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Michael E. Dobbs
Eastern Illinois Univesity

Elizabeth M. Schwindenhammer
Eastern Illnois University

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Executive Compensation in Higher Education: Effects of Institutional Characteristics and Performance on Presidents' Compensation

Michael E. Dobbs, Eastern Illinois University
Elizabeth M. Schwindenhammer, Eastern Illinois University

While CEO compensation has been widely explored (Huang, 2010), there is also debate about whether university presidents are equitably paid given university budget cuts and rising tuition rates (Ehrenberg, Cheslock, and Epifantseva, 2001; Cotton, 2012). We explore possible determinants of compensation for university presidents of 419 private and 160 public universities. We hypothesize about the effects of enrollment, endowment, and employee size; graduation and retention rates; and other institutional factors on presidents' compensation and use regression analysis to test these hypotheses. We find strong support for a positive effect of enrollment on university presidents' pay levels, but this effect is moderated by institutional control.

Income inequality is increasingly the subject of much political and social debate (e.g., Fuller, 2014; Obama, 2014; International Monetary Fund, 2014) and may be fueling increased scrutiny of the highest paid employees of organizations, including chief executive officers (CEOs). Recently there has been scrutiny over hefty compensation packages for a different type of chief executive -- university presidents (Stripling, 2012a). Discussions and analysis abound concerning whether university presidents are being paid fairly (Ehrenberg, Cheslock, and Epifantseva, 2001; Cotton, 2012), and faculty members on university campuses have questioned university president pay compared to their own (Chen and Huang, 2009).

According to an analysis published in *The Chronicle of Higher Education* (Stripling and Newman, 2013), four public university presidents were compensated more than $1 million in 2012, an increase from three university presidents a year earlier. Additionally, thirty-six private university presidents, up from thirty-three a year earlier, also earned more than $1-million in 2010. It appears university presidents are continuing to receive significant pay raises even as government funds are declining, tuition is rising, and many universities are engaged in large-scale budget cuts (Belkin, 2013).

In light of this, many universities now feel the need to defend compensation packages awarded to their presidents and how those packages are developed. In their defense, some argue that a president's salary only makes up a small percentage of an institution's budget and has no impact on tuition increases, and also that corporate chief executives are rewarded with far greater compensation given comparable organizational size and complexity (Stripling and Fuller, 2011). University presidents earn on average one-third of the compensation compared to CEOs of companies with equivalent size (Chen and Huang, 2009). Also, according to the National Association of Independent Colleges and Universities (as cited in Burnsed, 2011), searches for university presidents are highly competitive, and institutions must offer compensation packages that attract highly skilled and qualified leaders. This could also contribute to presidential pay continuing to rise if colleges and universities must meet labor market demands to attract and maintain successful and capable presidents (Burnsed, 2011).

Some researchers have examined possible factors affecting college and university president's pay, and most of that work has focused on private colleges and universities. In this study we examine both public and private sectors combined and separately. We follow the lead of Bartlett (2012) and draw from both the limited body of research on university president compensation and the larger set of research on CEO compensation to develop our ideas about variables that may affect university president compensation.

The objective of this study is to provide new understanding and insight into the compensation determinants of university presidents in both public and private universities. Below, we explain the hypotheses we developed concerning determinants of university president compensation. We then describe the data we collected that included the salaries and benefits paid to the presidents of 579 universities, along with other institutional characteristics such as institutional control (i.e., public or private[1]), enrollment, tuition, admission standards, and more. We discuss the multiple regression modeling we used to test our hypotheses, both in a combined data set and then separately by institutional control. Finally, we tease out additional insights by plotting some of our models as graphs and then discussing limitations and extensions for further research.

HYPOTHESES

Researchers have consistently found that firm characteristics and performance are significant determinants of CEO pay (e.g.; Pfeffer and Blake, 1987; Garen, 1994; Rose and Shepard, 1997). However, there has not been nearly as much research on university president compensation over the years (e.g., Pfeffer and Ross, 1988; Ehrenberg et al., 2001; Chen and Huang 2009; Bartlett, 2012). Most of this research has examined private universities and has relatively ignored the public sector. Therefore, the bases for our hypotheses are closely related research topics rather than previous work examining the same combination of data and variables.

Institutional Size

Ehrenberg et al. (2001), Monks (2004), Banker, Plehn-Dujowich, and Xian (2009), and Chen and Huang (2009) focused on institution size and its correlation to a university president's pay using student enrollment as a proxy. In these studies they find that university presidents at larger institutions (measured by student enrollment) are paid more than university presidents at smaller institutions. Chen and Huang (2009) reason that larger universities require a president with more talent to manage the complexity that comes with handling more students, which causes larger universities to offer higher pay to attract and maintain university presidents fit to manage a larger institution.

In addition to student enrollment, other researchers have examined the number of faculty as a measure of institutional size having an effect on university president compensation. Tang, Tang, and Tang (2000) state that the number of full time professors at a university can influence the amount of students who are interested in attending that university. A large number of professors can mean more programs, training, and specialized degrees offered to students. If a larger number of professors can attract a higher student enrollment, then the institution's size will increase by both the number of professors and student enrollment. Tang, Tang, and Tang (2004) and Pfeffer and Ross (1988) measured institution size by both student enrollment and full-time professors and found a positive correlation with university president pay.

As for CEO compensation, Sapp (2008) also found the complexity of a job to grow with the increase in an organization's size. Larger companies require more talent and skills necessary to accomplish the required job. To attract the leaders essential for the position, companies must offer competitive pay (Sapp, 2008; Kaplan 2013). Universities require leaders with talent and skills comparable to chief executives of corporations to manage a university just as well (Cornell, 2002). In their study, Chen and Huang (2009) found university president compensation to be closely related to institutional size as a proxy for job complexity. Given the competitive labor market, boards may offer a higher compensation package to attract high-quality university presidents (Chen and Huang 2009; Pfeffer and Ross, 1988). Banker et al. (2009) also found the compensation of university presidents to be significant and positively associated with an organization's complexity. Thus, regarding institutional size, we hypothesize the following.

[1] For-profit institutions were not included.

Hypothesis 1a*: The number of university students will be will be positively related to the annual compensation package of university presidents.*

Hypothesis 1b*: The number of university employees will be will be positively related to the annual compensation package of university presidents.*

A major role that presidents play in many if not all universities is overseeing the fund raising activities of the university, including increasing and managing the school's endowment funds (Bartlett, 2012, Tang et. al., 2000). *The Chronicle of Higher Education* surveyed university presidents and found more than half spent part of nearly every day on fund raising (Chen and Huang, 2009). Ehrenberg et al. (2001) found that universities with a higher endowment per student paid their presidents more. Bartlett (2012) also measured a university's endowment based on the university's student enrollment and found limited evidence that it is positively associated with university presidents' pay. Therefore, because universities with higher endowments are more likely to have more financial resources with which to pay employees (including presidents) and higher endowments are indicative of larger organizational size and complexity, we expect there to be a positive correlation between endowment and university president compensation and hypothesize the following.

Hypothesis 1c*: University endowment levels will be will be positively related to the annual compensation package of university presidents.*

Institutional Performance

Agency theory (Fama & Jensen, 1983; Eisenhardt, 1989) is used by scholars and others to describe situations in which resource owners, called "principles," delegate work to another group, called "agents," and problems arise from this arrangement. Specifically, problems occur when the goals of the two parties conflict (e.g., a CEO is motivated to maximize personal wealth rather than shareholder wealth) and it is difficult for principals to verify or monitor the actions of agents. Many researchers have investigated CEO compensation from an agency theory perspective and they have generally found mixed results. Common variables representing performance have been return on assets or equity (Finkelstein & Hambrick, 1989; Miller, Wiseman, & Gomez-Mejia, 2002; Lilling, 2006; Ghosh, 2006; Vieito, Khan, Cerqueira, & Brandao, 2008) and stock price or market capitalization (Rose & Shepard, 1997; Miller, Wiseman, & Gomez-Mejia, 2002; Lilling, 2006).

In the case of universities, the board of trustees may be viewed as the principal (representing broader ownership interests) with the university president serving as the agent. The board of trustees presumably monitors the university president using measures of performance, and compensation may be one control mechanism used to manage this principal-agent relationship (O'Connell, 2005). Perhaps two of the most direct education-related performance measures for universities are retention and graduation rates. Both of these measures are closely related to the mission of any university. In addition, they are readily available and hence, more easily and inexpensively monitored by principals. However, there has only been minimal research regarding retention and graduation rate impacts on university president compensation.

Retention and graduation rates influence a university's performance. However, there has been minimal research on retention and graduation rates associated with university president compensation. Langbert (2006) found that retention rate was highly correlated with university president pay, but was insignificant in more robust regression modeling. We argue that 1) since retention rates and graduation rates are some of the more direct measures of academic performance for universities, and 2) boards of trustees are charged with monitoring such measures and holding presidents accountable for performance in these areas, that president pay will be linked to these measures as hypothesized below.

Hypothesis 2a*: University performance, measured by retention rate, will be positively related to the annual compensation package of university presidents.*

Hypothesis 2b*: University performance, measured by graduation rate, will be positively related to the annual compensation package of university presidents.*

Institutional Quality Indicators

Other than direct educational performance measures, more indirect measures of university quality could be used by boards of trustees to evaluate university president performance. High-status universities are frequently associated with higher admissions test scores (Bartlett, 2012). Tang, Tang, and Tang (1996) argue that universities with the best academic reputations will be the ones to attract the most intelligent students with the highest SAT scores. Universities with the more prestige may, therefore, recruit more talented university presidents with superior human capital skills to lead their institutions. If a university wants to uphold its status, it needs a strong leader that can take on the difficult tasks of maintaining the quality of students and professors, thus higher compensation packages will be necessary (Banker et al., 2009). Chen and Huang (2009) and Ehrenberg et al. (2001) found positive and significant correlations between SAT scores and university president compensation and we similarly hypothesize the following relationship.

Hypothesis 3a*: Student admission test scores will be positively related to the annual compensation package of university presidents.*

Tuition can also be an indirect marker of university performance as a measure of what the market (students, parents, etc.) believe to be the value of the educational experience and benefits of a particular school. Beyond just a measure of quality and therefore of interest from an agency theory perspective, tuition has the added impact of actually impacted revenue generated by universities. Bartlett (2012) found that both companies and universities with more revenues possessed the assets and resources necessary to reward executives with more compensation. Several researchers (Tang et al., 2000; O'Connell, 2005; Chen and Huang, 2009) also found positive and significant relationships between university revenues and president salaries for both private and public institutions. We hypothesize a relationship between tuition rates and president compensation consistent with prior research as follows.

Hypothesis 3b*: University tuition and fee rates will be positively related to the annual compensation package of university presidents.*

Institutions with higher tuition levels will generate more revenues, which may be used to pay higher salaries for not only university presidents, but for employees as well. In addition, universities with high quality reputations are found to be more financially supported by their graduates which can also lead to higher salaries for all kinds of university employees. O'Connell (2005) found faculty salaries to have one of the strongest linear relations with university president compensation. This may also be indicative of an overall compensation philosophy of a university. We therefore hypothesize the following concerning employee pay levels and university president compensation.

Hypothesis 3c*: University faculty salary levels will be positively related to the annual compensation package of university presidents.*

Institutional Control

Public and private institutions compete for similar resources, such as funds, students, and professors, however they remain differentiated based on their institutional characteristics and performance (Tang et al., 2000). Chen and Huang (2009) and Monks (2004) both found public universities to pay their

presidents less than private universities. Chen and Huang's (2009) results showed public university presidents earned about one-third less than their private university counterparts, while Monks (2004) found that public university presidents received about 50 percent less. Pfeffer and Ross (1988) argued that running a public university is less challenging due to a more stable budget and the higher student enrollment that comes with a more attractive tuition rate. In addition, public universities depend on political support and less on donations, whereas private universities depend more on donations and high tuition costs as their major sources of funding because they do not receive funding from the government (Pfeffer and Blake, 1987). Therefore, it is conceivable that public university presidents are paid less because they are not required to have the same skill set need for successful management of private universities. Consistent with previous research, therefore, we hypothesize the following relationship between institutional control and president compensation.

> ***Hypothesis 4****: University presidents at private institutions will receive higher compensation than university presidents at public institutions.*

METHODS

The purpose of this study is to examine the compensation packages of university presidents in order to understand more deeply the factors that affect pay levels and why those pay levels vary. We used multiple regression techniques to model the effects of theoretical and control variables on university presidents' pay levels (dependent variable where:

$$\text{President's Annual Compensation}_i = \beta_0 + \beta_1 x_{1i} + \ldots + \beta_k x_{ki} + u_i$$

Data concerning university president pay were available from *The Chronicle of Higher Education* (2013). We gathered the total compensation packages for university presidents at 419 private universities during the 2011 calendar year and at 160 public universities for the 2012 fiscal year. Fiscal years usually run from July 1 to June 30 but can vary by institution, so the fall of 2011 is included in fiscal 2012. Total compensation is not exactly the same between public and private institutions as reported by *The Chronicle*. Compensation for presidents of private nonprofit institutions included some different categories, such as the value of various nontaxable benefits. Also, the total compensation between public and private universities differs by when in the year it is reported.

The Integrated Postsecondary Education Data System (IPEDS) was used as the source of data for the theoretical variables used in this study: full-time equivalent (FTE) enrollment, FTE employees, endowment, retention rates, graduation rates, admission scores, tuition and fees, and average salary of full-time instructional faculty (U.S. Department of Education, 2014).

There were three measures of institutional size used in this study: FTE student enrollment (H1a), FTE employees (H1b), and endowment level (H1c). FTE student enrollment for the fall of 2011 was a combination of full-time and part-time student headcounts of both undergraduates and graduates for each institution. The part-time component of FTE student enrollment was determined by multiplying a school's part-time headcount by a fractional factor determined by the type of institution (e.g., public four-year university part-time students were multiplied by a factor of .403543, while their private school counterpart's corresponding factor was .392857). The fractional factors used by IPEDS were developed by the U.S. Department of Education (2014). The measure of FTE employees was calculated by IPEDS by summing the total number of full-time employees in the fall of 2011 and adding one-third of the total number of part-time staff. As for endowment levels, private university endowments were measured as the value of endowment assets at the beginning of the fiscal year July 1, 2010 – June 30, 2011. Public university endowment levels were measured as the value of endowment assets at the beginning of the fiscal year July 1, 2011 – June 30, 2012. According to IPEDS, endowment assets consist of "gross

investments of endowment funds, term endowment funds, and funds functioning as endowment for the institution and any of its foundations and other affiliated organizations."

To examine the relationship between university president compensation and direct educational performance measures two measures were used: retention rate (H2a) and graduation rate (H2b). The retention rate represented the number of full-time, bachelor degree-seeking first-year students from the fall of 2010 who returned to the institution for the fall of 2011. The graduation rate represented the number of students who completed their degree programs within 150% of the normal time of completion. For our data set, this would most typically measure the percentage of first-year students from the academic year 2006-2007 who graduated by the spring/summer of 2012 or before.

Measures of indirect performance and institutional quality included student admission scores (H3a), tuition and fees (H3b), and faculty salary levels (H3c). We chose to use the 75th percentile ACT composite score to measure student admission scores. While most universities report scores for both the Scholastic Aptitude Test (SAT) and the American College Testing program (ACT), a number of universities only report scores for one or the other rather than both. (Note: 42 universities were deleted in this process because they had neither SAT nor ACT scores documented on IPEDS.) For the 25 universities not reporting ACT scores but reporting only SAT scores, we converted the SAT scores for critical reading and math for the 75th percentile into comparable ACT scores using the ACT-SAT concordance published by the producers of both exams (ACT, Inc., 2014). Tuition and fees were measured by the price of attendance for full-time, first-time undergraduate students for the full academic year as documented for IPEDS. Faculty salary levels were calculated using the average salary of full-time instructional faculty equated to 9-month contracts.

The final variable addressed in our hypotheses (H5) was institutional control. We created a dummy variable coded "1" if the university was privately controlled and "0" if the university was a public institution.

We included 579 institutions in our data set and Table 1 includes descriptive statistics (mean, minimum, maximum, and standard deviation) and correlations for all of the variables included in the study. We used Stata (StataCorp, 2007) to analyze data, run regression models, and graph results. The values of the dependent variable, annual university president compensation, included several amounts that seemed to be significantly higher than the rest. For example, the president of Pennsylvania State University, Graham B. Spanier, received $1.2 million in severance pay and $1.2 million in deferred compensation that are included in the amount reported for his compensation (Stripling, 2012b). This amount is atypical for university president compensation packages and we considered dropping this institution and others with similar variable values. However, to do so would have required that we investigate the details of each and every compensation package in our data set of 579 universities. Given the tradeoff between time and data set size, we chose to maximize the number of institutions in the study and rely on the data as reported in *The Chronicle*, with whatever flaws may exist.

Another variable of some concern to us was the level of endowment assets. Out of 579 universities, only 10 exceeded $5 billion with the four schools highest being Harvard, $27.6 billion; Yale, $16.5 billion; Princeton, $14.8 billion; and Stanford, $13.9 billion. To control for this skewness, we calculated a log-transformation of endowment and used it in our regression models. The results were not very different from the results without the transformation and interpreting results (and graphing results) was much simpler without the transformation, so we elected to include endowment without a log transformation.

TABLE 1: Descriptive Statistics and Correlations for Public and Private Institutions*

Variable	Mean	s.d.	Min	Max	1	2	3	4	5	6	7	8	9
1. Annual compensation (in thousands of $)	529.71	367.38	105.16	3358.72	1.00								
2. FTE enrollment (in thousands)	9.24	10.68	0.24	64.60	0.31	1.00							
3. FTE employees (in thousands)	2.40	3.60	0.09	25.38	0.47	0.79	1.00						
4. Endowment (in millions of $)	528.02	1803.58	0.00	27565.03	0.36	0.23	0.51	1.00					
5. Retention rate	80.94	10.14	48.00	99.00	0.44	0.26	0.41	0.35	1.00				
6. Graduation rate	63.98	16.32	11.00	97.00	0.40	0.08	0.32	0.37	0.87	1.00			
7. 75th percentile ACT	27.31	3.11	17.00	35.00	0.43	0.13	0.37	0.42	0.77	0.81	1.00		
8. Annual tuition (in thousands of $)	24.50	12.08	0.91	45.29	0.27	-0.54	-.21	0.17	0.42	0.58	0.50	1.00	
9. Average faculty salary (in thousands of $)	76.28	18.67	43.41	151.26	0.58	0.45	0.60	0.54	0.71	0.62	0.63	0.23	1.00
10. Institutional control (public = 0, private = 1)	0.72	0.45	0.00	1.00	0.02	-0.77	-0.47	0.01	0.00	0.20	0.13	0.81	-0.18

N=579.
* Coefficients greater in magnitude than .08 are significant at the .05 level.

Other transformations of variables were considered, as well. We examined quadratic (x^2) and polynomial (x^3) transformations of several of the independent variables. Results were sometimes significant; however, most of the significance of the squared or cubed terms occurred outside the vast majority of observed values. For example, there were statistically curvilinear effects for endowment; but when the resulting equations were plotted, the curve was only applicable to the extreme outlier values and did not provide valuable insight for the vast majority of institutional values. In effect, such models became linear in nature once again when they were plotted for more expected values. Therefore, we elected to use straightforward linear regression models.

With multiple measures of the same constructs of institutional size, performance, and quality, multicollinearity was expected to occur between independent variables and was found in abundance. While certainly not an ideal quality of a data set, high multicollinearity is no worse than a very small number of observations or variables with small variances (Achen, 1982, p. 82). Regression models account for multicollinearity and frequently produce wider confidence intervals, insignificant *t*-ratios, and/or high R^2 values with few significant *t*-ratios (Gujarati, 1988, pp. 290-293). Therefore, we assert that issues relating to multicollinearity within our data are adequately addressed in our choice and implementation of regression modeling.

RESULTS

Table 2 displays the results of regression models testing the hypotheses using the complete data set with 579 observations. In equations that examined the relationships between theoretical variables by themselves and the dependent variable, every variable but institutional control was statistically significant at the $p < .001$ level and in the direction hypothesized. In addition, each of those models (again, with the exception of the institutional control model 9) was statistically significant at the $p < .001$ level. Model 8 which included faculty salaries as the independent variable had the highest R^2 value of .34. Other high R^2 values were observed for models 2 (.22 for FTE employees), 4 (.19 for retention rate), 6 (.18 for ACT scores), and 5 (.16 for graduation rate).

We used a stepwise regression technique to develop a multiple regression "best" model with multiple theoretical variables included (StataCorp, 2007). Individual variables not significant at the $p < 0.01$ level

were excluded one at a time until we developed model 10. Model 10 includes theoretical variables representing FTE enrollment, FTE employees, graduation rate, tuition, and faculty salaries. All variables and the model itself are significant at the $p < .001$ level, and the R^2 value is .43. However, the coefficient for graduation rate is in the opposite direction as predicted.

TABLE 2: Regression Models for Private and Public University President Compensation

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
FTE enrollment	10.59***									8.64***
	(0.000)									(0.000)
FTE employees		47.52***								22.67***
		(0.000)								(0.000)
Endowment			.07***							
			(0.000)							
Retention rate				16.01***						
				(0.000)						
Graduation rate					9.02***					-3.90***
					(0.000)					(0.001)
ACT scores						50.67***				
						(0.000)				
Tuition							8.18***			14.44***
							(0.000)			(0.000)
Faculty Salary								11.47***		6.54***
								(0.000)		(0.000)
Public/Private									12.99	
									(0.704)	
Constant				-		-		-		-
	431.92***	415.74***	490.66***	765.84***	-47.18	854.34***	329.30***	344.90***	520.31***	204.30***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.406)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
F	60.42***	159.44***	87.57***	139.95***	110.24***	130.12***	45.03***	296.68***	0.14	87.37***
Adjusted R^2	.0932	0.2151	0.1303	0.1938	0.1590	0.1826	0.0708	0.3384	-0.0015	.4277

N=579
***p<.001 **p<.01 *p<.05 +p<.10 (two tailed tests)

Models 1-8 provide limited support for hypotheses 1a, 1b, 1c, 2a, 2b, 3a, 3b, and 3c. Model 10 provides even stronger support for hypotheses regarding enrollment, number of employees, tuition, and faculty salary; but the earlier support for graduation rate is contradicted. Only hypothesis 4 is not supported at all, and this was very unexpected given that significant differences existed in previous research between private and public universities. We believed this warranted further investigation. We calculated separate descriptive statistics and correlations for private universities (N=419) and public universities (N=160) to further explore the effects for each institution control type. These data are found in Tables 3 and 5. Once again, significant multicollinearity is present in both data sets and this may have been the primary cause of the lack of significance in the combined data set model for the public/private dummy variable. To determine if variables remained positively and significantly related to university president compensation for both public and private institutions, we ran individual regression models for each type of institutional control. These results may be found in Tables 4 and 6 and indicate that public and private universities have different values and significance for each theoretical variable regressed on university president compensation.

Just as with the combined data set, all theoretical variables for private universities were significant at the $p < 0.001$ level and positively related to university president compensation. Also, all models were significant at the $p < .001$ level. The same was true for public universities, except that tuition and faculty salary were only significant at $p < 0.01$ level, and those models were only significant at the $p < .01$ level. Therefore, once again, our hypotheses were supported by simple, single-variable linear regression models -- this time for private and public universities analyzed separately. We again used stepwise regression techniques to attempt to find best models of combined independent variables for both data sets. Model 9

in Table 4 shows the best model for the variables in the private institution data set. This model included

TABLE 3: Descriptive Statistics and Correlations for Private Institutions*

Variable	Mean	s.d.	Min	Max	1	2	3	4	5	6	7	8
1. Annual compensation (in thousands of $)	533.29	380.63	105.16	3358.72	1.00							
2. FTE enrollment (in thousands)	4.18	4.87	.24	37.92	0.65	1.00						
3. FTE employees (in thousands)	1.35	2.79	0.09	23.34	0.62	0.78	1.00					
4. Endowment (in millions of $)	534.94	2033.13	10.16	27565.03	0.39	0.44	0.65	1.00				
5. Retention rate	80.97	10.51	48.00	99.00	0.48	0.34	0.41	0.34	1.00			
6. Graduation rate	66.04	16.09	11.00	97.00	0.45	0.30	0.42	0.37	0.89	1.00		
7. 75th percentile ACT	27.57	3.29	17.00	35.00	0.46	0.33	0.46	0.41	0.78	0.81	1.00	
8. Annual tuition (in thousands of $)	30.52	8.23	0.91	45.29	0.48	0.28	0.38	0.28	0.76	0.80	0.72	1.00
9. Average faculty salary (in thousands of $)	74.16	19.81	43.41	151.26	0.69	0.60	0.64	0.57	0.72	0.68	0.67	0.68

N=419.
* Coefficients greater in magnitude than .10 are significant at the .05 level.

FTE enrollment and average faculty salary, was significant at the $p < .001$ level, and had an adjusted R^2 value of .56. No such model was possible with the public university data set. All attempts to find a multiple regression model with statistical significance and a higher R^2 value were futile. The best model for the public data set was Model 1 in Table 6. We surmise this was due to a combination of multicollinearity between existing independent variables and unaccounted for independent variables that drive public university president compensation.

TABLE 4: Regression Models for Private University President Compensation

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
FTE enrollment	50.78*** (0.000)								28.66*** (0.000)
FTE employees		85.11*** (0.000)							
Endowment			0.07*** (0.000)						
Retention rate				17.25*** (0.000)					
Graduation rate					10.55*** (0.000)				
ACT scores						53.08*** (0.000)			
Tuition							22.25*** (0.000)		
Faculty Salary								13.29*** (0.000)	9.07*** (0.000)
Constant	320.90*** (0.000)	418.41*** (0.000)	494.28*** (0.000)	-863.77*** (0.000)	-163.43* (0.021)	-930.27*** (0.000)	-145.80*** (0.000)	-452.34*** (0.000)	-259.27*** (0.000)
F	304.06***	265.54***	74.63***	122.43***	103.52***	111.03***	125.67***	382.48***	269.63***
Adjusted R^2	.4203	0.3876	0.1498	0.2251	0.1970	0.2084	0.2297	0.4772	.5624

N=419
***p<.001 **p<.01 *p<.05 +p<.10 (two tailed tests)

As is evident comparing adjusted R^2 values between Table 4 and Table 6, much more variation of private university president compensation was explained than for public institutions. Table 4 indicates FTE

enrollment and faculty salary contained the highest adjusted R^2 values of .42 and .48 respectively, indicating they were major factors in determining university president compensation for private universities. Table 6 indicates FTE enrollment had the highest adjusted R^2 value of .16 for public institutions. This means FTE enrollment was the variable explaining the most variation in public university president compensation. Examining the differences in R^2 values between private and public universities, it is clear that the theoretical variables for public universities explained far less of the variation in university president compensation than for private universities -- and by a wide margin.

TABLE 5: Descriptive Statistics and Correlations for Public Institutions*

Variable	Mean	s.d.	Min	Max	1	2	3	4	5	6	7	8
1. Annual compensation (in thousands of $)	520.31	331.13	164.28	2906.72	1.00							
2. FTE enrollment (in thousands)	22.47	10.44	7.15	64.60	0.41	1.00						
3. FTE employees (in thousands)	5.14	4.01	0.91	25.38	0.40	0.77	1.00					
4. Endowment (in millions of $)	509.92	978.59	0.00	7725.31	0.25	0.50	0.63	1.00				
5. Retention rate	80.86	9.14	56.00	97.00	0.32	0.61	0.62	0.47	1.00			
6. Graduation rate	58.59	15.72	22.00	94.00	0.28	0.54	0.61	0.49	0.89	1.00		
7. 75th percentile ACT	26.64	2.47	20.00	33.00	0.32	0.56	0.66	0.55	0.80	0.81	1.00	
8. Annual tuition (in thousands of $)	8.73	2.64	4.13	16.13	0.20	0.29	0.38	0.26	0.45	0.54	0.41	1.00
9. Average faculty salary (in thousands of $)	81.82	13.89	57.26	128.02	0.19	0.51	0.58	0.39	0.76	0.71	0.69	0.54

N=160.
* Coefficients greater in magnitude than .15 are significant at the .05 level.

DISCUSSION

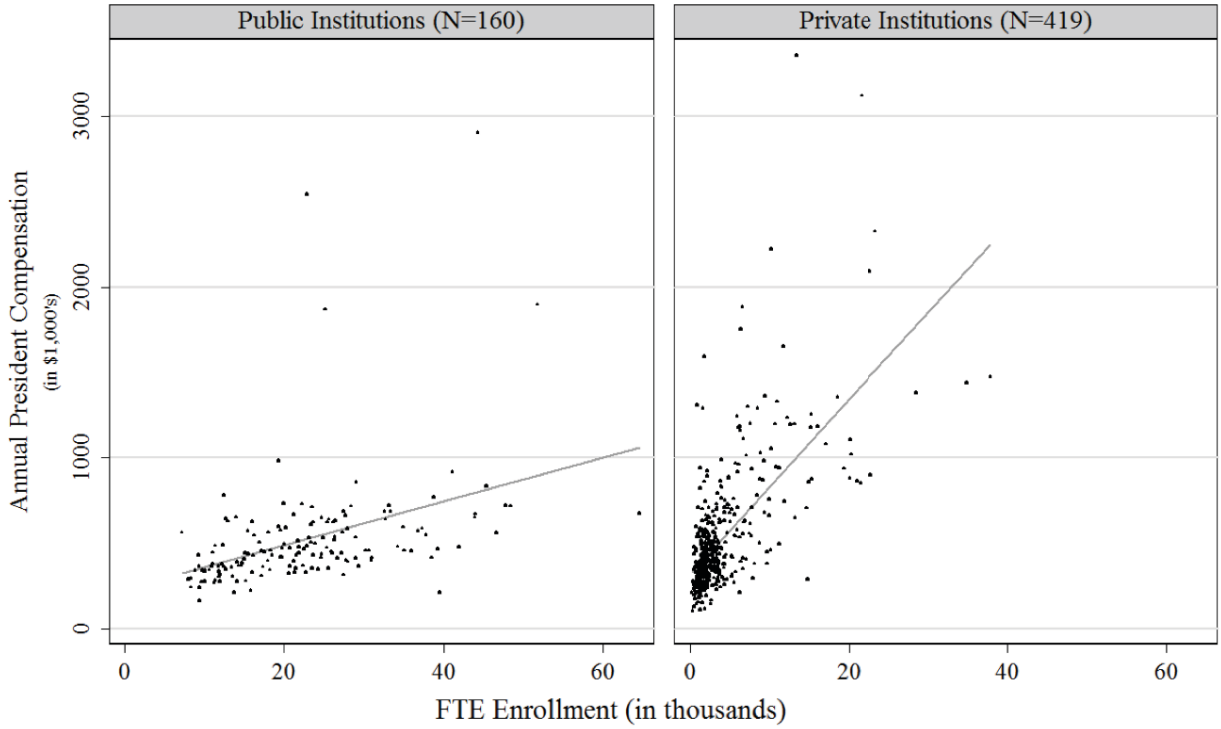
Table 7 presents a summary of our hypotheses and their support from the various regression models. While all the hypotheses received some levels of support, FTE enrollment was the theoretical variable with the most support. To explore this relationship further, we plotted university president compensation against FTE enrollment separately for public and private institutions.[2] The resulting plots are presented in Figure 1. The slope of the line for private universities is much steeper compared to that of public universities. For public universities, president compensation increases more gradually with increases in enrollment. However, as enrollment increases at private universities, its presidents' compensation rises at a much faster rate. Public universities are generally much larger than private universities, which is why enrollment size begins around 7,000 students; whereas private university enrollment size begins at a lower amount, below 1,000 students. Even though public universities have significantly higher enrollment levels than their private school counterparts, private universities still pay their presidents at a much higher level. To reach the $1 million compensation threshold, a public school would be predicted to need an enrollment of about 60,000 students while a private school would only need about 15,000 students.

Returning to another of the interesting results of this research -- the much lower explanatory power of our models for public institutions vs. private ones -- our best models only accounted for about 25% of the

[2] In an unreported regression model for the combined data set, FTE enrollment and institutional control (the variables plotted in Figure 1) combined to make up a very strong model: both variables and the model itself were significant at the $p < .001$ level with an adjusted R^2 of .25.

variation in public university presidents' pay compared to nearly 60% of pay for private university presidents. Clearly there were variables missing from our models that would have added significantly to their predictive value. In future research regarding public universities in particular, measures of research orientation, athletic programs, and state and local politics and economics may improve the value of the models. Also, it may be worth noting *The Chronicle of Higher Education* omitted a surprisingly high number of public institutions compared to the number of private institutions, and this may be another reason why the theoretical variables used in this study did not have the expected effect on public university president compensation. In addition, *The Chronicle* did not always report figures for university presidents that accurately reflected impacts of one-time disbursements such as retirement windfalls. We did not include such payments in the total compensation data and were limited to the quality of *The Chronicle's* reporting.

FIGURE 1. University President Compensation by Enrollment for Public and Private Institutions.



We chose information and resources that were available and accessible in a timely manner for this study. There are still more measures not included in this study that may have impacts on university president compensation. We used cross-sectional data. Perhaps a more longitudinal orientation examining growth rates of some variables would be beneficial. For example, is president compensation linked to *change* in graduation rates or retention rates rather than just the rates themselves? Also, personal characteristics of the presidents were not included in this research[3] and future research may possible benefit from their inclusion (e.g., tenure at the university, academic background, personal wealth, age, etc.).

A few conclusions are strongly supported by this project. First, there is strong evidence that university size, as measured by number of students enrolled, is positively related to university president pay. However, this effect is moderated by the type of institutional control. Private university presidents are paid much greater amounts to oversee enrollments of much smaller numbers of students than their public

[3] Information regarding the sex of each president was collected and analyzed. Never was gender found to be a significant variable in any regression equation.

university counterparts. This gap in presidential earnings may pose problems for public universities in recruiting and attracting highly skilled and talented presidents due to private institutions being able to offer much more attractive compensation packages. Further investigation of these relationships is warranted, especially if the difficulty public universities may have in attracting highly qualified applicants results in marked declines in institutional quality and performance.

TABLE 6: Regression Models for Public University President Compensation

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FTE enrollment	12.86***							
	(0.000)							
FTE employees		32.93***						
		(0.000)						
Endowment			0.09***					
			(0.001)					
Retention rate				11.65***				
				(0.000)				
Graduation rate					5.98***			
					(0.000)			
ACT scores						43.27***		
						(0.000)		
Tuition							24.63**	
							(0.013)	
Faculty Salary								4.63**
								(0.014)
Constant	231.44***	350.96***	476.92***	-422.06*	169.73*	-632.36*	305.19***	141.84
	(0.000)	(0.000)	(0.000)	(0.059)	(0.084)	(0.020)	(0.001)	(0.360)
F	31.09***	29.91***	10.66***	18.22***	13.87***	18.40***	6.34**	6.18**
Adjusted R^2	0.1591	0.1539	0.0573	0.0977	0.0749	0.0986	0.0325	0.0316

N=160
***p<.001 **p<.01 *p<.05 +p<.10 (two tailed tests)

TABLE 7: Hypotheses Support in Regression Models

	Private & Public Institutions		Private Institutions		Public Institutions	
Hypotheses	**Single Model**	**Best Model**	**Single Model**	**Best Model**	**Single Model**	**Best Model**
1a FTE enrollment	✓	✓	✓	✓	✓	✓
1b FTE employees	✓	✓	✓		✓	
1c Endowment	✓		✓		✓	
2a Retention rate	✓		✓		✓	
2b Graduation rate	✓	–	✓		✓	
3a ACT scores	✓		✓		✓	
3b Tuition	✓	✓	✓		✓	
3c Faculty salary	✓	✓	✓	✓	✓	
4 Public/private control						

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