overall relation between this category of variables and university president compensation is likely to be weak, but still positive. Stated formally,

Hypothesis 3: *University president personal characteristics will be positively related to university president compensation.*

In addition, although university president personal characteristics are unlikely to have a stronger influence on university president compensation than university size/complexity does, it

is possible that these characteristics' impact on compensation is greater than that of university performance. If agents' risk aversion is higher than assumed by agency theory, Boards may be less likely to use university performance to determine university president compensation. Instead they may choose to use more stable characteristics (e.g., amount of experience/tenure). That being said, it is equally as reasonable to expect that university performance will have a stronger impact on president compensation than personal characteristics because of the dynamics described by agency theory (Jensen & Meckling, 1976). Therefore, I ask,

> ***Research question 6:*** *How well do university president personal characteristics predict university president compensation in comparison to university performance and university size and complexity?*

As with the previous two characteristics (i.e., performance and non-performance institutional characteristics), I explore differences in the relation between personal characteristics and president compensation between private and public universities. Although there are reasons to suspect that there may be differences between private and public universities in the extent to which university performance and/or university size/complexity are used to determine president compensation, there is no reason to suspect that there will be differences, on average, between the use of president personal characteristics to set compensation among these universities. However, to be thorough, it is important to determine if any differences do exist. Thus, I ask,

> ***Research question 7:*** *Are there differences in the strength of the relation between president personal characteristics among private universities and public universities?*

Consistent with the executive compensation literature, differences in the predictive power between the various dimensions of personal characteristics are likely. For instance, amount of working experience and other tenure-related variables have been shown to be positively

associated with executive compensation (Agarwal, 1981; Fulmer, 2009), as well as president compensation (Banker et al., 2009; Bartlett & Sorokina, 2005; Langbert & Fox, 2013). Thus, one would expect measures of tenure (i.e., amount of working experience) to have a fairly consistent, and positive, association with compensation. However, measures of professional experience (e.g., field of highest degree, professional degree holder) have generally not been found to significantly impact compensation for executives (Agarwal, 1981) or university presidents (Bartlett & Sorokina, 2005; He & Callahan, 2017; Monks, 2007). This suggests that the association between measures of tenure and compensation is stronger than the relation between measures of professional experience and compensation. To explore this more thoroughly, I pose,

> ***Research question 8(a):*** *What is the relative influence of the four different personal characteristics dimensions on executive compensation?* ***(b):*** *Is the pattern of strength of these relations different between public universities and private universities?*

In sum, this meta-analysis will determine the extent to which university performance is related to university president pay. In addition, this study also examines the relations between two other commonly recognized determinants of executive compensation (i.e., university size/complexity, president personal characteristics). In so doing, this paper will help to address the controversy surrounding university president compensation. Figure 1 summarizes the proposed relations.

Method

Literature Search

A thorough search was conducted to identify both published and unpublished primary studies that assessed the relation between university president compensation and any variables related to university performance, non-performance institutional characteristics, and/or university

president personal characteristics. Specifically, studies were identified by searching ABI/INFORM Complete, Academic Search Complete, Business Source Complete, Education Research Complete, ERIC, Proquest Dissertations & Theses, PsycINFO, ScienceDirect. Google Scholar was also used to supplement this search process. The following keywords were used, in combination, to search the abstracts of these databases: *university, college, higher education, president, compensation, salary, salaries,* and *pay*. There were no time restrictions placed on these searches; the search was completed in November 2018. Additional restrictions were applied to Education Resource Complete and ABI/INFORM to limit the number of non-relevant results returned. These restrictions, as well as the exact search string and number of results returned from each database, are listed in Table 6.

Based on these criteria, a total of 702 records were identified through ABI/INFORM Complete, Academic Search Complete, Business Source Complete, Education Research Complete, ERIC, Proquest Dissertations & Theses, PsycINFO, and ScienceDirect. An additional 1.5 million results were identified through Google Scholar (of these, 11 were identified as potentially relevant)[7]. After removing duplicates, 663 records were retained (including the 11 records identified through Google Scholar). The titles and abstracts for these 663 records were reviewed for relevancy using the criteria discussed in the next section. A total of 612 of these 663 articles were excluded; 51 were retained for full-text review. After examining the full text of these articles, 29 were excluded because they did not meet the eligibility criteria. Thus, a total of 22 studies were included in the systematic review. The search process is detailed in the PRISMA diagram, included as Figure 4.

[7] Not all 1.5 million results from Google Scholar were reviewed. Titles of the search results were screened until 10 consecutive pages of results (a total of 100 articles) appeared not relevant. This resulted in approximately 500 total titles being screened.

Inclusion/Exclusion Criteria

Decisions regarding the inclusion or exclusion of articles were made based on several criteria. For instance, study samples had to include university presidents employed at nonprofit universities in the United States. Therefore, studies that took place outside of the U.S., focused on faculty members' compensation, or did not clearly define their sample were excluded. Studies also needed to contain variables that could be categorized as measures of university performance, non-performance institutional characteristics, or university president characteristics, as well as a measure of university president compensation. Studies that assessed the relation between university performance, non-performance institutional characteristics, or university president characteristics and other variables besides compensation (e.g., turnover) were excluded.

Data Extraction, Coding, and Preparation

All data extraction, coding, and data preparation was performed by the author of this dissertation. For each identified article, the following information was extracted for the systematic review: author, year, article title, journal, journal impact factor (if applicable), sample type (e.g., private, public, private and public university presidents), sample size, study design (e.g., cross-sectional, longitudinal), years included, variable names, effect size, effect size type (e.g., correlation, beta), statistical significance of each variable examined including the *p-value* (if provided), whether or not the effect size could be converted to a correlation, source of data (e.g., Chronicle of Higher Education, U. S. Department of Education), statistical technique utilized (e.g., OLS regression, Arellano-Bond dynamic panel modeling), theories utilized, and whether or not hypotheses were made.

Analytical Plan

Although I initially intended to test the proposed hypotheses and research questions using meta-analytic techniques, a number of issues were identified during the coding process that precluded the use of meta-analytic techniques. Specifically, meta-analysis requires consistent effect size estimates (e.g., correlations). Correlations were only provided (or could otherwise be derived/calculated) for nine of the 22 studies. An additional nine studies included beta weights from regression equations. Although these beta weights were converted using the formula provide by Peterson and Brown (2005), including these converted estimates in a meta-analysis would be problematic as the number of additional variables in the respective regression equations varies widely. For instance, Banker, Plehn-Dujowich, and Xian (2009) only included eight variables in their equation, whereas Cheng (2014) included 34 variables. This means that the converted beta weights are not comparable and, therefore, including correlations calculated from these beta weights would likely result in a misleading/erroneous conclusion (likely underestimate of the true relation [Roth et al., 2018]). The remaining four studies did not include the necessary information to calculate a correlation or a beta weight.

In addition to requiring a consistent effect size, meta-analysis also assumes that effect sizes are independent of one another. Unfortunately, many of the identified studies either do not report the time period examined in the study or have time periods that overlap with other identified studies (which would make the effect sizes in those studies non-independent). One way to address this issue is to nest effect sizes within years (Borenstein, Hedges, Higgins, & Rothstein, 2009). However, this is unlikely to fully address this issue. The average tenure of presidents in my dataset is approximately nine years. Thus, even nesting effect sizes within year does not adequately resolve the violation of the assumption independence.

Given the aforementioned issues (inconsistent effect size estimates and independence violations), it would be inappropriate to use meta-analytic techniques to address the proposed hypotheses and research questions. Therefore, instead, I provided a systematic review of the accumulated evidence from the identified studies. Taking this approach allowed me to take stock of this literature and provide a qualitative assessment of the extent to which existing evidence supports or fails to support the hypotheses as well as shed light on the research questions posed in the introduction to this chapter. To aid in this process, I used a version of vote counting, which involved counting the number of effect sizes that were positive, negative, and nil (regardless of whether these effect sizes were statistically significant). This approach can be used when traditional meta-analytic techniques are not appropriate (Higgins & Green, 2011).

Results

Performance

Of the 22 studies identified through the literature search, 21 included at least one variable that could be categorized as a university performance variable. Across those 21 studies, a total of 81 university performance variables were identified (see Table 7, Panel A, Column 2)[8]. Two (2%) of these variables had a nil relation with university president compensation, 57 (70%) had a positive association with president compensation, and 22 (27%) had a negative association with president compensation (see Table 7, Panel A, Columns 3 and 5). This provides initial support for Hypothesis 1, which suggested that university performance is positively related to university president compensation.

[8] Tang, Tang, and Tang (1996, 2000, 2004) used many of the same variables in their studies (they also used the same exact same compensation data in each study). Therefore, to avoid the most blatant independence violation, any variables that were duplicated in these studies was only counted once in the analyses reported here.

To provide a more detailed assessment of the strength of this association, effect size estimates were examined. Of the 81 university performance variables examined, standardized effect sizes (either correlations or beta weights) were provided for 65 of them. Although, as previously mentioned, it is inappropriate to conduct a meta-analysis to provide a meta-analytic effect size estimate, I did examine these effect sizes to determine the likely size of the overall effect. Specifically, I converted the beta weights to correlations using the formula provided by Peterson and Brown (2005). Evidence suggests that beta weights tend to underestimate the true effect size by 12% to 70% (Roth, Le, Oh, Van Iddekinge, & Bobko, 2018); therefore, to provide the most generous estimate, I also added 70% to each converted beta weight. I then created two averages – the first was an average of the correlations and converted beta weights (the conservative, likely under-estimate), the second was an average of the correlations and converted beta weights plus 70% (the generous estimate). This allowed me to create a range in which the effect size likely exists[9]. I then considered Cohen (1988) effect size benchmarks to determine the likely magnitude of the association between the two variables. Cohen suggested that, for correlations, a weak relation is .10, a moderate relation is .30, and a strong relation is .50. I used this information to create ranges. Using the absolute value of the effect sizes, values of less than .05 indicated no association between the variables (a nil effect size), values between .05 and .24 indicated weak effect sizes, values between .25 and .44 were considered moderate effect sizes, and values of .45 or greater were considered large effect sizes. Using this approach, the results

[9] One may question the decision to add 70% rather than 12% to the beta weights to calculate the range in which the effect size likely exists; however, this decision was made for two reasons. First, because adding 70% increases the size of the range, it provides the most generous interpretation of the results and decreases the likelihood of making a Type I error. Second, the number of predictors included in a regression equation can reduce the size of each individual beta weight. When converted to correlations, these beta weights are underestimates of the true correlation. The majority of the studies examined in this systematic review included eight or more predictors. Therefore, these beta weights are likely to be more underestimated than results from studies where only two or three predictors are included. Thus, adding 70% to each beta weight, in addition to decreasing the chances of making a Type I error, may also be a more accurate reflection of the true correlation than adding 12% would be.

suggest that the relation between university performance and university president compensation is likely to be positive, but weak.

The first research question asked if there was a difference in the relation of university performance and university president compensation among public and private universities. Of the 21 studies that examined the relation between university performance and university president compensation, four included only public universities, 11 included only private universities, and three reported their results separately for private and public universities. Across the seven studies reporting results for public universities, a total of 30 university performance-public university president compensation relations were examined (see Table 8, Panel A, Column 2). Across the 14 studies reporting results for private universities, 39 university performance-private university president compensation relations were examined (see Table 9, Panel A, Column 2).

For public university presidents, 18 of the 30 (60%) effect sizes were positive, 10 of the 30 (30%) effect sizes were negative, and two of the effect sizes (7%) were nil (see Table 8, Panel A, Columns 3 and 5). Considering private university presidents, 29 of the 39 (74%) effect sizes were positive. Ten of the 39 (26%) effect sizes assessing the relation between university performance and private university president compensation were negative. (see Table 9, Panel A, Columns 3 and 5). Taken together, these results suggest that the relation between university performance and university president compensation is likely to be positive in both public and private universities. It is possible that the relation between university performance and university president compensation is stronger in private institutions than in public ones; however, there is not enough evidence to state this definitively. Examining the standardized effect sizes (23 for public universities and 31 for private universities) suggests that the relation between university

performance and university president compensation is likely to be nil to weak and positive for public universities and weak and positive for private universities.

Research question 2 asked if there were differences in the strength of the relation between university performance and university president compensation depending on the specific dimension of university performance assessed. Of the 81 university performance variables examined, there were seven variables in the *academic and research performance* dimension, eight in the *academic and research quality* dimension, seven in the *faculty quality* dimension, 27 in the *financial performance* dimension, nine in the *reputation* dimension, 18 in the *selectivity* dimension, and three in the *other* dimension. Two of the 81 variables are excluded from this discussion because they were created using a combination of measures that spanned multiple dimensions (e.g., the variable was described as an average between a financial performance metric and a reputation metric). Table 7 provides a summary of the results. As can be seen from Table 7, Panel A, Column 3, the percentage of positive effect sizes ranges from 33% (*other* dimension) to 89% (*reputation* dimension). Considering the information in this table together, it appears that performance metrics from the *faculty quality, reputation,* and *selectivity* dimensions have a more consistent positive association with university president compensation than the other four dimensions. Performance metrics from the *academic and research performance* metric appear to have the least consistent positive association with university president compensation. Considering the standardized effect sizes that were reported, it appears that variables from the *faculty quality* and *reputation* dimensions have the strongest relation with university president compensation, whereas variables from the *academic and research performance, financial performance,* and *selectivity* dimensions have the weakest association with university president compensation (with the exception of variables from the *other* dimension, which appear to have

no relation with compensation). However, these results should be interpreted with caution as there are relatively few numbers of effect sizes in each dimension.

Research question 2 also asked if there were differences in the pattern of the relations between the performance dimensions and university president compensation between private and public university presidents. These results are displayed in Tables 8 and 9. Although there are only a small number of effect sizes in each dimension (between one and eight for public universities; zero and 16 for private universities), one key difference can be observed. Specifically, variables in the *faculty quality* dimension appear to have a nil or weak positive association with public university president compensation, yet these variables appear to have a strong positive relation with private university president compensation. However, this determination is based on two effect sizes from public universities and four effect sizes from private universities; therefore, it should be interpreted with caution.

Non-performance institutional characteristics

A total of 21 studies included at least one variable that could be categorized as a non-performance institutional characteristic. Hypothesis 2(a) stated that university size and university complexity will have a positive association with university president compensation. A total of 60 effect sizes were reported for the relation between non-performance institutional characteristics related to university size and complexity and university president compensation (see Table 7, Panel B, Column 2). Of these 60 effect sizes, 47 (78%) were positive, 12 (20%) were negative (see Table 7, Panel B, Columns 3 and 5), and one (2%) was nil. This provides initial support for Hypothesis 2(a).

To provide a more detailed assessment of the strength of this association, effect size estimates were examined. Of the 60 non-performance institutional characteristics related to

university size and complexity examined, standardized effect sizes (either correlations or beta weights) were provided for 33 of them. An examination of these effect sizes suggests that the relation between non-performance institutional characteristics related to university size and complexity and university president compensation is likely to be weak to moderate and positive (see Table 7, Panel B, Column 7). This supports Hypothesis 2(a).

Hypothesis 2(b) proposed that non-performance institutional characteristics related to university size and complexity would account for more variance in university president compensation than university performance. Given the limitations of the data, the amount of variance in university president compensation accounted for by these two sets of variables cannot be determined. However, an examination of Table 7, Panels A and B, Column 7, indicates that university performance seems to have a weak positive effect on university president compensation whereas non-performance institutional characteristics related to university size and complexity appear to have a weak to moderate positive effect on university president compensation. Thus, it is possible that non-performance institutional characteristics related to university size and complexity do have a stronger impact on university president compensation than university performance.

In addition to non-performance institutional characteristics related to university size and complexity, there is one additional dimension of non-performance institutional characteristics (i.e., the *other* dimension). Research question 3 asked if there was any association between variables in this dimension and university president compensation. There were 25 variables in this dimension, nine (36%) of which had positive effect sizes and 16 (64%) of which had negative effect sizes. An examination of the effect sizes suggests one theme - university presidents at religious institutions earn less than presidents at non-religious institutions, on

average. The results for religious institutions are shown in Table 7, Panel B. Therefore, in response to Research question 3, at least one non-performance institutional characteristics other than university size and complexity is related to university president compensation.

Just as with university performance, it is also important to determine if there are differences in the strength of the association of non-performance institutional characteristics and university president compensation between public and private universities. Given that the only result of note in the *other* dimension was that university presidents at religious institutions are compensated less than university presidents at non-religious institutions and all religious institutions are private institutions, this set of results will only focus on variables related to university size and complexity. Of the 21 studies that examined the relation between non-performance institutional characteristics related to university size and complexity and university president compensation, four included only public universities, 12 included only private universities, and three reported their results separately for private and public universities. Across the seven studies that included results for public universities, a total of 14 non-performance institutional characteristics related to size and complexity-public university president compensation effects were examined (see Table 8, Panel B, Column 2). Across the 15 studies that reported results for private universities, 36 non-performance institutional characteristics related to size and complexity-private university president compensation effects were examined (see Table 9, Panel B, Column 2).

Of the 15 effects from public universities, 12 (80%) were positive, two (13%) were negative, and one (9%) was nil (see Table 8, Panel B, Columns 2, 3 and 5). Considering the 36 private universities effects, 29 (81%) were positive. There were also seven (19%) negative effect sizes see Table 9, Panel B, Columns 2, 3 and 5).

The patterns of these results suggest that the relation between non-performance institutional characteristics related to size and complexity and university president compensation is likely to be positive in both public and private universities. This is also supported by the standardized effect sizes which suggest that the relation between non-performance institutional characteristics related to size and complexity and university president compensation is likely to be moderate and positive for both public and private universities. However, given the small number of effect sizes from public universities, these results should be interpreted with caution.

Research question 5 asked if there were differences in the relative influence of variables from the *size* and *complexity* dimensions on university president compensation and if the pattern of differences was similar between private and public universities. Tables 7 – 9 display these results. The results from the *other* dimension are also shown; however, they will not be discussed here because, as previously stated, the only consistent theme identified among the variables in this dimension was that religious institutions, which are private institutions, provide less compensations to their presidents. An examination of Table 7, Panel B, shows that of the 60 non-performance institutional characteristics variables, 34 can be categorized into the *size* dimension and 25 can be categorized into the *complexity* dimension. One of the 60 variables could not be categorized into either dimension because it was formed from measures that spanned multiple dimensions. As can be seen from Table 7, Panel B, the majority of the variables from both the *size* and *complexity* dimensions are positive and statistically significant. However, the table also shows that effect sizes in the *size* dimension are more likely to be positive than those from the *complexity* dimension (91% versus 60%; see Table 7, Panel B, Column 3). This suggests that the effects of university size are likely to have a stronger impact on university president compensation than university complexity. This is also supported by the standardized effect sizes

– variables in the *size* dimension appear to have a moderate positive association with university president compensation, whereas variables in the *complexity* dimension seem to have a weak positive association.

Considering Panel B from Tables 8 and 9, the effect of variables in the *size* and *complexity* dimensions on university president compensation becomes less clear. An examination of the percentages in Columns 2 and 3 still suggests that the relation between university size and university president compensation is likely to be stronger than the relation between university complexity and university president compensation for both public and private universities. However, the standardized effect sizes do not support this. Specifically, in public and private universities, university size and university complexity both appear to have a moderate positive association with university president compensation. Thus, it is difficult to determine definitively if university size does, in fact, have a larger impact on university president compensation than university complexity.

President personal characteristics

President personal characteristics were assessed in 14 of the 22 identified studies. Across those 14 studies, a total of 60 personal characteristic variables were examined. However, unlike the previous two categories of variables (i.e., university performance and non-performance institutional characteristics), it is not appropriate to lump all the university president personal characteristic variables together. Therefore, I will discuss specific groupings of variables. For instance, the first dimension of university president characteristics is *demographics*. This dimension included a total of 18 effect sizes that could be categorized into two themes that had at least two associated standardized effect sizes: gender and age.

Gender was reported 13 times across the identified studies; however, in one instance, there was no information about how gender was coded. Therefore, this instance will be excluded from subsequent discussion. Eight of the remaining 12 (67%) effect sizes were positive, which suggests that male university presidents receive higher compensation (see Table 7, Panel C, Column 2 and 3). Four of the 12 (33%) effects were negative, suggesting that females receive higher compensation (see Table 7, Panel C, Column 5). Taken together, this suggests that males may receive more compensation; however, the effect is likely to be weak and/or inconsistent. An examination of the standardized effect sizes provides additional support for this notion. These effect sizes suggest that there is a nil to weak positive relation between gender (male) and university president compensation (see Table 7, Panel C, Column 7). This provides some support, however, for Hypothesis 3 which suggested that there is a positive relation between university president characteristics and university president compensation.

Research question 7 asked if there were differences in the relation between university president personal characteristics and university president compensation between public and private universities. Tables 8 and 9 display the results of the relation between gender and university president compensation separately for public and private universities. These results suggest that the relation between male gender and university president compensation in public institutions is weak (see Table 8, Panel C, Column 7); whereas in private universities, it is nil (see Table 9, Panel C, Column 7). However, the estimate from public universities is based on three effect sizes; therefore, it is plausible that this relation is also nil.

In addition to the effect of gender on compensation, the relation between university president age and university president compensation has also been examined in two studies that included only private universities. Both of these studies found a positive association between

university president age and university president compensation (see Tables 7 and 9, Panel C). However, both effect sizes suggest a weak positive association (see Tables 7 and 9, Panel C, Column 7). This finding also supports Hypothesis 3 (Research question 7 cannot be addressed since the relation between university president age and university president compensation has not been examined in public universities).

The second dimension of university president characteristics is *professional experience*. This dimension included a total of 18 effect sizes that could be categorized into one theme with at least two associated effect sizes: prior presidency. The relation between presidential experience at a prior university and university president compensation was examined six times (see Table 7, Panel C, Column 2). The effect was positive in all six instances, suggesting that there is a positive association between experience as a university president at a previous university and compensation at one's current university. This is supported by the standardized effect sizes which also find a weak positive effect (see Table 7, Panel C, Column 7). This supports Hypothesis 3. In response to Research question 7, Tables 8 and 9, Panel C, show that this effect appears to be consistent between public and private universities.

Tenure is the third dimension of university president characteristics. Variables related to tenure were examined 13 times across nine studies. Table 7, Panel C, displays these results. In 10 of these 13 (77%) cases, the effect was positive (see Table 7, Panel C, Columns 2 and 3). A negative effect was observed in three (23%) instances. This suggests that the relation between tenure-related variables and university president compensation is positive. An examination of the standardized effect sizes suggests that the relation is either nil or weak, but positive (see Table 7, Panel C, Column 7). This provides some support for Hypothesis 3.

Regarding Research question 7, some differences can be seen when comparing the effects of tenure separately for public and private universities (see Panel C of Tables 8 and 9, respectively). For public universities, all of the effects are negative. Averaging the standardized effect sizes results in a nil effect size (see Table 8, Panel C, Column 7). In private universities, however, all of the observed effects were positive (see Table 8, Panel C, Column 4). This suggests that the relation between tenure and university president compensation in private universities in likely positive. In fact, the standardized effect sizes suggest a weak positive association between these two variables (see Table 8, Panel C, Column 7). Taken together, this suggests that tenure has a stronger impact on university president compensation in private universities than in public universities. However, the estimate from public universities is only based on three effect sizes; therefore, this conclusion should be interpreted with caution.

There is also an *other* dimension for university president characteristics. A total of 11 variables were included in this dimension; however, only one theme could be identified that had at least two associated standardized effect sizes: alumni status (see Table 8, Panel C, Column 2). Two studies included this variable. One of the two (50%) effects was positive; one (50%) was negative, which suggests that there may be a nil effect. The standardized effect sizes suggest that the relation between alumni status and university president compensation is nil to positive (see Table 8, Panel C, Column 7), providing some support for Hypothesis 3. Interestingly, the positive (weak) effect was observed in private universities (see Table 9, Panel C, Column 7), whereas the negative (nil) effect was noted in public universities (see Table 8, Panel C, Column 7). Thus, it is possible that alumni status impact private university president compensation, but it is not relevant in public universities. However, this is based on one effect in each setting, so it is, at best, weak evidence of such an effect.

In summary, Hypothesis 3 suggested that president personal characteristics would be positively related to university president compensation. As can be seen from Table 7, Panel C, there is some support for this notion. Specifically, gender (male), age, prior presidency, tenure, and alumni status may all potentially have a weak positive effect on university president compensation. Research question 6 asked how university president characteristics affected university president compensation in comparison to university performance and non-performance institutional characteristics. An examination of Table 8, Panels B and C, suggests that university president characteristics are likely to have less of an influence on university president compensation than university performance and non-performance institutional characteristics. For instance, considering the standardized effect sizes, all of the university president personal characteristics are estimated to have a nil or weak effect on university president compensation, whereas the variables from the university performance and non-performance institutional characteristics categories have nil to strong positive effects (see Table 7, Panels B and C, Column 7). Research question 7 asked if there were differences between public and private universities in the extent to which university president personal characteristics are related to university president compensation. Tables 8 and 9, Panel C, show that the effects of university president personal characteristics on university president compensation are consistent between public and private universities, with the exception of tenure-related variables and alumni status, both of which appear to have a stronger relation with university president compensation in private universities than in public universities.

Discussion

The controversy surrounding the high levels of compensation paid to university presidents has led to several studies that have attempted to assess the determinants of university

president compensation. The main goal of this systematic review was to examine the extent to which the compensation paid to university presidents is determined by university performance. In doing so, this review also assessed the impact of non-performance institutional characteristics, including university size and complexity, as well as university president personal characteristics on university president compensation. The influence of each of these sets of variables is supported theoretically by agency theory (Jensen & Meckling, 1976), managerialism (e.g., Aoki, 1984; Herman, 1981), and/or human capital theory (e.g., Agarwal, 1981; Becker, 1962). Therefore, this review also offers insight into the efficacy of each of these theories. Next, I will discuss the results and theoretical implications for each of the examined set of variables.

University Performance

The findings of this systematic review are supportive of predictions from agency theory. As discussed in the theoretical overview, agency theory (Jensen & Meckling, 1976) suggests that university performance will have a positive, but weak, association with university president compensation. The prediction that the relation is positive is based on the low task programmability and outcome measurability present in the job of university president which makes it difficult to monitor and judge the appropriate individual decisions and behaviors of university presidents. Therefore, to align the goals of the university president and the Board, it may be necessary to make university president compensation contingent on university performance (as opposed to relying on monitoring or tying university president compensation to individual university president performance). The prediction that the relation between university performance and university president compensation is relatively *weak* is based on the idea that, because university performance is not directly under the control of university president compensation, basing university president compensation on university performance transfers

undue risk to university presidents. To compensate for this, university performance should only have a small effect on university president compensation. The findings of this systematic review support these predictions - there seems to be a weak positive association between university performance and university president compensation (see Table 7, Panel A).

The conceptual review provided also suggested that the relation between university performance and university president compensation may be weaker in public universities than in private ones. This argument was based on the idea that, because public university presidents earn less money, on average, than private university presidents, public universities presidents may be more intrinsically motivated to perform, and, therefore, goal alignment is less necessary for public university presidents than for private university presidents (Bai, 2014; Handy & Katz, 1998). An examination of Tables 8 and 9, Panel A, indicates that the relation between university performance and university president compensation is nil to weakly positive in public universities, but weakly positive in private universities. Thus, it seems that public university president's compensation is likely to be less strongly linked to university performance than the compensation of private university presidents. If accurate, this could be due to differences in the extent to which public and private university Boards feel they need to incentivize performance. However, given that this review did not allow an exact effect size to be calculated, it is possible that there is no actual difference between public and private universities in terms of the strength of the relation between university president compensation and university performance. Thus, this is still an open question.

I also proposed, based on agency theory (Jensen & Meckling, 1976), that various dimensions of university performance may have differential effects on university president compensation. Specifically, to mitigate the risk to university president's compensation, Boards

may choose to link aspects of university performance to university president compensation that are more directly under university presidents' control, such as academic and research quality selectivity, and fundraising. Alternatively, Boards may choose to incentivize performance in dimensions that are most aligned with the mission of the university and its long-term success, such as financial performance and academic and research performance. Interestingly, this review found that university reputation has the strongest and most consistent impact on university president compensation, while the other dimensions have weak and/or inconsistent relations with university president compensation (see Tables 7 through 9, Panel A). One potential reason for the effect of university reputation is that it is typically measured through the use of university rankings (He & Callahan, 2017; Huang & Chen, 2013; Monks, 2007). These rankings take into account metrics from several different performance dimensions, including alumni giving (financial performance dimension) and graduation rate (academic and research performance dimension), as well as SAT scores (selectivity dimension), class size (academic and research quality dimension), and faculty salary (faculty quality dimension) (Morse, 2017). Thus, aligning university president compensation to university reputation, as measured by university ranking, may be considered by university Boards to be the easiest and most straightforward way to judge overall university performance. Given that many Board members tend to lack expertise in the field of higher education (Price, 2018), it is logical to assume that they would prefer to use a metric that is easy to obtain (i.e., they are published every year by various organizations, The Princeton Review, 2018; U. S. News & World Report, 2019) and understand. It is also possible that these rankings are normatively accepted just as stock price/market value is in the for-profit context.

In sum, the main predictions of agency theory appear to be somewhat supported by this systematic review. The overall relation between university president compensation and university performance tends to be weak, but positive. Furthermore, specific dimensions (e.g., reputation) do appear to have a moderate to strong positive association (using the cutoffs discussed in the Method section) with university president compensation. If these dimensions (e.g., reputation) include metrics (e.g., ranking) that university Boards would like to see most improved, it is possible that these results provide strong support for agency theory. However, the accuracy of secondary predictions based on agency theory concepts are unclear (in the case of the differences between public and private universities), or unsupported (in the case of the various dimensions of university performance having a greater or weaker effect).

Non-performance Institutional Characteristics

In addition to the relation between university president compensation and university performance, this systematic review also examined the extent to which other non-performance institutional characteristics influence university president compensation. In particular, managerialism (e.g., Aoki, 1984; Herman, 1981) and human capital theory (e.g., Agarwal, 1981; Becker, 1962), support a relation between university size as well as complexity and university president compensation. Managerialist arguments state that university presidents may become entrenched and can use their power to strengthen the impact that university size has on their compensation while weakening the extent to which the Board ties their compensation to university performance. This is desirable for university presidents because university size and complexity may be more directly under their control than university performance. The argument from human capital theory (e.g., Agarwal, 1981; Becker, 1962) suggests that larger and more complex universities require more human capital to lead, and, therefore, the fair pay for

presidents of these universities is higher. The results of this systematic review support the general predictions of both theories.

As indicated in Tables 7 through 9 (Panel B), the relation between non-performance institutional characteristics related to university size and complexity appear to have a weak to moderate positive association with university president compensation. Furthermore, the overall pattern of results related to university performance and non-performance institutional characteristics related to university size and complexity suggests that the latter set of variables have a stronger influence on university president compensation than does university performance (Table 7, Panels A and B), which is consistent with the findings from the executive compensation literature (Tosi et al., 2000).

The theoretical overview also highlighted competing theoretical arguments for why the relation between university size and complexity and university president compensation may be different for public and private universities. Specifically, one argument suggests that private universities have less shareholder dispersion and thus less powerful university presidents than would be expected in public universities. If true, this first argument would result in the association between university size and complexity and university president compensation being weaker in private universities than in public ones. Conversely, public university Boards are typically appointed by the state's governor (Price, 2018), which may result in public university presidents having less power over their Boards compared to private university presidents. In this second argument, the relation between university size and complexity and university president compensation would be weaker in public universities than in private universities. However, empirical evidence does not indicate substantive differences between public and private universities in terms of the strength of the association between university president compensation

and university size and complexity. This suggests that either (a) neither of the competing arguments presented are valid, or (b) both are valid and the effects of one balance out the effects of the other.

The closest test of the efficacy of managerialism versus human capital theory that can be gleaned from this systematic review is gained by examining whether university size or university complexity has the greater relation with university president compensation. This assessment can provide insight into which of these two theories may be more relevant because university size is likely more easily manipulated than university complexity (managerialism), yet leading a complex university arguably requires more human capital than leading a large, but simple university (human capital theory). Table 7, Panel B shows that university size seems to have a larger association with university president compensation than does university complexity. Therefore, one can infer that the managerialist arguments are more relevant than the arguments grounded in human capital theory. Stated differently, these findings suggest that university president compensation is related to non-performance institutional characteristics because university presidents tend to be entrenched and exert their power over Boards to ensure that their compensation is based on metrics that are more directly under their control. However, it is important to note that once the results are broken out separately by public and private universities (Tables 8 and 9), no substantive differences are noted between the effect of university size and university complexity on university president compensation.

In sum, the main predictions of managerialism and human capital theory are supported; however, it is difficult to say definitively whether the reason for the finding that non-performance institutional characteristics related to university size and complexity is due to

university president entrenchment and power (managerialism) or because the fair wage for a job that requires high-levels of human capital is high (human capital theory).

University President Personal Characteristics

This systematic review also aimed to determine if university president personal characteristics influence their compensation. Human capital theory suggests that differences in pay are due to differences in levels of human capital (Agarwal, 1981; Combs & Skill, 2003). Therefore, university president compensation may be related to president personal characteristics that are indicative of human capital. However, for positions high in the organizational hierarchy, including university presidents, variance in human capital is likely to be low (e.g., Agarwal, 1981; Gagliardi et al., 2018); therefore, any observed relation should be relatively weak. Tables 7 through 9, Panel C, indicate that each personal characteristic variable of interest has a nil or weak association with university president compensation, supporting this notion.

Of the examined human capital variables, university president's experience at a prior university had the most consistent effect – it was weak, but positive. Therefore, it seems as if Boards tend to pay a premium for university presidents with prior experience as president, especially since only about 25% of presidents have prior experience as a university president (Gagliardi et al., 2018). Thus, these presidents may be offered a higher initial compensation than university presidents without experience at a previous university. This suggests that university presidents are, in part, compensated for their level of human capital, consistent with human capital theory.

Summary of Theoretical Implications

Taken together, the findings from the systematic review are somewhat consistent with the theories discussed. Specifically, university performance was found to be positively, albeit

weakly, associated with university president compensation. This provides some support for agency theory. In fact, some dimensions of university performance appear to have a moderate or strong impact (using the cutoffs discussed in the Method section) on university president compensation which provides strong support for agency theory. University size and complexity also appear to impact university president compensation, supporting managerialism and human capital theories. Even some university president personal characteristics seem to have a weak, but positive effect on university president compensation, lending support to human capital theory. Thus, each theory discussed in this paper received at least some level of support.

Results of this review are also somewhat consistent with evidence from the broader executive compensation literature, which found that organizational size has a greater influence on CEO compensation than organizational performance does (Tosi et al., 2000). Specifically, the overall pattern of results (see Table 7) indicates that non-performance institutional characteristics related to university size and complexity have the strongest association with university president compensation, followed by university performance. University president personal characteristics have the weakest association with university president compensation. However, a more nuanced examination of the university performance results finds that some university performance dimensions have a similar or stronger impact on university president compensation than does university size and complexity. This is in contrast with findings from the executive compensation literature, which suggest that organizational size has a significantly stronger effect than organizational performance on executive compensation. Therefore, it is possible that performance is emphasized more heavily in the nonprofit educational context than in the for-profit context, which would provide even stronger support for agency theory predictions in the nonprofit educational context.

Limitations and Future Research

Although this systematic review offered a comprehensive picture of the current state of the evidence regarding the determinants of university president compensation, including university performance, university size and complexity, and university president characteristics, there are several limitations. First, the initial intent was to conduct a meta-analysis to provide a better understanding of the correlation between university president compensation and various metrics, yet, that was not possible, primarily because the available primary studies did not report the necessary data. Therefore, even though Tables 7 through 9 do provide information about the likelihood that an effect is positive or negative and the approximate magnitude of the effect, they do not include a specific effect size that would be able to quantify how much additional compensation a university president receives for increased university performance, university size and complexity, or greater accumulation of human capital. This information is necessary in order to fully understand the practical implications of these findings. For instance, although it is useful to know that university president compensation and university performance are related, it is possible that, for example, for every $1 increase in financial performance (e.g., endowment), a university president is compensated an extra $50,000. Under such a situation, one may reasonably argue that the benefit provided by a $1 increase in endowment is not worth an extra $50,000 paid to the president. Utility analysis would be helpful in this regard, however, because an effect size could not be calculated, it was not possible to conduct one for this study. Furthermore, although exploring how changes in university performance lead to changes in university president compensation could have provided additional information about the justification of university president compensation, only three studies (i.e., Cheng, 2014; Parsons & Reitenga, 2014; Sorokina, 2003) included in this review examined *change* in university

performance and compensation levels rather than just the levels themselves. Given the small number of studies, it was not possible to make a distinction between *change* and *level*. Therefore, this systematic review only provides an answer to the question of whether university performance and university president compensation are related, not whether the actual levels of university president compensation is justified. To best address the issue of justification, it is necessary to look at how relations evolve over time using longitudinal data and regression-based data analytic methods.

Second, it is also possible that the results of the systematic review are affected by factors not considered in this study. For instance, it is possible that results from primary studies using different methodologies (e.g., cross-sectional v. panel designs; different data analytic techniques) are different. These differences may be due to, for instance, statistical power (i.e., panel designs may have a larger total *N* and thus more statistical power) or the specific characteristics of the data analyses conducted (e.g., are fixed and/or random effects accounted for; what assumptions are made regarding causality). Unfortunately, only eight of the 22 studies included in the systematic review used panel data; furthermore, only six studies employed a method other than OLS regression and the methods used by these six studies also differed. Therefore, creating subgroups based on these characteristics would result in small *k*s, which could produce misleading results. However, given that substantive differences may exist, future systematic reviews that occur after more studies have been conducted should take these factors into consideration.

A third limitation present in this study was that no distinction could be made between private religious institutions and private non-religious institutions. It is possible that the relation between university performance and university president compensation is different in religious

schools than in non-religious schools, as individuals working at religious institutions may be more intrinsically motivated than those working at non-religious schools. This argument is based on the fact that university presidents from religious schools receive significantly less compensation than individuals at non-religious schools (Langbert, 2006). However, only one study (Saunders, 2007) provided results separately for religious and non-religious institutions. In all other studies including private universities, if the religious orientation of the university was considered, it was as a predictor or control variable. However, future research should consider examining differences between not only public and private universities, but also religious and non-religious universities.

In addition to these first three issues, it is also important to note that systematic reviews (and meta-analyses) are limited by the quality of the studies included in them (Borenstein et al., 2009). If the data included in the individual studies is outdated, or the quality of these studies is poor, then the results reported in Tables 7 through 9 may not accurately reflect the underlying effect. Unfortunately, there were several issues present in the primary studies which may impact the confidence that one can have in these results. For instance, many of the primary studies did not clearly report important details such as variable definitions (e.g., Langbert & Fox, 2013; Saunders, 2007; Tang, Tang, & Tang, 1996), sample size (i.e., Huang & Chen, 2013; Tang et al., 1996), years included (e.g., Pati & Lee, 2016; Tang et al., 2000), or the effect size metric (i.e., O'Connell, 2005). This lack of clarity makes it difficult to be sure that the results of this systematic review are an accurate depiction of the actual relations of interest. Furthermore, many of the studies included data that was more than 10 years old (e.g., Ehrenberg et al., 2001; Langbert, 2006; Sorokina, 2003). It is possible that the strength of the relations of interest have

changed over time. Thus, future studies should be sure to clearly and accurately report their methodology and results as well as use more up-to-date data.

Potentially the most problematic limitation of this systematic review is that it could not shed light on questions about which there was limited or no data. For example, this study only examined the relation between university president compensation and university performance, non-performance institutional characteristics, and university president personal characteristics. Yet, it is possible that the relation between university performance and university president compensation is different depending on the component of compensation (e.g., merit increases, bonuses, deferred compensation) examined. It was also not possible to determine if university president compensation affects these variables (i.e., university president compensation and university performance, non-performance institutional characteristics, and university president personal characteristics) in the future. Only three of the studies included in the review (Hunt et al., 2019; Parsons & Reitenga, 2014; Tang et al., 2004) included university president compensation as a predictor and, besides university president compensation, these studies contained only one overlapping variable – university size. To have a good understanding of the justification of the high compensation paid to university presidents, it is also useful to know if high rates of compensation lead to future performance increases, not just whether they are based on prior performance. Therefore, future studies should explore these additional open questions to continue to shed light on this controversy.

Conclusion

The goal of Study 1 of this dissertation was to conduct a systematic review of primary studies that have explored variables related to university president compensation. Such a review should help to shed light on the applicability of three major theories from the for-profit executive

compensation literature – agency theory, managerialism, and human capital theory – to the nonprofit educational context. A total of 22 studies were identified through the literature search. A synthesis of the results of these studies indicated that some of the predictions of agency theory, managerialism, and human capital theory are applicable and supported. Specifically, university performance, non-performance institutional characteristics, and university president personal characteristics were each related to university president compensation. An analysis of the dimensions of each of these variables suggests that university reputation had a larger impact on university president compensation than the other university performance metrics; university size had the strongest and most consistent relation with university president compensation compared to other non-performance institutional characteristics; and, whether or not the president has prior experience as a president at another institution had a more consistent relation with university president compensation than other president personal characteristics. However, there are still several open questions that could not be addressed by this review. Study 2 of this dissertation attempts to examine a subset of these open questions, as well as address methodological limitations encountered in the systematic review.

CHAPTER 3

A Nuanced Examination of the Relation between University Performance and University President Compensation

University president compensation has become an increasingly controversial topic over the past several years (Dillon, 2004; Sonnenberg, 2017; Stripling & Fuller, 2011; Svluga, 2018). In fact, despite the increasing costs of attending university and the rising levels of student loan debt, university president compensation has continued to rise steadily (Svluga, 2018). In 2015, there were 58 university presidents paid over $1 million, 19 more than the previous year (Bauman, Davis, & O'Leary, 2018; Sonnenberg, 2017; Svluga, 2018). Although there continue to be questions surrounding whether or not university presidents should receive such high levels of compensation when costs for students continues to increase, many suggest that these high levels of compensation are necessary to attract the best candidates and justifiable because of the extensive requirements of the job and to incentivize future performance (e.g., Cotton, 2012; Roediger, 2005). To explore these arguments, several researchers have examined variables that are theoretically related to university president compensation (Bai, 2014; Hunt et al., 2019; Parsons & Reitenga, 2014).

In the previous chapter (Chapter 2), I briefly reviewed both the university president compensation literature and the broader executive compensation literature (see Tables 1 and 2). The review indicated that university performance, university size and complexity, and university president personal characteristics have all been examined as determinants of university president compensation. Therefore, the goal of Study 1 (discussed in Chapter 2) was to conduct a systematic review to determine what relation, if any, these three sets of variables have with university president compensation. In doing so, I also reviewed the theories relevant to each of

these sets of relations. Specifically, I reviewed agency theory (Eisenhardt, 1989; Jensen & Meckling, 1976) to address the theoretical association between university performance and university president compensation. I also discussed managerialism (e.g., Aoki, 1984; Herman, 1981) and human capital theory (e.g., Agarwal, 1981; Becker, 1962) in order to examine why university size and complexity may influence president compensation. Lastly, I reviewed the predictions of human capital theory (e.g., Agarwal, 1981; Becker, 1962) regarding the association between university president characteristics and president compensation.

Based on my review of the literature on university president compensation, the broader executive compensation literature, and the aforementioned theories, I proposed several hypotheses and research questions to answer in the systematic review. However, although the review shed light on the current state of the literature, the examination was not without limitations. For instance, the quality and accuracy of a systematic review is limited by the individual studies included in it (Borenstein et al., 2009). If the data included in the individual studies is outdated, or their quality is poor, the results from a systematic review may not accurately reflect the underlying effect. Therefore, the first part of the two-part study discussed in this chapter (Chapter 3) will review the hypotheses and research questions from Chapter 2 and attempt to replicate the findings with more current data.

An additional limitation of systematic reviews is that they can only answer questions for which sufficient primary study data exists. For example, if the primary studies only examined relations between university performance and university president total compensation, it would not be possible to examine the relation between university performance and the various components of total compensation (e.g., merit increases, bonuses, deferred compensation). Likewise, if primary studies only examined the relation between university performance and

future university president compensation, a systematic review would not be able to shed light on the relation between president compensation and future university performance. In my review of the university president compensation literature, I identified several gaps (including the two examples mentioned above [components of compensation, relation between compensation and future performance]) that have not been explored in a sufficient number of primary studies, and thus, could not be addressed in the systematic review. Therefore, the second part of this two-part study will review these gaps and attempt to fill them.

Part I: Replication

Part I of this chapter provides a replication of Study 1 (Chapter 2). Therefore, Part I addresses one of the research questions posed in the problem statement (see Chapter 1):

> ***Research question 1:*** *What impact, if any, does university performance have on university president compensation?*

Part II: Addressing Identified Gaps

Part II of this chapter discusses and addresses gaps I identified in the university president compensation literature, as well as in the broader executive compensation literature. Thus, results of this study will answer the following research questions posed in the problem statement (see Chapter 1):

> ***Research question 2a:*** *Does the relation between university performance and university president compensation differ depending upon which component of compensation is measured?*
>
> ***Research question 2b:*** *Is there a reciprocal relation between university president compensation and university performance?*

Research question 2c: *How does the link between university performance and university president compensation change over time?*

Research question 2d: *Is the relationship between university performance and university president compensation linear?*

In addressing these questions, this study contributes to both the university president compensation literature and the broader executive compensation literature in general. Specifically, this study provides a more nuanced examination of the relation between university performance and university president compensation by breaking compensation into its various components (e.g., merit increase, bonus, deferred compensation) as well as examining reciprocal and nonlinear relations. This study may, therefore, help to provide evidence to address the ongoing controversy surrounding the increasing levels of compensation among university presidents and provide guidance to those who set, and regulate, university president compensation.

Part I: Replication

As discussed above, Part I of this study is a replication of Study 1 (from Chapter 2). As such, the theoretical framework to set up the following hypotheses and research questions is only briefly reviewed below. Please see Chapter 2 for a more comprehensive explanation of the hypotheses and research questions. The hypotheses and research questions are organized below by the specific determinant that they address (i.e., university performance, non-performance institutional characteristics, university president personal characteristics).

University Performance

Organizational performance has been identified as a key determinant of executive compensation in the private sector (Tosi et al., 2000). Several studies, reviewed in Chapter 2

(e.g., Bartlett & Sorokina, 2005; Cheng, 2014; Ehrenberg et al., 2001; Parsons & Reitenga, 2014; Saunders, 2007), have also examined the relation between university performance and university president compensation; however, the findings have been mixed. Many of the currently existing studies on this relation in university settings have been atheoretical (e.g., Ehrenberg et al., 2001; Monks, 2007). That being said, the majority of those that have relied on theory have invoked agency theory in their theoretical grounding (e.g., Cheng, 2014; He & Callahan, 2017; Langbert, 2006; Pati & Lee, 2016), which supposes a positive effect of performance on subsequent compensation. To attempt the replicate the findings in Chapter 2, I test the following,

Hypothesis 1: *University performance will be positively related to president compensation.*

In my review of the current literature on the relation between university performance and university president compensation, I also noted research questions. First, although agency theory suggests that there may be differences between public and private universities, only three studies have provided a direct comparison of the relation between university performance and president compensation in public versus private universities (Huang & Chen, 2013; Monks, 2007; Parsons & Reitenga, 2014). Therefore, I examine the following,

Research question 1: *Are there differences in the strength of the relation between private universities and public universities?*

In addition, although there are reasons to believe that different measures of performance are more strongly or weakly tied to university president compensation, based on the general state of the literature, it is difficult to determine where these differences are. Therefore, I also aimed to explore in Chapter 2 the relative influence of various performance dimensions on president

compensation, as well as if these findings are stable across both public and private universities. Stated formally,

> ***Research question 2(a):*** *What is the relative influence of the seven different performance dimensions on executive compensation?* ***(b)*** *Is the pattern of strength of these relations different between public universities and private universities?*

University Non-Performance Institutional Characteristics

Chapter 2 also reviewed the relation between various non-performance institutional characteristics (including university size and complexity) and university president compensation. As discussed, the managerialist perspective (e.g., Aoki, 1984; Herman, 1981), human capital theory (e.g., Agarwal, 1981; Becker, 1962), and evidence from the broader literature of executive compensation (Tosi et al., 2000), suggest a positive association between university size/complexity and university president compensation. In addition, evidence from the broader executive compensation literature suggests that size and complexity have a greater influence on executive compensation than does organizational performance (Tosi et al., 2000). To attempt to replicate the findings in Chapter 2, I test the following,

> ***Hypothesis 2(a):*** *Non-performance institutional characteristics related to university size/complexity will have a positive relation with university president compensation; and,* ***(b):*** *university size and complexity will account for more variance in university president compensation than university performance.*

Although the managerialist perspective (e.g., Aoki, 1984; Herman, 1981) and human capital theory (e.g., Agarwal, 1981; Becker, 1962) suggest that there is a positive association between university size as well as complexity and president compensation, there is no consistent theoretical reasoning to suggest a relation between other non-performance institutional

characteristics (e.g., religious affiliation, geographic location) and president compensation. However, it is possible that these characteristics influence compensation. Therefore, I examine the following research question,

Research question 3: *Is there a relation between other non-performance institutional characteristics and university president compensation?*

In addition, as previously mentioned, there may be differences between public and private universities; however, only three studies have provided a direct comparison of the relation between university performance and president compensation in public versus private universities (Huang & Chen, 2013; Monks, 2007; Parsons & Reitenga, 2014). Thus, it is difficult to determine what differences may exist between public and private universities. Therefore, I ask,

Research question 4: *Are there differences in the strength of the relation between non-performance institutional characteristic dimensions (including university size/complexity) among private universities and public universities?*

Although evidence suggests that organizational size and complexity have a strong association with executive compensation, it is not currently known which of these characteristics has the greater impact on university president compensation, or whether there is a difference between public and private universities.

Research question 5(a): *What is the relative influence of the university size and complexity dimensions on president compensation?* ***(b):*** *Is the pattern of strength of these relations different between public universities and private universities?*

University President Personal Characteristics

Human capital theory (e.g., Agarwal, 1981; Becker, 1962) suggests a relation between some personal characteristics (e.g., tenure) and compensation. In the context of universities, there is some evidence to support this idea. Specifically, positive associations between personal characteristics, including gender, reputation, tenure, and alumni status, and university president compensation have been observed in primary studies (e.g., Bartlett & Sorokina, 2005; Sorokina, 2003). However, these effects were not found in every primary study (e.g., Banker et al., 2009; Cheng, 2014). To replicate findings from Chapter 2, I test,

Hypothesis 3: *University president personal characteristics will be positively related to university president compensation.*

In addition to this hypothesis, several research questions related to the personal characteristics of university presidents were posed in Chapter 2. First, there is evidence from the broader executive compensation literature (Tosi et al., 2000) that size is the strongest predictor of executive compensation and that organizational performance only accounts for about 5% of the variance in executive compensation. However, though it is unlikely that personal characteristics account for more variance than university size/complexity, it is possible that these characteristics have a greater effect on university compensation than university performance. Therefore, I examine the following,

Research question 6: *How well do university president personal characteristics predict university president compensation in comparison to university performance and university size and complexity?*

Second, as with university performance and non-performance characteristics, potential differences in the strength of the association between university president personal

characteristics and university president compensation were also examined in Chapter 2. In an attempt to replicate the findings from Chapter 2, I address the following,

> ***Research question 7:*** *Are there differences in the strength of the relation between president personal characteristics and university president compensation among private universities and public universities?*

Third, though university president personal characteristics may be related to university president compensation, there are multiple dimensions of personal characteristics (i.e., demographics, professional experience, tenure/length of experience, other [see Table 5]). There may be differences in the relative influence of each of these dimensions on compensation. Further, the relative influence of each of these dimensions on university president may be different in public and private universities. Therefore, I examine the following question,

> ***Research question 8(a):*** *What is the relative influence of the four different personal characteristics dimensions on executive compensation?* ***(b):*** *Is the pattern of strength of these relations different between public universities and private universities?*

Part II: Addressing Identified Gaps

Although the results from the systematic review and the replication in Part I of this study can inform our understanding of how university president compensation is determined (e.g., through university performance, university non-performance institutional characteristics, and president personal characteristics), there are several questions that these results cannot answer. As previously mentioned, one limitation of the review provided in Chapter 2 is that when there is insufficient number of primary studies that have addressed a particular relation of interest, that relation cannot be evaluated. My review of the university president compensation literature highlighted that there are several open questions that could not be examined in a systematic

review. Therefore, in this part of the study, I will review a subset of these identified gaps (i.e., gaps pertaining to the relation between university performance and university president compensation), review several theories that may help to shed light on these open questions, and empirically test several hypotheses pertaining to these gaps.

Identified Gaps

First, although there are several different components of university president (and executive) compensation (e.g., base salary, bonus, deferred compensation, benefits), the majority of primary studies on the topic of university president compensation focused on salary or total compensation (e.g., Cheng, 2014; Galle & Walker, 2014; He & Callahan, 2017; Huang & Chen, 2013). Thus, despite important and well-established theoretical differences between the components of compensation, we have no knowledge of how the relations between the aforementioned predictors and the individual components of compensation may differ. This is also the case in the broader executive compensation literature. For instance, only total compensation, total cash compensation, or salary (which are all highly correlated) were included in the meta-analysis that assessed the relation between organizational size, organizational performance, and executive compensation (Tosi et al., 2000). Thus, even in the broader executive compensation literature, we know little about the differences in the relation between performance and the various aspects of performance.

Second, existing primary studies have failed to integrate findings and theories across literature areas examining the relations between pay and performance as well as performance and pay. Specifically, only three of the studies on university president compensation included in the systematic review provided an assessment of the influence of university president on university performance (Hunt et al., 2019; Parsons & Reitenga, 2014; Tang et al., 2004). Consequently,

although theory supports both sets of relations (i.e., performance has an impact on compensation; compensation influences performance), little is known about the potential reciprocal effects. The most recent narrative review of the executive compensation literature highlighted that this gap also exists in the broader executive compensation literature (Devers et al., 2007).

Third, the studies examining the relation between university president compensation and university performance have lacked nuance in their assumptions about the potential nature of this relation. For instance, all of the existing studies have assumed that the relation between university performance and university president compensation is linear. However, there is theory to support nonlinear relations between these variables. In fact, there is some evidence from the executive compensation literature that supports this view (e.g., Kuo, Lin, Lien, Wang, & Yeh, 2014). Thus, it is important to explore the possibility of nonlinear relations in the nonprofit educational context.

Lastly, none of the existing primary studies proposed and tested how the relation between university performance and university president compensation changes over time. Yet, depending on the theory utilized, the magnitude of these relations may vary over time. For example, agency theory suggests that the relation between university performance and university president compensation should remain stable over time (Jensen & Meckling, 1976). The managerialist perspective, however, suggests that the relation between performance and compensation may weaken over time (e.g., Aoki, 1984; Herman, 1981).

Each of these gaps highlights that even if we have a consistent estimate of the linear relation between compensation and performance, there are many nuances about the relation that are not yet understood. This is problematic for several reasons. First, without a complete understanding of the nature of the relation between these two variables, we cannot be confident

that our assessment of the link between university performance and university president compensation, including the different components of compensation, is accurate (e.g., performance may appear to be weakly linked to total compensation, but may have a strong relation to bonuses). If this is the case, we may make suggestions about compensation policy that could be misleading.

Second, if university president compensation seems to have no relation with subsequent university performance, then it could be argued that tying performance to compensation is not an effective way to continually align interests and thus also incentivize future performance. Agency theory suggests that using incentives will help to align the interests of the university president to those of the Board, which should ultimately benefit university performance. If providing monetary incentives has no effect on future performance, however, this practice would result in wasted financial resources. Third, if the relation between university performance and subsequent university president compensation are not linear, it may be beneficial to know the inflection point(s). Fourth, understanding if and how the relation between these two variables changes over time may be valuable. For example, if the relation between university performance and university president compensation tends to weaken over time, Boards, and those individuals who appoint Board members, can take steps to prevent this from occurring. Because compensation is an essential part of an organization's overall human resource management strategy (Kepes, Delery, & Gupta, 2009), it is important to have a solid understanding of the potentially complex nature of the relation between performance and compensation.

Gap 1: The Effect of University Performance on the Various Components of Compensation

The majority of studies that explored the relation between organizational performance and executive compensation operationalized compensation as either total compensation, total

cash compensation or salary (Tosi et al., 2000). In the context of universities, compensation is typically defined as either salary, salary and benefits, total cash compensation, or total compensation. In fact, Table 10 shows that, of the 22 studies reviewed in the previous chapter, 10 operationalized compensation as president's salary, four studies as salary plus benefits, five as total cash compensation, and nine as total compensation.

Although two studies that operationalized compensation as salary and benefits also measured salary individually (i.e., Banker et al., 2009; O'Connell, 2005) and two studies separated total cash compensation from benefits (i.e., Tang et al., 2000, 2004), none of these studies made a distinction between salary and bonuses. Furthermore, only two studies specified that long-term, or deferred compensation, was included as a component of total cash compensation or total compensation (i.e., Parsons & Reitenga, 2014; Pati & Lee, 2016) and neither of these studies directly compared the effects of salary, bonuses, and deferred compensation. This is problematic as it presupposes that there are no meaningful differences between the distinct components of compensation. However, there likely are important differences. It is possible or even likely that performance is more or less related to each individual component of compensation.

The components of compensation. Prior to discussing the potential explanations for why performance may be differentially tied to the various components of compensation, it is necessary to define each component and highlight its particular characteristics. *Base pay* is a form of fixed compensation that is usually set based on a combination of human capital considerations (e.g., knowledge, experience) and benchmarking (Murphy, 1999). *Changes in base pay* can occur for a variety of reasons, one of which is the previous year's performance. The portion of the change in base salary that is due to performance is typically termed a merit

increase, or *merit pay* (e.g., Park & Sturman, 2016). Merit raises are usually provided in the form of percentages of base salary (Murphy, 1999). Such raises have features of both fixed and variable compensation in that they must be re-earned every year, but once they are earned, they are added into the permanent base salary[10] (Park & Sturman, 2016). Because these increases become permanent (i.e., incorporated into base pay), they result in permanently higher total labor costs for the organization (Milgrom & Roberts, 1992; Nyberg, Pieper, & Trevor, 2016). For instance, a 5% raise awarded on a base pay of $80,000 is $4,000, resulting in a new base pay of $84,000. If the individual receives another 5% raise the following year, the raise would be $4,200, and the new base pay would be $88,200. The subsequent year, with the same 5% raise, base compensation would be $92,610. Thus, in just these three years, the costs of compensating this one employee increased by $12,610. One can easily see how quickly these costs can add up over time, especially if the employee stops performing at a high enough level to justify the new high base pay. Thus, from the organization's perspective, merit increases are not necessarily a desirable form of compensation. This explains why merit raises (at least in the U. S.) are only about 3%, on average (Miller, 2018).

Bonuses are similar to merit increases in that they are typically awarded because of performance; however, unlike merit increases, bonuses are not added into permanent base salary (Park & Sturman, 2016; Sturman & Short, 2000). Therefore, bonuses do not permanently increase the organization's total cost of compensating labor (Kahn & Sherer, 1990). Consider the aforementioned example of the 5% merit raises. If over the course of the three years described, 5% bonuses were awarded instead of 5% merit raises, the organization would save $12,810 ($264,810 minus $252,000) in labor costs just from that one employee. However, because

[10] This explains why it is more appropriate to measure the effect of performance on base pay by examining changes in base pay.

bonuses must be re-earned every year, they are strictly a form of variable compensation (Park & Sturman, 2016), and thus, are riskier than merit increases for employees, including university presidents and other executives.

Deferred compensation may also be considered a form of variable compensation; however, unlike bonuses, deferred compensation is not awarded immediately (Park & Sturman, 2016)[11]. Rather, receiving deferred compensation requires university presidents not only to perform well, but also to remain with the university for a specified amount of time (Eaton & Rosen, 1983; Park & Sturman, 2016). Stated differently, when deferred compensation is awarded, it is added into a pool of compensation that can be received at a later date, based on the agreed upon terms (e.g., after a specified number of years, after leaving the position). Therefore, similar to bonuses, this type of compensation is also risky for university presidents. Base pay (including the proportion of base pay resulting from merit increases), bonuses, and deferred compensation are all components of *total cash compensation*.

Benefits are not a form of cash compensation. Instead, benefits include health insurance, retirement contributions, housing, vehicles, etc. (Bai, 2014; Murphy, 1999). Benefits are typically associated with a particular position, irrespective of performance. This may explain why many of the primary studies that assessed the relation between university performance and university president compensation separated benefits from other forms of compensation (e.g., Bai, 2014; Banker et al., 2009; Bartlett & Sorokina, 2005; Ehrenberg et al., 2001; Tang et al., 2000). The sum of cash compensation and benefits is termed *total compensation*. To understand why each of these specific components of compensation may be differentially related to

[11] Merit increases are also not awarded immediately as they are spread across a year's paycheck. However, once awarded, individuals do start receiving rewards immediately. Thus, deferred compensation is still unique in regards to the timeframe associated with actually receiving the award after it is granted.

performance, it is first helpful to consider why any component of compensation would be performance-related. A thorough review of agency theory is provided in Chapter 2; however, I provide a brief review here to remind the reader.

***Agency theory*.** Agency theory is the most frequently cited theory to explain the relation between performance and compensation in the context of executive compensation and is also frequently cited in studies assessing the relation between performance and compensation in academic settings (e.g., Banker et al., 2009; Devers et al., 2007; Tang et al., 2000; Tosi et al., 2000). Agency theory is relevant in organizations where the individuals in charge of running the organization are not the owners of the organization, as is the case in universities (Eisenhardt, 1989; Jensen & Meckling, 1976). Specifically, although university presidents are charged with running universities, they are not inherently accountable for all decisions they make. Stated differently, the decisions presidents make may affect the university's financial situation, university employees' salaries, student outcomes, etc., but, in the absence of any monitoring, control, or reward system, their decisions do not necessarily directly impact the financial situation of the university presidents themselves. Therefore, university presidents may be less motivated to exert effort toward ensuring the long-term success of the university. This represents the classic agency problem that occurs because principals (owners or key stakeholders) and agents (those to whom work has been delegated) may have conflicting goals resulting from the desire to maximize ones' outcomes (Eisenhardt, 1989; Jensen & Meckling, 1976). Another defining feature of the agency problem is the existence of information asymmetry between the principals and agents (Eisenhardt, 1989). Meaning, agents have access to information that the principals do not have access to, and thus, principals cannot verify what agents are doing or the effects of these actions. In the case of universities, university presidents have more access to

information (e.g., university performance metrics, financial situation, progress on strategic initiatives) than Boards do by the very nature of their position as the president.

There are two general ways to manage the agency problem – monitoring and incentives (Eisenhardt, 1989). Although monitoring can be an effective way to manage the agency problem, it is unlikely to be effective in the university context. As discussed in Chapter 2, task programmability for university presidents is low as the proper actions are not always known. This makes monitoring less effective because Boards will not know what actions and behaviors to monitor. In addition, Board members generally do not have a background in higher education. Thus, they may not have the necessary expertise to effectively monitor university presidents. Therefore, incentives are theoretically more appropriate in university settings. Using incentives allows principals to bring the goals of the agents into alignment with their own goals (Dalton et al., 2007; Eisenhardt, 1989; Jensen & Meckling, 1976). Thus, by choosing appropriate incentives, principals may bring agents' goals in-line with their own goals (i.e., the high performance of the university; Dalton et al., 2007; Eisenhardt, 1989; Jensen & Meckling, 1976). This, then, should encourage agents to act in the best interest of the organization, rather than just in their own interest. Stated differently, by tying university president compensation to university performance, Boards are hoping that university presidents will exert more effort in the service of the university to, ultimately, increase university performance.

There is one additional consideration from agency theory relevant to this discussion- the concept of financial risk. Agency theory predicts that principals and agents may be comfortable with different levels of risk, and therefore, may prefer that president compensation be more, or less strongly, tied to performance (Dalton et al., 2007; Eisenhardt, 1989; Jensen & Meckling, 1976; Shapiro, 2005). The general assumption is that agents are risk-averse (i.e., they prefer their

compensation to be less strongly tied to performance and thus more stable) because they are not able to spread out their risk as they are only working for one organization (Dalton et al., 2007; Eisenhardt, 1989). Stated differently, because agents theoretically only have one major source of income, they prefer that income to be stable, rather than variable. This suggests that university presidents will prefer compensation that is less risky. This is important for Boards to consider because presidents may engage in undesirable behaviors to mitigate the increased risk resulting from tying compensation to performance (Shapiro, 2005; Zhang et al., 2008). Thus, Boards are likely to use both fixed and variable forms of compensation to balance the amount of financial risk that university presidents may incur.

Taken together, agency theory suggests that because university presidents do not directly benefit from, and, conversely, are not directly harmed by, the performance of the university, they may make decisions that are not in the best interest of the university and its stakeholders (e.g., students and faculty; Dalton et al., 2007; Eisenhardt, 1989; Jensen & Meckling, 1976; Shapiro, 2005). According to agency theory, making compensation dependent on the performance of the university may help to alleviate this problem and encourage university presidents to act in the best interest of the university and its stakeholders (Eisenhardt, 1989). However, if enhancing university performance is the ultimate goal of this practice (i.e., tying university president compensation to university performance), Boards must also consider other potential consequences of this practice that may not have a positive effect on university performance (Eisenhardt, 1989; Zhang et al., 2008). Specifically, Boards must balance the desire to motivate university presidents with the potential negative effects of making presidents' compensation riskier and increasing labors costs to the university such that its financial performance is ultimately harmed.

Differential relations between university performance and the components of compensation. As previously mentioned, *benefits* include health insurance, housing, vehicles, etc. (Bai, 2014; Murphy, 1999). These are typically considered to be fixed forms of compensation (Murphy, 1999). In fact, employers are required by law to provide some benefits (i.e., health insurance; "Patient Protection and Affordable Care Act", 2010). Thus, it is unlikely that university performance is related to changes in benefits. Although previous research found that university performance is related to president benefits (e.g., Tang et al., 2000), this study used cross-sectional data, and thus, did not test if changes in performance are tied to changes in benefits. Rather, Tang et al. (2000) found that benefits were related to variables such as expenditures, whether the university was a research or doctoral school, the university's reputation, and the cost of tuition. It makes sense that larger, more complex universities, with good reputations would have more resources, and thus would be able to offer their presidents better benefits packages (e.g., better life insurance plans); yet, according to theory, it is still unlikely that university performance is tied to university president benefits[12].

Agency theory suggests that components of cash compensation (i.e., merit pay, bonuses, and deferred compensation) will be tied to university performance (Eisenhardt, 1989), but it is possible that this occurs to differing degrees. For instance, university performance is expected to have a positive, but modest effect on merit pay. As previously mentioned, the defining feature of merit pay is that raises from one year are added automatically into base pay (Nyberg et al., 2016). Therefore, although new raises can be earned each year, it is not necessary for university presidents to maintain high levels of university performance to continue reaping rewards

[12] Note that no formal hypothesis is made because the data necessary to test this idea (i.e., the cost of benefits provided to the president at each university) is not available to the author. Due to the unavailability of this data, and because a nil effect is predicted, benefits will not be included in further discussions in this paper.

resulting from one year's performance in subsequent years; thus, this practice would not effectively align the interests of university presidents and Boards over time. Furthermore, because any pay raises are added to base pay, merit pay results in higher total expenditures for the university over the long-term, which may harm overall university financial performance (Kahn & Sherer, 1990; Nyberg et al., 2016). Given that Boards "bear ultimate legal responsibility for … monitoring the institution's fiscal welfare" (Association of Governing Boards of Universities and Colleges, 2015, p. 3), providing large merit increases, which can ultimately harm the financial performance of the university, is unlikely to be desirable. This suggests that performance is unlikely to be a strong predictor of merit pay, as this practice would not effectively and efficiently mitigate agency problems.

Bonuses, however, unlike merit pay, do not result in permanent increases to base pay (Nyberg et al., 2016; Park & Sturman, 2016). Rather, bonuses are paid in lump sums and must be re-earned each year. Therefore, using bonuses requires that performance be high every year (Nyberg et al., 2016; Park & Sturman, 2016). Thus, bonuses more effectively align the interests of university presidents and university Boards than does merit pay. Furthermore, because bonuses do not get added to base pay, providing bonuses is a more cost-effective practice than using merit pay (Kahn & Sherer, 1990; Park & Sturman, 2016; Sturman & Short, 2000). Therefore, bonuses are also an efficient way to mitigate agency problems. This suggests that performance will have a stronger effect on subsequent bonuses than on other forms of compensation.

It is difficult to determine whether deferred compensation will be more effective at aligning the interests of university presidents and Boards than either merit pay or bonuses. Although being awarded deferred compensation only requires high performance in one year,

actually receiving the awarded deferred compensation requires some degree of continued alignment of the interests of university presidents and Boards for a number of subsequent years to prevent termination and thus the loss of the deferred compensation (Park & Sturman, 2016). Stated differently, if receiving the deferred compensation is contingent upon staying with the university for a specified number of years, a university president may only be motivated to expend enough effort to not be fired, resulting in minimal interest alignment. Yet, even if alignment is minimal, deferred compensation is still expected to be awarded based on university performance, as Boards are unlikely to encourage poorly performing university presidents to remain with the university. Furthermore, providing deferred compensation may be more desirable from the Board's perspective because, as it is not paid out immediately and is not added into a president's base salary. Therefore, it may be more cost-effective over the long-term than providing merit increases.

Taken together, the preceding arguments can be used to make two formal hypotheses and pose one research question,

Hypothesis 1: *University performance will have a positive effect on future (a) merit pay, (b) bonuses, and (c) deferred compensation.*

Hypothesis 2: *University performance will have a greater effect on future bonuses than it does on merit pay.*

Research question 1: *How does the effect of university performance on deferred compensation compare to its effect on bonuses and merit pay?*

Gap 2: The Reciprocal Relation Between University Performance and University President Compensation

The relation between compensation and subsequent performance. The previous section (and all of Chapter 2) focused on the relation between university performance and subsequent university president compensation as this is the most commonly studied ordering of these variables in the executive compensation literature, including the university president compensation literature. However, there is also theory (e.g., expectancy theory; Vroom, 1964) to support a relation between compensation and subsequent university performance. Stated differently, depending on the theory utilized (i.e., agency or expectancy theory), the causal ordering of these variables is different. Despite this, the relation between compensation and subsequent performance is rarely tested, particularly in the context of university president compensation.

For instance, concerning the studies reviewed in Chapter 2, only three included an examination of the influence of compensation on future performance (Hunt et al., 2019; Parsons & Reitenga, 2014; Tang et al., 2004). Hunt et al. (2019) only examined the effect of university president compensation on one aspect of future performance – financial performance (specifically, fundraising) and this effect was not statistically significant. Although Parsons and Reitenga (2014) did find statistically significant relations between compensation and some performance measures (e.g., university reputation and resources), they measured compensation as the residual in the equation using university selectivity (defined as average SAT scores) and complexity (defined as enrollment and Carnegie classification) as predictors of compensation rather than examining distinct effects of each component of compensation on future performance. As discussed in the previous section, there are differences among these

components of compensation, and thus, differing effects of each component on subsequent university performance should be expected. Furthermore, Parsons and Reitenga (2014) did not compare the strength of the impact of compensation on future performance to that of performance on future compensation. Therefore, not only is there still insufficient evidence that compensation influences future performance in the context of universities, we also do not understand the potential reciprocal effects that exist between these two variables in the context of universities.

The most recent narrative review of the executive compensation literature (i.e., Devers et al., 2007) pointed out that these issues also exist in the broader executive compensation literature. Specifically, Devers et al. (2007, p. 1024) note, "little attention has been paid to the complexities inherent in determining the nonrecursive effects that are likely to occur in the pay-performance-pay arena […] Furthermore, work comparing and contrasting the effects of variable ordering is virtually nonexistent". The authors suggest that this lack of integration exists because the theories used to support each relation (i.e., the executive compensation–organizational performance relation and the organizational performance–executive compensation relation) are incompatible. However, this is not necessarily accurate.

Agency theory suggests that university president compensation should be tied to university performance to reduce the likelihood that the presidents will shirk their duties or pursue goals that are not aligned with the goals of the university Board (Eisenhardt, 1989; Jensen & Meckling, 1976). The implicit assumption is that this practice will lead to future high performance. If this were not the case, there would be no reason to tie compensation to performance. Yet, agency theory does not describe exactly how or why this would occur. To understand why aligning compensation with performance may be an effective practice, one can

turn to more traditional motivational theories (e.g., expectancy theory; Vroom, 1964) that are typically used to support a relation between compensation and subsequent performance. Combining these two theories is in line with the work of other compensation researchers (Banks, Woznyj, Kepes, Batchelor, & McDaniel, 2018; Gerhart & Milkovich, 1992).

Expectancy theory. Expectancy theory was developed to explain how individuals make choices about which behaviors to engage in based upon the anticipated outcome of each behavior (Chiang & Jang, 2008; Vroom, 1964). Thus, it is compatible with agency theory because, at its core, agency theory is concerned with getting agents to engage in behaviors that principals want them to engage in, rather than behaviors that the agent wants to engage in (Eisenhardt, 1989; Jensen & Meckling, 1976). Expectancy theory provides a description of the conditions that influence the choices that agents make (Vroom, 1964). Therefore, principals can rely on expectancy theory to inform policies aimed at increasing the likelihood that agents engaged in behaviors desired by principals. Stated differently, whereas agency theory explains why a performance-based pay policy may be necessary, expectancy theory explains how such a policy should be implemented to be effective.

In expectancy theory, Vroom (1964) proposed that each potential task an individual may engage in is associated with a motivational force equal to the product of three distinct perceptions (i.e., expectancy, instrumentality, and valence). *Expectancy* perceptions refer to the extent to which individuals feel that their effort can lead to performance. *Instrumentality* perceptions denote the extent to which individuals believe that performance can lead to outcomes (e.g., rewards). Lastly, the value that individuals place upon these outcomes is termed *valence* (Bartol & Locke, 2000; Vroom, 1964). Because these perceptions are theorized to combine in a multiplicative manner, if any one is weak, the motivational force associated with the given task

will also be weak. It is not likely that an individual will choose to engage in the task with a weak motivational force; instead the individual is likely to engage in some other task that is associated with a stronger motivational force. In the context of a university, this means that if, for example, the motivational force associated with playing golf is stronger than the motivational force associated with contacting potential financial donors, a university president is more likely to play golf.

The practice of compensating a university president for university performance affects instrumentality and valence perceptions. Specifically, if a president's employment contract states that rewards will be provided if performance reaches a particular threshold, that president is likely to believe that if he or she reaches the specified performance threshold, the associated rewards will be provided. Similarly, if a president discerns a past pattern of the Board providing a reward for a particular level of performance, that president is also likely to believe that similar high performance will yield similar rewards in the future. Stated differently, the university president will have high instrumentality perceptions. Thus, over time, the practice of rewarding high levels of performance should strengthen university presidents' instrumentality perceptions. Furthermore, if the rewards are large enough, they will be perceived as valuable (i.e., have a strong valence). The combination of strong instrumentality and valence perceptions should, theoretically, result in a strong motivational force. Therefore, the motivational force to exert effort and display behaviors aimed at improving university performance should be stronger than that of behaviors that are unlikely to result in higher university performance (as they are not being rewarded). This will lead university presidents to engage in these performance-related behaviors more frequently, which, ultimately, should have a positive effect on subsequent university performance. Stated formally,

Hypothesis 3: *University president compensation will have a positive effect on future university performance.*

***Differential relations between components of compensation and subsequent performance*.** To determine how effectively each component of university president compensation may motivate individuals to increase future performance, one must consider how each component may differentially affect valence perceptions. All else constant, one may expect merit pay to have greater valence than the valence associated with any other component of compensation (Nyberg et al., 2016). As demonstrated previously, over time, one year's merit pay represents a larger sum of money than a bonus or deferred compensation of the same amount because each new merit increase becomes permanent. From this perspective, a $4,000 merit increase should lead to a larger increase in subsequent performance than a $4,000 bonus or $4,000 in deferred compensation. Furthermore, considering that part of the attraction of deferred compensation is that at least a portion of this pay can be realized when the awarded individual is in a lower tax bracket (Eaton & Rosen, 1983), $4,000 in deferred compensation is likely be end up being a larger reward than a $4,000 bonus awarded immediately because taxes are deducted from it at a lower rate. Taken together, these considerations suggest that changes to base pay will result in the highest levels of future performance, followed by deferred compensation, and then bonuses. Stated formally,

Hypothesis 4a: *Merit pay will have the largest effect on future performance.*

Hypothesis 4b: *Deferred compensation will have a moderate effect on future performance (as compared to merit pay and bonuses).*

Hypothesis 4c*. Bonuses will have the weakest effect on future performance.*

However, Nyberg et al. (2016) highlighted that factors besides the amount of money that merit pay represents over time should be considered when making predictions regarding the effect of various components of compensation on subsequent performance. For instance, individuals' choices are affected by various psychological factors (e.g., Kahneman, 2011; Kahneman & Tversky, 1979). In addition to the objective amount of a financial reward, valence is also affected by the reward's salience. From this perspective, one would expect bonuses to have the largest valence, and thus, the strongest relation with future performance (Nyberg et al., 2016). Whereas a $4,000 bonus would be received in one lump sum payment, changes to base pay are spread out over every paycheck. Thus, a $4,000 increase to base pay would only translate to a raise of $153.85 per paycheck (assuming payments are issued bi-weekly). Further, considering that deferred compensation is by its very nature not received immediately, presidents would not actually receive any of the awarded deferred compensation until a later date. Therefore, considering psychological factors, such as a reward's salience, suggests that bonuses will have the strongest effect on future performance, followed by changes to base pay, and then changes in deferred compensation (Nyberg et al., 2016).

This is consistent with predictions based on the concept of net present value (Gallo, 2014). Specifically, to determine the value of a reward, one must consider not only the objective financial value of the reward, but also what an individual may do with the reward once it is received. If an individual invests the received reward, the value of that reward should also take into account the potential return on that investment. From this perspective, bonuses are expected to have a stronger valence than both merit pay and deferred compensation, as an individual receiving a bonus can invest it immediately.

This consideration yields different hypotheses than the rationale that assumes individuals act in an economically rational manner. To determine which rationale is more accurate, I propose the following competing hypotheses. Note that this approach is consistent with the strong inference approach devised by (Platt, 1964).

Hypothesis 5a: *Bonuses will have the largest effect on future performance.*

Hypothesis 5b: *Merit pay will have a moderate effect on future performance (as compared to bonuses and deferred compensation).*

Hypothesis 5c*. Deferred compensation will have the weakest effect on future performance.*

Reciprocal relations between university performance and university president compensation over time. Given that agency theory (Jensen & Meckling, 1976) suggests a relation between university performance and university president compensation, and expectancy theory (Vroom, 1964) suggests a relation between university president compensation and university performance, it is important to consider the reciprocal nature of these variables. In order to do this, one must examine how the relations between these two variables evolve over time.

Research question 2: Does the strength of the relations between university president compensation and university performance change over time? If so, do they become weaker over time or stronger?

Gap 3: Curvilinear Relations Between University Performance and University President Compensation

The majority of studies that assess the relation between organizational performance and future executive compensation assume that the relation between these two variables is linear. For

instance, the largest meta-analysis on executive compensation that is frequently cited as evidence that organizational size has a stronger effect on executive compensation than organizational performance makes no mention of potential nonlinearities (Tosi et al., 2000). Furthermore, Devers et al. (2007) only discuss linear relations between organizational performance and future executive compensation. The situation is similar in the context of universities. Specifically, all 22 studies reviewed in Chapter 2 (see Table 7 for a list of these studies) restricted their analyses of the association between university performance and university president compensation to linear relations. If only linear associations are examined, the relation between organizational performance and executive compensation (or university performance and university president compensation) may be underestimated if it is, in fact, nonlinear.

There are several reasons to believe that the relation between organizational performance and organizational president compensation is nonlinear. For instance, agency theory highlights that agents are risk averse (Eisenhardt, 1989; Jensen & Meckling, 1976). This risk aversion should be taken into account when devising incentive plans, as agents may engage in undesirable behaviors to mitigate their risk (Eisenhardt, 1989; Jensen & Meckling, 1976; Zhang et al., 2008). In the context of universities, one potential way to do this is to provide some compensation increase regardless of the level of university performance (e.g., by providing cost of living adjustments, seniority-based pay raises).

Besides decreasing the risk exposure of presidents, there are other reasons to believe that at least some increase in compensation will be provided regardless of the level of performance. For instance, considering that university performance is not completely under the control of a university president, presidents may view receiving a small or no raise as inequitable. This would be particularly problematic because equity theory suggests that compensating a university

president in an inequitable manner will lead these presidents to withdraw effort in the future, which would ultimately harm university performance (Adams, 1965). Given that agency theory suggests making compensation commensurate with performance to encourage agents to engage in desirable behaviors (Eisenhardt, 1989; Jensen & Meckling, 1976), it would be counterproductive to provide compensation commensurate with poor performance (i.e., little or no compensation increase) as this would cause presidents to reduce effort in the future. Therefore, considering the risk involved in providing no compensation increase, it can be expected that, even when performance is below the desired goal or target, at least some baseline compensation increase will still be provided. Figure 2 provides a graphic depiction of this. Below the performance threshold, a non-zero reward is still provided; however, this reward is not reflective of university performance. Therefore, until the performance threshold is met, the reward is stable (i.e., is does not increase as poor performance becomes slightly less poor). Stated differently, before the performance threshold, the correlation between performance and compensation rewards is predicted to be zero.

Once performance rises above the threshold, however, agency theory suggests that the best way to align the interests of the university president and the Board is to tie compensation to actual university performance (Eisenhardt, 1989; Jensen & Meckling, 1976). This is represented by the first inflection point in Figure 2. This first bend represents the point at which compensation (i.e., merit increases, bonuses, deferred compensation) is provided to reward performance, and therefore, incentivize future performance. The area between this first inflection point and the second inflection point (discussed next) is termed the "incentive zone" (Murphy, 1999, p. 11, see also Indjejikian & Nanda, 2002). This is the area in which incremental improvements in performance are rewarded with incremental increases in rewards (i.e., merit

increases, bonuses, deferred compensation; Indjejikian & Nanda, 2002; Murphy, 1999). Thus, in the incentive zone, the correlation between university performance and compensation rewards is predicted to be non-zero.

It is also reasonable to assume that at very high levels of performance, the link between university performance and compensation will decrease in strength. This is due to the fact that it would not be as cost efficient to continue to compensate university presidents at increasingly high levels, even if performance is high (Brown, Sturman, & Simmering, 2003). Here, it is also useful to consider the relation between pay and future performance. Specifically, although this relation is not frequently examined in the executive compensation literature, there is evidence from the employee (non-executive) compensation literature that suggests that the incentive effect of compensation diminishes at high levels of compensation. For instance, both cardinal utility theory (Eaton & Rosen, 1983; Larrick, 1993) and prospect theory (Kahneman & Tversky, 1979) suggest that exceedingly high levels of pay will have "decreasing marginal returns" (Mitra, Jenkins, Gupta, & Shaw, 2015, p. 154). This means that, at very high levels of compensation, the compensation–performance relation is likely to be weaker than at moderate levels of compensation. For instance, a 5% increase in compensation may be expected to result in a 5% increase in future performance. However, a 100% increase in compensation is likely to result in a less than 100% increase in future performance. Based on this reasoning, universities may set a maximum reward at a point where the anticipated effect on future performance is not expected to be high enough to warrant additional investment in the form of higher rewards. This is represented by the second inflection point in Figure 2. Specifically, this second bend shows that, after a certain performance threshold, the maximum reward (i.e., merit increase, bonus, deferred compensation) will be provided. Above this level of performance, no additional rewards will be

awarded. Stated differently, once the maximum financial reward is provided, the relation between university performance and compensation rewards is predicted to be zero.

Taken together, agency theory can be used to suggest that the relation between organizational performance and executive compensation would look more similar to the solid line with the two inflection points depicted in Figure 2 than to the dashed line that most studies assume. It is informative to note that the solid line in Figure 2 is similar to the line in the figure depicting target "incentive zones" provided and discussed by Murphy (1999) and adapted by Indjejikian and Nanda (2002). An adapted version of these figures (i.e. with transposed axes) is displayed as Figure 3. This figure was developed based on survey results that indicated that organizations' executive bonus plans do not award performance bonuses below a certain performance threshold (Indjejikian & Nanda, 2002; Murphy, 1999). Above this performance threshold, bonuses are based on performance until a pre-determined cap is reached. Thus, above a certain level of performance bonuses compensation will not continue to increase in size (Indjejikian & Nanda, 2002; Murphy, 1999).

Although neither of these articles discussed why this may occur theoretically, they provided initial empirical evidence that such a relation may exist, at least for bonuses. However, there is no reason to believe that this type of relation would not apply to other components of compensation as well. Specifically, changes in base pay and deferred compensation may also be used to align the interests of university presidents and Boards; thus, the same theoretical should arguments are likely to apply. Taken together, based on the empirical evidence and the theoretical arguments discussed above, I propose that the relation between university performance and university president compensation is nonlinear. Stated formally,

Hypothesis 6: *The relation between university performance and future university president compensation (as measured using merit pay, bonuses, and deferred compensation) is nonlinear.*

Method

Sample

The sample of public and private nonprofit university presidents used in this study was derived from the executive compensation database populated by the Chronicle of Higher Education (CHE) (Bauman et al., 2018; The Chronicle of Higher Education, 2018a, 2018b). Individuals who served as a university president for the same university across the 2013 – 2015 years were included in this study. A total of 438 university presidents fit this criterion. Of these 438, 25 individuals were the heads of university systems (e.g., Texas State University System, Montana State University System). University performance data are not provided at the system level; therefore, these 25 individuals were removed from the dataset. Individuals who were presidents of specific universities within these systems were included in the dataset assuming they held that position between 2013 and 2015. An additional 10 individuals were removed from the sample because they received zero total compensation in either 2013, 2014, and/or 2015. This resulted in a total of 403 university presidents. Of the 403 university presidents in the analysis, 290 (72%) were from private universities, whereas 113 (28%) were from public universities.

Measures

Because the goal of Part I of this study was to replicate the results in Study 1, it includes more measures, and different specific operationalizations of these measures, than Part II. Therefore, the measures used in in each part will be described separately. However, all measures used in either Part I or Part II of this study are defined in Table 11.

Part I.

University president compensation. In Part I of this study, university president compensation was operationalized as *total compensation*, which includes all compensation received by the university president in a given year. As deferred compensation, set aside, and employer retirement contributions are not received by a president at the time they are awarded, these types of compensation were not included in total compensation (Bauman et al., 2018). All data pertaining to the compensation of the university presidents in this sample were obtained through the CHE (Bauman et al., 2018; The Chronicle of Higher Education, 2018a, 2018b). The CHE gathers compensation data from private colleges and universities using the Internal Revenue Service's Form 990 (Bauman et al., 2018). This form is required by the IRS for most nonprofit institutions, including most nonprofit private universities. Public universities are not required to file the IRS' form 990, therefore, the CHE gathers compensation data via surveys (Bauman et al., 2018).

University performance. University performance was defined in nine different ways, with at least one operationalization per university performance dimension. The specific metrics were informed by theory, research, and the results of Study 1. Endowment and fundraising-related variables were the most frequently examined variables in the studies included in the systematic review; therefore, the two university financial performance metrics used in this study are *endowment per full-time equivalent (FTE) student* and *fundraising*. Fundraising was defined as a university's reported gifts.

Graduation rate, although only measured in three of the studies included in the systematic review, appeared to have a larger impact on university president compensation than the other operationalizations of academic and research performance. Therefore, *graduation rate*, defined

as the percentage of a cohort that graduates within 150% of the normal time (Ginder, Kelly-Reid, & Mann, 2018), was used as one measure of academic and research performance. The percentage of students in a cohort that default on certain Federal loans within three years of entering repayment, termed *three-year cohort default rate* (U. S. Department of Education, 2018) was also used as a metric of academic and research performance. This measure has not been examined in prior studies; however, given that part of the controversy surrounding university president compensation is that it continues to rise despite increasing student loan debt, it is possible that university Boards are beginning to take students' ability to repay their loans into account when determining university president compensation. Three-year default rate can be considered a measure of academic and research performance because students' ability to repay their loans is likely, in part, tied to the value of their education and degree. This metric was reversed scored in the analyses.

Of the various academic and research quality measures used in previous studies, *student-to-faculty ratio*, defined as total FTE students divided by total FTE faculty (Ginder et al., 2018), seemed to have the largest impact on university president compensation. Therefore, student-to-faculty ratio was used as the measure of academic and research quality in this study. Regarding the faculty quality dimensions, each of the measures used in previous studies involved faculty salary, therefore, in this study, *average full-time faculty salary* is used. *University ranking* was the most common measure of university reputation used in prior studies and is, therefore, used in this study as well. University ranking was coded as 0 = unranked, 1 = ranked.

Regarding the selectivity dimension, two metrics, *acceptance rate* and *average SAT score*, were used as these were the two mostly commonly used measures of selectivity in prior studies. Acceptance rate is defined as the number of admitted students divided by the number of

applicants (Ginder et al., 2018). Because lower acceptance rates are indicative of higher selectivity, this variable was reverse scored. Average SAT score was measured using the average SAT equivalent score (i.e., it includes converted ACT scores as well as SAT scores) for all students admitted to a university (Ginder et al., 2018).

The data for endowment per FTE, graduation rate, student-to-faculty ratio, and acceptance rate were obtained through the Integrated Postsecondary Education Data System (IPEDS) (National Center for Education Statistics, 2018). The IPEDS database is maintained by the National Center for Education Statistics (NCES), which is part of the Institute of Education Sciences (IES) and the U. S. Department of Education (Ginder et al., 2018). All colleges and universities that apply for, or receive, federal funding under Title IV of the Higher Education Act of 1965 are required to complete to the IPEDS surveys ("Higher Education Amendments Act of 1992", 1992). The three-year cohort default rate, average faculty salary, and average SAT score were acquired through the College Scorecard database (U. S. Department of Education, 2018). This database is maintained by the U. S. Department of Education and includes data collected through IPEDS as well as data from the National Student Loan Data System (NSLDS) and the U.S. Department of Treasury. Lastly, university ranking data was obtained from *U. S. News and World Report* (USNWR; Morse, 2017) via *The Washington Post* (Anderson, 2015), which publishes university rankings over time as determined by USNWR.

Non-performance institutional characteristics. There were a total of four non-performance institutional characteristics used in this study. *Enrollment,* defined as the university's FTE enrolled students, was used as it was the most frequently used metric of university size in previous studies. *Carnegie classification* was a commonly used measure of university complexity in prior studies and is a normatively accepted way to categorize

universities based on the types of degrees they issue and the amount of research they produce (The Carnegie Classification of Institutions of Higher Education, n.d.) and was, therefore, used to measure university complexity. A university's Carnegie classification was coded as 0 = Baccalaureate/Associate's universities or Associate's colleges, 1 = Baccalaureate university, 2 = Master's university, 3 = Doctoral/Professional university, 4 = Doctoral university – High research activity, and 5 = Doctoral university – Very high research activity. It was also important to include a measure of institutional ownership (coded as private = 1; public = 0) and whether the university was religiously oriented (religious = 1, non-religious = 0) as there is evidence that both of these variables have a significant impact on university president compensation. Data pertaining to enrollment, Carnegie classification, and religious orientation was collected through the IPEDS database (National Center for Education Statistics, 2018), whereas data necessary for the public/private university variable was obtained through the CHE's executive compensation database (Bauman et al., 2017; The Chronicle of Higher Education, 2018a, 2018b).

University president personal characteristics. Four university president personal characteristics were used in this study. *Gender* was the most frequently examined demographic variable in previous studies. In this study, gender was coded as 1 = female and 0 = male. A university president's *tenure* in their current position (measured in months) was used to assess the impact of tenure-related variables on university president compensation. Two professional experience variables were used – a dummy code indicating if the university president has a *Ph.D.* or equivalent degree (Ph.D. holder = 1, no Ph.D. = 0) and a dummy code indicating if a university president had prior presidential experience at another university (prior presidency = 1, no prior presidency = 0). Prior presidential experience was included because it was identified in the systematic review as a consistent predictor of university president compensation. Although

only one prior study included a measure of whether or not the university president held a Ph.D., this variable could be related to university president compensation, as a Ph.D. is the highest degree that one can earn.

Data on the tenure of university presidents was obtained through the CHE's executive compensation dataset (Bauman et al., 2017; The Chronicle of Higher Education, 2018a, 2018b) and, when the information was unavailable from the CHE, though web searches (e.g., university websites, university presidents' LinkedIn profiles). The remaining data (i.e., gender, Ph.D. holder, prior presidency) was obtained through web searches.

***Control variables*.** Two additional variables were used as control variables. The *non-compete enforceability index* of the state in which a university resides was obtained and updated using methodology from Garmaise (2011)[13]. This variable captures how legally enforceable a non-compete agreement is by state. Non-compete agreements reduce the likelihood that an individual will leave an organization (Garmaise, 2011). In this context, highly enforceable non-compete agreements make it less likely that university presidents will leave their current organization and go to another university than non-compete agreements that are not as easily enforceable. This could be related to university president compensation in one of two ways. On the one hand, it is possible that Boards will pay university presidents less when they reside in a state where non-compete agreements are highly enforceable because the Board is less worried that the president will leave. This notion has received support from the for-profit literature (Garmaise, 2011). On the other hand, because highly enforceable non-compete agreements add significant risk to a university president (i.e., he/she has less of an opportunity to move to another university), a university Board may feel inclined to pay their president more highly in

[13] Special thanks to Dr. Joseph Coombs for providing the non-compete enforceability index data.

exchange for the president's willingness to sign the non-compete. This would be supported by social exchange theory (Blau, 1964; Cropanzano & Mitchell, 2005). Given how this variable could relate to university president compensation, it is important to account for its potential influence.

A measure of university density was also included as a control variable. This variable is a count of how many colleges and universities are in a university's metropolitan statistical area (MSA). The number of universities in a university's MSA may be related to university president compensation for two reasons. First, if there are a large number of universities in a given area, there are many potential job opportunities for potential university presidents; therefore, to attract high performing university presidents and incentivize them to stay with their current university, Boards may pay presidents more. This notion has been supported in the for-profit literature (Wheaton & Lewis, 2002). A large number of universities in a university's MSA may also be a general indicator of how populous an area is, which could reflect the cost of living in an area and how many other non-university employment opportunities exist, both of which could influence the level of compensation paid to university presidents.

Part II.

University president compensation. In Part II of this study, the following dimensions and forms of university president compensation were measured, and separately assessed, depending on the specific hypothesis: *change in total compensation, merit pay, bonus pay*, or *deferred compensation, set aside*. Each of the respective measures were obtained through the CHE or derived using information provided by the CHE. Specifically, *change in total compensation* was defined as the difference between current year's total compensation and previous year's total compensation. *Merit pay* was operationalized as the difference between current year's base

salary and previous year's base salary[14]. *Bonus pay* included all bonuses and incentives received by a university president in a given year. Lastly, *deferred compensation, set aside* was all compensation that was set aside in a given year to be paid out to university presidents in a future year.

To calculate change in total compensation and merit pay, it was necessary to obtain compensation data from the CHE for 2012 in addition to the data from 2013 to 2015. Because this study included individuals who were present at their university from 2013 to 2015, there were some instances where change in total compensation and merit pay for 2012 to 2013 could not be calculated. Information about these individuals' change in total compensation and merit pay for the 2013 to 2014 time period was still included in the analysis.

Change in total compensation, merit pay, bonus pay, and deferred compensation were each operationalized as their respective raw numbers (e.g., merit increase of $4,000) and relative numbers compared to base pay (e.g., merit increase of 5% of base pay) or, in the case of total compensation, to prior total compensation (e.g., 5% increase in total compensation compared to prior year's total compensation). There is evidence to suggest that the relative increases in compensation may have a stronger impact on performance outcomes than absolute increases (Mitra, Tenhiälä, & Shaw, 2016). For instance, a $4,000 merit increase on a base pay of $60,000 represents a 6.66% raise; whereas a $4,000 merit increase on a base pay of $100,000 only represents a 4.00% raise. Research regarding the smallest noticeable pay increases conducted by Mitra et al. (2016) found that individuals' behavioral intentions (to, for example, increase performance) are not positively impacted until raises rise above a certain threshold (4.2% for

[14] It is important to note that base salary is not necessarily comparable between public and private universities. Base salary for public universities includes compensation provided by private university foundations; base salary for private universities includes sick pay and employee contributions to 401(k) and/or 403(b) plans (Bauman et al., 2018).

U. S. samples). Thus, whereas a $4,000 merit increase should motivate individuals with a base pay of $60,000 to increase their level of performance, the same result would not be expected for individuals that receive a $4,000 merit increase and have a base pay of $100,000. Stated differently, the same absolute raise can have differing effects on performance outcomes depending on how that raise compares to current base pay.

University performance. For Part II of this study, university performance was defined as *change in endowment*. Change in endowment was chosen for several reasons. Boards cite that the three most significant challenges faced by universities are their financial stability, the net tuition for students, and the decrease in state and federal funding (Association of Governing Boards of Universities and Colleges & Gallup, 2018). Having large endowments can help with each of these issues. In fact, large endowments allow universities to subsidize the education of students directly by providing financial aid using endowment funds and indirectly by relying less on tuition revenue and more on endowment funds to cover university expenses (Association of Governing Boards of Universities and Colleges, 2019; Baum & Lee, 2018). Therefore, endowments are a very important metric of university performance. In addition, university presidents, as the primary fundraisers and financial managers of universities (Cote, 1985), can have a substantial impact on the size of a university's endowments. Taken together, it is reasonable to expect that Boards would emphasize university endowments when considering the compensation of university presidents and that university presidents would likewise emphasize increasing the size of university endowments.

To calculate change in endowment, it was necessary to obtain data from 2012 and 2016 as well as from 2013 to 2015. Because of this study focused on individuals who were at the same university from 2013 to 2015, it is possible that some university presidents were not employed

by their respective university in 2012 or 2016. However, it is likely that any performance increases from 2012 to 2013 would factor into future compensation decisions. It is also likely that any policies, initiatives, or changes university presidents make will still have an effect on the university's performance one year after that president leaves the university. This is discussed more in the analytical approach section.

Control variables. Based on the results of Part I, five control variables were chosen to be included in all analyses relevant to Part II of this study. Specifically, *change in FTE enrollment*, *non-compete enforceability*, *university density*, and dummy codes indicating whether the university was *private* or *public* and *religious* or *non-religious* were used in Part II. These measures were defined and coded the same was as in Part I, except that change in FTE enrollment was used rather than total FTE enrollment.

Analytical Approach

Part I. Past studies on the relation between university performance and university president compensation have used a variety of different statistical methods including ordinary least squares (OLS) regression (e.g., He & Callahan, 2017; Langbert & Fox, 2013; Monks, 2007; Pati & Lee, 2016), random-effects regression (Bartlett & Sorokina, 2005), fixed-effects regression (Bai, 2014), and the Arellano-Bond dynamic panel model (Cheng, 2014). Although OLS regression without cluster-robust standard errors has been used most frequently and is easiest to specify, its use in longitudinal studies is problematic, as several important assumptions would be violated. However, because most of the previous studies did use OLS regression without cluster-robust standard errors, the hypotheses from Part I of this study, which focuses on replication, were tested twice – once using the OLS framework without cluster-robust standard

errors and once using random coefficient modeling (RCM), which accounts for clustering and both fixed and random effects[15].

For the OLS analyses, total compensation at Time 2 was regressed on all university performance measures, non-performance institutional characteristics, university president personal characteristics, and control variables measured at Time 1. To determine which set of variables accounts for the most variance in total compensation, three separate analyses were conducted where each category of variables was entered into the analysis in the second step. This allows one to compare each category's relative R^2 change when accounting for the remaining variables. Outliers were identified by considering z-scores and Mahalanobis distances. Observations with z-scores over 3.0 or statistically significant Mahalanobis distances were considered outliers for purposes of these analyses. All analyses were conducted including and excluding outliers. Because differences between public and private universities are of interest in this study, all analyses, including the outlier analyses, were performed using the full sample, only public universities, and only private universities. Furthermore, all of these analyses were replicated using Time 3 compensation regressed on all of the university performance measures, non-performance institutional characteristics, university president personal characteristics, and control variables measured at Time 2. If these results are similar to the previous time-period's, then one can have more confidence in the initial results. Conversely, if the Time 1 to Time 2 results are not replicated at Time 2 to Time 3, then one should be more skeptical that the initial observations are reflective of true underlying effects. All OLS analyses were conducted in SPSS v.25 (IBM Corp., Released 2017).

[15] Alternatively, rather than using RCM, one could also calculate cluster-robust standard errors for the OLS analyses to address the non-independence problems associated with combining data across years (Wooldridge, 2013).

Using the RCM approach, total compensation at Time 2 was regressed on the relevant Time 1 variables and total compensation at Time 3 was regressed on the relevant Time 2 variables simultaneously. All RCM analyses were conducted using *R* version 3.5.0 and *R Studio* version 1.2.1335 (R Studio, 2019) with the *multilevel* and *nlme* packages (Bliese, 2016; Pinheiro, Bates, DebRoy, Sakar, & R Core Team, 2019). To determine which set of variables accounts for the most variance in total compensation, the marginal R-square and 95% confidence intervals for each variable were calculated using the *r2glmm* package (Jaegar, 2017; Johnson, 2014; Nakagawa & Schielzeth, 2013). Outliers were identified as cases for which the normalized residuals were greater than two standard deviations outside of the normal distribution (Pinheiro et al., 2019). All analyses were conducted separately for public and private universities and including and excluding outliers.

Part II. All analyses for Part II were conducted using RCM. For Hypotheses 1, 2, and Research questions 1 and 2, there was a one-year lag between university performance and future university president compensation. For Hypotheses 3, 4, 5, 6 and Research question 2, there was a two-year lag between university president compensation and future university performance. This longer lag was used to allow for some time for any changes made by a university president to take effect. Outliers were identified in the same manner as in Part I. All analyses were conducted with and without outliers; however, as differences between public and private universities were not the primary interest in Part II, analyses were only conducted using the full sample of universities, rather than separately for public and private universities. Also, because the relative impact of each predictor was not the primary interest for Part II, R^2 values and confidence intervals are not shown.

Results

Part I: Replication

Sample descriptives. As previously mentioned, there were a total of 403 university presidents included in the sample - 290 (72.0%) from private universities and 113 (28.0%) from public universities. The majority of the university presidents were males (325, 80.6%) and 232 (71.4%) of these men worked at private universities. There were also 78 female university presidents (19.4% of the total sample), most of whom worked for private universities (58; 74.4%). As anticipated, roughly three-quarters (304; 75.4%) of the university presidents held a Ph.D., or equivalent degree (212 [69.7%] at private universities and 92 [30.3%] at public universities). Only 58 (14.4%) of the university presidents had been president at another college or university prior to their current position. Of the 290 private university presidents, 43 (14.8%) had a prior presidency; 15 (13.3%) of the 113 public university presidents had a prior presidency.

The mean tenure at Time 1 was 88.38 months (*SD* = 72.57). Only university presidents who were president at their university for all three timepoints of interest were included in the dataset, therefore, the mean tenure at Time 2 was 12 months more than at Time 1, and the mean tenure at Time 3 was 12 months after that. Presidents from private universities had significantly longer tenure (*M* = 96.07, *SD* = 77.01) than presidents from public universities [(*M* = 68.64, *SD* = 55.26), $t(283) = 3.982$, $p < .001$]. Levene's test indicated unequal variance ($F = 10.28$, $p = .001$), so the degrees of freedom were adjusted from 401 to 283.

The mean total compensation for university presidents in 2013 was $488,590.04 (*SD* = $374,624.88). The mean compensation increased in 2014 (*M* = $527,082.24, *SD* = 470,629.13) and again in 2015 (*M* = $569,813.67, *SD* = $472,982.11). In 2013, private university presidents received significantly more total compensation (*M* = $516,790.14, *SD* = $427,791.13) than public university presidents [(*M* = $416,218.10, *SD* = $155,471.89), $t(400) = 3.46$, $p = 001$].

Levene's test indicated unequal variance ($F = 14.21$, $p < .001$), so the degrees of freedom were adjusted from 401 to 400. This difference between public and private universities persisted in 2014 and 2015. Total compensation across all three years was highly skewed; thus, the natural log of the variable was used in all subsequent analyses.

University performance.

Hypothesis 1. Hypothesis 1 predicted that university performance would be positively related to university president compensation. Table 12 presents the correlation matrix for the full sample of universities. An examination of this table provides initial support for this hypothesis. Specifically, almost all the university performance variables included in the analyses had a positive and statistically significant relation with university performance across all timepoints. There was, however, one exception. Student-to-faculty ratio had a negative association with university president compensation that was statistically significant considering student-to-faculty ratio at Time 1 to university president compensation at Time 2 ($r = -.108$, $p < .05$), but was not statistically significant between student-to-faculty ratio at Time 2 and university president compensation at Time 3 ($r = .077$, *ns*). It is important to note though that, generally, lower student-to-faculty ratios are desirable and, thus, indicative of higher performance. Stated differently, the statistically significant negative correlation between student-to-faculty ratio (Time 1) and university president compensation (Time 2) provides evidence for a positive relation between university performance and university president compensation. Taken together, the correlational evidence suggests that Hypothesis 1 is supported.

As mentioned in the Method section, this hypothesis was also tested using two regression-based approaches - OLS and RCM. The benefit of these approaches over just examining the correlations is that they can determine if the effect of university performance on

compensation is positive and significant when accounting for the effects of other variables of interest. Considering the OLS approach first, Table 13, Panel A provides the standardized regression coefficients (beta weights) for the model that includes all predictors in this study (i.e., university performance, non-performance university characteristics, university president personal characteristics, and control variables) in one step. The relevant beta weights for full sample from Time 1 to Time 2 are shown in Column 2, whereas the beta weights for the Time 2 to Time 3 predictions are shown in Column 5. Looking first at Column 2, one can see that only three university performance variables had a statistically significant effect on university president compensation – graduation rate (β = -.238, p = .032), average faculty salary (β = .196, p = .044), and average SAT score (β = .252, p = .021). Interestingly, graduation rate had a negative effect on university president compensation, suggesting that universities where students are less likely to graduate have more highly paid presidents. These results indicate that, when controlling for the other variables of interest, there is little evidence that university performance positively affects university president compensation, which is in contrast with the correlational results. Turning to Column 5, it can be seen that the results from Time 2 to Time 3 are not consistent with the results from Time 1 to Time 2. Specifically, in Column 5, only endowment per FTE has a statistically significant impact on university compensation (β = .186, p = .028). Graduation rate, average faculty salary, and average SAT score are not statistically significant in Column 5 and endowment per FTE is not statistically significant in Column 2. This further suggests that university performance has little, if any, consistent influence on university president compensation. While these results indicate that Hypothesis 1 may be largely unsupported, it is possible that they were influenced by the presence of outliers.

Table 13, Panel B displays the standardized regression coefficients for the model that includes all predictors in this study in one step, excluding outliers. The results in Table 13, Panel B, Column 2 are fairly consistent with the results in Table 13, Panel A, Column 2. Graduation rate (β = -.256, p = .008), average faculty salary (β = .218, p = .007), and average SAT score (β = .364, p < .001) each remained statistically significant predictors of university president compensation once outliers were removed. In addition, after the removal of outliers, university ranking also became statistically significant (β = .147, p = .032). The results of the Time 2 to Time 3 analysis with outliers removed, shown in Table 13, Panel B, Column 5, are inconsistent with those shown in Table 13, Panel A, Column 5. Specifically, once outliers were removed, endowment per FTE was not statistically significant (β = .132, p = .080), but average faculty salary (β = .194, p = .014) and average SAT score (β = .195, p = .029) were.

Taken together, these results suggest that average faculty salary and average SAT score are the only two university performance variables that have a consistent, statistically significant, positive impact on university president compensation. The remaining university performance variables have inconsistent or insignificant effects on university president compensation. The impact of average faculty salary and average SAT score as compared to the other university performance variables is also supported by the correlational findings as average faculty salary and average SAT score had the two strongest sets of relations with university president compensation. Thus, these analyses suggest limited support for Hypothesis 1.

The RCM results both before and after outlier removal are shown in Table 14, Panels A and B, Columns 2 and 3. As can be seen, these results do not completely replicate the results from the OLS analyses. Specifically, before outlier removal, only one university performance variable had a statistically significant effect on university president compensation – endowment

per FTE (b = .116, SE = .034, p < .01). After outlier removal, endowment per FTE (b = .134, SE = .031, p < .01) and average faculty salary (b < .001, SE < .001, p < .05) both have a statistically significant impact on university president compensation; however, the estimate for average faculty salary is virtually zero (i.e., < .001). Thus, from a practical standpoint, it does not appear to impact compensation. Taken together, these results do suggest a reliable effect of endowment per FTE on compensation, yet the remaining university performance variables do not appear to have any significant relation with future compensation. Therefore, although the specific variables that are shown to influence compensation are not consistent between the OLS and RCM analyses, the conclusion that Hypothesis 1 has limited support is consistent.

Research question 1. Research question 1 asked if there are differences in the strength of the relation between university performance and university president compensation between public and private universities. Table 15 displays the correlation matrix, as well as the means and standard deviations, for public and private universities separately. The correlations for private universities are below the diagonal and the ones for public universities are above the diagonal. Considering private universities first, the results appear to be fairly consistent with the results for the full sample. Specifically, all the university performance variables, except student-to-faculty ratio, had a positive and statistically significant relation with university president compensation. As previously stated, the negative association between student-to-faculty ratio and university president compensation was expected. The results for public universities are similar, except that none of the correlations between student-to-faculty ratio and university president compensation were statistically significant. These correlational results suggest that the pattern of relations between university performance and university president compensation are similar.

Table 13, Panel A, Column 3 shows the standardized regression coefficients for private universities for the Time 1 to Time 2 analysis, whereas Column 6 displays the results from the Time 2 to Time 3 analysis. Considering the results in Column 3, there were two variables that had a statistically significant effect on university president compensation – graduation rate (β = -.247, p = .050) and university rank (β = .235, p = .043). However, the results in Column 6 indicate that only one variable, endowment per FTE (β = .252, p = .042), had a statistically significant effect on university president compensation.

The results of the Time 1 to Time 2 and Time 2 to Time 3 analyses for private universities after outlier removal are shown in Table 13, Panel B, Columns 3 and 6, respectively. In the Time 1 to Time 2 analysis, graduation rate (β = -.285, p = .004), average faculty salary (β = .278, p = .029), university rank (β = .195, p = .029), and average SAT score (β = .195, p = .029) all had a statistically significant impact on university president compensation. The results of the Time 2 to Time 3 analysis (Table 14, Column 6) indicated that endowment per FTE (β = .195, p = .037) and university ranking (β = .249, p = .004) were the only two statistically significant variables. Considering the results in Table 13, Panels A and B, suggests that university rank has the strongest and most consistent effect on private university president compensation.

The results of the analyses for public universities are displayed in Tables 13, Panel A and B, Columns 4 and 7. Table 13, Panel A, Column 4 shows that only three-year default rate had a statistically significant impact on university president compensation (β = -.270, p = .050) from Time 1 to Time 2. This result was consistent even after outliers were removed (β = -.358, p = .014; see Table 13, Panel B, Column 4). The Time 2 to Time 3 results, both including outliers (see Table 13, Panel A, Column 7) and excluding identified outliers (see Table 13, Panel B,

Column 7) indicated that none of the university performance variables have a statistically significant impact on university president compensation.

Taken together, the results in Table 13, Panels A and B, for only private universities (Columns 3 and 6), and only public universities (Columns 4 and 7) show that the majority of university performance variables across all of the analyses do not have a positive, statistically significant impact on university president compensation. However, it appears that university performance has a stronger influence on university president compensation in private universities than in public universities. That being said, it is important to note that there are only 98 public university presidents including in the analyses; therefore, it is possible that statistically significant effects were not observed due to low statistical power.

The relevant RCM analyses are displayed in Table 14, Panels A and B, Columns 4 and 5 (private universities) and Columns 6 and 7 (public universities). These results also suggested that the relation between university performance and university president compensation is stronger in private universities than in public universities. Although endowment per FTE had a statistically significant effect on compensation in private universities (before outlier removal: $b = .172$, SE = .057, $p < .01$; after outlier removal: $b = .196$, SE = .048, $p < .01$), no university performance variables appeared to have an effect on public university president compensation.

Research question 2. Research question 2 asked how the different performance dimensions varied in their prediction of university president compensation, and if these results were consistent between private and public universities. The results from the full sample indicated that average faculty salary (a measure of faculty quality) and average SAT score (a measure of university selectivity) had the strongest effect on university president compensation (see Table 13, Panels A and B, Columns 2 and 5). However, there was another measure of

selectivity, acceptance rate, that had little impact on university president compensation. Therefore, to get a sense of how the various dimensions as a whole predicted university president compensation, the average beta weight for each dimension was compared. The results were fairly consistent across timepoints and considering the analyses with and without outliers. Specifically, faculty quality had the strongest impact on university president compensation, followed by selectivity, reputation, and academic and research performance (each with similar average beta weights). Financial performance and academic and research quality had the weakest impact on university president compensation. All effects were consistently positive, except for the effect of academic and research performance, measured by graduation rate and three-year default rate, which had a negative influence on university president compensation. According to this result, universities where students are *less likely* to graduate and *more likely* to default on their student loans compensate their presidents more highly.

For private universities, the strongest predictor was university ranking, which is a measure of reputation (see Table 13, Panels A and B, Columns, 3 and 6). The results across timepoints and with and without outliers were fairly consistent. Reputation had the strongest effect on university president compensation, followed by faculty quality, then financial performance. Academic and research performance, academic and research quality, and selectivity had relatively weak effects on university president compensation.

Three-year default rate (a measure of academic and research performance) had the strongest and most consistent impact on university president compensation for public universities (albeit only for the Time 1 to Time 2 results; see Table 13, Panels A and B, Columns 4 and 7). However, graduation rate, the other measure of academic and research performance had a small, and statistically insignificant influence on compensation. Therefore, when averaging these

effects, the influence of the academic and research performance dimension was diminished. In fact, the dimension with the highest average beta weight was faculty quality; yet, the measure of faculty quality, average faculty salary, did not have a statistically significant effect on university president compensation in any of the analyses. Furthermore, considering the average beta weights after outlier removal (see Table 13, Panel B, Columns 4 and 7), only faculty quality, which was not statistically significant, is above .100, the remaining average beta weights range from .081 (selectivity) to .006 (financial performance). This suggests that none of the university performance dimensions have much of an effect on university president compensation. However, as previously mentioned, this observation may be due to low statistical power.

Taken together, an examination of the average beta weights for the various dimensions of university performance suggests that the different dimensions may have differing impacts on university president compensation depending on the sample characteristics.

The RCM results for the full sample suggested that endowment per FTE, a financial performance metric, was the only university performance variable with a statistically significant effect on university president compensation. However, the other financial performance metric, fundraising, was not statistically significant. That being said, even averaging their respective R^2 values (see Table 14, Panels A and B, Column 3), the financial performance dimension still accounts for more variance in university president compensation than the remaining university performance dimensions. This finding is consistent for private universities (see Table 14, Panels A and B, Column 5). For public universities, none of the university performance variables in any dimension had a statistically significant impact on university president compensation (see Table 14, Panels A and B, Column 7). Therefore, the relative impact of the dimensions is a moot point.

University non-performance institutional characteristics.

***Hypothesis 2*.** Hypothesis 2 stated that non-performance institutional characteristics related to university size and complexity will have a positive relation with university president compensation. Considering the correlations in Table 12, it appears that both university size (measured by FTE enrollment) and university complexity (measured by Carnegie classification) had a positive association with university president compensation, with *r*s ranging from .309 to .338 (all $p < .001$). This provides initial support for the idea that university size and complexity have a positive relation with university president compensation. Turning to the regression results presented in Table 13, Panels A and B, Columns 2 and 5, it appears that university size had a consistent, positive, and statistically significant impact on university president compensation, whereas university complexity had no statistically significant impact on compensation. It is possible that these results are due to the strong correlation between university size (FTE enrollment) and university complexity (Carnegie classification), which ranges from $r = .835$ ($p < .001$) to $r = .838$ ($p < .001$). Yet, the statistically significant effect of university size on university president compensation suggests support for Hypothesis 2.

The RCM analyses shown in Table 14, Panels A and B, Column 2 and 3, were consistent with the OLS analyses. Specifically, FTE enrollment appeared to have a positive and statistically significant effect on university president compensation (before outlier removal: $b = .305$, SE = .066, $p < .01$; after outlier removal: $b = .298$, SE = .061, $p < .01$). Thus, one can have more confidence in the OLS results and the conclusion that there is a positive relation between university size and complexity and university president performance.

Hypothesis 2 also stated that university size and complexity would account for more variance in university president compensation than did university performance. The correlational results were mixed in their support of this notion. Specifically, acceptance rate, average SAT

score, average faculty salary, and graduation rate all had mean correlations with university president compensation that were stronger than those of FTE enrollment and Carnegie classification, whereas, student-to-faculty ratio, three-year default rate, fundraising, and endowment per FTE had weaker mean correlations.

Table 16 presents the results of the R^2 change when each category of variables was entered into the model at step 2 (i.e., after all of the other predictors were entered in step 1). An examination of these results (Table 15, Panels A and B, Columns 2 and 5) indicates that university performance consistently accounts for more unique variance in university president compensation than does university size and complexity, which suggests that this part of Hypothesis 2 is not supported. However, it is important to note that the R^2 change between university performance and university size and complexity may not be comparable as university performance includes nine variables whereas university size and complexity includes only two.

Therefore, the beta weights were also examined. Table 13, Panels A and B, Columns 2 and 5, suggest that university size has a stronger influence on university president compensation than does university performance. Specifically, the beta weights for university size ranged from .442 ($p < .001$) to .604 ($p < .001$), whereas the largest beta weight across all university performance variables for either timepoint, including or excluding outliers, was -.256 ($p = .008$) (see Table 13, Panel B, Column 2). This provides evidence in support of the second part of Hypothesis 2; however, considering the R^2 change and average beta weights together suggests that there is inconclusive evidence to say that this portion of the hypothesis was supported (i.e., that non-performance institutional characteristics related to size and complexity would account for more variance in university president compensation than does university performance).

The RCM analyses, however, do suggest strong support for this notion. In fact, the R^2 value for FTE enrollment (.045 both before and after outlier removal; see Table 14, Panels A and B, Column 3) was higher than the largest R^2 value for any of the university performance variables. Furthermore, even the sum of all of the R^2 values for university performance (a total of nine variables) was less than the R^2 value for FTE enrollment (one variable). Therefore, the RCM results support Hypothesis 2.

Research question 3. Research question 3 asked if there was a relation between other non-performance institutional characteristics and university president compensation. There were two variables included in the analysis that could fit this description – institutional ownership and religious orientation. Table 12 shows that there was no statistically significant relation between ownership (private or public) and university president compensation. However, the standardized regression coefficients in Table 13, Panels A and B, Columns 2 and 5, indicate that whether the university is public or private had a significant impact on university president compensation with βs ranging from .390 ($p < .001$) to .774 ($p < .001$). This is not surprising given that, as previously reported in the sample descriptives section, private university presidents receive significantly higher compensation than public university presidents. Turning to whether or not the institution was religious, the correlations in Table 12 suggest that university presidents at religious universities earn significantly less money than presidents at non-religious universities. This was also supported by the beta weights in Table 13, Panels A and B, Columns 2 and 5, which ranged from $\beta = -.170$ ($p < .001$) to $\beta = -.205$ ($p < .001$).

The RCM results were consistent with the ones from the OLS analyses. The results in Table 14, Panels A and B, Column 1 show that both institutional ownership and religious orientation had a statistically significant impact on university president compensation. The effect

on institutional ownership was positive, meaning that private university presidents received higher compensation than public university presidents (before outlier removal: b = .579, SE = .127, p < .01; after outlier removal: b = .402, SE = .123, p < .01). Religious orientation, as anticipated, had a negative effect, such that university presidents at religious institutions received lower compensation than their counterparts at non-religious institutions (before outlier removal: b = -.263, SE = .075, p < .01; after outlier removal: b = -.262, SE = .074, p < .01).

***Research question 4*.** Research question 4 asked if the relation between non-performance institutional characteristics and university president compensation is different among private and public universities. The correlational results followed a similar pattern in for private and public universities. Both university size and complexity had statistically significant correlations with university president compensation in private and public samples (see Table 15). This was also supported by the regression coefficients in Table 13, Panels A and B, Columns 3 and 6 as well as 4 and 7. Although there were some instances where the beta weights associated with these variables were not statistically significant, these variables did generally appear to influence university president compensation. In addition, religious orientation was examined in the private university sub-sample; however, as public universities cannot be religiously oriented, the effects of religious orientation were very similar to those of the full sample.

Results of the RCM analyses were consistent with the results of the OLS analyses. Non-performance institutional characteristics did appear to have a significant influence on university president compensation in both private and public institutions. Religious orientation also had a negative, statistically significant impact on private university president compensation (see Table 14, Panels A and B, Columns 4 and 6). Therefore, it appears that non-performance institutional characteristics affect private and public universities in much the same way.

Research question 5. Research question 5 was aimed at determining whether university size or university complexity has a stronger influence on university president compensation, and if this effect was the same across public and private universities. As previously stated, in the full sample, university size had a statistically significant impact on university president compensation, whereas university complexity did not (see Table 13, Panels A and B, Columns 2 and 5). However, this observation could have been due to the high degree of multicollinearity between these two variables. In private universities, the effect of university size was positive and statistically significant across all timepoints, both including and excluding outliers; however, the effect of complexity was negative and only statistically significant at Time 1 after the removal of outliers (see Table 13, Panels A and B, Columns 3 and 6). This suggests that university size has a greater influence on compensation than does complexity. However, an examination of the correlations in Table 15 indicates that multicollinearity was also a problem in this sub-sample (*r*s ranging from .784 to .785, *p*s < .001). Thus, no definitive conclusion can be drawn about the relative influence of these variables. Interestingly, in public universities, where there was less multicollinearity (although still potentially a problematic amount [*r*s from .592 to .617, *p*s < .001]), the beta weights for university size and complexity are very similar (university size: *β*s from .292, *p* = .028, to .387, *p* = .003; university complexity: *β*s from .320, *p* = .016, to .374, *p* = .006). Therefore, it is possible that these two variables have a similar impact on university president compensation and that this effect is consistent across private and public universities.

Results from the RCM analyses were similar to those from the OLS analyses (see Table 14, Panels A and B). Specifically, for the full sample and the private university sub-sample, where multicollinearity was high, university size appeared to have a stronger impact on university president compensation than did university complexity. The estimates ranged from

.298 to .399, *p*s < .01 for university size and from -.132 to -.02, *ns* for university complexity (see Table 14, Columns 2 – 5, Panels A and B). For the public university sub-sample, which had less multicollinearity, the estimates for university size were similar to but higher than those for university complexity (university size *b*s: .145 [before outlier removal] and .136 [after outlier removal], *p*s < .05; university complexity: .126, $p < .01$ [before outlier removal] and .100, $p < .05$ [after outlier removal]). Interestingly, for public universities, the R^2 values for university complexity were actually higher than those for university size (see Table 14, Columns 7, Panels A and B). This suggests that, accounting for the other variables in the model, university complexity explains more unique variance than does university size.

Taken together, these results suggest that more research is needed to disentangle the differential effects of university size and university complexity on university president compensation.

University president personal characteristics.

Hypothesis 3. Hypothesis 3 stated that university president personal characteristics would be related to university president compensation. There were four such variables examined in this study – tenure, whether or not the president held a Ph.D., gender, and prior presidential experience. The results in Table 12 do not support Hypothesis 3. In fact, none of these variables had a statistically significant association with university president compensation. The regression results also provided little support for this hypothesis – statistically significant beta weights were only noted at Time 1 after the removal of outliers (tenure: $\beta = .116$, $p = .003$; Ph.D. holder: $\beta = .073$, $p = .048$; prior presidency: $\beta = .080$, $p = .029$; see Table 13, Panels A and B, Columns 2 and 5). Given that these effects were not noted at Time 2, it is likely that Hypothesis 3 is unsupported.

The RCM results were similar. Specifically, the only university president personal characteristic that was statistically significant was tenure after outlier removal (b = .001, SE < .001, p < .05; see Table 14, Panels A and B, Column 2). However, given that this estimate was so small, it is unlikely that tenure has any practically significant effect on university president compensation. The results of the OLS and RCM analyses, taken together, fail to support Hypothesis 3.

Research question 6. Research question 6 asked how well university president personal characteristics predicted university president compensation in comparison to non-performance institutional characteristics related to university size and complexity. Given that there was evidence to suggest that university performance and non-performance institutional characteristics did have a significant positive effect on university president compensation, but there was no evidence that personal characteristics had such an influence, one can conclude that university president personal characteristics are poorer predictors than these other variables. This is given further support by the results noted in Table 16, which show that university president personal characteristics only account for a statistically significant amount of unique variance in one instance – Time 1 to Time 2, excluding outliers, for private universities.

The RCM analyses also supported this notion (see Table 14, Panels A and B, Column 2 and 3). Although the R^2 values for president personal characteristics were higher than many of those of university performance combined, they were still less than the R^2 values for endowment per FTE. Therefore, one can conclude that university performance and non-performance university institutional characteristics have a greater effect on university president compensation than do university president personal characteristics.

Research question 7. Research question 7 was aimed at determining if there were differences in the relation between university president personal characteristics and university president compensation for private and public universities. For both private and public universities, the correlational results were largely similar to those of the full sample. Only one variable – prior presidential experience – had a statistically significant relation with university president compensation, and only for public universities (see Table 15). However, the regression results were more mixed. In private universities, after the removal of outliers, tenure (β = .166, p < .001) and whether or not the president held a Ph.D. (β = .084, p = .027) were both statistically significant at Time 1 and Time 2 (see Table 13, Panel B, Columns 3 and 6). No statistically significant effects of university president personal characteristics were observed for public universities (see Table 13, Panels A and B, Columns 4 and 7). Taken together, this suggests that university president personal characteristics may have some limited influence on university president compensation in private universities, but not in public universities. However, as previously noted, this may be due to lack of statistical power for public ones.

The RCM results, however, do not agree with the OLS results for private universities. Specifically, they suggest that university president personal characteristics have no significant effect on university president compensation for either private or public universities (see Table 14, Columns 4 – 7, Panels A and B).

***Research question 8*.** Research question 8 was interested in differences between the various dimensions of university president personal characteristics in their effect on university president compensation. There was no evidence to support a relation between any of these characteristics in the full sample or in public universities; therefore, any differences are likely to be inconsequential. In private universities, there was evidence to suggest that tenure and whether

or not the university president held a Ph.D. has an influence on their compensation. The variable tenure falls into the tenure-related variables dimension, whereas educational degree (i.e., Ph.D. holder) is included in the professional experience dimension. Therefore, these results suggest that these two dimensions have a greater influence on compensation than variables in the demographics dimension, such as gender, appear to have. That being said, prior presidential experience was also included in the professional experience dimension and, in this study, it appeared to have no significant effect on compensation. Taking this into account, as well as the results in Table 13, Panel B, Columns 3 and 6, which show that tenure had a larger beta weight than the Ph.D. holder dummy code, suggests that tenure-related variables likely have the strongest impact on compensation, followed by professional experience and that demographics are unlikely to play any significant role in the determination of compensation.

As previously mentioned, the RCM analyses found no evidence of any statistically and practically significant effects of any of the university president personal characteristics examined in either the full sample, private university sub-sample, or public university sub-sample. Therefore, the RCM analyses suggest that any differences between the dimensions in terms of their relative impact are likely to be inconsequential.

Summary.

University performance. The results of Part I indicate that there is little evidence that overall university performance influences university president compensation. However, there is evidence to suggest that specific metrics of university performance are linked to future university president compensation. The specific metrics affecting private university president compensation are different, however, when one considers the OLS results versus the RCM results.

The OLS results suggest that average faculty salary and average SAT score have the largest influence on university president compensation in the full sample of universities, that university rank has the largest effect when only considering private universities, and that none of the performance variables affect public university president compensation. Although the conclusions drawn from the RCM results are comparable with the conclusions of the OLS analyses for public universities, they contrast with the OLS results for private universities and for the full sample. Specifically, the RCM results suggest that endowment per FTE influences university president compensation in the full sample and in private universities, whereas the remaining university performance metrics do not.

To make sense of these findings, one must consider the differences between the OLS analyses and the RCM analyses. For instance, in this study, the OLS analyses were conducted separately by timepoint. The RCM analyses, however, pooled data across years. Therefore, the RCM analyses had a larger overall sample size, leading to decreased sampling error and more statistical power. From a practical standpoint, this means because of the way the OLS and RCM analyses were implemented in this study, the results from the RCM analyses are more likely to be robust and reflective of the true underlying effect than the results from the OLS analyses.

Considering this, the main takeaway from this study regarding the relation between university performance and subsequent university president compensation is that there is evidence to suggest that endowment per FTE affects private university president compensation, but there is little evidence to say that any university performance metric affects public university president compensation.

Non-performance institutional characteristics. Results from the OLS and RCM analyses largely agreed regarding the effect of non-performance institutional characteristics on university

president compensation. University size, as measured by FTE enrollment, had a positive effect on university president compensation at both private and public universities. Furthermore, this variable accounted for more variance in university president compensation than all the university performance variables combined. In addition, university complexity, as measured by a university's Carnegie classification, appeared to have a positive effect on university president compensation at public universities. Regarding the other non-performance institutional characteristics, institutional ownership was a significant predictor of university president compensation in the full sample (i.e., private university presidents, on average, receive higher compensation than public university presidents). Religious orientation of the university was also a significant predictor of university president compensation in the full sample and in private universities, with university presidents from religious institutions receiving less compensation, on average, than those presidents from non-religious institutions.

President personal characteristics. For university president personal characteristics, the OLS analyses and RCM analyses showed different results. The OLS analyses suggested that, after outlier removal, university tenure and whether or not the president had a Ph.D. influenced compensation for private university presidents; however, the RCM analyses showed that these variables, and the remaining university president personal characteristics variables, had no effect on university president compensation at either public or private universities. Given the larger sample size for the RCM analyses, one can thus draw the conclusion that none of the university president personal characteristics measured in this study have a significant effect on university president compensation.

Part II: Identified Gaps

Sample descriptives. Of the 403 university presidents included in the Part I analyses, compensation component data were available for 395 (98%). Across the three timepoints relevant in this study, the mean increase in total compensation was $34,495.18 (*Mdn* = $12,974.00; SD = $386,095.71)[16] and the mean relative increase in compensation was 43,503.78% (*Mdn* = 3.18%, *SD* = 1,061,219.42%). The average merit pay (i.e., increase from prior year's base salary) was $21,237.84 (*Mdn* = $10,327.00; *SD* = $51,202.56). In terms of the percentage change from prior year's base salary, the mean increase was 208,519.74% (*Mdn* = 2.85%; *SD* = 2,360,850.84%). The mean bonus across the three timepoints was $34,745.12 (*Mdn* = $00.00; *SD* = $119,857.63), which, as a percentage of base salary, translates to a 21,887.98% increase on average (*Mdn* = 00.00%; *SD* = 753,248.39%). Lastly, the average deferred compensation, set aside (from here on, the term "deferred compensation" will refer to deferred compensation, set aside) was $56,374.74 (*Mdn* = $25,500.00; *SD* = $94,069.78). As a percentage of base salary, this corresponds to a mean of 17,142.02% (*Mdn* = 7.17%; *SD* = 567,502.94%). The correlation matrix, depicted as Table 17, includes the mean and standard deviation for each of the variables included in the analyses for Part II separated by timepoint.

Gap 1: The effect of university performance on the components of compensation.

Hypothesis 1. Hypothesis 1 suggested that university performance would have a positive effect on each component of future compensation. In Part II, university performance was defined as the change in university endowment per FTE. University president compensation was measured as the change in total compensation. In addition, three specific components of total

[16] The means and standard deviations provided throughout this section are very large. These numbers were influenced by 14 individuals who received, in at least one time period, a compensation increase of over $1 million. Therefore, the medians provided may be more informative of the typical compensation provided.

compensation were examined – merit pay, bonus, and deferred compensation. All compensation variables were also measured as a percentage of total compensation (for change in total compensation) or a percentage of base salary (for merit pay, bonus, and deferred compensation). An examination of the correlations in Table 17 shows that there were no statistically significant correlations between change in endowment and any measure of compensation. This initial evidence suggests that performance is unlikely to have an effect on compensation.

The RCM results for the effect of the change in endowment on each compensation measure are presented in Tables 18 through 25. Model 1 in these tables includes only the control variables used in the Part II analyses, whereas Model 2 includes the control variables as well as change in endowment. Considering the change in total compensation first, the results indicated that change in endowment had a positive and statistically significant effect on the change in total compensation prior to the removal of outliers (b = .134, SE = .032, p < .01, see Table 18, Model 2, Panel A); however this effect disappeared after outliers were removed (b = .007, SE = .003, *ns*, see Table 18, Model 2, Panel B). No statistically significant effects were noted for the relative change in total compensation measure (see Table 19, Model 2, Panels A and B). This suggests mixed support for the notion that university performance affects university president compensation. However, it is possible that university performance has clearer effects on the specific components of compensation.

Considering the raw metric of the compensation components first (see Tables 20, 22, and 24, Models 1 and 2, Panels A and B), the results indicated that change in endowment had a statistically significant and positive effect on merit pay prior to (b = .091, SE = .027, p < .01; Table 20, Model 2, Panel A), and after (b = .053, SE = .006, p < .01; Table 20, Model 2, Panel B), outlier removal. Thus, it seems that university performance does have an effect on the raw

metric of merit pay. In addition, Table 24, Model 2, Panel B, indicates that change in endowment had a positive and statistically significant effect on deferred compensation after the deletion of outliers (b = .044, SE = .016, p < .01). However, there was no evidence to suggest that change in endowment influences bonuses (see Table 22, Model 2, Panels A and B).

The results of the effect of change in endowment on the relative measures of the compensation components are shown in Tables 21, 23, and 25, Models 1 and 2, Panels A and B. An examination of these tables shows that that there was no evidence that change in endowment had an effect on any of these relative compensation component measures.

Taken together, it appears that Hypothesis 1 was supported for merit pay, received mixed support for change in total compensation and deferred compensation, and was unsupported for bonuses, the relative measure of total compensation, and the relative measures of all compensation components.

Hypothesis 2. Hypothesis 2 stated that university performance would have a greater effect on bonuses than on merit pay. However, although a statistically significant effect of university performance on the raw metric of merit pay was noted, no similar effect was noted for bonuses. University performance also appeared to have no effect on the relative metrics of either merit pay or bonuses. Therefore, Hypothesis 2 was unsupported.

Research question 1. Research question 1 asked how the effect of change in endowment on deferred compensation compared to its effect on merit pay and bonuses. An initial review of the results in Tables 20, 22, and 24, Model 2, Panels A and B, suggests that the effect of change in endowment on deferred compensation is likely to be weaker than that of merit pay, but stronger than that of bonuses. To investigate this further, the respective R^2 values for change in endowment on merit pay, deferred compensation, and bonuses were examined. The R^2 values for

the effect of change in endowment on merit pay (before outlier removal: R^2 = .014; after outlier removal: R^2 = .095), were larger than those for deferred compensation and bonuses (before outlier removal: R^2 = .001; after outlier removal: R^2 < .001 for both deferred compensation and bonuses). This, together with the results of Hypothesis 1, suggests that change in endowment affects merit pay, but not the other components of compensation.

Gap 2: Reciprocal relations between university performance and university president compensation.

Relation between compensation and subsequent university performance.

Hypothesis 3. Hypothesis 3 stated that university president compensation has a positive effect on future university performance. An examination of the correlations in Table 17 indicates that change in total compensation and relative change in total compensation had no statistically significant effects on change in endowment. There were also no statistically significant relations between the components of compensation (for both raw and relative metrics) and change in endowment, with one exception. Time 1 and Time 2 deferred compensation values had a statistically significant effect on change in endowment at Time 3 and Time 4, respectively. However, these effects were inconsistent. The effect from Time 1 to Time 3 was negative (r = -.159, p < .01), whereas the effect from Time 2 to Time 4 was positive (r = .109, p < .01). This provides mixed support for Hypothesis 3 for the deferred compensation component of total compensation and no support for the remaining compensation variables.

The RCM results are shown in Tables 26 through 33, Models 1 and 2, Panels A and B. As with the previous set of results, Model 1 in these tables includes only the control variables. Model 2 includes the control variables and the relevant compensation variable. Considering change in total compensation first, there was support for a statistically significant effect of

change in total compensation on change in endowment both before and after outlier removal; however the effect was in the opposite direction then was expected (before outlier removal: b = -.187, SE = .032, p < .01; after outlier removal: b = -1.036, SE = .022, p < .01, see Table 26, Model 2, Panels A and B). This suggests that increases in total compensation led to future decreases in endowment. There was no evidence that relative change in total compensation impacts changes in endowment (see Table 27, Model 2, Panels A and B).

Turning to the components of compensation, there was also no evidence to suggest that any of these compensation components, either in their raw or relative form, had a statistically significant effect on change in endowment (see Tables 28 – 33, Model 2, Panels A and B). Considering these results along with the negative effects observed for changes in total compensation suggests that Hypothesis 3 is not supported.

Hypotheses 4 and 5. Hypotheses 4 and 5 made predictions about how the relations between the components of compensation and change in endowment would vary in strength. Because no statistically significant effects were noted for any of these components (see Tables 26 through 33, Models 1 and 2, Panels A and B), Hypotheses 4 and 5 are not supported and will not be discussed further.

Changes in the relationship between performance and compensation over time.

*Research question 2***.** Research question 2 asked if the strength of the relation between university president compensation and university performance changes over time. To examine this question a series of time by performance and time by compensation interactions were examined. Statistically significant interactions would suggest that the relation between university president compensation and university performance depended on the time period examined. The results of these interactions are depicted in Model 3, Panels A and B of Tables 18 through 33.

Across these 16 tables, only one statistically significant interaction was observed. Specifically, there was a statistically significant, negative interaction between time and change in endowment in the prediction of bonuses (before outlier removal: b = -1.066, SE = .396, p < .01; after outlier removal: b = -.965, SE = .198, p < .01). This interaction was plotted and is displayed in Figure 5, Panels A (before outlier removal) and B (after outlier removal). Figure 5 shows that changes in endowment at Time 1 lead to larger bonuses at Time 2, but that this effect weakens for the subsequent timepoint (change in endowment at Time 2 affecting bonuses at Time 3). However, most university presidents did not receive a bonus (72% and 68% of the sample did not receive a bonus at Time 2 and Time 3, respectively). With so few individuals receiving bonuses, it is difficult to determine if the observed interaction is actually reflective of the true underlying effects. Therefore, caution is warranted regarding the interpretation of the interaction. Taken together, there is little conclusive evidence provided by this study that the relations between university performance and university president compensation change over time.

Gap 3: Curvilinear relations between university performance and university president compensation.

Hypothesis 6. Hypothesis 6 suggested that there would be a curvilinear relation between university performance and future university president compensation. To evaluate this, two additional models were examined. Model 4 in Tables 18 through 25, Panels A and B, included a quadratic effect for university performance, while Model 5 in these tables included quadratic and cubic terms. Considering change in total compensation first, one can see that although the quadratic term was not statistically significant in Model 4 and Model 4 as a whole offered no significant improvement over the linear model (shown in Model 2), Model 5, which included the cubic term, did appear to be a more accurate depiction of the underlying effect. Specifically, the

cubic term for change in endowment was statistically significant both before (b = -.007, SE = .002, p < .01) and after (b = -.007, SE < .001, p < .01) outlier removal (see Table 18, Model 5, Panels A and B). The plot of the cubic relation is shown in Figure 6, Panels A (before outlier removal) and B (after outlier removal). This finding suggests that, at least for the raw metric of change in total compensation, curvilinear relations may exist. No effects were found for relative change in total compensation (see Table 19, Columns 4 and 5, Panels A and B).

Turning to the components of compensation, two additional observed effects were noteworthy. Results indicated that changes in endowment had a statistically significant cubic effect on merit pay before (b = -.006, SE = .002, p < .01) and after (b = -.023, SE = .002, p < .01) outlier removal (see Table 20, Model 5, Panels A and B). This effect is depicted in Figure 7, Panels A (before outlier removal) and B (after outlier removal). There was also a statistically significant quadratic effect of changes in endowment on bonuses (before outlier removal: b = -.069, SE = .033, p < .05; after outlier removal: b = -.067, SE = .016, p < .01); see Table 22, Model 4, Panels A and B). Figure 8, Panels A (before outlier removal) and B (after outlier removal) display a plot of this effect.

Although the observed curvilinear effects suggest some support for Hypothesis 6, an examination of the figures for each of these three effects indicates that the results did not take the expected form (which is depicted in Figure 2). Furthermore, no nonlinear effects were observed for deferred compensation or any of the relative measures of the components of compensation (see Tables 19, 21, 23 – 25, Models 4 and 5, Panels A and B). Taken together, these results suggest that even though some nonlinear relations were observed, Hypothesis 6 was not supported.

Summary.

Effect of university performance on compensation components. In Part II of this study, RCM results indicated that change in endowment did have a linear effect on merit pay (i.e., change in base salary) both before and after outlier removal. Results for the linear effect of change in endowment on the remaining components of compensation were either inconsistent (i.e., only observed before or after the removal of outliers – change in total compensation, deferred compensation) or non-existent (bonuses, all relative measures of compensation).

Effect of compensation components on university performance. Results of the RCM analyses suggested that none of the compensation variables, in either their raw or relative form, had a statistically significant and positive effect on change in endowment. However, contrary to expectations, there was evidence to suggest that *increases* in total compensation led to future *decreases* in endowment.

Changes in the relation between university performance and university president compensation over time. The results of the interaction analyses showed that time was a significant moderator of the relation between change in endowment and bonuses. Specifically, findings indicated that, at Time 1, changes in endowment had a positive effect on bonuses; however, this effect was not observed at Time 2. However, the majority of university presidents did not receive a bonus at either Time 1 or Time 2, which could have impacted the results. Thus, overall, there was little conclusive evidence to suggest the relations between university performance and university president compensation changed over time.

Curvilinear effects of university performance on compensation components. Consistent (i.e., both before and after outlier removal) nonlinear effects of changes in endowment were noted for three compensation variables. Specifically, a cubic effect was noted for changes in total compensation and merit pay. A quadratic effect of changes in endowment was observed for

bonuses. This is particularly interesting given that changes in endowment did not have consistent linear effects on changes in total compensation or bonuses. However, these nonlinear effects did not follow the expected pattern. Furthermore, there was no evidence of nonlinear effects of changes in endowment on deferred compensation or on any of the compensation variables in their relative form.

Discussion

The purpose of this study was two-fold. First, the goal of Part I was to conduct a replication of previous research regarding the effect of university performance (and other relevant variables) on university president compensation. Second, the goal of Part II was to provide insight on several gaps that exist within the current literature on university president compensation. In doing so, the hope was that this study would shed light on our current understanding of the dynamics surroundings the various relations between university performance and university president compensation. This, in turn, would add to our understanding of how predictions based on theories typically used in the for-profit executive compensation literature generalize to the nonprofit educational context. In particular, this study explored predictions derived from agency theory (Eisenhardt, 1989; Jensen & Meckling, 1976), managerialism (e.g., Aoki, 1984; Herman, 1981), human capital theory (e.g., Agarwal, 1981; Becker, 1962), expectancy theory (Vroom, 1964), prospect theory (e.g., Kahneman, 2011; Kahneman & Tversky, 1979), cardinal utility theory (Eaton & Rosen, 1983; Larrick, 1993), and equity theory (Adams, 1965). In addition to the theoretical insight this study aimed to provide, it also intended to address the ongoing controversy related to the high pay of university presidents (see Dillon, 2004; Sonnenberg, 2017; Stripling & Fuller, 2011; Svluga, 2018) and provide guidance to Boards and lawmakers.

In the following sections, I will first review how the results of Part I compared to those from the systematic review. Theoretical and practical implications of the results from Parts I and II will then be discussed. Limitations and ideas for future research directions will be addressed after the implications section. Lastly, a summary of the overall conclusions from this study will be provided. Summaries of the results were provided on pages 148 – 150 (Part I results) and 157 – 158 (Part II).

Part I Results – Comparison to the Systematic Review

Results from Part I did somewhat correspond to those from the systematic review. Specifically, both the systematic review and this study found that university performance had a positive, but somewhat weak effect on university president compensation for the full sample and for public universities. Both studies also suggested that the effect of university performance on university president compensation is stronger in private universities than in public ones. Also, in both studies, non-performance institutional characteristics related to size had a positive effect on university president compensation at both private and public universities. Furthermore, the results from the review and this study indicated that non-performance institutional characteristics, especially university size, had a stronger effect on university president compensation than either university performance or university president personal characteristics.

However, despite the general agreement on these findings, the effect of specific variables that were shown to affect university president compensation differed. For instance, in the systematic review, reputation and faculty quality were identified as the dimensions that had the strongest relation with compensation; however, in this study, the RCM results indicated that endowment per FTE (a measure of financial performance) was the university performance metric with the largest effect, at least for the full sample and for private universities. Additionally, for

private universities, size and complexity dimensions of the non-performance institutional characteristics were both found to have a moderate effect on university president compensation in the systematic review, yet, in Part I of this study, only university size had a significant effect.

There are a few potential explanations for these discrepancies. First, the results from the systematic review and Part I of this study are not directly comparable. Conclusions from the systematic review were drawn using correlations or other types of effect sizes (e.g., beta weights) converted to correlation coefficients, whereas conclusions from Part I of this study were based on regression coefficients from either OLS or RCM analyses. Indeed, if one were to ignore both the OLS results and the RCM results, the correlations do suggest that university rank (a measure of reputation) and average faculty salary (a measure of faculty quality) were more strongly associated with university president compensation than was endowment.

Second, no exact estimates or determinations of statistical significance were made in the systematic review. This also makes it difficult to compare those results to the ones in this study. For instance, in the full sample, the approximate magnitude of the effect of reputation was determined by nine effects and the magnitude of the effect of faculty quality was determined by seven effects. With such small *k*s (and *n*s), it is possible that, had exact estimates and confidence intervals been calculated, the results would have been statistically insignificant due to large amounts of sampling error. Similarly, it is possible that the magnitude of the effect of the financial performance dimension (which contained 27 effects), although smaller than that of reputation and faculty quality, could have been statistically significant due to the estimate being more precise and thus having a narrower confidence interval. If this were the case, the results of the systematic review may have been more similar to the results of this study. In fact, although

endowment did have a consistent effect, it was relatively weak, only uniquely accounting for, at most, 3.5% of the variance in university president compensation.

Implications

The results from Part I and Part II of this study have several implications for research and practice. Each of these implications will be detailed below, starting with those implications related to research.

Research. The findings in Part I provide support for agency theory in the nonprofit educational context. Board members have stated that they are concerned about financial stability, the net tuition for students, and the decrease in state and federal funding (Association of Governing Boards of Universities and Colleges & Gallup, 2018); large endowments can help alleviate these concerns. Furthermore, university presidents are the financial managers and primary fundraisers for universities (Cote, 1985); therefore, endowments may be more directly under their control than metrics such as university ranking. Thus, it makes sense from an agency theory perspective that endowments have stronger effects on university president compensation than other performance metrics. However, endowment funds are also typically invested and, as such, are subject to market forces (Association of Governing Boards of Universities and Colleges, 2019). Therefore, they are not completely under the control of university presidents. Considering this, the somewhat weak effect observed also makes sense in an agency theory framework.

It is difficult to determine, however, if the results from Part II support predictions from agency theory or not. For instance, there was limited evidence that change in endowments led to changes in total compensation (i.e., an effect was detected prior to outlier removal, but was not observed after outliers were removed). If compensation is based on performance, one would

expect that this effect would be observed when focusing on the changes in these two variables. However, as noted in Part I, the effect of performance on university president compensation was only observed for private universities; therefore, it is possible that change in endowment does have a consistent effect on change in total compensation in private universities, but that the inclusion of public universities in this sample clouded the results.

When examining the effect that changes in endowment had on the specific components of compensation, findings indicated that endowments had a consistent effect on merit pay, but not on the other components of compensation. This was also not expected. Merit pay results in permanent increases in base pay (Nyberg et al., 2016), and thus does not require continued commitment to reaching goals to reap the benefits of the increase. It was anticipated that changes in endowment would have a stronger effect on bonuses, as bonuses must be re-earned each year (Nyberg et al., 2016; Park & Sturman, 2016) and are, therefore, more likely to be effective at aligning the goals of university presidents to those of Board members. Yet, this effect was not observed, which would seem to contrast with expectations based on the concepts of goal alignment in agency theory (Jensen & Meckling, 1976). One potential explanation for this finding is that most university presidents did not receive a bonus (72% and 68% of the sample did not receive a bonus at Time 2 and Time 3, respectively). It is possible that those Boards providing bonuses did award them based on performance, but that this effect was not detected due to the overall lack of variance.

Both Parts I and II of this study are clear, however, in their support of the notion that non-performance institutional characteristics related to university size/complexity influence university president compensation. Furthermore, these variables have a stronger and more consistent effect on total compensation and merit pay than does university performance. These

findings suggest support for predictions based on the managerialist view (e.g., Aoki, 1984; Herman, 1981). Recall that managerialism states that agency problems allow executives (in this case, university presidents) to be more entrenched (i.e., powerful) (Combs & Skill, 2003). These university presidents can use their power to influence the Board to base their compensation on university size or complexity, which are less risky (i.e., result in less volatility in compensation) than performance measures would be. Thus, based on this view, one would expect measures of size and complexity to have a stronger association with university president compensation than does university performance. Parts I and II of this study both found this to be the case, at least for university size, as measured by FTE enrollment.

Taken together, these results regarding the relations between university performance and university president compensation, as well as university size/complexity and university president compensation are consistent with findings from the for-profit executive compensation literature. The for-profit literature has also found that both organizational performance and organizational size/complexity affect CEO compensation and that variables related to size, in particular, have a greater effect on compensation than do university performance variables (Tosi et al., 2000). Thus, it does appear that at least some theories and findings from the for-profit literature can provide insight in nonprofit settings.

Part II of this study also has some specific implications related to its findings, or lack thereof. Specifically, contrary to predictions based on expectancy theory (Vroom, 1964), no positive effect of university president compensation on future university performance was observed. In fact, the only observed statistically significant effect of university president compensation on university performance was negative, suggesting that increases in total compensation have a negative effect on future university performance. Although expectancy

theory was used as the basis for the hypothesis, it can also lend insight to why the hypothesis may not have been supported. Specifically, expectancy theory involves three perceptions which make up the potential motivating force of a behavior. These perceptions are expectancy, instrumentality, and valence (Bartol & Locke, 2000; Vroom, 1964). It is possible that these perceptions are generally weak for university presidents. First, even though fundraising enhances endowments and may be somewhat under the control of university presidents, they may feel that they, themselves, are not ultimately able to affect the value of endowments (as endowments are typically invested and thus subject to market forces; Association of Governing Boards of Universities and Colleges, 2019), leading to weak expectancy perceptions. Second, university presidents may not be aware of the effect that endowments have on their compensation, which would result in weak instrumentality perceptions. Third, the association between endowments and university president compensation may not be strong enough to incentivize engagement in behaviors that would result in increases in endowments (e.g., more fundraising), resulting in weak valence perceptions.

Of course, it may be that expectancy theory, which is typically drawn upon to explain motivation and performance at the non-executive level, is not applicable for the executive context. Indeed, given that endowments are not completely under the control of university presidents, it may be unreasonable to think that expectancy perceptions could ever be strong. Yet, if aligning performance to compensation does not result in future performance increases, and, in fact leads to future declines in performance, it becomes difficult to justify performance-based compensation at the executive level and calls a main prediction of agency theory into question.

Part II also explored if the effects of university performance on university president compensation and university president compensation on performance changed over time. Agency theory suggests that the university performance to university president compensation effect should remain stable over time, as it is necessary to continually ensure that the principal's and agent's goals are aligned (Jensen & Meckling, 1976). If this effect does remain stable, expectancy theory would suggest that the compensation to performance effect should either remain stable or increase over time because instrumentality perceptions would strengthen, resulting in stronger motivation (Vroom, 1964). Managerialism, however, suggests that as university presidents gain more power and become more entrenched, the effect of performance on compensation should decrease (Aoki, 1984; Combs & Skill, 2003; Herman, 1981). This would ultimately decrease instrumentality and valence perceptions and thus lead to weaker compensation to performance relations in the future. This would occur because the motivational force of engaging in performance-related behaviors would decrease as instrumentality and valence perceptions became weaker (Vroom, 1964).

Only one statistically significant interaction between the relevant predictor and time was observed (out of 16; 6%). Specifically, the performance to bonus compensation effect did decrease at Time 2 as compared to Time 1. This finding could suggest support for managerialism (i.e., first year bonus was based on performance, second it was based on some other factor preferred by the presidents). However, as previously mentioned, most individuals did not receive bonuses, therefore, it is possible that these results are not really reflective of an underlying interaction. Thus, caution is warranted regarding this interpretation.

The remaining non-statistically significant interactions could suggest support for agency theory. However, it is difficult to draw this conclusion as the lack of interaction effects may have

also been due to low statistical power. Furthermore, given that only one variable – merit pay – was determined to be affected by performance, non-statistically significant interactions for total compensation and deferred compensation, while not providing support for managerialism, can also not provide support for agency theory.

Part II also explored the potential for nonlinear effects of university performance on university president compensation. Specifically, a cubic relation was expected with inflection points representing minimum and maximum rewards. Minimum rewards were predicted due to risk considerations from agency theory (Eisenhardt, 1989; Jensen & Meckling, 1976) and fairness considerations from equity theory (Adams, 1965). Maximum rewards were expected based on predictions from prospect theory (Kahneman & Tversky, 1979) and cardinal utility theory (Eaton & Rosen, 1983; Larrick, 1993) as well as empirical evidence (Mitra et al., 2015). In fact, prior research has found support for such a cubic relation for executive bonuses (Indjejikian & Nanda, 2002). However, the results in this study did not take the expected form. For instance, there did appear to be a quadratic effect of university performance on bonuses. However, this finding is likely due to most university presidents not receiving bonuses. The two cubic effects observed (on changes in total compensation and merit pay) also do not provide support for the expected effects. The plots do appear to show clusters around 14.6 and 15.4 for changes in total compensation, and 12.6 and 13.2 for merit pay, which could suggest a minimum and maximum award as predicted and displayed in Figure 2. However, it is important to remember that these numbers reflect the natural log transformation of changes in total compensation and merit pay. Thus, the plots show much less variance around these numbers than is observed in the non-transformed variables. The untransformed numbers are less likely to show

such clear minimum and maximum clusters. Taken together, these results suggest that, for this study, there was no support for the idea of minimum or maximum rewards.

Across both Parts I and II of this study, perhaps the most important implication is that still very little is known about the dynamics surrounding the relation between university performance and university president compensation. For instance, in Part I, endowment per FTE and FTE enrollment accounted for, at most, 8% of the variance in university president compensation. This means, that at least 92% of the variance in university presidents' compensation remains unexplained. Furthermore, the lack of expected findings in Part II suggests that more nuanced explanations of the relation between university performance and university president compensation are no better at explaining the high levels of compensation received by university presidents than basic linear predictions. Taken together, this suggests that our current theories, or at least our empirical evaluations of them, are limited and thus inadequate at explaining the high levels of university president compensation; therefore, more research is needed. This will be addressed further in the limitations and future directions section.

Practical. From a practical standpoint, the most important findings were that increases in university president compensation appeared to have a nil or negative effect on university performance (as measured by endowments) and that none of the variables in either Parts I or II of this study did a particularly good job explaining the high levels of university president compensation. These findings have important implications for Boards and lawmakers.

First, Boards should consider that the high compensation awarded to university presidents does not appear to be commensurate with the performance of these presidents. This is problematic as it feeds the continued controversy surrounding the high levels of compensation received by university presidents. It may also explain why university president compensation

does not lead to future positive effects on performance – the portion of compensation that is based upon performance is not large enough to be motivating. To combat these issues, Boards should develop compensation policies that increase the degree to which compensation is dependent upon reaching performance goals. Further, attaining these performance goals should be as much under the control of universities presidents as possible. For instance, fundraising may be more directly under the control of university presidents than endowments as endowments are subject to market forces and used to fund ongoing university projects and initiatives (Association of Governing Boards of Universities and Colleges, 2019). Boards should also consider making the process of university president performance evaluation and compensation determination more transparent. This may not only help to quell the controversy surrounding the high levels of pay received by university presidents, it may also provide clearer guidance to interested researchers and the public about how compensation decisions are made. These suggestions are particularly important for Boards of public universities in which compensation did not appear to be determined by university performance.

Second, the results of this study suggest that laws limiting the amount of a public university president's compensation that can come from public funds (e.g., Fla. Stat., 2017) may be justified. For public universities, university performance did not appear to influence university president compensation and no positive effects of compensation were observed on future university performance. Thus, it seems difficult to justify why large amounts of public funding would go to compensating university presidents, rather than to programs that would better serve students. Therefore, lawmakers in states without such regulations should consider adopting them. This suggestion is not directly applicable for private universities; however, it may still be useful

for decision makers at private universities to consider setting reasonable ranges in which university presidents can be compensated.

Limitations and Future Directions

As with all studies, this study had limitations. Limitations affecting the obtained results, as well as the interpretation of those results will be discussed in the following sections. Suggestions for how these results could be addressed in future research will also be provided.

Four main sets of limitations may have influenced the obtained results – lack of statistical power, multicollinearity as well as practical and conceptual overlap in Part I, the specific operationalizations of variables used in the study, and the analytical approach utilized. Although power analyses indicated that there was enough power to detect the expected effects in the full sample of universities, the subsamples, particularly the public university subsample, may not have had a large enough sample size to detect the expected effects in Part I. This was likely to a be a greater issue for the OLS analyses, however, as the RCM analyses had double the amount of observations. That being said, in Part II, although the analyses were not separated by group and there were fewer predictors included in the models, there may still not have been enough statistical power to detect interaction effects. Therefore, future studies could expand the number of university presidents included in the sample. A large enough sample size would also allow private universities to be broken down into religious and non-religious private institutions, as suggested in the limitations and future research section of Study 1.

Multicollinearity and conceptual overlap among university performance variables also represent potential limitations for Part I of this study. Although the vast majority of correlations between the university performance variables were below .80 (Field, 2012) and variance inflation factors (VIF) were all below 10 (Myers, 1990), all VIFs were also greater than 1

(Bowerman & O'Connell, 1990). This suggests that multicollinearity was present in Part I of this study. Furthermore, some of the variables also practically and conceptually overlapped with other included variables. For instance, although the correlations between fundraising and endowment only ranged from .392 to .421, these two variables may, in practice, overlap quite a bit. Increases in endowment are largely gained through fundraising and investment performance. As university presidents have little control over the investment performance of endowment funds, Boards are likely to tie university president more closely to endowment gains due to fundraising. Therefore, although not all of the money gained through fundraising may become part of a university's endowment (e.g., it may be spent immediately, provided to a specific department), increases in endowment due to fundraising are likely completely captured by the fundraising variable. These issues are problematic as they can inflate standard errors, which affects statistical significance tests (Field, 2012). Furthermore, multicollinearity as well as practical and conceptual overlap can make it difficult to determine the relative importance of each predictor (Field, 2012). Therefore, to better determine the importance of each predictor of university president compensation, future research could employ relative weights analysis, which can better determine predictor importance for correlated variables (Tonidandel & LeBreton, 2011). Future research could also leave out variables that are empirically, practically, or conceptually redundant. To attempt to address these problems present in Part I, Part II only included one university performance variable, thereby reducing these concerns.

It is also possible that the specific operationalizations of university performance in this study did not include important measures of university performance that are used by Boards to determine compensation. As noted in Chapter 2, there have been many different operationalizations of university performance used in previous studies and there are additional

operationalizations, such as the diversity of the student body and post-graduation earnings, that Boards may consider. However, as there were already potential issues with multicollinearity, it was not plausible to evaluate more predictors in this study. Related to this issue is the possibility that universities do not make compensation dependent on the same university performance metrics, which would make it appear as though there was no effect of university performance when one does, in fact, exist. To attempt to mitigate the effects of this issue, the university performance metrics used in this study, particularly in Part II, were metrics that Boards claim to consider important. However, future research could address both of these limitations by considering other operationalizations of university performance and creating a weighted performance index based on what each university board claims to emphasize. This information is not easily available but can sometimes be derived from information in Board meeting minutes and other university sources.

The data analytic techniques and approaches used in this study also have limits. For instance, RCM, just like OLS, assumes strict exogeneity. This assumption is violated (i.e., endogeneity is present) when one or more predictors is correlated with the error term at any time period. There are several reasons why this may occur. For instance, omitted variables can cause predictors to be correlated with the error term. This can lead to substantial bias in coefficient estimates and, thus, also in statistical significance tests (Greene, 2003; McNeish & Kelley, 2019; Woolridge, 2016). This bias makes it difficult to determine if the obtained results are actually reflective of the underlying effect. One potentially important variable that was omitted from many of the RCM analyses was a dummy code referring the specific timepoint. Although this variable was included in the interaction analyses in Part II (see Model 3 of Tables 18 to 33), it was not included in Models 1 or 2, or in any of the Part I analyses. Yet, this variable is likely to

be correlated with one or more of the predictors and the dependent variable, especially as some variables (e.g., endowment, compensation) tend to increase over time. In fact, when included as a predictor, the time variable was statistically significant in the majority of instances (i.e., endowment and many of the compensation components increased over time; see Model 3 in Tables 18, 20, and 26 – 33). Therefore, it is likely that its inclusion in Models 1 and 2 (as well as Models 4 and 5 and the Part I analyses) would have impacted the obtained results. Therefore, to attempt to address the omitted variable bias, future research should explicitly model this variable (i.e., the dummy code for timepoint) to determine the extent to which it influences the coefficient estimates of the other variables.

Another source of endogeneity in this study has to do with the dynamics of the relation between university president compensation and university performance. To avoid violations of strict exogeneity, predictors cannot be influenced by prior levels of an examined outcome variables (Woolridge, 2016). In this study, however, that is exactly the type of dynamic expected. This study proposed that university performance affects subsequent university president compensation and that university president compensation affects subsequent university performance. Stated differently, it was expected that changes in performance would affect changes in compensation, that these changes in compensation would lead to changes in performance, and so on. Thus, clearly, predictors in either equation (i.e., performance, compensation) are influenced by prior levels of the relevant outcome (i.e., compensation, performance). This causes the error term in one equation (e.g., the prediction of university performance) to be correlated with future predictors in that equation (i.e., compensation). Ultimately, this has the same effect that the omitted variable problem does - coefficient estimates and statistical significance tests may be substantially biased (Woolridge, 2016). To address this

issue, future research could consider using instrument variables and two-stage least squares regression, which is a common technique to address exogeneity violations (e.g., Floyd, 2013; Woolridge, 2013).

The specific approach to testing the hypotheses also has limitations. For instance, in Part I, several of the research questions involved determining if there were differences between public and private universities. To make these determinations, I looked to the statistical significance of the various predictors included in the analyses. This approach did suggest differences between public and private universities, however, comparing results of statistical significance tests can be misleading, especially when sample sizes are not equal. Therefore, to better assess if differences exist between public and private universities, future research should either examine whether institutional ownership (public or private) interacts with each independent variable to predict university president compensation. Such a test is termed a Chow test (Chow, 1960; Woolridge, 2012).

It is also possible that the specific lags that I used did not adequately reflect the complexity of the underlying relations. For instance, I examined the effect of university president compensation on university performance with a two-year lag (e.g., university president compensation at Time 1, university performance at Time 3). This two-year lag was used to allow time for policies a university president may have put into effect the year of their compensation increase to have an effect. However, it is possible that these effects take longer to go into effect, which would mean that a longer lag is necessary. Stated differently, university performance at Time 2 may be affected by university president compensation (and other variables) that occurred more than two years prior if the effects of compensation take longer than two years to be fully realized. To address this issue, future research should consider using more years of data as well

as analytical approaches that include lagged values of the dependent variable as predictors (e.g., Arellano-Bond dynamic panel model).

In addition, in this study, the university performance to university president compensation and university president compensation to university performance effects were examined separately. Thus, the causal inferences that can be made about any observed effects are limited. Given that few effects were actually observed in Part II, this may be a moot point; however, future research could use Bayesian estimation to better test the cross-lagged effect that was hypothesized and allow causal inferences (Schuurman, Ferrer, De Boer-Sonnenschein, & Hamaker, 2016).

It is also possible that the findings that were obtained in this study were not due to the theoretical explanation provided. Some could argue that the weak effect of university performance could be expected due to the intrinsic motivation of the university presidents (Bai, 2014; Handy & Katz, 1998; Jobome, 2006). Recall that this argument states that nonprofit university presidents choose to work in a nonprofit setting and, thus, to receive lower compensation, because they are intrinsically motivated. If accurate, then it may not be necessary to incentivize performance because these presidents need no incentive. On its face, this argument may explain why there was no effect of university performance on university president compensation observed for public universities. However, one could also make the argument then that, if these presidents are intrinsically motivated, there is really no need to provide such high compensation and that this money would be better allocated toward student programs. Potentially more reasonable explanations for the lack of effect noted for public universities are low statistical power (discussed above) or that compensation is provided with no performance justification (at least not considering the variables used in this study). To explore these issues

further though, future researchers could survey university presidents at public and private universities to determine if there are substantive differences in the levels of intrinsic motivation. If the data could be obtained, it would also be interesting to determine if there are differences in intrinsic motivation between private university presidents at religious and non-religious institutions.

Regarding the noted effect of non-performance institutional characteristics related to university size and complexity, one cannot be sure, based on the analyses in this study, if the relation between university size and university president compensation is due to entrenchment as predicted by managerialism (Aoki, 1984; Combs & Skill, 2003; Herman, 1981) or due to some other factor. To provide a better test of this, future research should examine how the relation between these variables and university president compensation evolves over time (and include more time periods than the two utilized in this study). If the relation increases over time, the entrenchment hypothesis would receive greater support.

Conclusion

Part I of this study attempted to replicate the results of the systematic review. Part II examined additional hypotheses and research questions aimed at filling gaps that exist in the nonprofit educational context (as well as the for-profit context). Limitations notwithstanding, the results of this study do provide some insight on the dynamics of the relation between university performance and university president compensation. In fact, three overarching conclusions can be drawn. First, the effect of university performance on university president compensation appears to be weak (for private universities) or non-existent (for public universities). Second, university president compensation appears to have a negative effect, if any, on future university performance. Third, overall, the results indicated that current theories and empirical evaluations

cannot adequately explain how university president compensation is determined. Therefore, it appears that the continued controversy surrounding university president compensation is justified.

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Table 1

Predictors Examined in the Executive Compensation Literature

Predictor	Example operationalizations	Theories/perspectives utilized	Example studies
Performance	Accounting performance (e.g., return on equity, return on assets), market performance (e.g., stock performance, dividends)	Agency theory	Aggarwal and Samwick (2003), Boschen, Duru, Gordon, and Smith (2003), Garen (1994), Hartzell Jay and Starks Laura (2003), Leone, Wu, and Zimmerman (2006), Nyberg et al. (2010), Tosi et al. (2000)*
CEO behavior	Research and development intensity, invention resonance, science harvesting	Agency theory	Makri, Lane, and Gomez-Mejia (2006)
Size and complexity	Number of employees, total assets, sales	Managerialism, human capital theory	Boyd (1994), David, Kochhar, and Levitas (1998), Gerhart and Milkovich (1990), Gray and Cannella (1997), Ingham and Thompson (1995), Tosi et al. (2000)*
CEO Personal characteristics	Level of education, firm tenure, job tenure	Human capital theory	Agarwal (1981), Combs and Skill (2003), Gerhart and Milkovich (1990)
CEO role characteristics	Hierarchical rank in organization	Tournament theory, social norms	Lazear and Rosen (1981)
Governance influences/failures	CEO duality, tenure, Board size, Board independence	Agency theory, Managerial power theory	Daily, Johnson, Ellstrand, and Dalton (1998), Deutsch (2005)*, van Essen et al. (2015)*
Labor market influences	Industry pay level, ratio of external hires	Neoclassical labor economic theory	Fulmer (2009)
Equity considerations	Compensation of individuals on compensation committee	Social comparison theory	O'Reilly et al. (1988)

* Denotes that the study is a meta-analysis.

Table 2

Predictors Examined in the University President Compensation Literature

Predictor	Example operationalizations	Theories/perspectives utilized	Example studies
University performance	Endowment, alumni giving rate, graduation rate, student/faculty ratio, faculty salaries, ranking, acceptance rate	Agency theory, organizational control theory,	Bai (2014), Banker et al. (2009), O'Connell (2005), Pati and Lee (2016), Tang et al. (2000)
University size and complexity	Enrollment, expenditures, revenue, Carnegie classification	Managerial power theory, theory of managerial capitalism, segmented labor market theory, functional theory of compensation	Galle and Walker (2014), Gordon and Fischer (2014), Huang and Chen (2013), Pfeffer and Ross (1988)
University president personal characteristics	Gender, age, tenure, highest degree, area of study	Human capital theory, supply-side theory of wage determination, labor theory	Banker et al. (2009), Bartlett and Sorokina (2005), Huang and Chen (2013), Sorokina (2003)

Table 3

Performance Dimensions and Measures

Performance (and dimensions)	Sample Studies
• Financial Performance	
• Alumni giving rate	Bartlett & Sorokina (2005), Langbert (2006), Langbert & Fox (2013), Sorokina (2003)
• Moody's bond rating	Bartlett & Sorokina (2005)
• Cost efficiency	Pati & Lee (2016)
• Endowment	Banker et al. (2009), Bartlett & Sorokina (2005), Cheng (2014), Ehrenberg et al. (2001), Huang & Chen (2013), Langbert (2006), Pati & Lee (2016), Saunders (2007)
• Equity ratio[17]	Cheng (2014)
• Fundraising/gifts	Bai (2014), Ehrenberg et al. (2001), Galle & Walker (2014), Pati & Lee (2016)
• Government grants	Galle & Walker (2014)
• Grants received	Bai (2014)
• Gross margin[18]	Langbert (2006)
• Investment revenues/returns	Bai (2014), Galle & Walker (2014)
• Operating surplus	Cheng (2014)
• Other revenues (not from tuition, grants, private contributions, or investments)	Bai (2014)
• Risk	Bartlett & Sorokina (2005)
• Short-term financial risk	Bartlett & Sorokina (2005)
• Total assets	Galle & Walker (2014), Gordon & Fischer (2014)
• Total liability	Galle & Walker (2014)
• Academic and Research Performance	
• Graduation rate	Gordon & Fischer (2014), (Langbert (2006), Pati & Lee (2016)

[17] Defined as net assets divided by total assets (Cheng, 2014)
[18] Defined as revenue minus expenses (Langbert, 2006).

Performance (and dimensions)	Sample Studies
• Retention rate	Bartlett & Sorokina (2005), Cheng (2014), Langbert (2006), Langbert & Fox (2013), Sorokina (2003)
• Academic and Research Quality	
• Academic support expenses	Cheng (2014)
• Faculty resource rank	Langbert (2006)
• Instructional and research expenses	Cheng (2014), Gordon & Fischer (2014)
• Research and development expenditures	Ehrenberg et al. (2001)
• Student/faculty ratio	Langbert (2006), He & Callahan (2017)
• Proportion of classes with < 20 students	Langbert (2006), Langbert & Fox (2013)
• Proportion of classes with > 50 students	Langbert (2006)
• Faculty Quality	
• Faculty salaries	Bai (2014), Banker et al. (2009), Cheng (2014), Ehrenberg et al. (2001), Galle & Walker (2014), Monks (2004), O'Connell (2005), (Pati & Lee (2016), Saunders (2007)
• Reputation	
• Number of applicants	Cheng (2014)
• Peer assessment score	Langbert (2006), Langbert & Fox (2013)
• Princeton review's best colleges	He & Callahan (2017)
• Ranking	Bai (2014), Huang & Chen (2013), Langbert (2006), Saunders (2007), Tang et al. (2000)
• Selectivity	
• Acceptance rate	Bartlett & Sorokina (2005), Cheng (2014), He & Callahan (2017), Langbert (2006), Langbert & Fox (2013)
• Admission rating	He & Callahan (2017)
• Freshman in top of high school class	Bartlett & Sorokina (2005)
• Percentage of students who graduated in the top 10% of their high school class	Parsons & Reintenga (2013)
• SAT scores (including average SAT scores, 25th percentile SAT, 75th percentile SAT, 25th percentile SAT Math, 75th percentile	Banker et al. (2009), Bartlett & Sorokina (2005), Cheng (2014), Ehrenberg et al. (2001), He & Callahan (2017), Huang & Chen (2013), Langbert (2006), Langbert & Fox (2013), Parsons & Reitenga, Sorokina (2003), Tang et al. (2000)

Performance (and dimensions)	Sample Studies
SAT Math, 25th percentile SAT Verbal, 75th percentile SAT Verbal	
• Student quality	He & Callahan (2017)
• Other	
• Environmental sustainability score	Pati & Lee (2016)
• Social sustainability score	Pati & Lee (2016)
• Student service expenses	Cheng (2014)

Table 4

Non-performance Institutional Characteristics

Institutional Characteristics (and dimensions)	Studies
• Size	
• Enrollment	Bai (2014), Banker et al. (2009), Bartlett & Sorokina (2005), Cheng (2014), Ehrenberg et al. (2001), Galle & Walker (2014), He & Callahan (2017), Huang & Chen (2013), Langbert (2006), Langbert & Fox (2013), Monks (2004), O'Connell (2005), Parsons & Reintenga (2013), Saunders (2007), Tang et al. (2000)
• Institutional support expenses	Cheng (2014)
• Administration expenditures	Gordon & Fischer (2014)
• Number of employees	Cheng (2014), He & Callahan (2017), Tang et al. (2000)
• Total expenditures	Langbert (2006), Tang et al. (2000)
• Other expenditures	Gordon & Fischer (2014)
• Total revenue	Bai (2014), Huang & Chen (2013), Langbert (2006), Langbert & Fox (2013), Monks (2004)
• Tuition revenue	Bai (2014), Banker et al. (2009), Saunders (2007), Tang et al. (2000)
• Number of administrators	O'Connell (2005)
• Complexity	
• Number of degree-granting programs	Huang & Chen (2013)
• Type of university/Carnegie classification	Bai (2014), Banker et al. (2009), Huang & Chen (2013), He & Callahan (2017), Langbert (2006), Parsons & Reitenga (2013), Pfeffer & Ross (1988), Saunders (2007), Tang et al. (2000)
• University tier	Bartlett & Sorokina (2005), He & Callahan (2017), Sorokina (2003)
• Other	
• % of aliens enrolled	Cheng (2014)
• % of students who receive financial aid	Cheng (2014)
• % of students who receive grant aid	Cheng (2014)

Institutional Characteristics (and dimensions)	Studies
• Average graduate tuition	Cheng (2014)
• Geographic location	Langbert (2006), Tang et al. (2000)
• Member of the Council for Christian Colleges and Universities	Saunders (2007)
• Presence of business school	Tang et al. (2000)
• Presence of law school	Tang et al. (2000)
• Presence of medical school	Tang et al. (2000)
• Ratio of administrative staff	Cheng (2014)
• Ratio of instructional and research staff	Cheng (2014)
• Religious affiliation	Galle & Walker (2014), Langbert (2006), Langbert & Fox (2013), Saunders (2007)
• Size of surrounding community	Langbert & Fox (2013)
• Year the university was founded	Langbert & Fox (2013), He & Callahan (2017), Tang et al. (2000)
• Tuition cost	Gordon & Fischer (2014)
• Tuition discount rate (what students actually pay for tuition)	Gordon & Fischer (2014)
• Net tuition cost	O'Connell (2005)

Table 5

Human Capital and Personal Characteristics

Personal Characteristics (and dimensions)	**Studies**
• Demographics	
• Age	Bartlett & Sorokina (2005), Ehrenberg et al. (2001), He & Callahan (2017), Langbert & Fox (2013), Monks (2004)
• Gender	Banker et al. (2009), Bartlett & Sorokina (2005), Cheng (2014), Ehrenberg et al. (2001), He & Callahan (2017), Huang & Chen (2013), Langbert (2006), Langbert & Fox (2013), Monks (2004), O'Connell (2005), Pfeffer & Ross (1988), Saunders (2007), Sorokina (2003)
• Marital status	Monks (2004)
• Race	Cheng (2014)
• Professional Experience	
• Field of highest degree	Monks (2004)
• J.D. degree holder	Banker et al. (2009)
• J.D., M.D., or other professional degree	He & Callahan, (2017)
• Law, business, or economics degree	Bartlett & Sorkina (2005)
• Past experience as a tenured professor	Banker et al. (2009)
• Past experience in educational administration	Banker et al. (2009)
• Ph.D. holder	Cheng (2014)
• Prior presidency	Banker et al. (2009), Bartlett & Sorokina (2005), Cheng (2014), Ehrenberg et al. (2001), Monks (2004)
• Tenure/Length of Experience	
• Aggregate experience	Banker et al. (2009)
• Job tenure	Banker et al. (2009), Bartlett & Sorokina (2005), He & Callahan (2017), Langbert & Fox (2013), Monks (2004), Pati & Lee (2016), Sorokina (2003)
• Number of working years	Banker et al. (2009)

Personal Characteristics (and dimensions)	Studies
• Seniority	Ehrenberg et al. (2001)
• University tenure	Banker et al. (2009)
• Years of experience at prior presidency	Ehrenberg et al. (2001)
• Years on faculty before becoming president	Monks (2004)
• Other Personal Characteristics	
• Alumni status	Bartlett & Sorokina (2005), Cheng (2014)
• Hired from outside academia	Monks (2004)
• In their first year as president	Cheng (2014), He & Callahan (2017)
• In their last year as president	Bartlett & Sorokina (2005)
• Interim president	Cheng (2014)
• Internal hire	Langbert & Fox (2013), Monks (2004), Pfeffer & Ross (1988)
• Listed on Who's Who	Saunders (2007), Sorokina (2003)
• Member of an external Board	Monks (2004)
• Member of clergy	Ehrenberg et al. (2001)
• Performance at past university	Banker et al. (2009)

Table 6

Search Strategy

Database	Keywords	Additional Search Restrictions	Results Returned
ABI/INFORM Complete	("university" OR "college" OR "higher education") AND "president" AND ("compensation" OR "salary" OR "salaries" OR "pay")	Results limited to journals, working papers, reports, dissertation, and conference papers	58
Academic Search Complete		N/A	46
Business Source Complete		N/A	30
Education Research Complete		Results limited to journals and conference papers	155
ERIC		N/A	275
ProQuest Dissertations and Theses		N/A	104
PsycInfo		N/A	24
ScienceDirect		N/A	11
Google Scholar		N/A	~1.5 million

Table 7

Summary of the Results by Dimension for All Universities

Dimension	Total number of effect sizes	Number of positive effect sizes	Number of positive effect sizes that were statistically significant	Number of negative effect sizes	Number of negative effect sizes that were statistically significant	Approximate magnitude of results based on standardized effect sizes
Panel A: University Performance						
University Performance	81	57 (70%)	35 (67%)*	22 (27%)	8 (36%)	weak positive
Academic and Research Performance	7	4 (57%)	1 (25%)	2 (29%)	0 (0%)	weak positive
Academic and Research Quality	8	5 (63%)	3 (75%)*	3 (38%)	2 (67%)	weak to moderate positive
Faculty Quality	7	6 (86%)	5 (100%)*	1 (14%)	1 (100%)	moderate to strong positive
Financial Performance	27	17 (63%)	8 (53%)*	9 (33%)	3 (33%)	nil to weak positive
Reputation	9	8 (89%)	6 (75%)	1 (9%)	0 (0%)	moderate positive
Selectivity	18	14 (78%)	9 (69%)*	4 (22%)	1 (25%)	weak positive
Other	3	1 (33%)	1 (100%)	2 (67%)	1 (50%)	nil to weak positive
Panel B: Non-Performance Institutional Characteristics						
Non-Performance Institutional Characteristics Related to Size and Complexity	60	47 (78%)	33 (73%)*	12 (20%)	5 (42%)	weak to moderate positive
Size	34	31 (91%)	25 (83%)*	2 (6%)	0 (0%)	moderate positive
Complexity	25	15 (60%)	7 (50%)*	10 (40%)	5 (50%)	weak positive
Other	25	9 (36%)	7 (78%)	16 (64%)	9 (56%)	nil
Religiously affiliated	6	0 (0%)	NA	6 (100%)	6 (100%)	weak to moderate negative
Panel C: President Personal Characteristics						
Demographics						
Gender (male)	12	8 (67%)	3 (43%)*	4 (33%)	1 (25%)	nil to weak positive
Age	2	2 (100%)	1 (100%)*	0 (0%)	NA	weak positive
Professional experience						
Prior presidency	6	6 (100%)	2 (40%)*	0 (0%)	NA	weak positive
Tenure	13	10 (77%)	6 (75%)*	3 (23%)	0 (0%)	nil to weak positive
Other	11	5 (45%)	4 (80%)	6 (55%)	2 (40%)*	
Alumni status	2	1 (50%)	0 (0%)	1 (50%)	0 (0%)	nil to weak positive

Note. *indicates the percentage is based on the number of effect sizes for which statistical significance information was available rather than the total number of effect sizes.

Table 8

Summary of the Results by Dimension for Public Universities

Dimension	Total number of effect sizes	Number of positive effect sizes	Number of positive effect sizes that were statistically significant	Number of negative effect sizes	Number of negative effect sizes that were statistically significant	Approximate magnitude of results based on standardized effect sizes
Panel A: University Performance						
University Performance	30	18 (60 %)	11 (61%)	10 (30%)	3 (30%)	nil to weak positive
Academic and Research Performance	3	1 (33%)	0 (0%)	1 (33%)	0 (0%)	weak positive
Academic and Research Quality	4	2 (50%)	2 (100%)	2 (50%)	1 (50%)	nil to weak positive
Faculty Quality	2	1 (50%)	1 (100%)	1 (50%)	1 (100%)	nil to weak positive
Financial Performance	7	5 (71%)	3 (43%)	1 (14%)	0 (0%)	weak negative to weak positive
Reputation	5	4 (80%)	2 (50%)	1 (20%)	0 (0%)	moderate positive
Selectivity	8	5 (63%)	3 (60%)	3 (38%)	1 (33%)	weak positive
Other	1	0 (0%)	NA	1 (100%)	0 (0%)	nil
Panel B: Non-Performance Institutional Characteristics						
Non-Performance Institutional Characteristics Related to Size and Complexity	15	12 (80%)	8 (67%)	2 (13%)	0 (0%)	moderate positive
Size	11	9 (82%)	6 (67%)	1 (9%)	0 (0%)	moderate positive
Complexity	4	3 (75%)	2 (67%)	1 (25%)	0 (0%)	moderate positive
Other	9	2 (22%)	0 (0%)	7 (78%)	1 (14%)	nil to weak negative
Religiously affiliated	*No relevant effect sizes*					
Panel C: President Personal Characteristics						
Demographics						
Gender (male)	3	3 (100%)	0 (0%)	0 (0%)	NA	weak positive
Age	*No relevant effect sizes*					
Professional Experience						
Prior presidency	2	2 (100%	1 (50%)	0 (0%)	NA	weak positive
Tenure	3	0 (0%)	NA	3 (100%)	0 (0%)	nil to weak negative
Other	4	1 (25%)	1 (100%)	3 (75%)	1 (33%)	
Alumni status	1	0 (0%)	NA	1 (100%)	0 (0%)	nil

Note. *indicates the percentage is based on the number of effect sizes for which statistical significance information was available rather than the total number of effect sizes.

Table 9

Summary of the Results by Dimension for Private Universities

Dimension	Total number of effect sizes	Number of positive effect sizes	Number of positive effect sizes that were statistically significant	Number of negative effect sizes	Number of negative effect sizes that were statistically significant	Approximate magnitude of results based on standardized effect sizes
Panel A: University Performance						
University Performance	39	29 (74%)	16 (67%)*	10 (26%)	4 (40%)	weak positive
Academic and Research Performance	3	3 (100%)	1 (33%)	0 (0%)	NA	weak positive
Academic and Research Quality	2	1 (50%)	NA*	1 (50%)	1 (100%)	nil to weak positive
Faculty Quality	4	4 (100%)	3 (100%)*	0 (0%)	NA	strong positive
Financial Performance	16	8 (50%)	2 (33%)*	8 (50%)	3 (38%)	nil to weak positive
Reputation	4	4 (100%)	4 (100%)	0 (0%)	NA	moderate positive
Selectivity	9	8 (89%)	5 (71%)*	1 (11%)	0 (0%)	weak positive
Other	*No relevant effect sizes*					
Panel B: Non-Performance Institutional Characteristics						
Non-Performance Institutional Characteristics Related to Size and Complexity	36	29 (81%)	19 (70%)	7 (19%)	3 (43%)	moderate positive
Size	20	19 (95%)	16 (89%)*	1 (5%)	0 (0%)	moderate positive
Complexity	16	10 (63%)	3 (33%)*	6 (38%)	3 (50%)	moderate positive
Other	13	7 (54%)	7 (100%)	6 (46%)	5 (83%)	weak positive
Religiously affiliated	5	0 (0%)	NA	5 (100%)	4 (80%)	weak to moderate negative
Panel C: President Personal Characteristics						
Demographics						
Gender (male)	8	4 (50%)	2 (66%)*	4 (50%)	1 (25%)	nil
Age	2	2 (100%)	0 (0%)*	0 (0%)	NA	weak positive
Professional experience						
Prior presidency	4	4 (100%)	1 (33%)*	0 (0%)	NA	weak positive
Tenure	8	8 (100%)	4 (67%)*	0 (0%)	NA	weak positive
Other						
Alumni status	1	1 (100%)	0 (0%)	0 (0%)	NA	weak positive

Note. *indicates the percentage is based on the number of effect sizes for which statistical significance information was available rather than the total number of effect sizes.

Table 10

Operationalizations of Compensation in Prior Studies

Article	President Salary	President Benefits	President Salary + Benefits	President Salary + Bonus	Total Cash Compensation	Total Compensation
1. Bai (2014)					X[1]	X
2. Banker et al. (2009)	X[2]		X			
3. Bartlett and Sorokina (2005)					X[3]	X
4. Cheng (2014)						X
5. Ehrenberg et al. (2001)	X					
6. Galle and Walker (2014)						X
7. Gordon and Fischer (2014) [4]						
8. He and Callahan (2017)	X					
9. Huang and Chen (2013)	X					
10. Hunt et al. (2019)						X
11. Langbert (2006)	X					
12. Langbert and Fox (2013)			X			
13. Monks (2007)	X					
14. O'Connell (2005)	X		X[2]			
15. Parsons and Reitenga (2014)			X[5]			X[6]
16. Pati and Lee (2016)				X	X[7]	
17. Pfeffer and Ross (1988)	X					
18. Saunders (2007)	X					
19. Sorokina (2003)	X					
20. Tang et al. (1996)						X
21. Tang et al. (2000)		X			X[9]	X
22.Tang et al. (2004)		X			X[9]	X
Sum	10	2	4	1	5	9

Notes. [1]Includes "all salaries, fees, bonuses, and severance payment" (Bai, 2014, p. 4); [2]No results reported. The authors stated that they used this as a sensitivity analysis; [3]Includes "all salaries, fees, bonuses, and severance payment" (Bartlett & Sorokina, 2005, p. 58); [4]Compensation is never defined; [5]Private university compensation was defined as salary plus benefits; [6]Public university compensation included salary, benefits, deferred compensation, and bonuses; [7]The authors specified that total compensation includes salary, bonus, and deferred compensation; [9]The authors specified that this included salaries, fees, bonuses, and severance payments.

Table 11

Study Variable Information

Variable	Description	Data source	Dimension
Total Compensation	Natural log of all compensation provided to the university president. Does not include deferred compensation, set aside, or retirement compensation	CHE	Compensation
Change in Total Compensation	Natural log of the difference between current year's total compensation and previous year's total compensation; also calculated as the percentage increase in total compensation from previous year	CHE	Compensation
Merit Pay	Natural log of the difference between current year's base salary and previous year's base salary; also calculated as a percentage of base salary	CHE	Compensation
Bonus	Natural log of bonuses and incentive compensation provided to university president; also calculated as a percentage of base salary	CHE	Compensation
Deferred Compensation, Set Aside	Natural log of deferred compensation that is set aside for the university president to be paid out in future years; also calculated as a percentage of base salary	CHE	Compensation
Endowment per FTE	Natural log of the university's endowment per FTE	IPEDS	UP: Financial performance
Change in Endowment per FTE	Natural log of the difference between current year's endowment per FTE and previous year's endowment per FTE	IPEDS	UP: Financial performance
Fundraising	Natural log of a university's reported private gifts	IPEDS	UP: Financial performance

Variable	Description	Data source	Dimension
Three-year Cohort Default Rate	The percentage of students in a cohort that default on certain Federal loans within three years of entering repayment; this metric was reverse scored in the analyses.	College Scorecard	UP: Academic and research performance
Graduation Rate	Percentage of cohort that graduates within 150% of the normal time.	IPEDS	UP: Academic and research performance
Student to Faculty Ratio	Total FTE students divided by total FTE faculty (excludes students and faculty exclusively associated with graduate and/or professional degree programs)	IPEDS	UP: Academic and research quality
Average Faculty Salary	Average full-time faculty salary earned per month	College Scorecard	UP: Faculty quality
U.S. News and World Report Ranking	Coded as 0 = unranked, 1 = ranked	USNWR	UP: Reputation
Acceptance Rate	Number of admitted students divided by number of applicants; this metric was reverse scored in the analysis	IPEDS	UP: Selectivity
SAT Average	Average SAT equivalent score for all admitted students	College Scorecard	UP: Selectivity
Enrollment	Natural log of the university's full-time equivalent (FTE) enrollment	IPEDS	NPIC: Size
Carnegie Classification	Coded as 0 = Baccalaureate/Associate's universities or Associate's colleges, 1 = Baccalaureate university, 2 = Master's university, 3 = Doctoral/Professional university, 4 = Doctoral university – High research activity, 5 = Doctoral university – Very high research activity	IPEDS	NPIC: Complexity
Religion	Coded as 0 = not religious, 1 = religious	IPEDS	NPIC: Other

Variable	Description	Data source	Dimension
Institutional Ownership	Coded as 0 = public, 1 = private	CHE	NPIC: Other
Gender	Gender of university president; coded as 0 = male, 1 = female	Web searches	PC: Demographics
Tenure	University president's tenure in months	CHE	PC: Tenure-related variables
Ph.D.	University president's degree; coded as 0 = no Ph.D. or equivalent degree; 1 = completed Ph.D. or equivalent degree	Web searches	PC: Professional experience
Prior Presidency	If the university president had been a president at a different university previously, coded as 0 = no prior presidency, 1 = at least one prior presidency (interim presidencies were not counted)	Web searches	PC: Professional experience
Non-compete Enforceability	Indicator of how legally enforceable a non-compete agreement is in the state the university resides in	Germaise (2011); updated by Dr. Joseph Coombs	Control variable
University Density	Number of other colleges/universities in a universities metropolitan statistical area	Calculated using data from IPEDS	Control variable

Notes. CHE = *Chronicle of Higher Education*; IPEDS = *Integrated Postsecondary Data System*; NPIC = Non-performance institutional characteristics; PC = Personal characteristics; UP = University performance.

Table 12

Correlation Table for the Full Sample for Part I

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12
1. Total Compensation - T1[a]	12.91	.67												
2. Total Compensation - T2[a]	12.97	.67	.937**											
3. Total Compensation - T3[a]	13.03	.72	.939**	.937**										
4. Endowment per FTE - T1[a]	10.28	1.52	.239**	.238**	.237**									
5. Endowment per FTE - T2[a]	10.40	1.52	.239**	.239**	.238**	.999**								
6. Endowment per FTE - T3[a]	10.42	1.59	.229**	.230**	.227**	.945**	.945**							
7. Fundraising - T1[a]	15.79	3.01	.235**	.230**	.256**	.397**	.402**	.392**						
8. Fundraising - T2[a]	15.92	2.80	.233**	.225**	.252**	.418**	.421**	.410**	.929**					
9. Fundraising - T3[a]	15.90	2.91	.218**	.208**	.235**	.406**	.409**	.395**	.882**	.944**				
10. Graduation Rate - T1	63.97	17.32	.330**	.327**	.342**	.702**	.704**	.677**	.423**	.435**	.426**			
11. Graduation Rate - T2	64.50	17.15	.330**	.327**	.342**	.696**	.697**	.667**	.428**	.438**	.425**	.976**		
12. Graduation Rate - T3	64.63	17.48	.336**	.327**	.343**	.680**	.682**	.655**	.425**	.432**	.416**	.971**	.976**	
13. Three-year Default Rate - T1[b]	93.67	4.27	.258**	.242**	.259**	.516**	.521**	.502**	.346**	.355**	.357**	.790**	.796**	.794**
14. Three-year Default Rate - T2[b]	94.29	3.95	.257**	.246**	.264**	.491**	.494**	.479**	.350**	.355**	.352**	.766**	.772**	.773**
15. Three-year Default Rate - T3[b]	95.28	3.46	.249**	.237**	.258**	.512**	.514**	.495**	.347**	.361**	.354**	.785**	.787**	.788**
16. Student-to-Faculty Ratio - T1	13.97	4.38	-.103*	-.108*	-.092	-.713**	-.709**	-.694**	-.292**	-.317**	-.337**	-.522**	-.521**	-.507**
17. Student-to-Faculty Ratio - T2	13.66	4.18	-.093	-.100*	-.077	-.703**	-.699**	-.686**	-.287**	-.317**	-.338**	-.500**	-.503**	-.488**
18. Student-to-Faculty Ratio - T3	13.59	4.21	-.110*	-.108*	-.086	-.714**	-.712**	-.693**	-.296**	-.318**	-.345**	-.521**	-.517**	-.510**
19. Average Faculty Salary - T1	8405.85	2147.18	.491**	.503**	.513**	.380**	.384**	.363**	.367**	.374**	.359**	.618**	.617**	.633**
20. Average Faculty Salary - T2	8568.34	2201.33	.484**	.498**	.507**	.379**	.382**	.361**	.362**	.368**	.356**	.625**	.622**	.638**
21. Average Faculty Salary - T3	8751.14	2296.87	.487**	.503**	.516**	.376**	.379**	.360**	.352**	.359**	.337**	.622**	.623**	.636**
22. Average SAT Score - T1	1140.96	132.01	.434**	.451**	.443**	.628**	.629**	.601**	.425**	.452**	.426**	.863**	.862**	.869**
23. Average SAT Score - T2	1142.05	132.68	.430**	.445**	.439**	.621**	.622**	.597**	.430**	.459**	.433**	.856**	.859**	.863**
24. Average SAT Score - T3	1145.37	138.28	.461**	.471**	.462**	.612**	.613**	.586**	.430**	.459**	.434**	.855**	.859**	.862**
25. Acceptance Rate - T1[b]	39.90	19.49	.345**	.354**	.348**	.483**	.483**	.460**	.232**	.233**	.206**	.512**	.493**	.500**
26. Acceptance Rate - T2[b]	38.99	19.91	.333**	.345**	.340**	.496**	.496**	.477**	.284**	.294**	.266**	.522**	.507**	.506**
27. Acceptance Rate - T3[b]	37.93	20.66	.326**	.333**	.337**	.511**	.510**	.491**	.279**	.287**	.267**	.530**	.513**	.512**
28. FTE Enrollment - T1[a]	8.48	1.10	.309**	.309**	.332**	-.386**	-.381**	-.374**	.065	.050	.025	-.015	-.007	.016
29. FTE Enrollment - T2[a]	8.48	1.10	.312**	.312**	.335**	-.386**	-.381**	-.374**	.065	.051	.024	-.013	-.006	.016
30. FTE Enrollment - T3[a]	8.49	1.11	.314**	.314**	.337**	-.384**	-.379**	-.373**	.068	.054	.027	-.010	-.003	.019
31. Tenure - T1	88.38	72.57	.056	.063	.045	.057	.053	.060	.016	.001	-.025	.021	.026	.038
32. Tenure - T2	100.20	72.45	.058	.065	.046	.057	.053	.060	.016	.001	-.024	.024	.028	.040
33. Tenure - T3	112.91	73.15	.058	.064	.047	.052	.048	.056	.014	-.001	-.026	.023	.028	.040

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10	11	12
34. University Rank	.22	.42	.361**	.372**	.394**	.162**	.164**	.163**	.310**	.314**	.308**	.395**	.393**	.397**
35. Carnegie Classification	2.49	1.51	.309**	.312**	.338**	-.138**	-.134**	-.135**	.152**	.124*	.090	.126*	.134**	.148**
36. Religious	.39	.49	-.244**	-.244**	-.254**	.144**	.139**	.144**	.030	.049	.071	.014	.020	-.011
37. Institutional Ownership	.72	.45	.035	.048	.032	.562**	.559**	.552**	.211**	.243**	.264**	.362**	.354**	.327**
38. Ph.D.	.75	.43	.015	.039	.066	.020	.020	.000	.019	.018	.014	.094	.086	.085
39. Gender	.19	.40	-.030	-.053	-.044	.093	.096	.093	-.014	-.029	-.073	.052	.045	.044
40. Prior Presidency	.14	.35	-.018	-.004	-.032	-.047	-.049	-.081	-.042	-.054	-.034	-.092	-.109*	-.116*
41. Enforceability Index	4.41	1.99	.042	.042	.031	.060	.055	.026	-.076	-.071	-.114*	-.029	-.016	-.037
42. University Density	55.69	83.62	.209**	.236**	.236**	.072	.073	.074	.076	.095	.105*	.192**	.195**	.203**

*Note. N*s range from 329 to 403; [a] indicates that the variable was logged; [b] indicates that the variable was reverse scored.

Table 12 (continued)

Correlation Table for the Full Sample for Part I

Variable	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
14. Three-year Default Rate - T2	.925**														
15. Three-year Default Rate - T3	.905**	.925**													
16. Student-to-Faculty Ratio - T1	-.427**	-.426**	-.433**												
17. Student-to-Faculty Ratio - T2	-.415**	-.406**	-.410**	.972**											
18. Student-to-Faculty Ratio - T3	-.424**	-.419**	-.424**	.961**	.972**										
19. Average Faculty Salary - T1	.461**	.449**	.470**	-.176**	-.170**	-.182**									
20. Average Faculty Salary - T2	.472**	.455**	.469**	-.167**	-.159**	-.173**	.976**								
21. Average Faculty Salary - T3	.458**	.447**	.463**	-.165**	-.152**	-.164**	.976**	.980**							
22. Average SAT Score - T1	.680**	.665**	.695**	-.402**	-.382**	-.386**	.723**	.725**	.724**						
23. Average SAT Score - T2	.673**	.662**	.685**	-.394**	-.376**	-.381**	.732**	.734**	.731**	.991**					
24. Average SAT Score - T3	.671**	.657**	.672**	-.377**	-.353**	-.363**	.740**	.745**	.740**	.985**	.991**				
25. Acceptance Rate - T1 [b]	.274**	.262**	.286**	-.332**	-.331**	-.332**	.547**	.531**	.541**	.605**	.594**	.592**			
26. Acceptance Rate - T2 [b]	.287**	.268**	.290**	-.351**	-.349**	-.349**	.554**	.542**	.545**	.619**	.614**	.618**	.916**		
27. Acceptance Rate - T3 [b]	.310**	.274**	.290**	-.337**	-.338**	-.328**	.564**	.549**	.555**	.631**	.626**	.633**	.891**	.936**	
28. FTE Enrollment - T1 [a]	-.048	-.055	-.049	.582**	.588**	.582**	.457**	.462**	.470**	.171**	.180**	.197**	.043	.052	.064
29. FTE Enrollment - T2 [a]	-.047	-.053	-.047	.581**	.589**	.584**	.458**	.462**	.470**	.173**	.183**	.199**	.046	.053	.067
30. FTE Enrollment - T3 [a]	-.045	-.051	-.044	.580**	.588**	.584**	.460**	.464**	.472**	.174**	.183**	.200**	.048	.054	.070
31. Tenure - T1	-.011	.029	.026	-.095	-.093	-.096	.006	.006	-.001	-.049	-.072	-.046	.047	.040	.048
32. Tenure - T2	-.009	.030	.028	-.097	-.095	-.098*	.008	.009	.001	-.048	-.071	-.043	.052	.045	.053
33. Tenure - T3	-.007	.031	.027	-.088	-.084	-.087	.008	.009	.003	-.045	-.068	-.041	.046	.040	.048
34. University Rank	.255**	.244**	.261**	.058	.074	.071	.623**	.616**	.625**	.486**	.493**	.521**	.259**	.273**	.305**
35. Carnegie Classification	.103*	.094	.111*	.349**	.364**	.358**	.542**	.542**	.550**	.234**	.254**	.285**	.110*	.111*	.135**
36. Religious	.047	.081	.072	-.283**	-.281**	-.272**	-.358**	-.355**	-.352**	-.162**	-.177**	-.186**	-.157**	-.154**	-.168**
37. Institutional Ownership	.332**	.370**	.360**	-.732**	-.734**	-.741**	-.078	-.091	-.101*	.160**	.141**	.122*	.199**	.204**	.191**
38. Ph.D.	.042	.013	.052	.054	.060	.077	.062	.068	.083	.066	.079	.074	.050	.006	.030
39. Gender	-.004	.044	.051	-.028	-.023	-.034	.030	.031	.052	.021	.023	.038	.082	.062	.082
40. Prior Presidency	-.134**	-.141**	-.134**	.012	.006	-.002	-.044	-.043	-.043	-.093	-.092	-.103	.042	-.002	.021
41. Enforceability Index	-.047	-.047	-.055	-.066	-.041	-.052	-.132**	-.145**	-.127*	-.014	-.010	.004	-.043	-.033	-.060
42. University Density	.179**	.197**	.221**	-.130**	-.138**	-.138**	.383**	.357**	.358**	.195**	.187**	.194**	.242**	.224**	.209**

Table 12 (continued)

Correlation Table for the Full Sample for Part I

Variable	28	29	30	31	32	33	34	35	36	37	38	39	40	41
28. FTE Enrollment - T1 [a]														
29. FTE Enrollment - T2 [a]	.999**													
30. FTE Enrollment - T3 [a]	.998**	.999**												
31. Tenure - T1	-.059	-.061	-.059											
32. Tenure - T2	-.059	-.062	-.060	.997**										
33. Tenure - T3	-.049	-.051	-.049	.996**	.993**									
34. University Rank	.592**	.595**	.597**	-.071	-.068	-.057								
35. Carnegie Classification	.835**	.837**	.838**	-.049	-.052	-.039	.728**							
36. Religious	-.432**	-.431**	-.430**	.027	.029	.021	-.245**	-.384**						
37. Institutional Ownership	-.703**	-.702**	-.701**	.170**	.175**	.157**	-.302**	-.596**	.499**					
38. Ph.D.	.094	.095	.095	-.020	-.013	-.017	.057	.084	-.041	-.087				
39. Gender	-.086	-.084	-.082	-.011	-.008	-.013	-.036	-.052	-.160**	.026	.061			
40. Prior Presidency	-.028	-.028	-.030	-.035	-.034	-.038	-.067	-.078	.049	.020	.037	-.058		
41. Enforceability Index	-.037	-.034	-.032	-.058	-.061	-.057	-.072	-.034	.029	.038	.031	-.010	.011	
42. University Density	.070	.069	.070	.112*	.115*	.109*	.130**	.076	-.071	.150**	-.014	.006	-.016	-.218**

*Note. N*s range from 329 to 403; [a] indicates that the variable was logged; [b] indicates that the variable was reverse scored.

Table 13

Standardized Regression Coefficients for Part I

	Time 1 to Time 2			Time 2 to Time 3		
Variables	Full sample β (*p*)	Private β (*p*)	Public β (*p*)	Full sample β (*p*)	Private β (*p*)	Public β (*p*)
Panel A: Including Outliers						
University Performance						
Endowment per FTE [a]	.144 (.079)	.171 (.125)	-.002 (.988)	.186 (.028)	.252 (.042)	-.045 (.698)
Fundraising [a]	-.017 (.749)	.042 (.573)	-.007 (.944)	-.026 (.630)	.029 (.816)	.057 (.563)
Three-year Default Rate [b]	-.036 (.609)	.015 (.844)	-.270 (.050)	.006 (.935)	.051 (.518)	-.118 (.365)
Graduation Rate	-.238 (.032)	-.247 (.050)	-.020 (.920)	-.177 (.088)	-.164 (.177)	.105 (.597)
Student-to-faculty Ratio	.044 (.611)	.064 (.373)	-.025 (.794)	.073 (.384)	.069 (.331)	.092 (.371)
Average Faculty Salary	.196 (.044)	.211 (.102)	-.135 (.316)	.150 (.111)	.112 (.364)	-.067 (.631)
University Rank	.121 (.128)	.235 (.043)	.135 (.310)	.109 (.155)	.213 (.060)	.087 (.521)
Acceptance Rate [b]	.023 (.702)	-.014 (.858)	-.030 (.754)	.003 (.966)	-.020 (.802)	-.074 (.459)
Average SAT Score	.252 (.021)	.192 (.147)	.320 (.110)	.143 (.191)	.044 (.754)	.065 (.744)
Non-performance Institutional Characteristics						
FTE Enrollment [a]	.442 (.001)	.342 (.006)	.343 (.006)	.500 (.000)	.430 (.001)	.292 (.028)
Carnegie Classification	-.117 (.350)	-.263 (.053)	.329 (.005)	-.057 (.634)	-.207 (.112)	.357 (.004)
Religious	-.175 (.002)	-.156 (.008)	-	-.203 (.000)	-.183 (.002)	-
Institutional Ownership	.390 (.000)	-	-	.479 (.000)	-	-
University President Personal Characteristics						
Gender	-.066 (.142)	-.075 (.161)	.069 (.393)	-.067 (.137)	-.063 (.236)	.029 (.726)
Tenure	.009 (.844)	.026 (.619)	-.051 (.515)	-.027 (.541)	-.014 (.790)	-.028 (.726)
Ph.D.	.033 (.456)	.022 (.674)	.035 (.672)	.056 (.197)	.049 (.338)	.006 (.946)
Prior Presidency	.032 (.466)	.034 (.508)	-.011 (.894)	-.013 (.768)	-.006 (.911)	-.071 (.402)
Control Variables						
Enforceability Index	.066 (.157)	.072 (.185)	.156 (.094)	.066 (.152)	.070 (.195)	.184 (.056)
University Density	.049 (.338)	.053 (.393)	.289 (.003)	.070 (.157)	.073 (.219)	.266 (.006)
Panel B: Excluding Outliers						
University Performance						
Endowment per FTE [a]	.121 (.104)	.146 (.093)	.000 (.998)	.132 (.080)	.195 (.037)	-.112 (.405)
Fundraising [a]	.027 (.671)	.058 (.503)	.042 (.662)	.033 (.600)	.159 (.084)	.093 (.351)
Three-year Default Rate [b]	-.115 (.067)	-.011 (.864)	-.358 (.014)	-.112 (.059)	-.007 (.913)	-.148 (.259)
Graduation Rate	-.256 (.008)	-.285 (.004)	.125 (.567)	-.078 (.364)	-.138 (.163)	.145 (.466)
Student-to-faculty Ratio	.033 (.660)	.057 (.292)	-.074 (.446)	.102 (.156)	.088 (.108)	.043 (.663)
Average Faculty Salary	.218 (.007)	.278 (.003)	-.145 (.294)	.194 (.014)	.107 (.278)	-.078 (.575)
University Rank	.147 (.032)	.292 (.001)	.034 (.811)	.087 (.177)	.249 (.004)	.021 (.879)
Acceptance Rate	-.060 (.251)	-.094 (.110)	-.053 (.582)	-.085 (.085)	-.107 (.083)	-.097 (.321)
Average SAT Score	.364 (.000)	.279 (.009)	.335 (.099)	.195 (.029)	.115 (.301)	.139 (.503)
Non-performance Institutional Characteristics						
FTE Enrollment [a]	.604 (.000)	.407 (.000)	.387 (.003)	.597 (.000)	.418 (.000)	.331 (.014)

Carnegie Classification	-.084 (.448)	-.233 (.023)	.320 (.016)	.097 (.343)	-.148 (.139)	.374 (.006)
Religious	-.170 (.000)	-.141 (.002)	-	-.205 (.000)	-.190 (.000)	-
Institutional Ownership	.618 (.000)	-	-	.774 (.000)	-	-
University President Personal Characteristics						
Gender	-.008 (.835)	-.010 (.802)	.071 (.409)	-.032 (.388)	.001 (.984)	.048 (.596)
Tenure	.116 (.003)	.166 (.000)	-.113 (.165)	.068 (.060)	.128 (.002)	-.081 (.322)
Ph.D.	.073 (.048)	.084 (.027)	.009 (.922)	.060 (.092)	.097 (.014)	-.028 (.765)
Prior Presidency	.080 (.029)	.085 (.027)	-.014 (.863)	.008 (.826)	.032 (.421)	-.072 (.407)
Control Variables						
Enforceability Index	.059 (.133)	.045 (.263)	.075 (.414)	.082 (.029)	.045 (.279)	.104 (.273)
University Density	.111 (.011)	.100 (.033)	.275 (.008)	.082 (.047)	.149 (.002)	.262 (.008)

Note. Time 1 to Time 2 *N*s: full sample = 352 (excluding outliers = 312); private universities = 254 (excluding outliers = 237); public universities = 98 (excluding outliers = 91); Time 2 to Time 3 *N*s: full sample = 355 (excluding outliers = 317); private universities = 256 (excluding outliers = 239); public universities = 99 (excluding outliers = 92).; [a] indicates that the variable was logged; [b] indicates that the variable was reverse scored.

Table 14

Random Coefficient Modeling Results for Part I

Variables	Full Sample		Private		Public	
	estimate *(SE)*	R^2 (CI)	estimate *(SE)*	R^2 (CI)	estimate *(SE)*	R^2 (CI)
Panel A: Including Outliers						
University Performance						
Endowment per FTE [a]	.116 (.034)**	.024 (.051, .007)	.173 (.057)**	.021 (.052, .004)	.012 (.023)	.002 (.035, .000)
Fundraising [a]	-.003 (.009)	.000 (.008, .000)	.003 (.014)	.000 (.010, .000)	.001 (.006)	.000 (.027, .000)
Three-year Default Rate [b]	.002 (.006)	.000 (.008, .000)	.003 (.008)	.000 (.010, .000)	-.002 (.007)	.001 (.028, .000)
Graduation Rate	-.004 (.003)	.002 (.015, .000)	-.004 (.003)	.002 (.017, .000)	.002 (.003)	.003 (.037, .000)
Student-to-faculty Ratio	.009 (.010)	.001 (.012, .000)	.021 (.015)	.003 (.021, .000)	.003 (.007)	.001 (.030, .000)
Average Faculty Salary	.000 (.000)	.003 (.017, .000)	.000 (.000)	.001 (.015, .000)	.000 (.000)	.000 (.026, .000)
University Rank	.124 (.118)	.003 (.016, .000)	.435 (.233)	.013 (.039, .001)	.040 (.069)	.003 (.037, .000)
Acceptance Rate [b]	.000 (.001)	.000 (.007, .000)	.000 (.002)	.000 (.010, .000)	.000 (.001)	.000 (.026, .000)
Average SAT Score	.001 (.000)	.003 (.016, .000)	.000 (.001)	.001 (.014, .000)	.000 (.000)	.000 (.026, .000)
Non-performance Institutional Characteristics						
FTE Enrollment [a]	.305 (.066)**	.045 (.079, .020)	.387 (.091)**	.048 (.090, .019)	.145 (.060)*	.046 (.118, .007)
Carnegie Classification	-.020 (.051)	.000 (.009, .000)	-.127 (.078)	.009 (.033, .000)	.126 (.041)**	.081 (.164, .024)
Religious	-.263 (.075)**	.031 (.006, .011)	-.262 (.087)**	.031 (.067, .008)		
Institutional Ownership	.579 (.127)**	.045 (.079, .020)				
University President Personal Characteristics						
Gender	-.122 (.075)	.007 (.025, .000)	-.132 (.100)	.007 (.028, .000)	.024 (.056)	.002 (.032, .000)
Tenure	.001 (.000)	.004 (.018, .000)	.001 (.001)	.003 (.021, .000)	.000 (.000)	.004 (.039, .000)
Ph.D.	.062 (.068)	.002 (.015, .000)	.041 (.086)	.001 (.014, .000)	.030 (.061)	.002 (.034, .000)
Prior Presidency	.036 (.082)	.001 (.009, .000)	.040 (.107)	.001 (.012, .000)	-.046 (.067)	.004 (.042, .000)
Control Variables						
Enforceability Index	.024 (.015)	.007 (.024, .000)	.028 (.020)	.007 (.029, .000)	.028 (.012)*	.052 (.125, .009)
University Density	.001 (.000)	.008 (.026, .000)	.001 (.000)	.007 (.029, .000)	.001 (.000)**	.072 (.153, .019)
Panel B: Excluding Outliers						
University Performance						
Endowment per FTE [a]	.134 (.031)**	.035 (.066, .013)	.196 (.048)**	.028 (.063, .006)	.019 (.022)	.007 (.049, .000)
Fundraising [a]	.003 (.007)	.000 (.008, .000)	.006 (.009)	.000 (.011, .000)	-.001 (.005)	.001 (.029, .000)
Three-year Default Rate [b]	.003 (.004)	.000 (.008, .000)	.000 (.005)	.000 (.010, .000)	-.002 (.006)	.000 (.028, .000)
Graduation Rate	-.002 (.002)	.000 (.009, .000)	-.001 (.002)	.000 (.011, .000)	.000 (.003)	.000 (.027, .000)

Student-to-faculty Ratio	.006 (.007)	.001 (.010, .000)	.019 (.011)	.003 (.020, .000)	.000 (.006)	.000 (.026, .000)
Average Faculty Salary	.000 (.000)*	.003 (.017, .000)	.000 (.000)	.001 (.016, .000)	.000 (.000)	.004 (.040, .000)
University Rank	.064 (.116)	.001 (.011, .000)	.351 (.237)	.008 (.032, .000)	.050 (.067)	.005 (.045, .000)
Acceptance Rate [b]	.000 (.001)	.000 (.008, .000)	-.001 (.001)	.001 (.013, .000)	.000 (.001)	.000 (.026, .000)
Average SAT Score	.000 (.000)	.001 (.012, .000)	.000 (.000)	.000 (.012, .000)	.000 (.000)	.001 (.031, .000)
Non-performance Institutional Characteristics						
FTE Enrollment [a]	.298 (.061)**	.045 (.080, .020)	.399 (.084)**	.052 (.096, .021)	.136 (.056)*	.048 (.122, .007)
Carnegie Classification	-.035 (.050)	.001 (.012, .000)	-.132 (.077)	.010 (.035, .000)	.100 (.040)*	.059 (.137, .011)
Religious	-.262 (.074)**	.032 (.062, .011)	-.265 (.087)*	.033 (.070, .009)		
Institutional Ownership	.402 (.123)**	.022 (.049, .006)				
University President Personal Characteristics						
Gender	-.105 (.074)	.006 (.022, .000)	-.119 (.101)	.006 (.026, .000)	.006 (.055)	.000 (.027, .000)
Tenure	.001 (.000)*	.012 (.034, .001)	.001 (.000)	.008 (.032, .000)	.000 (.000)	.011 (.059, .000)
Ph.D.	.028 (.067)	.000 (.010, .000)	.009 (.087)	.000 (.010, .000)	.054 (.059)	.008 (.053, .000)
Prior Presidency	.042 (.082)	.001 (.011, .000)	.044 (.108)	.001 (.013, .000)	-.040 (.065)	.004 (.042, .000)
Control Variables						
Enforceability Index	.023 (.015)	.007 (.025, .000)	.027 (.020)	.007 (.030, .000)	.027 (.011)*	.053 (.129, .009)
University Density	.001 (.000)*	.010 (.030, .001)	.001 (.000)	.008 (.032, .000)	.001 (.000)*	.057 (.134, .010)

Note. *N*s: full sample = 705 (excluding outliers = 679); private universities = 507 (excluding outliers = 488); public universities = 198 (excluding outliers = 190); *indicates $p < .05$; **indicates $p < .01$; [a] indicates that the variable was logged; [b] indicates that the variable was reverse scored; all depicted models account for autocorrelation.

Table 15

Correlation Table for Private and Public Universities for Part I

Variable	*M* (Private/Public)	*SD* (Private/Public)	1	2	3	4	5	6	7	8	9	10	11	12
1. Total Compensation - T1 [a]	12.93/12.87	.76/.37	-	.803**	.773**	.492**	.490**	.410**	.227*	.192*	.143	.537**	.536**	.543**
2. Total Compensation - T2 [a]	12.99/12.91	.77/.30	.949**	-	.914**	.535**	.530**	.438**	.253**	.210*	.140	.604**	.620**	.619**
3. Total Compensation - T3 [a]	13.04/12.99	.82/.35	.953**	.939**	-	.479**	.476**	.398**	.292**	.252**	.198*	.550**	.563**	.558**
4. Endowment per FTE - T1 [a]	1.81/8.91	1.18/1.45	.234**	.233**	.248**	-	.999**	.829**	.305**	.275**	.258**	.669**	.683**	.672**
5. Endowment per FTE - T2 [a]	1.93/9.03	1.18/1.46	.235**	.235**	.250**	.998**	-	.827**	.316**	.281**	.263**	.670**	.686**	.674**
6. Endowment per FTE - T3 [a]	1.96/9.01	1.16/1.69	.242**	.243**	.256**	.988**	.990**	-	.279**	.249**	.224*	.573**	.581**	.581**
7. Fundraising - T1 [a]	16.18/14.77	1.63/4.95	.389**	.379**	.417**	.479**	.480**	.491**	-	.972**	.911**	.334**	.346**	.346**
8. Fundraising - T2 [a]	16.34/14.82	1.32/4.71	.455**	.437**	.484**	.598**	.600**	.610**	.745**	-	.943**	.290**	.304**	.304**
9. Fundraising - T3 [a]	16.38/14.66	1.32/4.89	.463**	.442**	.486**	.558**	.560**	.570**	.742**	.928**	-	.270**	.277**	.268**
10. Graduation Rate - T1	67.88/53.93	14.92/19	.324**	.320**	.353**	.633**	.635**	.644**	.535**	.676**	.679**	-	.993**	.987**
11. Graduation Rate - T2	68.28/54.8	14.88/18.77	.323**	.316**	.348**	.617**	.616**	.623**	.536**	.668**	.670**	.959**	-	.993**
12. Graduation Rate - T3	68.19/55.49	15.58/18.81	.324**	.312**	.345**	.613**	.614**	.620**	.539**	.661**	.666**	.956**	.962**	-
13. Three-year Default Rate - T1 [b]	94.56/91.41	3.71/4.76	.229**	.220**	.246**	.351**	.357**	.368**	.305**	.399**	.418**	.716**	.728**	.736**
14. Three-year Default Rate - T2 [b]	95.2/91.95	3.33/4.45	.240**	.229**	.258**	.282**	.287**	.296**	.312**	.389**	.406**	.691**	.703**	.716**
15. Three-year Default Rate - T3 [b]	96.06/93.3	2.78/4.17	.227**	.212**	.248**	.333**	.337**	.340**	.319**	.417**	.435**	.727**	.735**	.754**
16. Student-to-Faculty Ratio - T1	11.97/19.1	2.78/3.47	-.133*	-.122*	-.123*	-.634**	-.628**	-.621**	-.343**	-.421**	-.396**	-.468**	-.483**	-.496**
17. Student-to-Faculty Ratio - T2	11.74/18.58	2.73/3.11	-.120*	-.113	-.104	-.616**	-.612**	-.606**	-.317**	-.402**	-.376**	-.437**	-.462**	-.472**
18. Student-to-Faculty Ratio - T3	11.64/18.58	2.73/3.06	-.134*	-.120*	-.114	-.620**	-.617**	-.612**	-.317**	-.401**	-.380**	-.457**	-.466**	-.493**
19. Average Faculty Salary - T1	8301.17/8674.50	2308.32/1642.45	.501**	.515**	.524**	.534**	.538**	.537**	.614**	.740**	.737**	.708**	.700**	.707**
20. Average Faculty Salary - T2	8443.99/8887.45	2368.81/1664.71	.496**	.511**	.520**	.542**	.546**	.545**	.618**	.742**	.742**	.723**	.713**	.722**
21. Average Faculty Salary - T3	8606.98/9121.11	2473.96/1717.77	.502**	.518**	.531**	.544**	.547**	.545**	.618**	.746**	.732**	.720**	.716**	.717**
22. Average SAT Score - T1	1154.22/1107.46	138.89/106.24	.446**	.463**	.460**	.693**	.694**	.700**	.621**	.789**	.773**	.879**	.870**	.877**
23. Average SAT Score - T2	1153.77/1112.11	14.36/105.50	.439**	.452**	.453**	.688**	.689**	.698**	.612**	.787**	.773**	.879**	.876**	.876**
24. Average SAT Score - T3	1156.37/1119.44	146.78/112.27	.474**	.482**	.479**	.685**	.686**	.696**	.609**	.792**	.782**	.874**	.874**	.874**
25. Acceptance Rate - T1 [b]	42.22/33.40	19.85/16.91	.384**	.388**	.394**	.610**	.612**	.617**	.575**	.656**	.654**	.559**	.530**	.528**
26. Acceptance Rate - T2 [b]	41.43/32.21	2.5/16.45	.363**	.370**	.376**	.607**	.610**	.634**	.549**	.651**	.641**	.567**	.542**	.532**
27. Acceptance Rate - T3 [b]	40.29/31.34	21.35/17.02	.357**	.359**	.374**	.619**	.620**	.642**	.566**	.667**	.663**	.559**	.533**	.521**
28. FTE Enrollment - T1 [a]	8.00/9.72	.85/.58	.455**	.477**	.491**	-.123*	-.119*	-.093	.431**	.543**	.569**	.308**	.307**	.307**
29. FTE Enrollment - T2 [a]	8.00/9.72	.85/.58	.459**	.480**	.493**	-.126*	-.123*	-.098	.430**	.543**	.568**	.306**	.303**	.302**
30. FTE Enrollment - T3 [a]	8.00/9.73	.86/.59	.461**	.482**	.495**	-.124*	-.122*	-.098	.431**	.545**	.569**	.308**	.304**	.302**
31. Tenure - T1	96.07/68.64	77.01/55.26	.049	.061	.039	-.087	-.094	-.096	.020	-.011	-.058	-.059	-.056	-.029
32. Tenure - T2	108.1/79.91	77.06/54.19	.049	.061	.039	-.087	-.094	-.096	.020	-.012	-.059	-.060	-.056	-.029
33. Tenure - T3	12.07/94.51	77.01/58.57	.049	.061	.039	-.087	-.094	-.096	.020	-.011	-.058	-.059	-.056	-.029

Variable	*M* (Private/Public)	*SD* (Private/Public)	1	2	3	4	5	6	7	8	9	10	11	12
34. University Ranked	.14/.42	.35/.50	.430**	.451**	.481**	.335**	.334**	.334**	.585**	.715**	.709**	.437**	.428**	.423**
35. Carnegie Classification	1.93/3.93	1.18/1.28	.388**	.415**	.437**	.100	.100	.105	.493**	.624**	.620**	.298**	.300**	.293**
36. Religious	.54/.00	.50/.00	-.316**	-.318**	-.323**	-.237**	-.245**	-.245**	-.188**	-.207**	-.181**	-.264**	-.246**	-.265**
37. Ph.D.	.73/.81	.44/.39	.002	.023	.051	.122*	.124*	.115	.035	.039	.041	.124*	.107	.103
38. Gender	.20/.18	.4/.38	-.057	-.075	-.059	.096	.100	.098	.000	-.022	-.068	.032	.032	.024
39. Prior Presidency	.15/.13	.36/.34	.017	.028	.003	-.010	-.015	-.016	.016	-.004	.030	-.066	-.085	-.083
40. Enforceability Index	4.46/4.29	1.98/2.03	.016	.016	.003	-.016	-.021	-.030	-.048	-.009	-.047	-.039	-.021	-.058
41. University Density	63.51/35.62	91.05/56.03	.208**	.229**	.233**	-.025	-.023	-.026	.098	.152**	.180**	.171**	.173**	.187**

Note. Private university correlations are below the diagonal; public university correlations are above the diagonal; *N*s for private universities range from 231 to 290; *N*s for public universities range from 98 to 113; [a] indicates that the variable was logged; [b] indicates that the variable was reverse scored.

Table 15 (cont.)

Correlation Table for Private and Public Universities for Part I

Variable	13	14	15	16	17	18	19	20	21	22	23	24	25	26
1. Total Compensation - T1 [a]	.494**	.461**	.475**	-.070	-.038	-.122	.485**	.469**	.455**	.432**	.423**	.413**	.178	.196*
2. Total Compensation - T2 [a]	.499**	.502**	.530**	-.096	-.046	-.095	.537**	.531**	.520**	.497**	.502**	.488**	.208*	.247*
3. Total Compensation - T3 [a]	.486**	.486**	.513**	-.044	.020	-.021	.519**	.506**	.501**	.442**	.440**	.429**	.112	.156
4. Endowment per FTE - T1 [a]	.538**	.502**	.498**	-.371**	-.333**	-.379**	.506**	.517**	.530**	.542**	.549**	.557**	.016	.049
5. Endowment per FTE - T2 [a]	.542**	.504**	.499**	-.367**	-.332**	-.380**	.508**	.519**	.532**	.542**	.548**	.556**	.013	.045
6. Endowment per FTE - T3 [a]	.457**	.430**	.426**	-.357**	-.335**	-.350**	.450**	.457**	.481**	.470**	.488**	.485**	.011	.017
7. Fundraising - T1 [a]	.340**	.330**	.312**	-.147	-.151	-.179	.364**	.356**	.333**	.331**	.364**	.369**	-.152	-.030
8. Fundraising - T2 [a]	.301**	.292**	.283**	-.130	-.141	-.146	.345**	.337**	.316**	.322**	.353**	.359**	-.146	-.033
9. Fundraising - T3 [a]	.289**	.269**	.256**	-.165	-.185	-.202*	.336**	.333**	.300**	.292**	.322**	.330**	-.195	-.019
10. Graduation Rate - T1	.835**	.790**	.793**	-.303**	-.253**	-.309**	.749**	.760**	.780**	.846**	.829**	.841**	.261**	.279**
11. Graduation Rate - T2	.834**	.790**	.790**	-.293**	-.241**	-.297**	.752**	.759**	.781**	.859**	.844**	.851**	.269**	.287**
12. Graduation Rate - T3	.826**	.787**	.779**	-.279**	-.228*	-.289**	.746**	.750**	.778**	.855**	.842**	.845**	.303**	.315**
13. Three-year Default Rate - T1 [b]	-	.947**	.920**	-.286**	-.238*	-.295**	.679**	.680**	.680**	.765**	.740**	.747**	.104	.124
14. Three-year Default Rate - T2 [b]	.894**	-	.962**	-.250**	-.191*	-.250**	.671**	.671**	.671**	.758**	.738**	.734**	.130	.166
15. Three-year Default Rate - T3 [b]	.877**	.878**	-	-.244**	-.194*	-.231*	.665**	.664**	.658**	.778**	.757**	.753**	.176	.222*
16. Student-to-Faculty Ratio - T1	-.286**	-.243**	-.284**	-	.920**	.901**	-.276**	-.275**	-.310**	-.248*	-.263**	-.254*	.009	-.018
17. Student-to-Faculty Ratio - T2	-.285**	-.227**	-.258**	.953**	-	.930**	-.272**	-.257**	-.283**	-.202*	-.227*	-.217*	-.026	-.031
18. Student-to-Faculty Ratio - T3	-.273**	-.223**	-.267**	.923**	.943**	-	-.286**	-.279**	-.293**	-.212*	-.246*	-.229*	-.010	-.018
19. Average Faculty Salary - T1	.485**	.486**	.526**	-.380**	-.364**	-.391**	-	.981**	.969**	.684**	.671**	.703**	.317**	.390**
20. Average Faculty Salary - T2	.509**	.504**	.533**	-.381**	-.367**	-.393**	.975**	-	.972**	.688**	.670**	.712**	.287**	.363**
21. Average Faculty Salary - T3	.496**	.500**	.536**	-.381**	-.360**	-.386**	.977**	.981**	-	.714**	.694**	.729**	.336**	.385**
22. Average SAT Score - T1	.647**	.629**	.667**	-.539**	-.506**	-.498**	.770**	.777**	.773**	-	.987**	.982**	.311**	.376**
23. Average SAT Score - T2	.651**	.637**	.666**	-.540**	-.506**	-.498**	.778**	.786**	.780**	.991**	-	.986**	.292**	.373**
24. Average SAT Score - T3	.645**	.633**	.647**	-.536**	-.491**	-.498**	.779**	.788**	.781**	.986**	.993**	-	.264**	.362**
25. Acceptance Rate - T1 [b]	.277**	.246**	.270**	-.409**	-.383**	-.386**	.642**	.632**	.637**	.663**	.654**	.665**	-	.881**
26. Acceptance Rate - T2 [b]	.285**	.240**	.257**	-.428**	-.407**	-.406**	.633**	.627**	.629**	.660**	.656**	.669**	.920**	-
27. Acceptance Rate - T3 [b]	.314**	.259**	.270**	-.425**	-.403**	-.388**	.630**	.621**	.623**	.671**	.666**	.680**	.899**	.938**
28. FTE Enrollment - T1 [a]	.227**	.281**	.269**	.128*	.127*	.114	.584**	.576**	.581**	.425**	.412**	.408**	.311**	.314**
29. FTE Enrollment - T2 [a]	.222**	.276**	.264**	.132*	.135*	.124*	.582**	.573**	.578**	.428**	.413**	.408**	.312**	.314**
30. FTE Enrollment - T3 [a]	.224**	.276**	.266**	.130*	.135*	.126*	.582**	.573**	.578**	.429**	.415**	.409**	.314**	.315**
31. Tenure - T1	-.098	-.056	-.062	.033	.018	.023	.029	.030	.023	-.082	-.101	-.083	.043	.022
32. Tenure - T2	-.098	-.056	-.062	.034	.019	.023	.029	.030	.023	-.083	-.102	-.083	.043	.021
33. Tenure - T3	-.098	-.056	-.062	.033	.018	.023	.029	.030	.023	-.082	-.101	-.083	.043	.022

Variable	13	14	15	16	17	18	19	20	21	22	23	24	25	26
34. University Ranked	.257**	.288**	.296**	-.229**	-.206**	-.208**	.656**	.643**	.646**	.547**	.555**	.569**	.456**	.467**
35. Carnegie Classification	.218**	.257**	.258**	-.106	-.102	-.096	.633**	.618**	.624**	.440**	.452**	.465**	.387**	.392**
36. Religious	-.185**	-.166**	-.181**	.175**	.178**	.204**	-.404**	-.391**	-.381**	-.323**	-.328**	-.339**	-.332**	-.329**
37. Ph.D.	.066	.031	.064	-.054	-.042	-.008	.043	.047	.063	.111	.123*	.108	.107	.064
38. Gender	-.013	.047	.084	-.048	-.042	-.051	.030	.024	.047	.007	.007	.013	.074	.064
39. Prior Presidency	-.112	-.111	-.112	.008	.025	.009	.001	.003	.005	-.058	-.052	-.064	.054	.017
40. Enforceability Index	-.060	-.074	-.104	-.078	-.077	-.085	-.123*	-.131*	-.116*	-.030	-.025	.007	-.057	-.035
41. University Density	.156**	.173**	.207**	-.016	-.016	-.032	.400**	.378**	.381**	.182**	.175**	.185**	.194**	.171**

Note. Private university correlations are below the diagonal; public university correlations are above the diagonal; *N*s for private universities range from 231 to 290; *N*s for public universities range from 98 to 113; [a] indicates that the variable was logged; [b] indicates that the variable was reverse scored.

Table 15 (cont.)

Correlation Table for Private and Public Universities for Part I

Variable	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
1. Total Compensation - T1 [a]	.169	.596**	.605**	.609**	.066	.077	.084	.422**	.629**	-	.117	.106	-.218*	.175	.200*
2. Total Compensation - T2 [a]	.205*	.614**	.619**	.628**	.021	.031	.041	.489**	.681**	-	.203*	.071	-.236*	.214*	.292**
3. Total Compensation - T3 [a]	.136	.624**	.628**	.636**	.049	.063	.072	.439**	.657**	-	.205*	.030	-.271**	.196*	.258**
4. Endowment per FTE - T1 [a]	.112	.438**	.447**	.456**	.067	.055	.073	.542**	.674**	-	-.013	.100	-.203*	.187*	.022
5. Endowment per FTE - T2 [a]	.110	.442**	.451**	.459**	.070	.058	.075	.541**	.678**	-	-.015	.101	-.196*	.178	.025
6. Endowment per FTE - T3 [a]	.078	.324**	.335**	.342**	.091	.081	.096	.509**	.594**	-	-.056	.096	-.287**	.078	.036
7. Fundraising - T1 [a]	-.002	.347**	.348**	.358**	-.082	-.086	-.076	.333**	.327**	-	.056	-.043	-.118	-.142	.008
8. Fundraising - T2 [a]	.003	.318**	.318**	.327**	-.102	-.105	-.094	.326**	.257**	-	.059	-.060	-.126	-.164	.005
9. Fundraising - T3 [a]	-.032	.267**	.266**	.274**	-.138	-.144	-.126	.341**	.219*	-	.052	-.126	-.108	-.231*	.000
10. Graduation Rate - T1	.346**	.569**	.589**	.601**	-.008	-.002	.018	.757**	.758**	-	.168	.075	-.196*	-.060	.111
11. Graduation Rate - T2	.359**	.580**	.600**	.611**	.011	.014	.038	.756**	.764**	-	.173	.055	-.211*	-.050	.119
12. Graduation Rate - T3	.385**	.590**	.609**	.620**	.007	.010	.031	.747**	.766**	-	.164	.070	-.234*	-.040	.121
13. Three-year Default Rate - T1 [b]	.145	.460**	.479**	.485**	-.008	-.005	.022	.593**	.734**	-	.101	-.016	-.232*	-.069	.112
14. Three-year Default Rate - T2 [b]	.149	.443**	.463**	.473**	.013	.010	.036	.556**	.720**	-	.092	.017	-.257**	-.050	.128
15. Three-year Default Rate - T3 [b]	.196*	.473**	.493**	.503**	.015	.017	.034	.562**	.728**	-	.150	-.023	-.227*	-.024	.162
16. Student-to-Faculty Ratio - T1	.009	.195*	.181	.179	.079	.091	.062	-.283**	-.264**	-	.079	.061	.110	-.014	-.084
17. Student-to-Faculty Ratio - T2	-.032	.230*	.222*	.222*	.143	.155	.135	-.269**	-.205*	-	.089	.079	.045	.105	-.141
18. Student-to-Faculty Ratio - T3	.001	.184	.176	.175	.120	.131	.109	-.292**	-.279**	-	.090	.049	.046	.072	-.074
19. Average Faculty Salary - T1	.451**	.478**	.489**	.503**	-.028	-.011	-.015	.675**	.613**	-	.107	.042	-.210*	-.157	.409**
20. Average Faculty Salary - T2	.421**	.490**	.500**	.512**	-.020	-.003	-.007	.670**	.630**	-	.115	.071	-.211*	-.191*	.367**
21. Average Faculty Salary - T3	.462**	.479**	.490**	.502**	-.017	.000	-.002	.692**	.623**	-	.127	.087	-.224*	-.157	.370**
22. Average SAT Score - T1	.401**	.410**	.425**	.429**	-.055	-.051	-.023	.715**	.642**	-	-.015	.057	-.262**	.020	.153
23. Average SAT Score - T2	.395**	.398**	.412**	.414**	-.076	-.071	-.044	.706**	.636**	-	-.007	.067	-.275**	.020	.148
24. Average SAT Score - T3	.393**	.408**	.422**	.426**	-.013	.006	.019	.716**	.661**	-	.024	.105	-.283**	-.014	.153
25. Acceptance Rate - T1 [b]	-.837**	.092	.107	.113	-.107	-.084	-.090	.137	.098	-	-.066	.092	-.034	-.032	.365**
26. Acceptance Rate - T2 [b]	-.915**	.141	.149	.153	-.056	-.034	-.037	.172	.098	-	-.117	.035	-.121	-.052	.375**
27. Acceptance Rate - T3 [b]		.137	.146	.152	-.063	-.041	-.046	.233*	.138	-	-.056	.074	-.106	-.111	.377**
28. FTE Enrollment - T1 [a]	.320**	-	.997**	.995**	.104	.131	.110	.446**	.592**	-	.313**	.091	-.159	.042	.059
29. FTE Enrollment - T2 [a]	.323**	.999**	-	.999**	.094	.121	.102	.458**	.605**	-	.318**	.096	-.160	.049	.058
30. FTE Enrollment - T3 [a]	.326**	.996**	.999**	-	.091	.118	.099	.471**	.617**	-	.316**	.092	-.159	.049	.066
31. Tenure - T1	.036	.084	.081	.085	-	.982**	.977**	-.068	.102	-	-.086	-.034	-.136	.043	-.040
32. Tenure - T2	.036	.083	.080	.084	1.000**	-	.962**	-.051	.104	-	-.048	-.026	-.134	.033	-.032
33. Tenure - T3	.036	.084	.081	.085	1.000**	1.000**	-	-.028	.115	-	-.072	-.041	-.142	.046	-.043

Variable	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
34. University Ranking	.485**	.643**	.645**	.644**	-.004	-.004	-.004	-	.497**	-	.042	.024	-.178	-.142	.147
35. Carnegie Classification	.408**	.784**	.785**	.784**	.056	.056	.056	.853**	-	-	.206*	.026	-.285**	.032	.090
36. Religious	-.339**	-.143*	-.143*	-.141*	-.074	-.074	-.074	-.152**	-.151*	-	-	-	-	-	-
37. Ph.D.	.077	-.016	-.015	-.013	.014	.014	.014	.029	-.020	.004	-	.102	.120	.114	-.039
38. Gender	.081	-.144*	-.142*	-.136*	-.010	-.010	-.010	-.059	-.075	-.232**	.051	-	.024	.002	-.151
39. Prior Presidency	.043	.016	.016	.012	-.013	-.014	-.013	-.006	-.002	.053	.012	-.087	-	-.057	-.023
40. Enforceability Index	-.053	-.031	-.027	-.024	-.097	-.098	-.097	-.021	-.034	.014	.007	-.016	.036	-	-.045
41. University Density	.154**	.281**	.278**	.278**	.111	.112	.111	.216**	.245**	-.182**	.007	.037	-.019	-.277**	-

Note. Private university correlations are below the diagonal; public university correlations are above the diagonal; *N*s for private universities range from 231 to 290; *N*s for public universities range from 98 to 113; [a] indicates that the variable was logged; [b] indicates that the variable was reverse scored.

Table 16

R-square Change when Category of Variables is Entered Last into the Model for Part I

	Time 1 to Time 2			Time 2 to Time 3		
Variables	Full sample ΔR^2 (p)	Private ΔR^2 (p)	Public ΔR^2 (p)	Full sample ΔR^2 (p)	Private ΔR^2 (p)	Public ΔR^2 (p)
(a) Including outliers						
University performance	.075 (.000)	.096 (.000)	.048 (.442)	.052 (.001)	.075 (.001)	.020 (.939)
University Size and Complexity	.025 (.001)	.022 (.015)	.147 (.000)	.038 (.000)	.030 (.003)	.141 (.000)
University President Personal Characteristics	.006 (.504)	.007 (.577)	.009 (.798)	.007 (.409)	.006 (.685)	.006 (.915)
(b) Excluding outliers						
University performance	.103 (.000)	.128 (.000)	.064 (.269)	.060 (.000)	.099 (.000)	.024 (.908)
University Size and Complexity	.037 (.000)	.027 (.000)	.143 (.000)	.049 (.000)	.026 (.000)	.143 (.000)
University President Personal Characteristics	.022 (.002)	.038 (.000)	.017 (.544)	.008 (.145)	.025 (.003)	.013 (.721)

Note. Time 1 to Time 2 *N*s: full sample = 352 (excluding outliers = 312); private universities = 254 (excluding outliers = 237); public universities = 98 (excluding outliers = 91); Time 2 to Time 3 *N*s: full sample = 355 (excluding outliers = 317); private universities = 256 (excluding outliers = 239); public universities = 99 (excluding outliers = 92).

Table 17

Correlation Matrix for Part II

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10
1. Change Total Compensation - T1	15.54	0.81										
2. Change Total Compensation - T2	14.56	0.75	-.017									
3. Change Total Compensation - T3	15.27	0.78	-.008	-.086								
4. Relative Change Total Compensation - T1	0.83	0.99	.043	-.005	-.005							
5. Relative Change Total Compensation - T2	0.73	0.14	-.001	.233**	-.500**	.037						
6. Relative Change Total Compensation - T3	0.73	0.13	.002	-.040	.298**	.004	-.390**					
7. Merit Pay - T1	12.32	0.69	.004	-.035	.007	.086	.014	.027				
8. Merit Pay - T2	12.45	0.64	-.017	-.026	.003	.135**	.059	.014	-.248**			
9. Merit Pay - T3	12.99	0.66	-.011	-.007	.003	.002	-.011	.042	.000	-.044		
10. Relative Merit Pay - T1	0.96	1.61	.013	.006	-.007	.483**	.025	-.016	.188**	.054	.004	
11. Relative Merit Pay - T2	0.77	0.80	.004	.002	.004	.008	.023	-.020	-.691**	.109*	-.017	-.021
12. Relative Merit Pay - T3	0.74	0.59	-.013	.002	.004	-.007	-.004	.000	.016	-.980**	.103*	.002
13. Bonus - T1	2.94	4.91	-.093	-.109*	-.094	-.045	-.046	.078	.046	.033	.034	-.004
14. Bonus - T2	3.12	5.00	-.093	-.095	-.093	-.052	.042	.029	.041	-.090	.043	-.009
15. Bonus - T3	3.38	5.17	-.086	-.095	-.081	-.061	-.003	.206**	.024	.050	.031	-.057
16. Relative Bonus - T1	0.05	0.11	-.080	-.229**	-.277**	-.032	.055	.005	.042	.036	.029	-.037
17. Relative Bonus - T2	0.08	0.63	-.079	-.023	-.044	-.043	.022	-.018	.030	-.966**	.041	-.047
18. Relative Bonus - T3	0.06	0.14	-.052	-.099*	-.265**	-.045	.116*	.218**	.032	.039	.024	-.059
19. Deferred Compensation - T1	8.28	4.50	-.059	-.014	-.049	-.051	.038	.144**	.116*	-.001	.100*	.035
20. Deferred Compensation - T2	8.34	4.45	-.058	-.022	-.008	-.022	-.036	.129*	.124*	-.005	.099*	.047
21. Deferred Compensation - T3	8.33	4.48	-.058	-.021	-.013	-.095	-.018	.071	.015	-.001	.100*	.000
22. Relative Deferred Compensation - T1	0.14	0.62	-.032	.015	-.050	-.031	.163**	-.001	.006	.006	.010	-.019
23. Relative Deferred Compensation - T2	0.13	0.46	-.178**	.004	.015	-.039	-.025	.053	.058	-.952**	.048	-.048
24. Relative Deferred Compensation - T3	0.11	0.13	-.157**	.013	.033	-.050	-.045	.125*	.033	.014	.043	-.057
25. Change Endowment per FTE - T1	7.39	0.54	-.100	.015	.004	-.022	.042	-.055	.014	.014	.060	-.023
26. Change Endowment per FTE - T2	9.29	0.90	.015	-.051	.030	-.018	.046	.058	.013	.037	.020	.028
27. Change Endowment per FTE - T3	11.55	0.60	-.003	.019	-.003	.006	.002	-.020	-.003	.001	-.003	.008
28. Change Endowment per FTE - T4	12.78	0.65	-.004	-.004	-.003	-.001	.008	.008	-.044	.001	-.003	.001
29. Change FTE Enrollment - T1	8.19	0.42	.001	-.018	-.011	.016	-.002	-.033	.003	-.005	.003	.005
30. Change FTE Enrollment - T2	9.87	0.50	-.003	-.005	-.006	.008	.000	-.013	.007	.002	-.014	.008
31. Change FTE Enrollment - T3	7.08	0.29	-.021	-.032	-.052	-.054	.051	-.066	.006	.003	-.030	-.051
32. Change FTE Enrollment - T4	7.89	0.44	-.017	-.040	-.010	.002	.004	.017	-.020	-.003	.247**	-.002

Variable	*M*	*SD*	1	2	3	4	5	6	7	8	9	10
33. Religious	0.40	0.49	.044	.031	.035	.042	-.003	-.086	-.077	-.065	.031	.000
34. Institutional Ownership	0.73	0.44	-.029	-.023	-.031	.038	.037	-.021	-.019	-.026	.083	.073
35. Enforceability Index	4.43	2.00	.038	.039	-.043	.105*	.010	-.014	.030	-.069	-.069	.058
36. University Density	40471.22	27103.51	.057	.010	.003	.006	-.013	-.023	-.018	-.122*	.024	.032

*Note. N*s range from 395 to 369; all variables were logged except for religion, institutional ownership, enforceability index, and university density; * indicate $p < .05$, ** indicates $p < .01$.

Table 17 (cont.)

Correlation Matrix for Part II

Variable	11	12	13	14	15	16	17	18	19	20	21	22
12. Relative Merit Pay - T3	-.090											
13. Bonus - T1	-.044	-.027										
14. Bonus - T2	-.052	.099*	.777**									
15. Bonus - T3	-.045	-.032	.684**	.714**								
16. Relative Bonus - T1	-.032	-.019	.810**	.669**	.601**							
17. Relative Bonus - T2	-.054	.981**	.082	.230**	.073	.118*						
18. Relative Bonus - T3	-.032	-.023	.519**	.516**	.764**	.666**	.092					
19. Deferred Compensation - T1	-.134**	.021	.143**	.097	.085	.129*	.026	.139**				
20. Deferred Compensation - T2	-.138**	.018	.182**	.149**	.108*	.142**	.028	.114*	.772**			
21. Deferred Compensation - T3	-.060	.020	.132**	.127*	.087	.108*	.027	.109*	.739**	.802**		
22. Relative Deferred Compensation - T1	-.017	-.009	-.010	-.014	-.013	.006	-.008	.021	.164**	.006	-.002	
23. Relative Deferred Compensation - T2	-.065	.962**	-.005	.116*	-.006	-.007	.955**	.011	.130**	.163**	.131**	.021
24. Relative Deferred Compensation - T3	-.052	-.026	.077	.072	.088	.055	-.017	.118*	.433**	.485**	.569**	.107*
25. Change Endowment per FTE - T1	-.012	.001	.094	.127*	.043	.044	.012	.037	-.081	-.046	-.063	-.009
26. Change Endowment per FTE - T2	.005	-.023	-.030	-.029	-.035	-.019	-.027	.015	.225**	.230**	.237**	.019
27. Change Endowment per FTE - T3	.006	-.006	.021	.019	.021	.018	.001	.011	-.018	-.020	-.021	.000
28. Change Endowment per FTE - T4	.007	.003	.033	.034	.037	.027	.007	.025	-.032	-.034	-.033	.006
29. Change FTE Enrollment - T1	-.004	.003	-.080	-.064	-.063	-.020	-.003	-.034	-.048	-.047	-.034	-.002
30. Change FTE Enrollment - T2	.004	-.003	.032	-.071	-.066	.026	.002	.007	.089	-.038	-.038	.011
31. Change FTE Enrollment - T3	-.020	.007	-.003	.049	.101*	.012	.009	.094	-.159**	-.091	-.065	-.004
32. Change FTE Enrollment - T4	.000	.017	.058	.077	.073	.052	.010	.053	-.007	.109*	-.002	.014
33. Religious Orientation	.084	.059	-.053	-.106*	-.125*	-.063	.046	-.097	.127*	.127*	.110*	.049
34. Institutional Ownership	.037	.033	.096	-.008	-.021	.095	.034	.060	.510**	.454**	.484**	.066
35. Enforceability Index	-.004	.056	.067	.136**	.068	.092	.088	.093	.000	-.002	-.023	-.036
36. University Density	-.022	.113*	-.123*	-.083	-.141**	-.117*	.089	-.109*	-.007	-.031	-.067	-.019

*Note. N*s range from 395 to 369; all variables were logged except for religion, institutional ownership, enforceability index, and university density.

Table 17 (cont.)

Correlation Matrix for Part II

Variable	23	24	25	26	27	28	29	30	31	32	33	34	35
24. Relative Deferred Compensation - T3	.195**												
25. Change Endowment per FTE - T1	-.007	-.039											
26. Change Endowment per FTE - T2	.011	.152**	-.028										
27. Change Endowment per FTE - T3	-.002	-.002	.003	-.190**									
28. Change Endowment per FTE - T4	.005	.007	.008	-.088	-.030								
29. Change FTE Enrollment - T1	.003	.019	-.042	-.029	.002	-.002							
30. Change FTE Enrollment - T2	-.002	-.016	-.021	.032	-.001	-.004	.001						
31. Change FTE Enrollment - T3	.002	.019	.142**	-.046	-.007	.002	.043	-.126*					
32. Change FTE Enrollment - T4	.023	.062	.044	.036	-.011	-.001	-.062	-.070	.228**				
33. Religious	.045	-.060	.010	-.088	.047	.049	.021	.039	-.147**	-.074			
34. Institutional Ownership	.057	.146**	-.142**	.263**	-.022	-.041	-.060	.079	-.248**	-.055	.489**		
35. Enforceability Index	.056	-.040	-.024	-.023	.108*	.018	-.045	.036	-.067	.014	.023	.026	
36. University Density	.083	-.094	.003	.062	.006	.022	.045	.001	-.024	-.030	.081	.042	.028

*Note. N*s range from 395 to 369; all variables were logged except for religion, institutional ownership, enforceability index, and university density.

Table 18

Random Coefficient Modeling Results for the Effect of Δ Endowment on Δ Total Compensation

Variable	Model 1 estimate (SE)	Model 2 estimate (SE)	Model 3 estimate (SE)	Model 4 estimate (SE)	Model 5 estimate (SE)
Panel A: Including Outliers					
Δ FTE Enrollment	.311 (.030)**	.199 (.040)**	-.024 (.059)	.189 (.041)**	.109 (.048)*
Institutional Ownership	.097 (.069)	-.136 (.069)*	-.115 (.070)	-.155 (.070)**	-.122 (.071)
Religious	.086 (.062)	.116 (.062)	.106 (.062)	.127 (.063)*	.103 (.063)
Enforceability Index	-.001 (.013)	.000 (.013)	-.001 (.013)	.001 (.013)	.001 (.013)
University Density	.000 (.000)	.000 (.000)	.000 (.000)	.000 (.000)	.000 (.000)
Δ Endowment per FTE		.134 (.032)**	.005 (.072)	.142 (.033)**	.264 (.050)**
Time			.705 (.140)**		
Time* Δ Endowment per FTE			.039 (.086)		
Δ Endowment per FTE^2				.010 (.007)	-.027 (.014)
Δ Endowment per FTE^3					-.007 (.002)**
Log Likelihood	-922.913	-914.360	-901.146	-913.350	-908.024
Δ Log Likelihood	59.655** [a]	8.553** [b]	13.214** [c]	1.010 [c]	5.326** [d]
Panel B: Excluding Outliers					
Δ FTE Enrollment	.416 (.005)**	.409 (.006)**	-.003 (.005)	.189 (.041)**	.133 (.008)*
Institutional Ownership	.018 (.005)**	.016 (.005)**	.010 (.005)*	-.155 (.070)*	.002 (.010)
Religious	-.006 (.005)	-.005 (.005)	-.006 (.004)	.127 (.063)*	-.008 (.009)
Enforceability Index	-.001 (.001)	-.001 (.001)	-.001 (.001)	.001 (.013)	.000 (.002)
University Density	.000 (.000)	.000 (.000)	.000 (.000)	.000 (.000)	.000 (.000)
Δ Endowment per FTE		.007 (.003)	.005 (.006)	.142 (.033)**	.216 (.009)*
Time			.710 (.013)**		
Time* Δ Endowment per FTE			-.002 (.007)		
Δ Endowment per FTE^2				.010 (.007)	-.029 (.002)*
Δ Endowment per FTE^3					-.007 (.000)*

Note. N = 789 before outlier removal and ranged from 783 to 785 after outlier removal; * indicates $p < .05$; ** indicates $p < .01$; [a] indicates model was compared to null model (not shown); [b] indicates model was compared to Model 1; [c] indicates that model was compared to Model 2, [d] indicates that model was compared to Model 4; log likelihood values and change in log likelihood values were not reported in Panel B because models with different Ns are not comparable; unstandardized estimates are shown; level 1 variables (FTE Enrollment and Endowment per FTE) were grand mean centered; all depicted models account for autocorrelation; Endowment per FTE, FTE enrollment, and total compensation were logged; Δ Endowment per FTE, Δ FTE Enrollment, and Δ Total Compensation were logged; Δ = 'change in'.

Table 19

Random Coefficient Modeling Results for the Effect of Δ Endowment on Relative Δ Total Compensation

Variable	Model 1 estimate (SE)	Model 2 estimate (SE)	Model 3 estimate (SE)	Model 4 estimate (SE)	Model 5 estimate (SE)
Panel A: Including Outliers					
Δ FTE Enrollment	.001 (.006)	-.005 (.007)	-.003 (.010)	-.006 (.007)	-.009 (.008)
Institutional Ownership	.012 (.010)	.010 (.010)	.010 (.010)	.000 (.002)	.000 (.002)
Religious	-.017 (.009)	-.015 (.009)	-.015 (.009)	.000 (.000)	.000 (.000)
Enforceability Index	.000 (.002)	.000 (.002)	.000 (.002)	.007 (.010)	.009 (.010)
University Density	.000 (.000)	.000 (.000)	.000 (.000)	-.014 (.009)	-.015 (.009)
Δ Endowment per FTE		.008 (.005)	.008 (.012)	.009 (.005)	.013 (.008)
Time			-.006 (.024)		
Time* Δ Endowment per FTE			.001 (.014)		
Δ Endowment per FTE^2				.001 (.001)	.000 (.002)
Δ Endowment per FTE^3					.000 (.000)
Log Likelihood	480.091	481.155	481.192	481.818	482.053
Δ Log Likelihood	34.388** [a]	1.064 [b]	0.037 [c]	0.663 [c]	0.235 [d]
Panel B: Excluding Outliers					
Δ FTE Enrollment	-.002 (.003)	-.006 (.004)	-.006 (.006)	-.007 (.004)	-.009 (.005)
Institutional Ownership	-.006 (.006)	-.007 (.006)	-.005 (.006)	-.009 (.006)	-.008 (.006)
Religious	-.006 (.005)	-.004 (.005)	-.006 (.006)	-.003 (.005)	-.004 (.006)
Enforceability Index	-.001 (.001)	-.001 (.001)	-.001 (.001)	-.001 (.001)	-.002 (.001)
University Density	.000 (.000)	.000 (.000)	.000 (.000)	.000 (.000)	.000 (.000)
Δ Endowment per FTE		.005 (.003)	.016 (.007)*	.007 (.003)*	.011 (.005)*
Time			-.006 (.014)		
Time* Δ Endowment per FTE			-.014 (.008)		
Δ Endowment per FTE^2				.001 (.001)	-.001 (.001)
Δ Endowment per FTE^3					.000 (.000)

Note. N = 789 before outlier removal and ranged from 756 to 757 after outlier removal; * indicates $p < .05$; ** indicates $p < .01$; [a] indicates model was compared to null model (not shown); [b] indicates model was compared to Model 1; [c] indicates that model was compared to Model 2, [d] indicates that model was compared to Model 4; log likelihood values and change in log likelihood values were not reported in Panel B because models with different Ns are not comparable; unstandardized estimates are shown; level 1 variables (FTE Enrollment and Endowment per FTE) were grand mean centered; all depicted models account for autocorrelation; Δ Endowment per FTE, Δ FTE Enrollment, and Relative Δ Total Compensation were logged; Δ = 'change in'.

Table 20

Random Coefficient Modeling Results for the Effect of Δ Endowment on Merit Pay

Variable	Model 1 estimate (SE)	Model 2 estimate (SE)	Model 3 estimate (SE)	Model 4 estimate (SE)	Model 5 estimate (SE)
Panel A: Including Outliers					
Δ FTE Enrollment	.242 (.025)**	.164 (.034)**	-.012 (.050)	.159 (.035)**	.096 (.041)**
Institutional Ownership	.074 (.059)	.048 (.059)	.075 (.061)	.039 (.060)	.065 (.061)
Religious	-.054 (.054)	-.033 (.054)	-.047 (.054)	-.028 (.054)	-.047 (.054)
Enforceability Index	-.022 (.011)	-.021 (.011)	-.022 (.011)	-.021 (.011)	-.021 (.011)
University Density	.000 (.000)	.000 (.000)	.000 (.000)	.000 (.000)	.000 (.000)
Δ Endowment per FTE		.091 (.027)**	.028 (.062)	.095 (.028)**	.191 (.042)**
Time			.532 (.119)**		
Time* Δ Endowment per FTE			-.023 (.073)		
Δ Endowment per FTE^2				.005 (.006)	-.025 (.012)*
Δ Endowment per FTE^3					-.006 (.002)**
Log Likelihood	-791.625	-786.087	-774.7041	-785.818	-781.253
Δ Log Likelihood	50.983**[a]	5.538**[b]	11.383**[c]	0.269[c]	4.565**[d]
Panel B: Excluding Outliers					
Δ FTE Enrollment	.322 (.005)**	.227 (.008)**	-.010 (.008)	.222 (.008)**	.097 (.008)**
Institutional Ownership	.016 (.009)	.007 (.011)	.009 (.009)	.000 (.011)	.001 (.011)
Religious	-.012 (.008)	-.008 (.010)	-.011 (.008)	-.004 (.010)	-.012 (.010)
Enforceability Index	-.001 (.002)	.000 (.002)	-.002 (.002)	.000 (.002)	-.001 (.002)
University Density	.000 (.000)	.000 (.000)	.000 (.000)	.000 (.000)	.000 (.000)
Δ Endowment per FTE		.053 (.006)**	.009 (.010)	.056 (.006)**	.182 (.009)**
Time			.546 (.019)*		
Time* Δ Endowment per FTE			-.002 (.012)		
Δ Endowment per FTE^2				.003 (.001)**	-.023 (.002)**
Δ Endowment per FTE^3					-.005 (.000)**

Note. N = 789 before outlier removal and ranged from 785 to 786 after outlier removal; * indicates $p < .05$; ** indicates $p < .01$; [a] indicates model was compared to null model (not shown); [b] indicates model was compared to Model 1; [c] indicates that model was compared to Model 2, [d] indicates that model was compared to Model 4; log likelihood values and change in log likelihood values were not reported in Panel B because models with different Ns are not comparable; unstandardized estimates are shown; level 1 variables (FTE Enrollment and Endowment per FTE) were grand mean centered; all depicted models account for autocorrelation; Δ Endowment per FTE, Δ FTE Enrollment, and Merit Pay were logged; Δ = 'change in'.

Table 21

Random Coefficient Modeling Results for the Effect of Δ Endowment on Merit Pay as a Percentage of Base Salary

Variable	Model 1 estimate (SE)	Model 2 estimate (SE)	Model 3 estimate (SE)	Model 4 estimate (SE)	Model 5 estimate (SE)
Panel A: Including Outliers					
Δ FTE Enrollment	-.015 (.027)	-.006 (.037)	-.009 (.054)	-.004 (.037)	.004 (.044)
Institutional Ownership	-.001 (.062)	.002 (.063)	.001 (.065)	.005 (.064)	.001 (.065)
Religious	.101 (.056)	.099 (.056)	.099 (.057)	.097 (.057)	.100 (.057)
Enforceability Index	.007 (.012)	.007 (.012)	.007 (.012)	.007 (.012)	.007 (.012)
University Density	.000 (.000)	.000 (.000)	.000 (.000)	.000 (.000)	.000 (.000)
Δ Endowment per FTE		-.011 (.029)	-.018 (.067)	-.013 (.030)	-.025 (.045)
Time			.013 (.129)		
Time* Δ Endowment per FTE			.008 (.079)		
Δ Endowment per FTE^2				-.001 (.007)	.003 (.012)
Δ Endowment per FTE^3					.001 (.002)
Log Likelihood	-838.193	-838.116	-838.108	-838.093	-838.021
Δ Log Likelihood	4.470 [a]	.077 [b]	.008 [c]	.024 [c]	.072 [d]
Panel B: Excluding Outliers					
Δ FTE Enrollment	-.003 (.003)	-.004 (.004)	-.003 (.005)	-.004 (.004)	-.004 (.004)
Institutional Ownership	-.001 (.006)	-.001 (.006)	-.002 (.006)	-.002 (.006)	-.002 (.006)
Religious	-.001 (.006)	-.001 (.006)	-.001 (.006)	-.001 (.006)	-.001 (.006)
Enforceability Index	-.002 (.001)	-.002 (.001)	-.002 (.001)	-.002 (.001)	-.002 (.001)
University Density	.000 (.000)	.000 (.000)	.000 (.000)	.000 (.000)	.000 (.000)
Δ Endowment per FTE		.002 (.003)	.001 (.007)	.002 (.003)	.001 (.005)
Time			-.002 (.013)		
Time* Δ Endowment per FTE			.001 (.008)		
Δ Endowment per FTE^2				.000 (.001)	.000 (.001)
Δ Endowment per FTE^3					.000 (.000)

Note. N = 789 before outlier removal and 785 after outlier removal; * indicates $p < .05$; ** indicates $p < .01$; [a] indicates model was compared to null model (not shown); [b] indicates model was compared to Model 1; [c] indicates that model was compared to Model 2, [d] indicates that model was compared to Model 4; log likelihood values and change in log likelihood values were not reported in Panel B because models with different cases are not comparable; unstandardized estimates are shown; level 1 variables (FTE Enrollment and Endowment per FTE) were grand mean centered; all depicted models account for autocorrelation; Δ Endowment per FTE, Δ FTE Enrollment, and Relative Merit Pay were logged; Δ = 'change in'.

Table 22

Random Coefficient Modeling Results for the Effect of Δ Endowment on Bonuses

Variable	Model 1 estimate (SE)	Model 2 estimate (SE)	Model 3 estimate (SE)	Model 4 estimate (SE)	Model 5 estimate (SE)
Panel A: Including Outliers					
Δ FTE Enrollment	.104 (.107)	-.090 (.176)	-.161 (.275)	-.024 (.178)	-.182 (.222)
Institutional Ownership	.610 (.603)	.551 (.604)	.771 (.607)	.676 (.607)	.731 (.607)
Religious	-1.408 (.546)*	-1.361 (.546)*	-1.489 (.546)**	-1.434 (.547)**	-1.475 (.547)**
Enforceability Index	.269 (.116)*	.271 (.116)*	.271 (.116)*	.266 (.116)*	.265 (.116)*
University Density	.000 (.000)*	.000 (.000)*	.000 (.000)*	.000 (.000)*	.000 (.000)*
Δ Endowment per FTE		.201 (.145)	.936 (.335)**	.153 (.146)	.362 (.228)
Time			-.235 (.619)		
Time* Δ Endowment per FTE			-1.066 (.396)**		
Δ Endowment per FTE^2				-.069 (.033)*	-.133 (.063)*
Δ Endowment per FTE^3					-.012 (.010)
Log Likelihood	-2253.644	-2252.680	-2248.937	-2250.458	-2249.746
Δ Log Likelihood	9.350** [a]	.964 [b]	3.743* [c]	2.222* [c]	-.712 [d]
Panel B: Excluding Outliers					
Δ FTE Enrollment	.045 (.051)	.039 (.076)	-.007 (.131)	-.005 (.087)	.021 (.104)
Institutional Ownership	.694 (.626)	.644 (.626)	.948 (.624)	.866 (.626)	.811 (.626)
Religious	-1.550 (.566)**	-1.451 (.566)*	-1.680 (.563)**	-1.631 (.566)**	-1.577 (.565)**
Enforceability Index	.286 (.122)*	.277 (.122)*	.295 (.121)*	.280 (.122)*	.282 (.122)*
University Density	.000 (.000)*	.000 (.000)*	.000 (.000)*	.000 (.000)*	.000 (.000)**
Δ Endowment per FTE		.022 (.064)	.879 (.168)**	.102 (.071)	.084 (.107)
Time			-.589 (.299)*		
Time* Δ Endowment per FTE			-.965 (.198)**		
Δ Endowment per FTE^2				-.067 (.016)**	-.056 (.029)
Δ Endowment per FTE^3					.002 (.005)

Note. N = 789 before outlier removal and ranges from 735 to 738 after outlier removal; * indicates $p < .05$; ** indicates $p < .01$; [a] indicates model was compared to null model (not shown); [b] indicates model was compared to Model 1; [c] indicates that model was compared to Model 2, [d] indicates that model was compared to Model 4; log likelihood values and change in log likelihood values were not reported in Panel B because models with different Ns are not comparable; unstandardized estimates are shown; level 1 variables (FTE Enrollment and Endowment per FTE) were grand mean centered; all depicted models account for autocorrelation; Δ Endowment per FTE, Δ FTE Enrollment, and Bonuses were logged; Δ = 'change in'.

Table 23

Random Coefficient Modeling Results for the Effect of Δ Endowment on Bonuses as a Percentage of Base Salary

Variable	Model 1 estimate (SE)	Model 2 estimate (SE)	Model 3 estimate (SE)	Model 4 estimate (SE)	Model 5 estimate (SE)
Panel A: Including Outliers					
Δ FTE Enrollment	-.009 (.017)	-.010 (.024)	-.001 (.035)	-.009 (.024)	-.008 (.028)
Institutional Ownership	.032 (.043)	.032 (.043)	.035 (.045)	.033 (.044)	.017 (.008)*
Religious	-.003 (.039)	-.003 (.039)	-.005 (.040)	-.003 (.039)	.000 (.000)
Enforceability Index	.017 (.008)*	.017 (.008)*	.017 (.008)*	.017 (.008)*	.033 (.045)
University Density	.000 (.000)	.000 (.000)	.000 (.000)	.000 (.000)	-.003 (.040)
Δ Endowment per FTE		.000 (.019)	.019 (.044)	.000 (.019)	-.001 (.030)
Time			-.034 (.083)		
Time* Δ Endowment per FTE			-.022 (.052)		
Δ Endowment per FTE^2				-.001 (.004)	-.001 (.008)
Δ Endowment per FTE^3					.000 (.001)
Log Likelihood	-500.709	-500.709	-500.575	-500.692	-500.692
Δ Log Likelihood	3.330 [a]	.000 [b]	0.134 [c]	0.017[c]	.000 [d]
Panel B: Excluding Outliers					
Δ FTE Enrollment	.006 (.003)*	.001 (.005)	.002 (.007)	.002 (.005)	-.002 (.006)
Institutional Ownership	.033 (.014)*	.031 (.014)*	.035 (.015)*	.032 (.014)*	.034 (.015)*
Religious	-.037 (.013)**	-.036 (.013)**	-.038 (.013)**	-.036 (.013)**	-.037 (.013)**
Enforceability Index	.007 (.003)**	.007 (.003)**	.007 (.003)**	.007 (.003)**	.007 (.003)**
University Density	.000 (.000)*	.000 (.000)*	.000 (.000)*	.000 (.000)*	.000 (.000)*
Δ Endowment per FTE		.006 (.004)	.021 (.009)*	.005 (.004)	.010 (.006)
Time			-.012 (.016)		
Time* Δ Endowment per FTE			-.020 (.010)		
Δ Endowment per FTE^2				-.001 (.001)	-.002 (.002)
Δ Endowment per FTE^3					.000 (.000)

Note. N = 789 before outlier removal and 788 after outlier removal; * indicates $p < .05$; ** indicates $p < .01$; [a] indicates model was compared to null model (not shown); [b] indicates model was compared to Model 1; [c] indicates that model was compared to Model 2, [d] indicates that model was compared to Model 4; log likelihood values and change in log likelihood values were not reported in Panel B because models with different case are not comparable; unstandardized estimates are shown; level 1 variables (FTE Enrollment and Endowment per FTE) were grand mean centered; all depicted models account for autocorrelation; Δ Endowment per FTE, Δ FTE Enrollment, and Relative Bonuses were logged; Δ = 'change in'.

Table 24

Random Coefficient Modeling Results for the Effect of Δ Endowment on Deferred Compensation

Variable	Model 1 estimate (SE)	Model 2 estimate (SE)	Model 3 estimate (SE)	Model 4 estimate (SE)	Model 5 estimate (SE)
Panel A: Including Outliers					
Δ FTE Enrollment	-.038 (.077)	-.182 (.128)	-.168 (.201)	-.200 (.130)	-.234 (.163)
Institutional Ownership	5.496 (.477)**	5.452 (.477)**	5.454 (.481)**	5.418 (.478)**	5.430 (.480)**
Religious	-1.277 (.431)**	-1.242 (.431)**	-1.243 (.433)**	-1.222 (.432)**	-1.230 (.432)**
Enforceability Index	-.043 (.092)	-.042 (.092)	-.042 (.092)	-.040 (.092)	-.040 (.092)
University Density	.000 (.000)	.000 (.000)	.000 (.000)	.000 (.000)	.000 (.000)
Δ Endowment per FTE		.148 (.106)	.165 (.246)	.161 (.107)	.207 (.168)
Time			-.045 (.453)		
Time* Δ Endowment per FTE			-.015 (.290)		
Δ Endowment per FTE^2				.019 (.024)	.005 (.046)
Δ Endowment per FTE^3					-.003 (.007)
Log Likelihood	-2031.444	-2030.455	-2030.449	-2030.145	-2030.083
Δ Log Likelihood	61.711** [a]	.989 [b]	.006 [c]	.310 [c]	.062[d]
Panel B: Excluding Outliers					
Δ FTE Enrollment	.015 (.012)	-.029 (.020)	-.032 (.031)	-.030 (.020)	-.035 (.026)
Institutional Ownership	5.814 (.506)**	5.800 (.506)**	5.811 (.507)**	5.798 (.506)**	5.799 (.507)**
Religious	-1.316 (.443)**	-1.305 (.443)**	-1.312 (.443)**	-1.303 (.443)**	-1.304 (.443)**
Enforceability Index	-.013 (.096)	-.013 (.096)	-.013 (.096)	-.013 (.096)	-.013 (.096)
University Density	.000 (.000)	.000 (.000)	.000 (.000)	.000 (.000)	.000 (.000)
Δ Endowment per FTE		.044 (.016)**	.084 (.039)*	.045 (.017)**	.051 (.026)
Time			-.015 (.070)		
Time* Δ Endowment per FTE			-.057 (.045)		
Δ Endowment per FTE^2				.001 (.004)	.000 (.007)
Δ Endowment per FTE^3					.000 (.001)

Note. N = 789 before outlier removal and 738 after outlier removal; * indicates $p < .05$; ** indicates $p < .01$; [a] indicates model was compared to null model (not shown); [b] indicates model was compared to Model 1; [c] indicates that model was compared to Model 2, [d] indicates that model was compared to Model 4; log likelihood values and change in log likelihood values were not reported in Panel B because models with different case are not comparable; unstandardized estimates are shown; level 1 variables (FTE Enrollment and Endowment per FTE) were grand mean centered; all depicted models account for autocorrelation; Δ Endowment per FTE, Δ FTE Enrollment, and Deferred Compensation were logged; Δ = 'change in'.

Table 25

Random Coefficient Modeling Results for the Effect of Δ Endowment on Deferred Compensation as a Percentage of Base Salary

Variable	Model 1 estimate (SE)	Model 2 estimate (SE)	Model 3 estimate (SE)	Model 4 estimate (SE)	Model 5 estimate (SE)
Panel A: Including Outliers					
Δ FTE Enrollment	-.011 (.012)	-.015 (.017)	-.003 (.026)	-.017 (.018)	-.011 (.021)
Institutional Ownership	.057 (.033)	.056 (.033)	.051 (.034)	.053 (.034)	.050 (.034)
Religious	-.014 (.030)	-.013 (.030)	-.010 (.030)	-.011 (.030)	-.009 (.030)
Enforceability Index	.005 (.006)	.005 (.006)	.005 (.006)	.005 (.006)	.005 (.006)
University Density	.000 (.000)	.000 (.000)	.000 (.000)	.000 (.000)	.000 (.000)
Δ Endowment per FTE		.005 (.014)	.001 (.032)	.006 (.014)	-.003 (.022)
Time			-.033 (.061)		
Time* Δ Endowment per FTE			.014 (.038)		
Δ Endowment per FTE^2				.002 (.003)	.004 (.006)
Δ Endowment per FTE^3					.000 (.001)
Log Likelihood	-260.034	-259.978	-259.684	-259.841	-259.705
Δ Log Likelihood	2.868 [a]	.056 [b]	.294 [c]	.137 [c]	.135 [d]
Panel B: Excluding Outliers					
Δ FTE Enrollment	-.002 (.002)	-.006 (.003)*	-.002 (.005)	-.007 (.003)*	-.005 (.004)
Institutional Ownership	.056 (.014)**	.055 (.014)**	.055 (.015)**	.054 (.015)**	.053 (.015)**
Religious	-.038 (.013)**	-.037 (.013)**	-.037 (.013)**	-.036 (.013)**	-.036 (.013)**
Enforceability Index	-.002 (.003)	-.002 (.003)	-.002 (.003)	-.002 (.003)	-.002 (.003)
University Density	.000 (.000)	.000 (.000)	.000 (.000)	.000 (.000)	.000 (.000)
Δ Endowment per FTE		.005 (.002)	.010 (.005)	.005 (.002)	.002 (.004)
Time			-.013 (.010)		
Time* Δ Endowment per FTE			-.004 (.006)		
Δ Endowment per FTE^2				.000 (.001)	.001 (.001)
Δ Endowment per FTE^3					.000 (.000)

Note. N = 789 before outlier removal and 785 after outlier removal; * indicates $p < .05$; ** indicates $p < .01$; [a] indicates model was compared to null model (not shown); [b] indicates model was compared to Model 1; [c] indicates that model was compared to Model 2, [d] indicates that model was compared to Model 4; log likelihood values and change in log likelihood values were not reported in Panel B because models with different cases are not comparable; unstandardized estimates are shown; level 1 variables (FTE Enrollment and Endowment per FTE) were grand mean centered; all depicted models account for autocorrelation; Δ Endowment per FTE, Δ FTE Enrollment, and Relative Deferred Compensation were logged; Δ = 'change in'.

Table 26

Random Coefficient Modeling Results for the Effect of Δ Total Compensation on Endowment

Variable	Model 1 estimate (SE)	Model 2 estimate (SE)	Model 3 estimate (SE)
Panel A: Including Outliers			
Δ FTE Enrollment	.739 (.051)**	.638 (.054)**	-.007 (.061)
Institutional Ownership	-.064 (.067)	-.090 (.067)	-.109 (.059)
Religious	.135 (.059)*	.150 (.059)*	.106 (.052)*
Enforceability Index	.022 (.013)	.024 (.013)	.019 (.011)
University Density	.000 (.000)	.000 (.000)	.000 (.000)
Δ Total Compensation		-.187 (.032)**	-.010 (.041)
Time			1.224 (.074)**
Time* Δ Total Compensation			.000 (.059)
Log Likelihood	-863.962	-847.300	-729.120
Δ Log Likelihood	122.194**[a]	16.662**[b]	118.180[c]
Panel B: Excluding Outliers			
Δ FTE Enrollment	1.207 (.021)**	.198 (.023)**	-.008 (.007)
Institutional Ownership	.109 (.030)**	.020 (.014)	-.014 (.008)
Religious	.031 (.026)	.006 (.012)	.016 (.007)*
Enforceability Index	.006 (.006)	.001 (.003)	-.001 (.001)
University Density	.000 (.000)	.000 (.000)	.000 (.000)
Δ Total Compensation		-1.036 (.022)**	-.001 (.005)
Time			1.242 (.009)**
Time* Δ Total Compensation			-.002 (.007)

Note. N = 762 before outlier removal and ranged from 755 to 758 after outlier removal; * indicates $p < .05$; ** indicates $p < .01$; log likelihood values and change in log likelihood values were not reported in Panel B because models with different Ns are not comparable; [a] indicates model was compared to null model (not shown); [b] indicates model was compared to Model 1; [c] indicates that model was compared to Model 2; unstandardized coefficients are shown; level 1 variables (Δ Endowment per FTE, Δ FTE Enrollment) were grand mean centered; all depicted models account for autocorrelation; Δ Endowment per FTE, Δ FTE Enrollment, and Δ Total Compensation were logged; Δ = 'change in'.

Table 27

Random Coefficient Modeling Results for the Effect of Relative Δ Total Compensation on Δ Endowment

Variable	Model 1 estimate (SE)	Model 2 estimate (SE)	Model 3 estimate (SE)
Panel A: Including Outliers			
Δ FTE Enrollment	.739 (.051)**	.737 (.051)**	-.007 (.061)
Institutional Ownership	-.064 (.067)	-.063 (.067)	-.108 (.059)
Religious	.135 (.059)*	.135 (.059)*	.106 (.052)*
Enforceability Index	.022 (.013)	.022 (.013)	.019 (.011)
University Density	.000 (.000)	.000 (.000)	.000 (.000)
Δ Relative Total Compensation		-.021 (.039)	-.001 (.034)
Time			1.236 (.069)**
Time* Δ Relative Total Compensation			.049 (.225)
Log Likelihood	-863.962	-863.823	-729.148
Δ Log Likelihood	122.194** [a]	.139 [b]	134.675** [c]
Panel B: Excluding Outliers			
Δ FTE Enrollment	1.207 (.021)**	1.207 (.022)**	-.008 (.007)
Institutional Ownership	.109 (.030)**	.109 (.030)**	-.014 (.008)
Religious	.031 (.026)	.031 (.026)	.016 (.007)*
Enforceability Index	.006 (.006)	.006 (.006)	-.001 (.001)
University Density	.000 (.000)	.000 (.000)	.000 (.000)
Δ Relative Total Compensation		.002 (.015)	.000 (.004)
Time			1.244 (.008)**
Time* Δ Relative Total Compensation			-.007 (.027)

Note. N = 762 before outlier removal and ranged from 755 to 758 after outlier removal; * indicates $p < .05$; ** indicates $p < .01$; log likelihood values and change in log likelihood values were not reported in Panel B because models with different Ns are not comparable; [a] indicates model was compared to null model (not shown); [b] indicates model was compared to Model 1; [c] indicates that model was compared to Model 2; unstandardized coefficients are shown; level 1 variables (Δ Endowment per FTE, Δ FTE Enrollment) were grand mean centered; all depicted models account for autocorrelation; Δ Endowment per FTE, Δ FTE Enrollment, and Δ Relative Total Compensation were logged; Δ = 'change in'.

Table 28

Random Coefficient Modeling Results for the Effect of Merit Pay on Δ Endowment

Variable	Model 1 estimate (SE)	Model 2 estimate (SE)	Model 3 estimate (SE)
Panel A: Including Outliers			
Δ FTE Enrollment	.739 (.051)**	.738 (.051)**	-.007 (.061)
Institutional Ownership	-.064 (.067)	-.065 (.067)	-.108 (.059)
Religious	.135 (.059)*	.139 (.059)*	.106 (.052)*
Enforceability Index	.022 (.013)	.022 (.013)	.019 (.011)
University Density	.000 (.000)	.000 (.000)	.000 (.000)
Merit Pay		.042 (.041)	-.001 (.048)
Time			1.233 (.068)**
Time*Merit Pay			.011 (.069)
Log Likelihood	-863.962	-863.447	-729.153
Δ Log Likelihood	122.194** [a]	.515 [b]	134.295 [c]
Panel B: Excluding Outliers			
Δ FTE Enrollment	1.207 (.021)**	1.205 (.022)*	-.008 (.007)
Institutional Ownership	.109 (.030)**	.108 (.030)**	-.014 (.008)
Religious	.031 (.026)	.033 (.026)	.016 (.007)*
Enforceability Index	.006 (.006)	.006 (.006)	-.001 (.001)
University Density	.000 (.000)	.000 (.000)	.000 (.000)
Merit Pay		.017 (.016)	-.004 (.006)
Time			1.245 (.008)**
Time*Merit Pay			.004 (.008)

Note. $N = 762$ before outlier removal and ranged from 755 to 758 after outlier removal; * indicates $p < .05$; ** indicates $p < .01$; log likelihood values and change in log likelihood values were not reported in Panel B because models with different *N*s are not comparable; [a] indicates model was compared to null model (not shown); [b] indicates model was compared to Model 1; [c] indicates that model was compared to Model 2; unstandardized coefficients are shown; level 1 variables (Δ Endowment per FTE, Δ FTE Enrollment) were grand mean centered; all depicted models account for autocorrelation; Δ Endowment per FTE, Δ FTE Enrollment, and Merit Pay were logged; Δ = 'change in'.

Table 29

Random Coefficient Modeling Results for the Effect of Merit Pay as a Percentage of Base Salary on Δ Endowment

Variable	Model 1 estimate (SE)	Model 2 estimate (SE)	Model 3 estimate (SE)
	Panel A: Including Outliers		
Δ FTE Enrollment	.739 (.051)**	.738 (.051)*	-.006 (.061)
Institutional Ownership	-.064 (.067)	-.063 (.067)	-.108 (.059)
Religious	.135 (.059)*	.135 (.059)**	.106 (.052)*
Enforceability Index	.022 (.013)	.022 (.013)	.019 (.011)
University Density	.000 (.000)	.000 (.000)	.000 (.000)
Merit Pay - Relative		-.008 (.022)	.004 (.021)
Time			1.234 (.068)**
Time*Merit Pay - Relative			-.001 (.045)
Log Likelihood	-863.962	-863.893	-729.153
Δ Log Likelihood	122.194** [a]	0.069 [b]	134.74 [c]
	Panel B: Excluding Outliers		
Δ FTE Enrollment	1.207 (.021)**	1.207 (.022)**	-.008 (.007)
Institutional Ownership	.109 (.030)**	.109 (.030)**	-.014 (.008)
Religious	.031 (.026)	.031 (.026)	.016 (.007)*
Enforceability Index	.006 (.006)	.006 (.006)	-.001 (.001)
University Density	.000 (.000)	.000 (.000)	.000 (.000)
Merit Pay - Relative		.000 (.008)	.001 (.002)
Time			1.244 (.008)**
Time*Merit Pay - Relative			.000 (.005)

Note. $N = 762$ before outlier removal and ranged from 755 to 758 after outlier removal; * indicates $p < .05$; ** indicates $p < .01$; log likelihood values and change in log likelihood values were not reported in Panel B because models with different *N*s are not comparable; [a] indicates model was compared to null model (not shown); [b] indicates model was compared to Model 1; [c] indicates that model was compared to Model 2; unstandardized coefficients are shown; level 1 variables (Δ Endowment per FTE, Δ FTE Enrollment) were grand mean centered; all depicted models account for autocorrelation; Δ Endowment per FTE, Δ FTE Enrollment, and Relative Merit Pay were logged; Δ = 'change in'.

Table 30

Random Coefficient Modeling Results for the Effect of Bonuses on Δ Endowment

Variable	Model 1 estimate (SE)	Model 2 estimate (SE)	Model 3 estimate (SE)
Panel A: Including Outliers			
Δ FTE Enrollment	.737 (.050)**	.735 (.050)**	-.009 (.060)
Institutional Ownership	-.040 (.063)	-.043 (.064)	-.110 (.057)
Religious	.131 (.057)*	.134 (.057)*	.109 (.051)*
Enforceability Index	.020 (.012)	.020 (.012)	.018 (.011)
University Density	.000 (.000)	.000 (.000)	.000 (.000)
Bonus		.002 (.005)	.004 (.006)
Time			1.236 (.066)**
Time*Bonus			.001 (.009)
Log Likelihood	-883.060	-882.942	-740.460
Δ Log Likelihood	129.867 [a]	0.118 [b]	142.481** [c]
Panel B: Excluding Outliers			
Δ FTE Enrollment	1.202 (.021)**	1.202 (.021)**	-.008 (.007)
Institutional Ownership	.120 (.029)**	.122 (.029)**	-.012 (.007)
Religious	.030 (.026)	.028 (.026)	.015 (.007)*
Enforceability Index	.005 (.006)	.006 (.006)	-.001 (.001)
University Density	.000 (.000)	.000 (.000)	.000 (.000)
Bonus		-.002 (.002)	.000 (.001)
Time			1.245 (.008)**
Time*Bonus			.001 (.001)

Note. N = 788 before outlier removal and ranged from 781 to 784 after outlier removal; * indicates $p < .05$; ** indicates $p < .01$; log likelihood values and change in log likelihood values were not reported in Panel B because models with different Ns are not comparable; [a] indicates model was compared to null model (not shown); [b] indicates model was compared to Model 1; [c] indicates that model was compared to Model 2; unstandardized coefficients are shown; level 1 variables (Δ Endowment per FTE, Δ FTE Enrollment) were grand mean centered; all depicted models account for autocorrelation; Δ Endowment per FTE, Δ FTE Enrollment, and Bonuses were logged; Δ = 'change in'.

Table 31

Random Coefficient Modeling Results for the Effect of Bonuses as a Percentage of Base Salary on Δ Endowment

Variable	Model 1 estimate (SE)	Model 2 estimate (SE)	Model 3 estimate (SE)
	Panel A: Including Outliers		
Δ FTE Enrollment	.737 (.050)**	.737 (.050)**	-.006 (.060)
Institutional Ownership	-.040 (.063)	-.041 (.063)	-.107 (.058)
Religious	.131 (.057)*	.131 (.057)*	.106 (.052)*
Enforceability Index	.020 (.012)	.020 (.012)	.018 (.011)
University Density	.000 (.000)	.000 (.000)	.000 (.000)
Bonus - Relative		.013 (.058)	.147 (.298)
Time			1.232 (.066)**
Time*Bonus - Relative			-.148 (.302)
Log Likelihood	-883.060	-883.033	-741.124
Δ Log Likelihood	129.867** [a]	.027[b]	141.909** [c]
	Panel B: Excluding Outliers		
Δ FTE Enrollment	1.202 (.021)**	1.202 (.021)**	-.007 (.008)
Institutional Ownership	.120 (.029)**	.120 (.029)**	-.018 (.009)*
Religious	.030 (.026)	.030 (.026)	.021 (.008)**
Enforceability Index	.005 (.006)	.005 (.006)	.001 (.002)
University Density	.000 (.000)	.000 (.000)	.000 (.000)
Bonus - Relative		.003 (.023)	-.004 (.042)
Time			1.242 (.009)**
Time*Bonus - Relative			.004 (.042)

Note. $N = 788$ before outlier removal and ranged from 781 to 785 after outlier removal; * indicates $p < .05$; ** indicates $p < .01$; log likelihood values and change in log likelihood values were not reported in Panel B because models with different *N*s are not comparable; [a] indicates model was compared to null model (not shown); [b] indicates model was compared to Model 1; [c] indicates that model was compared to Model 2; unstandardized coefficients are shown; level 1 variables (Δ Endowment per FTE, Δ FTE Enrollment) were grand mean centered; all depicted models account for autocorrelation; Δ Endowment per FTE, Δ FTE Enrollment, and Relative Bonuses were logged; Δ = 'change in'.

Table 32

Random Coefficient Modeling Results for the Effect of Deferred Compensation on Δ Endowment

Variable	Model 1 estimate (SE)	Model 2 estimate (SE)	Model 3 estimate (SE)
Panel A: Including Outliers			
Δ FTE Enrollment	.737 (.050)**	.739 (.050)**	-.004 (.060)
Institutional Ownership	-.040 (.063)	-.016 (.073)	-.104 (.065)
Religious	.131 (.057)*	.126 (.058)*	.104 (.052)*
Enforceability Index	.020 (.012)	.020 (.012)	.019 (.011)
University Density	.000 (.000)	.000 (.000)	.000 (.000)
Deferred Compensation		-.004 (.006)	.001 (.008)
Time			1.232 (.067)**
Time*Deferred Compensation			-.003 (.010)
Log Likelihood	-883.060	-882.836	-740.874
Δ Log Likelihood	129.867** [a]	.224 [b]	141.962** [c]
Panel B: Excluding Outliers			
Δ FTE Enrollment	1.202 (.021)**	1.202 (.021)**	-.006 (.007)
Institutional Ownership	.120 (.029)**	.123 (.033)**	-.011 (.008)
Religious	.030 (.026)	.029 (.026)	.015 (.007)*
Enforceability Index	.005 (.006)	.005 (.006)	-.001 (.001)
University Density	.000 (.000)	.000 (.000)	.000 (.000)
Deferred Compensation		-.001 (.003)	.000 (.001)
Time			1.244 (.008)**
Time*Deferred Compensation			-.002 (.001)

Note. N = 788 before outlier removal and ranged from 781 to 784 after outlier removal; * indicates $p < .05$; ** indicates $p < .01$; log likelihood values and change in log likelihood values were not reported in Panel B because models with different Ns are not comparable; [a] indicates model was compared to null model (not shown); [b] indicates model was compared to Model 1; [c] indicates that model was compared to Model 2; unstandardized coefficients are shown; level 1 variables (Δ Endowment per FTE, Δ FTE Enrollment) were grand mean centered; all depicted models account for autocorrelation; Δ Endowment per FTE, Δ FTE Enrollment, and Deferred Compensation were logged; Δ = 'change in'.

Table 33

Random Coefficient Modeling Results for the Effect of Deferred Compensation as a Percentage of Base Salary on Δ Endowment

Variable	Model 1 estimate (SE)	Model 2 estimate (SE)	Model 3 estimate (SE)
Panel A: Including Outliers			
Δ FTE Enrollment	.737 (.050)**	.737 (.050)**	-.006 (.060)
Institutional Ownership	-.040 (.063)	-.039 (.063)	-.105 (.057)
Religious	.131 (.057)*	.131 (.057)*	.104 (.051)*
Enforceability Index	.020 (.012)	.020 (.012)	.019 (.011)
University Density	.000 (.000)	.000 (.000)	.000 (.000)
Deferred Compensation - Relative		-.013 (.048)	.003 (.051)
Time			1.234 (.066)**
Time*Deferred Compensation - Relative			-.002 (.085)
Log Likelihood	-883.060	-883.025	-740.918
Change in Log Likelihood	129.867** [a]	0.035 [b]	142.107** [c]
Panel B: Excluding Outliers			
Δ FTE Enrollment	1.202 (.021)**	1.202 (.021)**	-.008 (.007)
Institutional Ownership	.120 (.029)**	.121 (.029)**	-.013 (.007)
Religious	.030 (.026)	.030 (.026)	.016 (.006)**
Enforceability Index	.005 (.006)	.005 (.006)	-.001 (.001)
University Density	.000 (.000)	.000 (.000)	.000 (.000)
Deferred Compensation - Relative		-.012 (.019)	-.003 (.006)
Time			1.245 (.008)**
Time*Deferred Compensation - Relative			.001 (.010)

Note. N = 788 before outlier removal and ranged from 781 to 784 after outlier removal; * indicates $p < .05$; ** indicates $p < .01$; log likelihood values and change in log likelihood values were not reported in Panel B because models with different Ns are not comparable; [a] indicates model was compared to null model (not shown); [b] indicates model was compared to Model 1; [c] indicates that model was compared to Model 2; unstandardized coefficients are shown; level 1 variables (Δ Endowment per FTE, Δ FTE Enrollment) were grand mean centered; all depicted models account for autocorrelation; Δ Endowment per FTE, Δ FTE Enrollment, and Relative Deferred Compensation were logged; Δ = 'change in'.

Figure 1

Chapter 2 Proposed Model

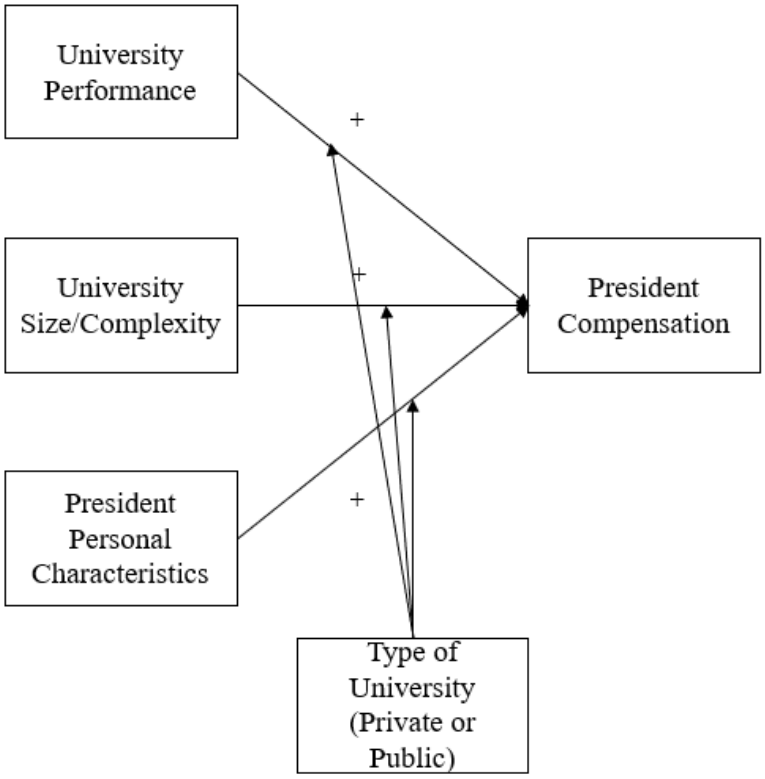


Figure 2

Proposed Relation Between Performance and Compensation

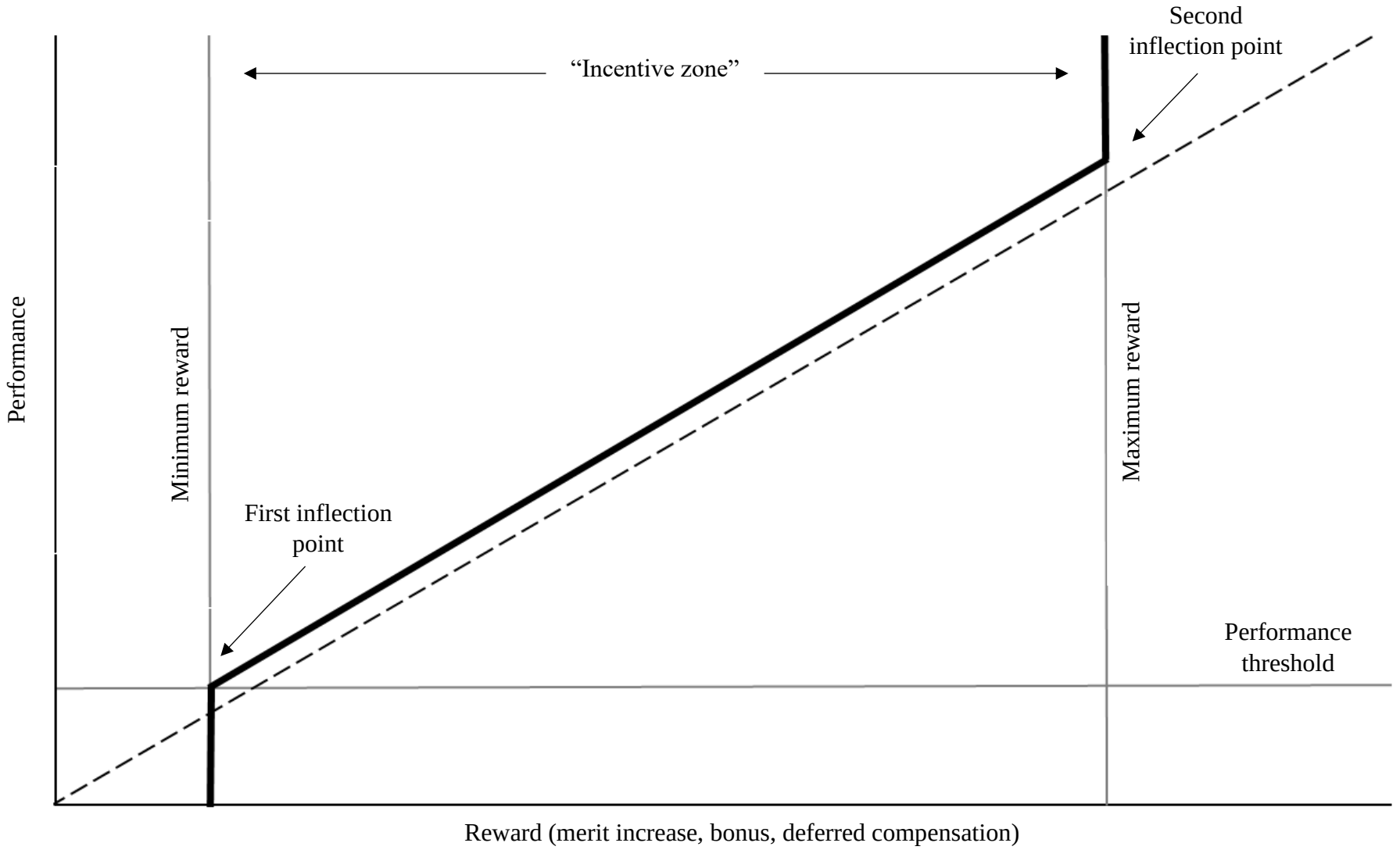


Figure 3

Adaptation of Figure 1 from Indjejikian and Nanda (2002)

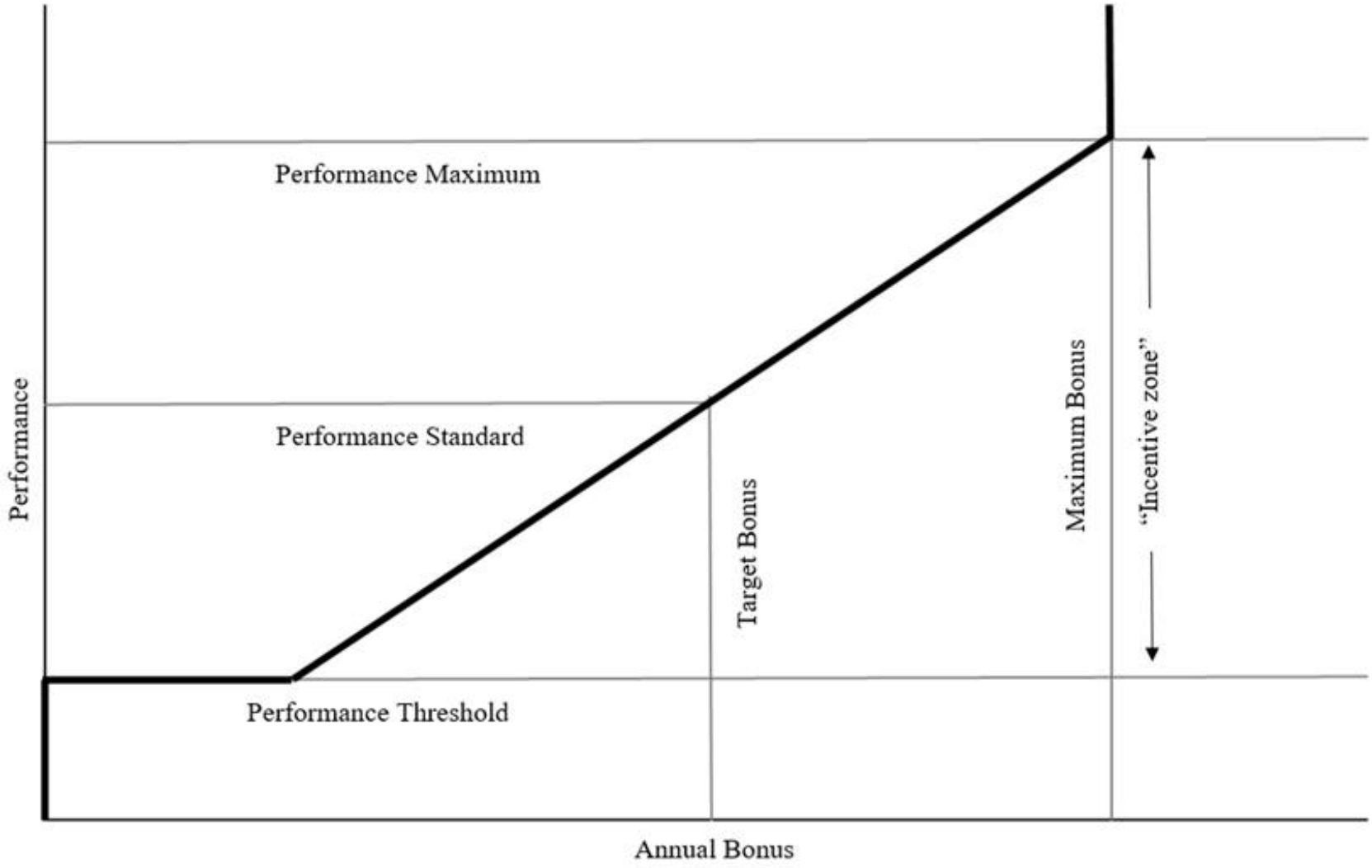


Figure 4

PRISMA diagram

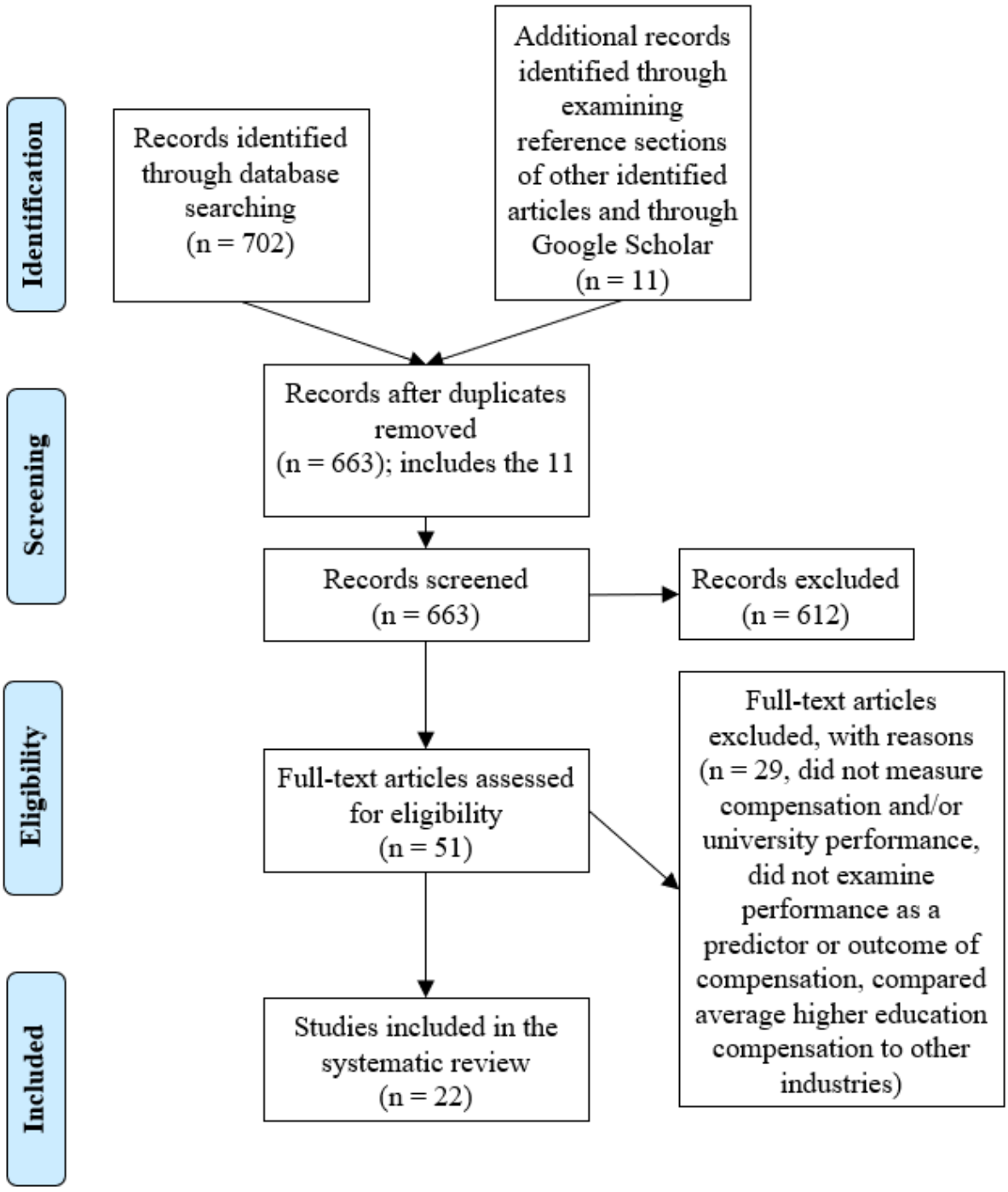
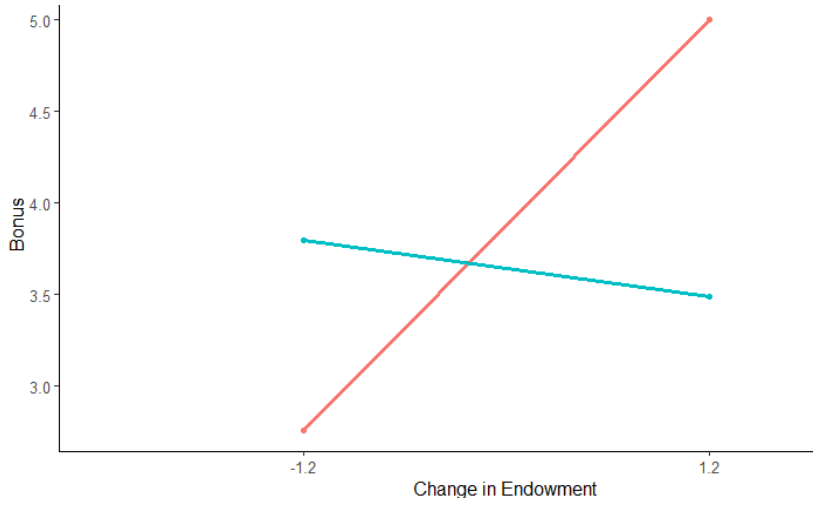


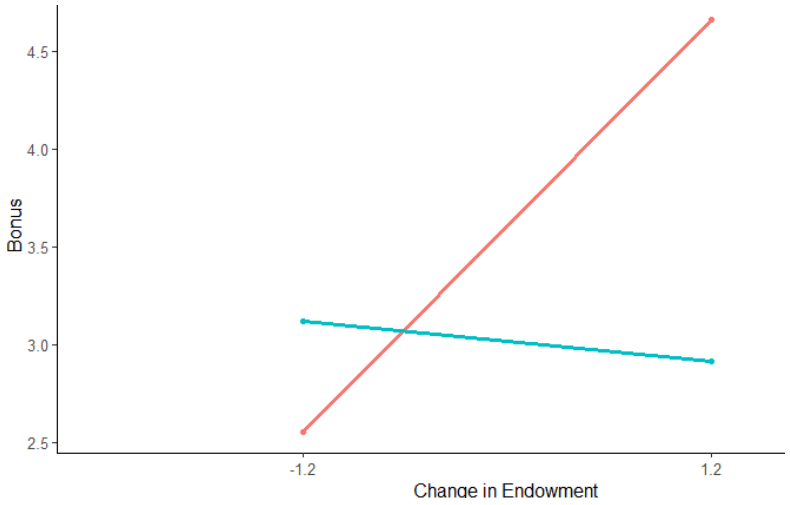
Figure 5

Plot of the Δ Endowment by Time Interaction on Bonuses

Panel A: Including Outliers



Panel B: Excluding Outliers

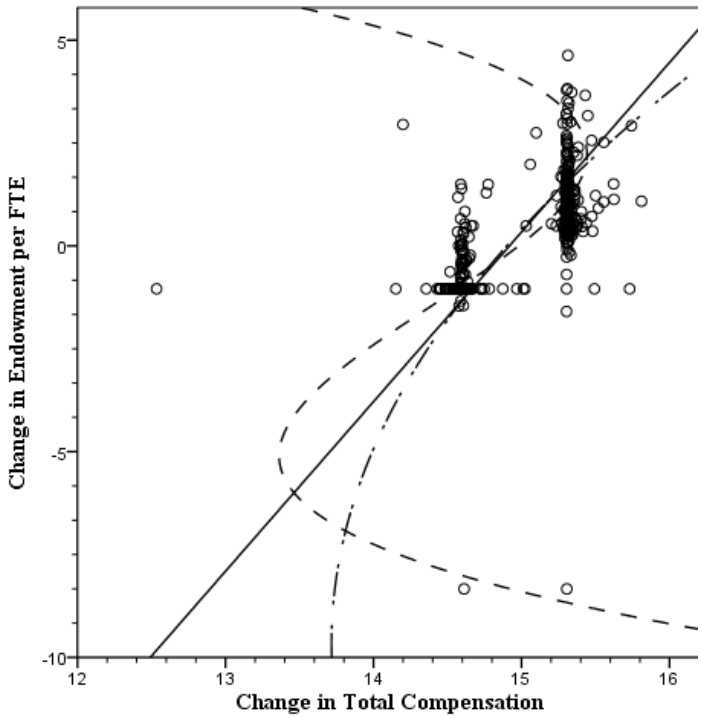


Note. Red lines represent the effect of Δ Endowment at Time 1 on Bonus at Time 2; Blue lines represent the effects of Δ Endowment at Time 2 on Bonus at Time 3.

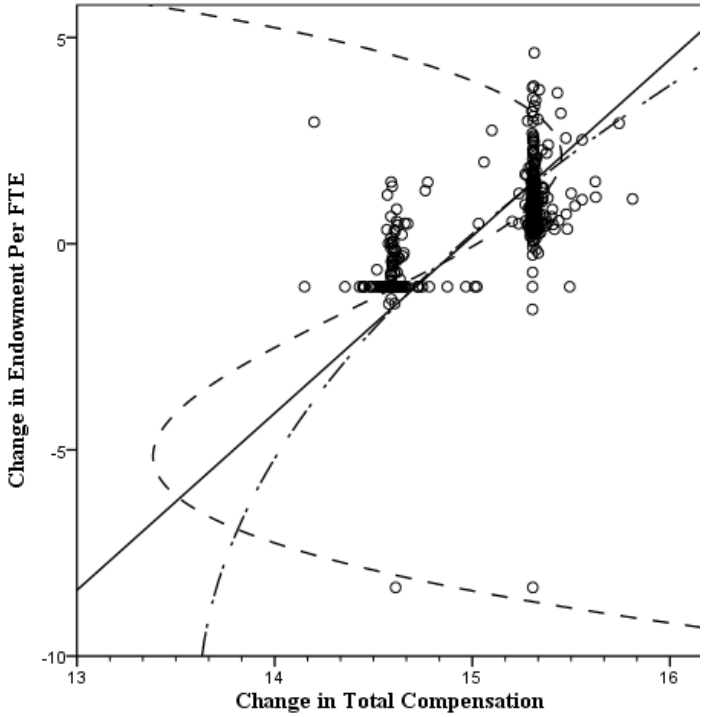
Figure 6

Plot of the Linear and Nonlinear Effects of Δ Endowment on Δ Total Compensation

Panel A: Including Outliers



Panel B: Excluding Outliers



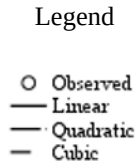


Figure 7

Plot of the Linear and Nonlinear Effects of Δ Endowment on Merit Pay

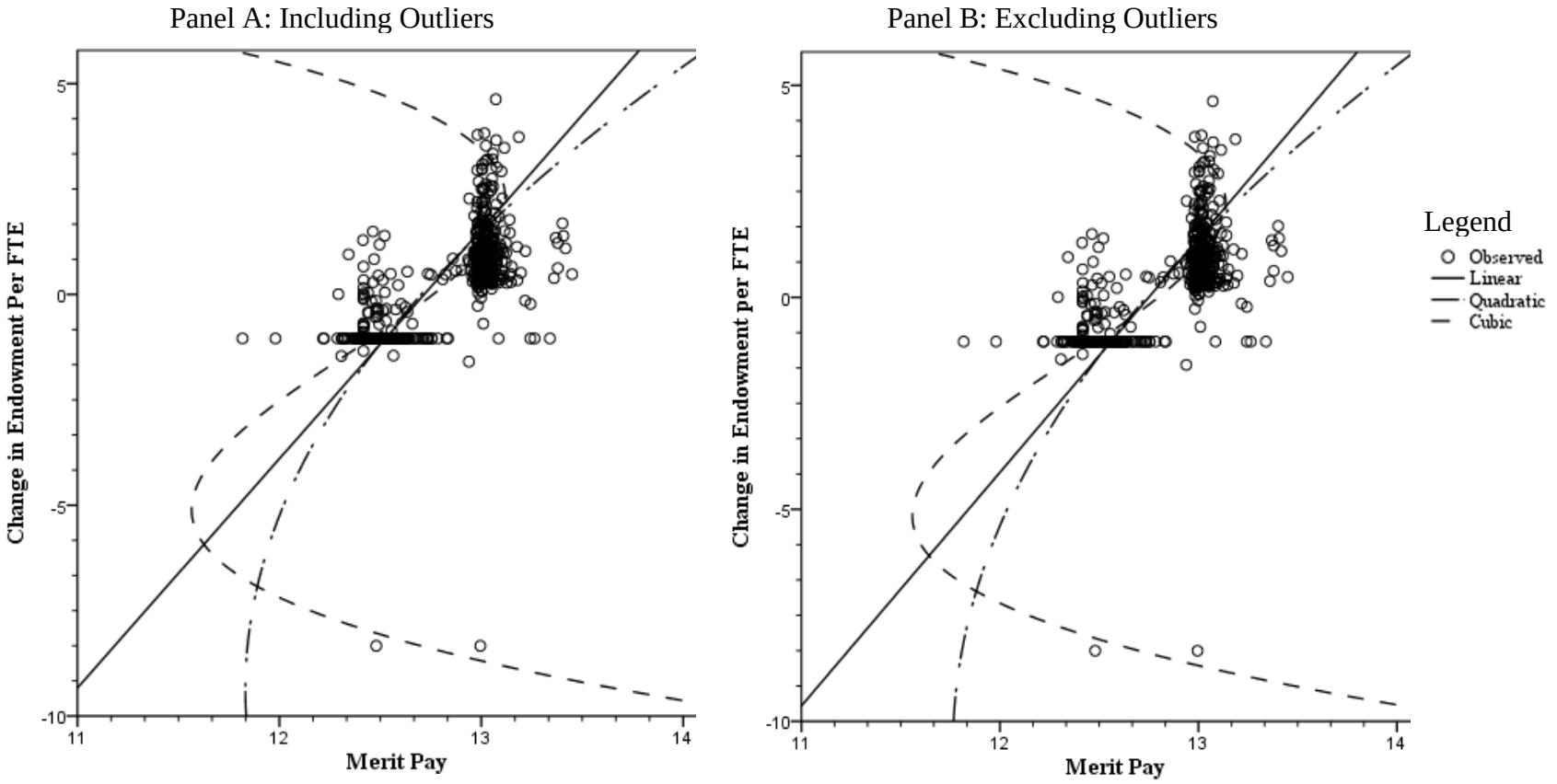
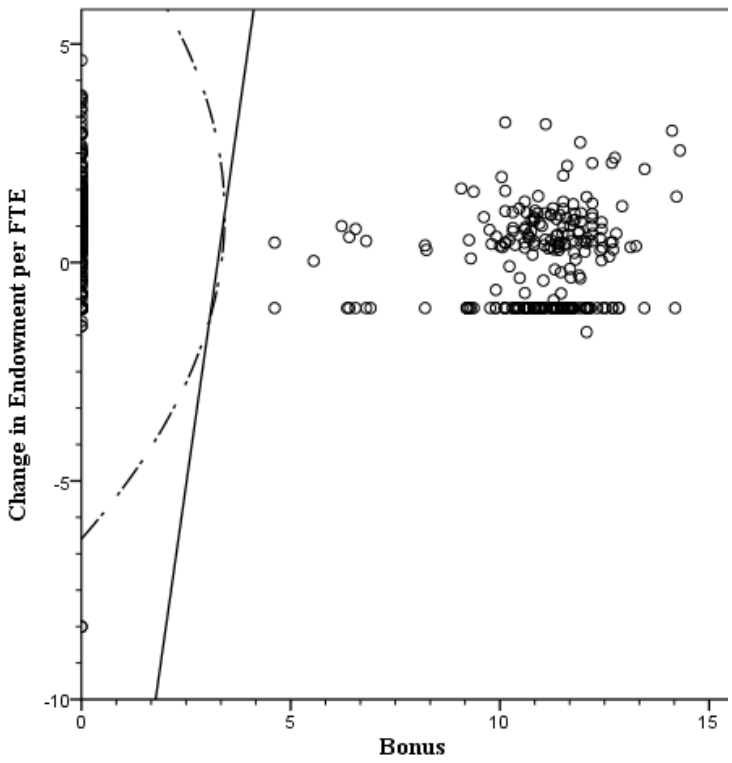


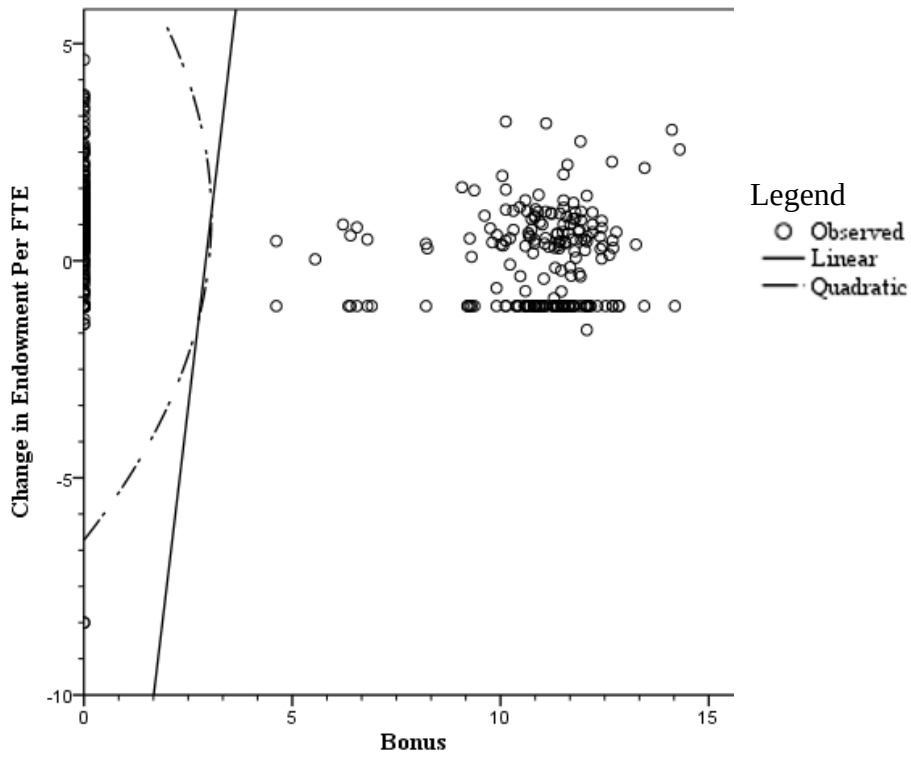
Figure 8

Plot of the Quadratic Effect of Δ Endowment on Bonuses

Panel A: Including Outliers



Panel B: Excluding Outliers



Vita

Sheila Kathleen Keener was born on August 2, 1988 in Baltimore, Maryland. She graduated from Lancaster Catholic High School in Lancaster, Pennsylvania in 2006. She received her Bachelor of Arts in Psychology from Temple University in Philadelphia, Pennsylvania in 2011. She also received a Master of Science in Psychology, concentrated in Industrial/Organizational Psychology from Radford University in Radford, Virginia in 2013.