The Compensation and Benefits of Private University Presidents

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ABSTRACT

This study examines the determinants of the salaries of private college and university presidents. Ordinary least squares estimates suggest that institutional size, performance, and prestige are linked to presidents' compensation. Pay is for performance. Externally recruited presidents are paid more than those promoted from inside, which confirms the relationship between pay and performance. As well, the impact of tenure is positive and significant, but its magnitude increases if a quadratic term is added. In contrast, there is evidence that larger class sizes and lower alumni giving rates are positively associated with compensation. Also, nondenominational institutions tend to pay more than religiously affiliated ones. In order to deal with potential simultaneous equations bias, the model was reestimated with two-stage least squares. Two-stage least squares causes enrollment's effect on earnings to increase. The impact of various school characteristics on longevity as president is also investigated. Probit models indicate that the acceptance rate is negatively associated with the probability of remaining in office.

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This study analyzes the determinants of the compensation of private college and university presidents. It extends previous work by including additional variables as well as by using two-stage least squares (2SLS) to account for potential joint determination of earnings and institutional characteristics. It estimates probit models in order to determine whether presidents who perform well have higher probabilities of keeping their positions.

Over the past several years a growing literature has studied the determinants of business firms' executive compensation. Proponents (e.g., Bebchuk and Fried, 2004) of the managerial power hypothesis claim that executives are able to extract rents through their connections to corporate boards. Moreover, Bebchuk and Grinstein (2005) present evidence that from 1993 to 2003 corporate executives' pay grew at a higher rate than could be explained by market capitalization or other market-related factors. However, with respect to the pay of corporate executives, Kay and Van Putten (2007), Hall and Murphy (2003), and Murphy (2002) claim that the intent of corporate boards is to pay for performance. Hall and Murphy (2003) find that premiums are paid to externally hired executives. This evidence is inconsistent with the managerial power model because, compared to those who are already employed, outside hires are unlikely to be able to influence corporate boards.

Our finding is that private college presidents are rewarded based on measures of institutional performance such as enrollment, SAT scores, and a peer assessment index. Indeed, the estimated impact of enrollment rises after 2SLS is used to adjust for simultaneous equations bias. Moreover, our results parallel those of Hall and Murphy (2003) in that premiums are paid to externally hired presidents. We do not find evidence that private college presidents are able to extract rents through their ties to boards of trustees.

Much of the impetus for research concerning executive compensation stems from the pay gap between corporate executives and average workers. From 1980 to 2007 the ratio of corporate CEOs' to average workers' earnings rose

from 40 to 364.1 The gap between college presidents and faculty also has risen. From 1997-1998 to 2007-2008 the real earnings of academic presidents rose 36%. The corresponding figure for full professors was 13%.2 A better understanding of the compensation of college presidents and their longevity in their jobs may contribute to a better understanding of academic labor markets and also provide insights into how markets for executives function.

LITERATURE REVIEW

Over the past 20 years several studies have analyzed the factors that influence college presidents' salaries.3 Pfeffer and Ross (1988) suggest that certain institutions are intrinsically more complex: Schools with large enrollments or varied graduate programs are difficult to administer. Hence, presidents of larger schools earn higher pay. Pfeffer and Ross also assert that it is riskier to run private than to run public colleges because private colleges' funding sources are uncertain. This line of argument would imply that there is an earnings premium associated with being a private college president. However, over the past few decades public colleges have been underfunded compared to their private counterparts, which suggests that this may no longer be true; presidents at public institutions may face increasing risk and so be entitled to expect increasing pay. Indeed, Ehrenberg (2006) argues that cutbacks in state funding have made it increasingly difficult for state institutions to compete. Nevertheless, Monks (2007) finds a large private/public differential. He has several explanations for this result. First, he suggests that the gap may reflect unobserved differences in ability. Second, running the two types of schools may require fundamentally different tasks. Third, leaders of private institutions may have less influence on public policy, so the observed premium reflects a compensating wage differential. Fourth, public schools may be under pressure from state legislators or taxpayers to keep their compensation relatively low.

Since Pfeffer and Ross's (1988) study, the research in the area has relied on single equation models. This work has included variables related to institutional quality. These include Peterson's selectivity index (Boulanger and Pliskin, 1999), average SAT scores (Bartlett and Sorokina, 2005; Ehrenberg, Cheslock, and Epifantseva, 2001), average faculty salaries (Ehrenberg et al., 2001), and institutional quality (Tang, Tang, and Tang, 2000). The research has measured the human capital of college presidents with variables such as years at the current position (Boulanger and Pliskin, 1999; Ehrenberg et al., 2001), age (Ehrenberg et al., 2001), and prior presidential appointment (Monks, 2007; Bartlett and Sorokina, 2005; Ehrenberg et al., 2001). These studies have included a gender dummy variable (e.g. Monks, 2007; Bartlett and Sorokina, 2005) and measures of risk (Bartlett and Sorokina, 2005). The literature has concluded that both the human capital and institutional variables have the predicted signs and are statistically significant. There does not appear to be a gender differential.4 Among tier one liberal arts colleges, Bartlett and Sorokina (2005) discover that risk is positively associated with earnings, which suggests a compensating differential. However, this pattern is reversed for schools in the other tiers.

FOCUS OF CURRENT STUDY

This study seeks to extend the existing work on college presidents' pay in a few respects. First, several new characteristics are added that do not appear in previous work. For example, we examine whether nondenominational institutions provide a pay premium as well as whether there is a pay differential for externally hired presidents. Except for Pfeffer and Ross (1988) and Boulanger and Pliskin (1999), previous studies have not included an internal/external hire variable. Pfeffer and Ross find that internally hired presidents earn significantly less, but they do not control for institutional quality variables that became available from the U.S. News and World Report subsequent to their study. The estimates of Boulanger and Pliskin (1999) indicate that internally hired college presidents earn more, although this finding is insignificant. Because of the importance of this variable to the pay-for-performance debate, it deserves a fresh look. We also include measures of alumni contributions, class size, and an institutional peer assessment measure. We investigate whether the results are robust to a few alternative specifications.

Second, we redo the earnings equations using a new econometric approach. Prior studies are limited to single equation models where the independent variables are presumed to be exogenous. There are strong reasons to believe that there is a causal link between college char-

1 See Institute for Policy Studies (2007)

2 These figures were calculated from the salary surveys from the Chronicle of Higher Education. These can be obtained at www.chronicle.com.

3 Monks (2007) provides a succinct review of most of the recent work.

4 The estimates by Monks (2007) and Ehrenberg et al. (2001) did not reveal a gender differential. Bartlett and Sorokina (2005) find that female presidents of tier one liberal arts colleges earn more than their male colleagues, but this pattern does not hold for tier two or tier three schools. Pfeffer and Ross (1988) find a gender differential in the expected direction.

acteristics and presidents' compensation.5 However, it is quite plausible and even likely that there is a simultaneous relationship among institutional characteristics including size and the ability levels of faculty and administration.6 More talented executives may be selected into institutions where their skills are more efficiently employed so that both institutional and personal characteristics determine their pay. Rosen (1982) reaches this conclusion in his model dealing with the sorting process of managers into different firms. He describes the underlying intuition succinctly:

The most capable foot soldier is not very effective if he is fighting the wrong war. Under these circumstances it pays to assign the most talented persons to positions of greatest power and influence. Though other, less talented individuals could manage these organizations, it is inefficient for them to do so.

It seems reasonable that this line of argument may also apply to college presidents. Moreover, it is possible that presidents aim to expand budgets and enrollments in order to increase their own compensation. In order to obtain consistent estimates of the impact of institutional characteristics on the earnings of their presidents, it is necessary to use an instrumental variables approach.

Third, this study considers an issue closely related to the one immediately above. There may be a superficial understanding of the market for college presidents if the level of earnings is the only dependent variable being considered. In particular, college presidents who are able to improve institutional performance may benefit not only through greater earnings but also through greater longevity. We consider this matter by estimating probits where the dependent variable is whether or not a president retains his position.

DATA

This study uses pooled cross-sectional data for the 1999-2000 and 2005-2006 academic years. Presidential compensation for 1999 and 2005 was obtained from the annual Chronicle of Higher Education survey.7 This data set uses information from Form 990. We define pay as being equal to the sum of base pay and benefits. The sample used in the ordinary least squares (OLS) and 2SLS models uses a pooled cross section of 641 observations. The denominational affiliation was obtained from the U.S. News and World Report website and from the colleges' own websites.8 Enrollment data for the two years were obtained from College Board handbooks (College Board, 1999; College Board, 2005). These texts also indicate the year that each school was founded and the size of the local community.

One potential drawback is that we do not have information about details of the compensation arrangements. For example, a president may receive a bump after a certain period of time or after raising institutional ranking by a certain amount. Some presidents may receive compensation from foundations and other outside sources, and some may receive nontaxable fringe benefits. However, these measurement errors occur in the dependent variable, and it is plausible that they are random. If so, it is well known that the estimated coefficients will not be biased, although the standard errors will be higher than otherwise.9

Several published archival sources were used to determine the individual presidents' characteristics such as year of hire, age, and whether or not theirs was an external hire. These sources included college websites, newspaper articles, Securities and Exchange Commission (SEC) proxy statements for presidents on corporate boards, religious denominations' newsletters, and direct inquiries to the presidents. For about 25% of the sample the year of birth was estimated by subtracting 22 from the year of college graduation. When archival sources were used to estimate year of birth, email inquiries were also sent to the presidents. Of this group, 26% (91 of 346 presidents) responded with their dates of birth. In this sample the ages of 72 of them had already been estimated by using the year of college graduation. The correlation between the actual and estimated year of birth was 0.983--which implies that this imputation method has almost no measurement error.

Information about the individual colleges was obtained from the U.S. News and World Report website for the years 1999 and 2005. The values of nominal variables for 2005, such as compensation and revenue per student, were

5 The empirical link between firm size and the compensation of workers (e.g. Ferrer and Luis 2008, Hettler 2007, Brown, and Medoff 1989) and executives (e.g. Kostiuk 1990) has been well documented.

6 For example, Garen (1985) analyzes the situation where larger firms have relatively little information about worker productivity. This induces them to base salary decisions more heavily on observed characteristics such as schooling, which in turn leads to an equilibrium whereby more educated workers are employed at bigger companies.

7 This information is available at www.chronicle.com.

8 The U.S. News and World Report website is www.USNews.com/rankings.

9 This result is discussed by Pindyck and Rubinfeld (1981, pp.176-77).

converted to 1999 dollars using the Consumer Price Index. This data set includes a number of quality measures, including a peer assessment score, SAT scores at the twenty-fifth percentile, freshman retention rate, the percentage of classes with fewer than twenty students, and the percentage of applicants admitted. 10,11 Explanations of these variables are available on the U.S. News and World Report website. Public institutions, community colleges, and professional schools are not included in this study.

The sample used in the empirical work had to be cut because not all schools provided the relevant information. In particular, higher-ranked colleges are more likely to provide information to the Chronicle of Higher Education. In 2005 the response rates to the Chronicle of Higher Education surveys of tier one national and liberal arts institutions were 90% and 94%, respectively. By contrast, the corresponding figures for tier four schools were 37% and 55%. There was a comparable gap among Midwestern schools with master's programs. Among this group 65% of tier one programs provided the relevant information, whereas only 13% of tier four programs did. The sample being used is not random because elite schools are oversampled, and it is not clear how the parameter estimates might be affected. 12

The number of observations is reduced for additional reasons. First, only one comprehensive institution provided data to the Chronicle of Higher Education. Second, not all of the schools providing salary information had matches in the U.S. News and World Report data set. Third, schools that did not provide salary data to the Chronicle of Higher Education were eliminated.

DESCRIPTIVE STATISTICS

Table 1 provides an overview of the institutional characteristics for the 641 observations in the sample. The mean president's salary in 1999 dollars is $247,055. The 25th

Table 1
Means of Variables Used in Cross-Sectional and 2SLS Models

Variables	Mean (Standard Deviation)
Real Total Presidential Compensation** (in 1999 dollars)	247,055
	(132,340)
25th percentile SAT Scores*	1040
	(141.6)
Female	0.20
	(0.40)
Tenure at Current Job	8.9
	(6.45)
Internal Hire	0.20
	(0.40)
Total Enrollment	3919
	(4620)
Institutional Religious Affiliation	0.30
	(0.46)
Freshman Retention Rate	81.4
	(9.3)
Age of President	59.4
	(6.3)
Peer Assessment***	2.98
	(0.69)
% of Alumni Who Contribute	25.6
	(13.2)
% of Classes <20 Students	61.8
	(12.8)
% of Applicants Accepted	65.9
	(20.0)
National University	0.18
	(0.39)
Revenue (millions of dollars) Per Student	0.039
	(0.06)
Observation from 2005	0.67
	(0.47)
N	641

* In some cases ACT scores were provided and converted to SAT scores using a formula on the Educational Testing Service Site.

** All nominal figures converted to 1999 dollars

*** This lowest value of this index is 1 and the top value is 5

10 The peer assessment index ranges from 1 to 5. It is based on a survey by *U.S. News and World Report of presidents, provosts, and admissions deans. It is intended to account for dedication to teaching and other intangibles.*

11 The 25th percentile SAT score is used in the empirical work below. In some instances only ACT scores were available. In these cases the ACT scores were converted to SAT scores using a conversion table provided on the Educational Testing Service website.

12 In a study of nationally ranked liberal arts colleges, Bartlett and Sorokina (2005) find that the coefficients of some variables depend on the tier. However, overall they find that the overall pay-performance link is weaker than is found in our study.

percentile SAT score is 1040.13 Twenty per cent of the presidents are female. The average job tenure is 8.9 years. The institutions have a mean enrollment of 3,919, and 30 per cent are religiously affiliated. The mean president's age is 59.4.

RESULTS OF OLS EQUATIONS

The single equation OLS estimates are provided in Table 2. The coefficient of the institutional denominational dummy variable is of interest because religious affiliation has only been considered peripherally in the previous literature. Ehrenberg et al. (2001) find that college presidents who are clergy members earn roughly 19% less than their colleagues, which may reflect their being less market oriented or disproportionately employed in religiously affiliated institutions. The results in Table 2 imply that, ceteris paribus, denominational schools pay approximately 15% less than other private institutions. It follows that the estimates of Ehrenberg et al. (2001) may reflect institutional religious affiliation rather than individual characteristics. It is not immediately clear why a differential would exist between denominational and nondenominational institutions. Monks (2007), as noted above, argues that private college presidents perform different tasks from their public college counterparts. In particular, they are heavily involved in fund-raising. It is plausible that a similar explanation applies here and that presidents of nonsectarian schools must work harder at this task than presidents of colleges that can draw on church resources. It is also possible that members of a religious denomination may receive psychic rewards from serving denominational colleges that compensate for lower pay.

The coefficient of the gender dummy variable is insignificant. This result is similar to that of other recent studies (e.g. Ehrenberg et al. 2001, Monks 2007).14 However, the earlier work of Pfeffer and Ross (1988) finds that female presidents earned less than their male colleagues. It is plausible that there has been a gradual reduction in gender discrimination in the market for college presidents.15

The coefficient of the 2005 year dummy variable is approximately 0.06. This implies that, holding other variables constant, the real earnings of college presidents rose by approximately six percent during this period.

The impact of tenure is statistically significant, but its estimated impact depends on the specification used. Most previous empirical studies have not included a quadratic term.[16] The first four models presented in Table 2 follow the earlier approach and yield estimates of the impact of tenure that are similar to earlier work (e.g., Ehrenberg et al., 2001). However, the results change when the square of tenure is included. These estimates are shown in the fifth column. For example, the first four models imply that five years of service are associated with a 3% rise in real earnings. By contrast, the last regression suggests that they are associated with a 10% real earnings increase--roughly three times as much. The simpler models predict that 10 years of service will raise real earnings by 6%. The corresponding figure is 25% if the quadratic term is included.

INTERNAL VERSUS EXTERNAL HIRES

Although some studies have analyzed whether the earnings of college presidents depend on whether or not they have previously served in the same position (e.g., Ehrenberg et al., 2001; Monks, 2007), less attention has been paid to whether there is a pay differential between internal and external hires. With respect to corporate executives, Hall and Murphy (2003) find that outside hires receive a premium, which contradicts the managerial power hypothesis. Our estimates in Table 2 corroborate that such a differential exists in the context of private academic institutions and that internally hired presidents earn approximately 15% less than those selected from other institutions. This result may initially seem counterintuitive as the former ought to have institution-specific human capital. As well, they are in a stronger position to extract rents through their more extensive ties to the boards of trustees. Hence, the lower compensation of internally hired presidents is inconsistent with the managerial power hypothesis.

It is also plausible that this gap reflects a compensating differential for the disutility associated with moving and changing jobs. Pfeffer and Ross (1988) suggest that the premium for external hires reflects a compensating differential for the disruptive effect of switching employers. Ransom (1993) extends this idea. He finds that seniority is negatively associated with faculty earnings after control-

13 Information about the 75th percentile SAT score was missing for many observations, so this variable is not included in the empirical work below.

14 The regressions of Bartlett and Sorokina (2005) indicate that among tier one national liberal arts schools, female presidents earned more. However, this pattern did not hold for the other tiers or for the overall sample.

15 The proportion of college presidents who are female rose from 9% in 1986 to 23% in 2006. June (2007) discusses the changing demographics of college presidents.

16 One important exception is Boulanger and Pliskin (1999).

Table 2
Impact of College and Individual Characteristics on Earnings of College Presidents

Variable	(1)	(2)	(3)	(4)	(5)
Constant	11.5**	10.8**	11.6**	11.8	11.5
	(0.3)	(0.3)	(0.3)	(0.3)	(0.3)
25th percentile SAT scores	0.00066**	0.00081**	0.00091**	---	0.00067**
	(0.00023)	(0.00023)	(0.00022)		(0.00022)
Female	0.035	0.040	0.043	0.019	0.034
	(0.034)	(0.034)	(0.033)	(0.034)	(0.033)
Tenure at Current Job	0.0060**	0.0057**	0.0060**	0.0059**	0.024**
	(0.0022)	(0.0022)	(0.0022)	(0.0023)	(0.006)
Tenure Squared	---	---	---	---	-0.0007**
					(0.00022)
Internal Hire	-0.15**	-0.15**	-0.16**	-0.14**	-0.14**
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Total Enrollment	0.000028**	0.000024**	0.000032**	0.000028**	0.000027**
	(0.000004)	(0.000004)	(0.000004)	(0.000004)	(0.000004)
Institutional Religious Affiliation	-0.14**	-0.16**	-0.16**	-0.15**	-0.14**
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Freshman Retention Rate	0.0029	0.0034	0.0041	0.0066**	0.0028
	(0.0028)	(0.0028)	(0.0027)	(0.0024)	(0.0027)
Age of President	0.0012	0.0017	0.0013	0.0009	0.0008
	(0.0023)	(0.0024)	(0.0023)	(0.0024)	(0.0023)
Peer Assessment	0.106**	0.134**	---	0.142**	0.105**
	(0.036)	(0.035)		(0.034)	(0.035)
% of Alumni Who Contribute	-0.0026*	-0.0018	-0.0027*	-0.0015	-0.0027*
	(0.0015)	(0.0015)	(0.0016)	(0.0015)	(0.0015)
% of Classes < 20 Students	-0.0039**	-0.0032**	-0.0044**	-0.0034**	-0.0039**
	(0.0012)	(0.0012)	(0.0012)	(0.0012)	(0.0011)
% of Applicants Accepted	0.0002	-0.0002	-0.0001	-0.0001	0.0001
	(0.0009)	(0.0009)	(0.0009)	(0.0009)	(0.0009)
Accepted National University	0.128**	0.195**	0.076	0.156**	0.127**
	(0.053)	(0.049)	(0.050)	(0.052)	(0.052)
Logarithm of revenue (Millions of dollars Per Student)	0.112**	---	0.136**	0.131**	0.111**
	(0.034)		(0.033)	(0.031)	(0.033)
Observation from 2005	0.063**	0.049*	0.063**	0.065**	0.057*
	(0.031)	(0.031)	(0.031)	(0.031)	(0.03)
N	641	641	641	641	641
Adjusted R^2	0.54	0.53	0.53	0.54	0.55

Notes:
Standard errors are in parentheses. The dependent variable is the logarithm of real (in 1999 dollars) total compensation. *Significant at the 10% level (two-tailed test) ** Significant at the 5% level (two-tailed test) All nominal figures are converted to 1999 dollars. In some cases ACT scores were converted to SAT scores.

ling for total experience.[17] Ransom explains this result using a monopsony model where some employees have high moving costs. Firms are able to observe the preferences of their workers and pay less to those who are less willing to leave. It is reasonable that this argument also applies to college presidents. Although the evidence presented here does not support the managerial power hypothesis, there are other viable explanations.

PAY FOR PERFORMANCE

The models in Table 2 indicate that college presidents are well compensated for some performance measures, which in turn suggests that pay and performance are linked. Test scores, enrollment, revenue per student, national university status, and peer assessment are strongly associated with presidential salaries.

Evidence that selectivity measures like SAT scores influence presidents' compensation suggests the possibility of manipulation. Ehrenberg (2002) discusses many ways that schools can manipulate their test scores and overall ranking. For example, colleges can choose to make it optional for applicants to indicate their SAT scores. This will induce only those who did well on the test to provide information, which will artificially raise average test scores. This strategy may also induce students with lower SAT scores and perhaps inferior academic credentials to apply, which will allow these schools to raise their rejection rates and appear to be more selective. Ehrenberg (2002) suggests that some institutions may pursue a related strategy by encouraging relatively weak students to seek admission, which will allow them to reduce their acceptance rates.

Another hypothetical method is to expand early decisions programs. As those admitted under these plans often must enroll, colleges can use this option to raise their yield (i.e., the proportion admitted who enroll), thereby reducing the percentage of applicants accepted and thereby creating the false impression that they have become more selective.

STUDENT ORIENTATION

Educational quality and services provided to students appear to have little impact on presidential compensation. The coefficient of the freshman retention rate is generally insignificant, although in one specification the results imply that a 10% increase in retention would raise real earnings by approximately 7%. It is slightly more puzzling why the alumni giving rate and the percentage of small classes (under twenty students) are both negatively associated with the earnings of presidents. The coefficient of the latter is negative and significant in all of the models reported in Table 2. The results imply that a 10% increase in the percentage of small classes would lower real earnings by roughly 3%.

There are a few explanations for these counterintuitive results. It is plausible that both the alumni giving rate and the percentage of small classes, particularly the latter, are proxies for an institutional orientation towards teaching and educational quality as opposed to research. There is evidence that the compensation of faculty members reflects the quality and quantity of research (e.g. Hamermesh, Johnson, and Weisbrod, 1982; Konrad and Pfeffer, 1990; Gomez-Mejia and Balkin, 1992) but not the amount of teaching or educational quality (Konrad and Pfeffer, 1990; Gomez-Mejia and Balkin, 1992). It seems likely that college presidents are better paid in research-oriented institutions with better-paid faculty.

Another hypothesis is that the alumni giving rate may reflect the extent of alumni involvement in college governance, which may serve to moderate administrators' salaries and other costs. A similar argument can be made by extending the framework of Hansmann (1980). He suggests that credit markets are imperfect and that since the cost of private higher education is high, private colleges would only be able to educate those from affluent families were it not for alumni donations. Colleges attempt to create an intertemporal arrangement whereby their alumni are pressured to support future students. (Alternatively, these gifts can be viewed as a voluntary installment plan whereby students pay for their own educations over many years.) Hansmann asserts that alumni are more willing to give to nonprofit institutions than to for-profit ones because there is some assurance that the money will be spent appropriately. Perhaps colleges that rely on alumni financial support choose to moderate the salaries of their top officers to signal that the gifts will be used effectively.

A third possibility is that the OLS results reflect heterogeneity in observed and unobserved school characteristics. In particular, it is plausible that the impact on earnings of such variables as the alumni giving rate and the percentage of small classes may vary along with institutional characteristics.

In order to pursue this supposition more closely, the models in Table 2 were reestimated separately for national universities and all other schools (the results are not reported here). In the model restricted to national universities, the coefficient of the alumni giving rate was positive but not close to being significant ($t = 0.56$) at any conventional level. Although this result may partially reflect the relatively small sample size of 118 observations, it appears that

17 Moore, Newman, and Turnbull (1998) find that the negative impact of seniority disappears after controlling for various productivity measures.

the impact of the alumni giving rate does vary by the type of college being considered. That does not extend to the class size variable: For national universities the coefficient of the class size variable was negative at a borderline level of 10% (t = 1.6) just like the broader sample.

The pattern discussed above continues to hold for the somewhat larger group of institutions that are not national universities. In that sample, the coefficient of the alumni giving rate is negative and close to being significant at the 10% level (t = 1.6). The negative coefficient of the class size variable is smaller than the estimate from the overall sample, but the t statistic is near the borderline of significance at the 5% level (t = 1.94).[18]

2SLS ESTIMATES

The empirical approach so far has followed the existing literature by estimating single equation models. However, as noted above, it is plausible that college characteristics and presidents' salaries are jointly determined. For this reason a simultaneous equations approach is warranted.

One of the two instrumental variables used is the age of the college. This information is obtained from the College Board (2005). Tang et al. (2000) include in some of their models the year that the school was founded, which is equivalent to the variable being used here. However, their study only presents estimates from single equation models. There is no a priori reason to believe that college presidents are paid more because their institutions are older. For this reason, it is not surprising that their estimate of the coefficient of the school age variable is insignificant. Nevertheless, it seems likely that institutional performance should in part depend on the number of years that a school has had to establish itself. In regressions not reported here, the impact of school age on the peer assessment variable and total enrollment was estimated. Both coefficients are significant and explain a non-trivial amount of the variance in these variables.19 Moreover, school age is exogenous and therefore meets all of the conditions to be a suitable instrument.

The other instruments are dummy variables for city size. The College Board (2005) indicates the size of the metropolitan area where each school is located by placing it into one of six categories: (1) very large city, (2) large city, (3) small city, (4) large town, (5) small town, and (6) rural community. The first two categories were combined into a group labeled big city, and the last two were aggregated together and served as the reference group. In regressions not reported here, the coefficients of the three dummy variables big city, small city, and large town were positive and significant, and the coefficient of the big city dummy variable was larger than the other two. Colleges in big cities were found to have approximately 4,600 more students on average than those in rural areas, and roughly 2,000 more students than those in small cities. City size was also found to be positively associated with the peer assessment index. It might appear that these dummy variables are inappropriate instruments because they could be linked to presidential compensation through their effect on the cost of living. However, this does not appear to be a problem. In their study of the determinants of the salaries of college presidents at national liberal arts institutions, Bartlett and Sorokina (2005) find that the coefficient of local housing prices is not close to significance (t statistics were often less than 0.5) at conventional levels.20 As city size may only be weakly associated with housing prices and other measures of cost of living, it is even more reasonable to conclude that this is not a serious issue.

The chosen instruments appear to be legitimate; moreover, there do not appear to be others that are readily available. In order to achieve identification, the number of excluded exogenous variables must be at least as great as the number of endogenous variables in the structural equation. For this reason, OLS and 2SLS estimates are reported for simpler models where the two included school characteristics are the peer assessment index and total enrollment. Several of the causal variables (e.g. test scores, revenue per student) are omitted. However, these other quality measures are tightly linked to the peer assessment index. For example, the correlation between the peer assessment index and the 25th percentile of SAT scores is 0.8, and the correlation with the logarithm of revenue per student is 0.76. It follows that in these simpler models the peer assessment index can be viewed as a proxy for overall quality. A comparison of the OLS and 2SLS models can then be made to determine if the results are sensitive to this modification.

The results are presented in Table 3. Most of the OLS parameters, particularly those pertaining to the characteristics of individual presidents, are similar to those presented

18 The coefficient of the class size variable is roughly -0.0024. By contrast, in the overall sample the coefficient from the otherwise identical specification is -0.0039.

19 The model implies that a college's peer assessment score rises by 1.2 points for each two hundred years of institutional age. This change would raise the ranking of an otherwise average school to a level comparable to the more elite institutions. The same increment in the age of the college would raise enrollment by 3400 students – which is not far below the mean enrollment of the institutions in the sample.

20 This study did find that housing prices were significant for presidents at tier three and four schools.

Table 3
Compensation Equations Using OLS and 2SLS

Variable	OLS	2SLS
Constant	11.13**	11.22**
	(0.16)	(0.27)
Female	-0.017	0.008
	(0.036)	(0.038)
Tenure at Current Job	0.0046*	0.0057**
	(0.0024)	(0.0025)
Internal Hire	-0.16**	-0.18**
	(0.04)	(0.04)
Total Enrollment	0.000039**	0.000061**
	(0.000003)	(0.000011)
Age of President	0.0003	-0.002
	(0.0025)	(0.003)
Peer Assessment	0.313**	0.294**
	(0.022)	(0.068)
Observation from 2005	0.085**	0.095**
	(0.031)	(0.032)
N	641	641
Adjusted R2	0.45	0.45

Notes:
Standard errors are in parentheses. The dependent variable is the logarithm of real (in 1999 dollars) total compensation. *Significant at the 10% level (two-tailed test). ** Significant at the 5% level (two-tailed test). All nominal figures are converted to 1999 dollars. In some cases ACT scores were converted to SAT scores.

in Table 2, although the coefficient for tenure is smaller. The estimated impact of the peer assessment index is over twice as large as that reported in Table 2. This result is not surprising as several highly correlated performance measures are omitted. The effect of enrollment is slightly greater than obtained from the models in Table 2.

The key finding is revealed by comparing the two models reported in Table 3. If 2SLS is used instead of OLS, the coefficient of the peer assessment variable is mostly unchanged. (It falls from 0.313 to 0.294.) However, the coefficient of the enrollment variable rises from 0.000039 to 0.000061. Using 2SLS instead of OLS implies that a 1,000 increase in enrollment would raise earnings by 6% instead of 4%. It follows that the compensation of college presidents may be even more closely associated with enrollment and perhaps other performance measures than is implied by earlier studies and that pay is more closely linked to institutional performance.

IMPACT OF PERFORMANCE MEASURES ON LONGEVITY

The approach so far has paralleled existing work in that compensation is the sole dependent variable being considered. However, it seems reasonable to expect that performance will be linked to other outcomes as well. In principle, successful presidents should be able to move to more elite institutions or have greater longevity at their current positions.

The empirical work in this section uses the cross-sectional data from 2005-2006 but not from the earlier survey date. This information was used in conjunction with the employment statuses of these presidents as of August 2009. It was initially expected that a high percentage would have moved on to other positions. If so, it would have been appropriate to estimate a multinomial model where the dependent variable could take on several distinct values. In particular, it would have been possible to analyze the impact of these performance measures on the mobility of presidents to more elite positions. However, it turned out that only a small percentage of the sample took on similar positions at other schools. For this reason, a simpler approach was used. Single equation probits were estimated in which the dichotomous dependent variable is equal to one if the president observed in 2005-2006 was still in that position in August 2009.

The results are shown in Table 4. The coefficients of age and years of tenure are both negative and significant. These findings are not surprising; the mean age of these presidents was approximately 60 in 2005, so many of them were approaching retirement.

Nevertheless, the coefficient of the acceptance rate variable is negative and significant. In the earnings equations presented in Table 2, several performance measures (e.g., SAT scores, peer assessment, and enrollment) had large, statistically significant effects on presidential earnings. By contrast, the coefficient of the acceptance rate was insignificant. This pattern is reversed in the probit models. The key independent variables (e.g., SAT scores, peer assessment index) are insignificant. However, the coefficient of the acceptance rate variable is negative and significant at conventional ($t = 2.04$) levels. The mean acceptance rate is 65%. Evaluated at the mean values of all of the independent variables, a 10% increase in that figure would reduce the probability that a president would still be in office from 0.53 to 0.50. This roughly corresponds to an elasticity of 0.6.

The estimates in Table 4 suggest that studies of college presidents should not focus exclusively on compensation. Indeed, some performance measures that are insignificant

Table 4
Probit Estimates of the Probability of Staying at Current Position

Variable	
Constant	5.57**
	(1.87)
25th percentile SAT scores	Ø.ØØØ13
	(Ø.ØØ13)
Female	-Ø.Ø37
	(Ø.18)
Tenure at Current Job	-Ø.Ø21*
	(Ø.Ø11)
Internal Hire	Ø.2Ø
	(Ø.17)
Total Enrollment	Ø.ØØØØ15
	(Ø.ØØØØ23)
Institutional Religious Affiliation	Ø.18
	(Ø.19)
Freshman Retention Rate	-Ø.126
	(Ø.Ø15)
Age of President	-Ø.Ø71**
	(Ø.Ø12)
Peer Assessment	Ø.ØØØ77
	(Ø.2Ø84)
% of Alumni Who Contribute	-Ø.ØØ58
	(Ø.ØØ79)
% of Classes < 2Ø Students	-Ø.ØØ39
	(Ø.ØØ62)
% of Applicants Accepted	-Ø.ØØ986**
	(Ø.ØØ483)
National University	-Ø.19
	(Ø.3Ø)
Logarithm of revenue (Millions of dollars per Student)	-Ø.222
	(Ø.189)
N	395
Log-Likelihood	-24Ø.8

Notes: Standard errors are in parentheses. The dependent variable is equal to 1 if the person was still president in 2ØØ9; Ø otherwise. *Significant at the 1Ø% level (two-tailed test) ** Significant at the 5% level (two-tailed test) All nominal figures are converted to 1999 dollars. In some cases ACT scores were converted to SAT scores.

in earnings equations may influence longevity or other outcomes that have important implications for the present value of career compensation.

EXTENSIONS TO SAMPLE SELECTION MODELS

The discussion above has suggested that single equation earnings equations using least squares may provide an incomplete picture of many aspects of the market for college presidents. A key goal of this study has been to extend earlier work by estimating earnings equations using 2SLS instead of OLS and by using longevity instead of earnings as a dependent variable. Another variant of the standard approach may also be warranted. If length of stay is endogenous, it is plausible that estimates from earnings equations using either OLS or 2SLS may reflect sample selection bias. For example, poorly performing presidents may have a high propensity to leave, which in turn will bias the coefficients obtained from the remaining sample. Indeed, our probit models indicate that length of stay may be endogenous and depend on some performance measures such as the acceptance rate.

We have attempted to deal with this issue by estimating two stage sample selection equations using the well-known approach of Heckman (1979).21 A condition for identification is that at least one variable must affect the probability of being in the sample but must not influence the dependent variable. We were unable to find effective instruments that meet this criterion. For example, alumni status might fill this role because it might influence the probability that a president stays at the job, but it might not influence compensation. However, this variable was insignificant in the preliminary first-stage probits. Nevertheless, further investigation into this area is warranted.

CONCLUSIONS

This paper analyzes the determinants of the compensation of private college presidents and their propensity to remain in their positions. Using OLS we find that certain performance measures, such as size, SAT scores, and revenue, are positively associated with presidential compensation. Tenure is also significant, and the effect rises dramatically if a quadratic term is included. Externally hired presidents receive an earnings premium, which casts doubt on the managerial power hypothesis. It does not appear that presidents within a school are able to extract rents from their affiliations with their boards of trustees. It is also found that presidents of schools with religious

21 See Maddala (1983) pp. 231-24Ø for a discussion of these models.

affiliations are paid less than those who head nondenominational schools.

In several of these models, the coefficients of both the alumni giving rate and the proportion of small classes are negative. One explanation for these apparently anomalous results is that these variables are proxies for a focus on teaching and educational quality. Evidence suggests that the earnings of both college faculty and administrators depend primarily on research output. Alternatively, the alumni giving rate may be a proxy for alumni involvement, which in turn might serve as a brake on compensation. Nevertheless, these empirical results are not that robust. The models were reestimated separately for national universities and other institutions. In the former group, the coefficient of the alumni giving rate was in fact positive but insignificant at conventional levels.

In the next stage of the empirical work we estimate the compensation equations with 2SLS. We employ this approach because presidential earnings and school characteristics may be jointly determined. The estimated impact of enrollment is larger than that predicted by OLS. However, the effect of a peer assessment index) is unchanged.

In the final stage of the empirical work, we use the same performance measures but replace earnings with a dichotomous variable that measures whether or not the president remained in office. Some institutional characteristics that influence earnings become insignificant. The reverse is true for the acceptance rate. Although it did not influence earnings, it was found that an increase in the percent of students admitted reduces the probability that a president retains his or her position.

Despite the evidence that institutional characteristics appear to influence both earnings and retention of college presidents, lingering issues remain. First, it is plausible that college presidents may be able to manipulate some of these performance measures. If so, the results obtained in this study and earlier work may be flawed. Second, it may be useful to extend this work by using alternative empirical and theoretical approaches such as sample selection models. These issues should be considered in future work.

REFERENCES

Bartlett, Robin L. and Olga Sorokina. 2005. "Determinants of Presidential Pay at National Liberal Arts Institutions. " Review of Higher Education Vol. 29, No. 1 (Fall), pp. 53-68.

Bebchuk, Lucian and Jesse Fried. 2004. Pay Without Performance: The Unfulfilled Promise of Executive Compensation. Cambridge, MA: Harvard University Press.

Bebchuk, Lucian and Yaniv Grinstein. 2005. "The Growth of Executive Pay." Oxford Review of Economic Policy, Vol. 21, No. 2, pp. 283-303.

Brown, Charles and James Medoff. 1989. "The Employer Size-Wage Effect." Journal of Political Economy, Vol. 97, No. 5, pp. 1027-59.

Boulanger, Kim and Jeffrey Pliskin. 1999. "Determinants of Compensation of College Presidents." Hamilton College mimeo.

College Board. 1999. 2000 College Handbook. Thirty-Seventh Edition New York: College Board.

College Board. 2005. 2006 College Handbook. Forty-Third Edition New York: College Board.

Ehrenberg, Ronald. 2002. "Reaching for the Brass Ring: The U.S. News and World Report Rankings and Competition." Review of Higher Education, Vol. 26, No. 2 (Winter), pp. 145-62.

Ehrenberg, Ronald. 2006. "The Perfect Storm and the Privatization of Public Higher Education." Change, Vol. 38, No. 1 (January/February), pp. 46-53.

Ehrenberg, Ronald G., John J. Cheslock, and Julia Epifantseva. 2001. "Paying Our Presidents. What Do Trustees Value?" Review of Higher Education Vol. 25, No. 1(Fall), pp. 15-37.

Ferrer, Ana and Stephanie Luis. 2008. "Should Workers Care About Firm Size?" Industrial and Labor Relations Review, Vol. 62, No. 1(October), pp. 104-24.

Garen, John. E. 1985. "Worker Heterogeneity, Job Screening, and Firm Size." Journal of Political Economy, Vol. 93, No. 4, pp. 715-39.

Gomez-Mejia, Luis R. and David B. Balkin. 1992. "Determinants of Faculty Pay: An Agency Perspective." Academy of Management Journal, Vol. 35, No. 5, pp. 921-55.

Hall, Brian J. and Kevin J. Murphy. 2003. "The Trouble with Stock Options." Journal of Economic Perspectives, Vol. 17, No. 3(Summer), pp. 49-70.

Hansmann, Henry B. 1980. "The Role of Nonprofit Enterprise." Yale Law Journal, Vol. 89, No. 5(April), pp. 835-901.

Hamermesh, D.S., G.E. Johnson and B.A. Weisbrod. 1982. "Scholarship, Citations, and Salaries." Southern Economic Journal, Vol. 49, No. 2 (October), pp. 472-81.

Heckman, James. 1979. "Sample Selection Bias as a Specification Error." Econometrica Vol. 47, pp. 153-61.

Hettler, Paul. 2007. "The Decomposition of Firm-size Wage Differentials." Journal of Labor Research, Vol. 28, No. 3, pp. 477-86.

Institute for Policy Studies. 2007. "Executive Excess 2007. The Staggering Social Cost of U.S. Business Leadership." Washington, D.C.: www.ips-dc.org.

June, Audrey Williams. 2007. "Presidents: Same Look, Different Decade." Chronicle of Higher Education, Vol. 53, No. 24 (February), p. A33.

Kay, Ira T. and Steven Van Putten. 2007. Myths and Realities of Executive Pay. New York, N.Y.: Cambridge University Press.

Konrad, Alison M. and Jeffrey Pfeffer. 1990. "Do You Get What You Deserve? Factors Affecting the Relationship between Productivity and Pay." Administrative Science Quarterly, Vol. 35, pp. 258-85.

Kostiuk, Peter F. 1990. "Firm Size and Executive Compensation." Journal of Human Resources, Vol. 25, No. 1 (Winter), pp. 90-105.

Maddala, G.S. 1983. Limited-dependent and Qualitative Variables in Econometrics. Cambridge, U.K.: Cambridge University Press.

Monks, James. 2007. "Public versus Private University Presidents Pay Levels and Structure." Economics of Education Review, Vol.26, No. 3 (June), pp. 338-48.

Moore, William J., Robert J. Newman, and Geoffrey K. Turnbull.1998. "Do Academic Salaries Decline with Seniority?" Journal of Labor Economics, Vol. 16, No. 2, pp. 352-366.

Murphy, Kevin J. 2002. "Explaining Executive Compensation: Managerial Power versus the Perceived Cost of Stock Options." University of Chicago Law Review, Vol. 69, No. 3 (Summer), pp. 847-869.

Pfeffer, Jeffrey and Jerry Ross. 1988. "The Compensation of College and University Presidents." Research in Higher Education, Vol. 29, No. 1, pp. 79-91.

Pindyck, Robert S. and Daniel L. Rubinfeld. 1981. "Econometric Models and Economic Forecasts. " Second Edition. McGraw-Hill Book Company.

Ransom, Michael. 1993. "Seniority and Monopsony in the Academic Labor Market." American Economic Review, 1993, Vol. 83, No. 1 (March), pp. 221-233.

Rosen, Sherwin. 1982. "Authority, Control, and the Distribution of Earnings." Bell Journal of Economics, Vol. 13, No. 2(Autumn), pp. 311-23.

Tang, Thomas Li-Ping, David Shin-Hsiung Tang, and Cindy Shin-Yi Tang. 2000. "Factors related to university presidents' pay: An examination of private colleges and universities." Higher Education, Vol. 39, pp. 393-415.