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Do Gender and Race Play a Role in the Compensation of University Presidents? Evidence from Institution-level Panel Data*

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Abstract

This study updates and extends prior economics research on the compensation of college and university presidents by examining a 13-year panel containing data on the total compensation packages of private college and university presidents in the U.S. Our econometric approach is the first to include president-level information on both gender and race in order to draw inferences about both the male-female and white-black pay gaps (favoring males and whites, respectively) in higher education administration. Results from both OLS and fixed-effects estimations suggest that white female presidents are paid significantly less than their white male counterparts, although this difference, which ranges from six to 9.8 per cent, is sensitive to the racial makeup of the student body of the institution to which a president is affiliated. Secondarily, we also find that non-white male presidents earn more than their white male counterparts. This gap is also sensitive, although to a lesser degree, to the racial makeup of the student body of the institution to which a president is affiliated.

Keywords: executive compensation; gender discrimination; racial discrimination; higher education
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1. Introduction and background

The economics literature on both gender and racial discrimination in university faculty salaries dates back to, and grew rapidly during, the 1970s and 1980s (e.g., Katz, 1973; Gordon, Morton and Braden, 1974; Hoffman, 1976; Koch and Chizmar, 1976; Hirsch and Leppel, 1982; Barbezat, 1987; Raymond, Sesnowitz and Williams, 1988). These early studies offered mixed conclusions, with, for example, Gordon et al. (1974), Hoffman (1976) and Barbezat (1987) presenting evidence of a male-female salary differential (favoring males) ranging from 7.4 per cent to 23 per cent, while Hoffman (1976), Hirsch and Leppel (1982) and Raymond, Sesnowitz and Williams (1988) find little or no evidence of male-female salary differences (gender discrimination).[1] Similarly, studies by Ashraf (1996b) and Ashraf and Shabbir (2006) find some evidence of a white-black differential (favoring whites) in faculty salaries, while Hoffman (1976) and Gordon et al. (1974) both find evidence of a black-white faculty salary difference.[2] This research stream also continued beyond the 1980s (e.g., Barbezat, 1991; Lindley, Fish and Jackson, 1992; Lillydahl and Singell, 1993; Ashraf, 1996a and 1996b; McNabb and Wass, 1997; Toutkoushian, 1998; Ward, 2001; Ashraf and Shabbir, 2006), finding, as before, quite mixed results. In recent years, economists working in this genre turned more toward an examination of gender differences in practices related to tenure, promotion and the awarding of named professorships (e.g., Ginther and Hayes, 2003; Mixon and Treviño, 2005a; Gomez-Mejia, Treviño and Mixon, 2009; Sabatier, 2010; Cooray, Verma and Wright, 2014; Treviño, Gomez-Mejia, Balkin and Mixon, 2018).[3] Together, these studies find a male advantage in the attainment of tenure, promotion and receipt of named professorships.[4]

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1 Katz (1973) examines personal interview data from a large, prestigious public university. He finds that female faculty earn $2,410 less, on average, than their male counterparts in 1969. Barbezat (1987) analyzes a national cross section of faculty surveys from 1968, 1975 and 1977, and finds that while male faculty salaries exceed those of their female counterparts, the per centage differential between male and female salaries (favoring males) fell from 23 per cent in 1968 to 19 per cent in 1977. This result is supported in the general study by Ashraf (1996a), who finds that the male-female salary gap (favoring males) in the *Panel Study of Income Dynamics* also narrowed between 1968 and 1989. On the other hand, Koch and Chizmar (1976) examine peer evaluations of faculty productivity and reported salaries at Illinois State University and find that the male-female salary gap (favoring males) that existed before affirmative action legislation/regulation was erased by that legislation/regulation, resulting in a female-male salary gap (favoring females) in academe.

2 The white-black salary differential (favoring whites) estimated from five micro datasets in Ashraf (1996b) is reported to be diminishing over the period 1969-1989. Using data from the *1993 National Study of Postsecondary Faculty*, Ashraf and Shabbir (2006) report that the white-black salary differential (favoring whites) exists at both the associate and full professor ranks, while a black-white differential (favoring blacks) exists at the rank of assistant professor. Lastly, the black-white difference estimated in Gordon et al. (1974), which is based on individual data from a large urban university, is 13 per cent.

3 Ginther and Hayes (2003) use data from the *Survey of Doctorate Recipients*, while Sabatier (2010) employs data on French female researchers from the *National Institute for Agricultural Research* database. Mixon and Treviño (2005a) examine economics faculty employment data from public and private universities in the U.S. South, while Gomez-Mejia et al. (2009) and Treviño et al. (2018) employ management faculty employment data from public and private universities across the U.S.

4 The most recent of these studies by Treviño et al. (2018) finds, for example, that female management faculty face a probability of holding a named (endowed) professorship that is 16 percentage points less than that faced by their male management faculty counterparts.

Interestingly, although there is a stream of economics research, albeit relatively small, examining the determinants of executive compensation in the academy (e.g., Sorokina, 2003; O'Connell, 2005; Monks, 2007), there is only one study of which we are aware that explores potential gender discrimination in the compensation of college and university presidents. In that particular study, Monks and McGoldrick (2004) examine the earnings of the five highest-ranking executives across private colleges and universities in the U.S. Using a three-year panel taken from the *Chronicle of Higher Education*, OLS estimates suggest that female administrators earn 13 per cent less than their male counterparts. Of this gap, Monks and McGoldrick (2004) estimate that 10.4 percentage points are attributable to institutional and occupational differences between the male and female executives in the sample, while only 2.6 percentage points (of the gap) are attributable to gender discrimination in compensation.

This paper both updates and extends the Monks and McGoldrick (2004) study by examining a 13-year panel containing data on the total compensation packages of private college and university presidents in the U.S.[5] In updating the study by Monks and McGoldrick (2004), our econometric model contains president-level information on gender that is interacted with both race and institution type in order to draw inferences about the male-female pay gap (favoring males) in higher education administration. Our extension of Monks and McGoldrick involves the inclusion of president-level information on race, which has not heretofore been included in economics studies examining the compensation of college and university presidents. In doing so, this variable (information) is also interacted with both gender and institution type in order to draw inferences about the male-female pay gap (favoring males) in higher education administration. Results from both OLS and fixed-effects estimations suggest that white female presidents are paid significantly *less* than their white male counterparts, although this difference, which ranges from six to 9.8 per cent, is sensitive to the racial makeup of the student body of the institution to which a president is affiliated. Secondarily, we also find that non-white male presidents earn *more* than their white male counterparts. This gap (favoring non-white males) is also sensitive, although to a lesser degree, to the racial makeup of the student body of the institution to which a president is affiliated.

Lastly, it is also worth noting that this analysis extends the literature on gender disparities in executive pay in the broader labor market. For example, in their examination of executive salaries in top U.S. corporations (over the period 1992-1997), Bertrand and Hallock (2001) find a gender pay gap (favoring males) of 45 per cent, about three-fourths of which is attributable to differences in firm size. In their analysis of executive salaries at large U.S. corporations (0ver the period 1992-2004), Adams, Gupta, Haughton and Leeth (2007) find that, although CEO pay is similar across genders, a gender gap (favoring males) of 16 per cent exists for executives

5 In the U.S., an institution's president is its chief executive officer and plays a role similar to that of vice-chancellor in Australian universities. A president's key responsibilities typically involve strategic planning, financial management, and fundraising. University presidents are typically selected on the basis of parameters established for a national (or international) search process, and their compensation is usually determined through negotiation with the institution's governing authority (e.g., a board of trustees).

below the level CEO in the corporate hierarchy. On the other hand, Vieito and Khan's (2012) study of salaries of CEOs of S&P 1500 listed firms (over the period 1992-2004) finds a narrowing gender gap (favoring males) in pay across time period, while research using a large panel dataset by Gayle, Golan and Miller (2012) finds that, after controlling for background characteristics and rank, women are actually paid more than men, although they attribute the gender gap (favoring women) to higher attrition rates among women. In any event, drawing the link between these studies and the current one is useful in explaining why, given that the decisions of executives in any organization carry significant weight, gender equality among executives matters.

The remainder of this paper is organized into five sections. The next section describes the econometric model, along with the hypotheses tested, while the following section describes the data and variables used in the regression analysis. Section 4 presents the various econometrics results, while the remaining section offers some concluding comments.

2. Framing the hypotheses

Following the previous literature on gender and race gaps in faculty salaries, as well as the Monks and McGoldrick (2004) study of the male-female gap (favoring males) in the compensation of college and university presidents in the U.S., the following statistical equation is employed in this study,

$$\ln TotComp = \alpha + \sum_{j=1}^{k} \beta_j P_j + \sum_{l=1}^{m} \delta_l I_l + \varepsilon \quad , \tag{1}$$

where ln*TotComp* is the natural log of total compensation. Total compensation includes a university president's base pay, bonus pay, deferred compensation (including vested deferred compensation), nontaxable benefits and other pay.[6]

As specified in (1), a university executive's total compensation is a function of two vectors. The first of these, P_j, is a vector of k personal characteristics variables, j, for each university president included in our study. Included in this vector are the variables *Male*, *Female*, *White* and *NonWhite*. The first two of these variables control for the gender of the university president, where *Male* is a dummy variable equal to 1 if the university president is male, and 0 otherwise. The second variable, *Female*, is a dummy variable equal to 1 if the university president is female, and 0 otherwise. With *Male* omitted from the econometric specification, a negative coefficient estimate attached to *Female* would be consistent with gender discrimination in terms of the compensation of university presidents, as in the case of the gender pay gap literature discussed earlier.

6 http://www.chronicle.com/article/Executive-Compensation-at/143541/#id=table.

Next, the variables controlling for race are *White* and *NonWhite,* where *White* is a dummy variable equal to 1 if the university president is white, and 0 otherwise. The second of these two, *NonWhite*, is a dummy variable equal to 1 if the university president is non-white, and 0 otherwise.[7] As before, with *White* omitted from the econometric specification, a negative coefficient estimate attached to *NonWhite* would be consistent with race discrimination in terms of the compensation of university presidents. Interaction of these four dummy variables allows us to capture finer details about each university president. For example, *White × Male* captures university presidents who are classified as white males, while *NonWhite × Male* accounts for university presidents who are classified as non-white males. Similarly, *White × Female* captures university presidents who are classified as white females, while *NonWhite × Female* accounts for university presidents who are classified as non-white females. In our empirical tests, these finer descriptions are substituted for the broader identifications described earlier, with *White × Male* serving as the omitted category.

The second vector in (1) above, I_l, is a vector of m institutional characteristics variables, l, for each private university included in our study. The first regressor in this vector is *MinorityInst*, which is a dummy variable equal to 1 if the total undergraduate enrollment of the university is, during a given year, at least 51 per cent non-white, and 0 otherwise. This variable and its counterpart, *NonMinorityInst*, are interacted with the gender-race interaction terms in the first vector in order to more finely parse the role that gender/race and institutional structure plays in presidential compensation at private universities.[8]

The next five variables included in this vector are the variables ln*UGEnrollment*, *RatioBlack*, *RatioNative*, *RatioHispanic* and *RatioAsian*. The first of these, ln*UGEnrollment*, is equal to the logarithm of total undergraduate enrollment of each institution in the sample during each year. It is expected that presidents of larger universities will receive higher levels of total compensation. Next, a series of variables captures the proportion of the total undergraduate enrollment of each institution in the sample during each year that is accounted for by blacks, Native Americans, Hispanics, and Asians. These variables are included in order to capture any existing discount or boost present in the compensation of college and university presidents that may be a result of differences in the student body structure of these same institutions. As such, no *a priori* relationship regarding these variables and the dependent variable, ln*TotComp*, is provided.

7 Determination of race was made solely on the basis of photographs available on college and university websites. Where no photograph was available, and where race was uncertain, the observation was dropped from the sample. The vast majority of presidents coded as NonWhite in our sample are black. Lastly, although it is possible that mixed race (or even Asian or Hispanic individuals) are coded as white, the American College President Study 2017, which is published by the American Council on Education, states that only one per cent of private college presidents report being biracial. Thus, any potential miscoding of NonWhite should not impact the reliability of our results.

8 The interaction terms created by this secondary interaction are (1) *NonWhite × Male × MinorityInst*, (2) *White × Male × MinorityInst*, (3) *NonWhite × Female × MinorityInst*, (4) *White × Female × MinorityInst*, (5) *NonWhite × Male × NonMinorityInst*, (6) *NonWhite × Female × NonMinorityInst*, and (7) *White × Female × NonMinorityInst*.

Next, a series of dummy variables capturing the level at which the institutions in the sample compete in terms of intercollegiate sports is also included in (1) above. This series includes *Division1*, *Division2*, *Division3*, *DivisionOther* and *DivisionNL*. The first of these is a dummy variable equal to 1 if the university participates in NCAA athletics at the Division 1 level, and 0 otherwise. Given the vast literature in economics purporting that the presence (and success of) big-time intercollegiate sports results in higher SAT scores for incoming students and higher retention and graduation rates for current students (e.g., Mixon and Treviño, 2005b; Pope and Pope, 2009; Pope and Pope, 2014; Anderson, 2017), one would expect higher compensation of presidents at institutions offering Division 1 sports.

Additional sports variables include Division2 and Division3, which are dummy variables equal to 1 if the university participates in NCAA athletics at the Division 2 level and the Division 3 level, respectively, and 0 otherwise. The remaining two sports variables are *DivisionOther* and *DivisionNL*. The first of these is a dummy variable equal to 1 if the university participates in intercollegiate athletics at a level other than Division 1, Division 2 or Division 3, and 0 otherwise. The latter is a dummy variable equal to 1 if the level at which a university participates in sports is not listed in *Peterson's*, and 0 otherwise. Institutions participating in intercollegiate sports at the Division 1 level build greater alumni affinity, a result that has been found to increase alumni donations (Anderson, 2017), even for selective liberal arts institutions (Holmes, 2009). With *Division1* serving as the omitted category, it is expected that the estimated coefficients for the other athletics variables described above will be negative and, perhaps, exhibit a decreasing trend (cascade).

The penultimate series of regressors in the second vector of (1) above captures information about the geographical setting, wealth, and age of each institution in the sample. Included in this series are *Urban*, *Suburban*, *SmallTown*, and *Rural*. The first of these, *Urban*, is a dummy variable equal to 1 if the university resides in an urban setting, and 0 otherwise. Next, *Suburban* (*SmallTown*) is a dummy variable equal to 1 if the university resides in a suburban (small town) setting, and 0 otherwise. Lastly, *Rural* is a dummy variable equal to 1 if the university resides in a rural setting, and 0 otherwise. The local alumni base will be larger for universities located in urban and suburban settings, thus generating more support locally for research and other endeavors of universities located in urban and suburban areas. Urban and suburban areas are also home to large companies and government agencies, which provide financial support for research and related efforts of higher education institutions. Where support for research and related endeavors of universities is greater, executive compensation will also likely exceed that of institutions located in rural areas and small towns. Thus, it is likely that presidential compensation will be greatest in urban and suburban settings. With *Rural* serving as the omitted variable, we expect that both *Urban* and *Suburban* will retain positively signed coefficient estimates.

Also included in this penultimate series are ln*Endowment* and *UnivAge*. The first of these, which is equal to the logarithm of each institution's endowment, captures the wealth of each university in the sample. Given that the financial prospects of an institution will have some impact of the compensation of its top-level executives, it is expected that ln*Endowment* will retain a positively signed coefficient estimate.

Next, various structural, institutional and cultural biases could give rise discriminatory outcomes in terms of the compensation of university presidents. These may be attributed to historical or traditional norms that are observed in U.S. universities, and that signal that the process of negotiating compensation packages is a subjective outcome. To investigate these aspects of the process, the empirical analysis incorporates an additional explanatory variable, *UnivAge*, which captures the age of each institution in the sample. Given that *UnivAge* serves as a proxy for the role of historical traditions and cultural biases, its role in the compensation process is left to empirical exploration.

The final series of regressors in the second vector of (1) above is a dummy variable series capturing the year of the sample (i.e., *2000-Year*, *2001-Year*, etc.). The omitted variable in this series is *1998-Year*. As such, each of the included regressors in this series is expected to retain a positively signed coefficient estimate, as total presidential compensation is expected to rise over time. Lastly, the variables in this particular series will, perhaps, exhibit an increasing trend (cascade).

3. Data and empirical strategy

The panel data used in this study represent an unbalanced panel, given that the universities included in the panel do not always employ the same president each year. The selection of private colleges and universities is a natural fit given that they have more freedom than their public counterparts in setting establishing enrollment numbers and determining executive pay. As such, these institutions are more sensitive to market changes and often must compete aggressively with one another.[9] The private universities' presidential compensation data employed in this study cover the 1998-2010 time period and come from the *Chronicle of Higher Education*. As stated previously, Total compensation includes a university president's base pay, bonus pay, deferred compensation (including vested deferred compensation), nontaxable benefits and other pay.[10] Information on the presidents' gender and ethnicity was gathered by the authors from university websites. The variables related to race and gender are coded based on names and photographs of the private university presidents included in the sample.[11] The institutional data were collected from *Peterson's* Licensed Undergraduate Dataset.[12]

9 Interestingly, according to the *American College President Study 2017*, public universities are a bit more likely to hire females to fill presidential openings than are private universities. More specifically, 33 per cent of public universities in the U.S. have female presidents, compared to 27.3 per cent for private universities in the U.S. Moreover, 22.3 per cent of public universities employ non-white presidents, compared to 10.6 per cent for private universities. Given the advantages private institutions have in terms of the freedom to establish enrollment numbers and compensate executives, these statistics support the notion that there are gender and race patterns in the selection of university presidents with regard to the organizational domain (i.e., public vs. private).

10 The original sample included 6,869 observations over 13 years. Of these, 379 observations were lost due to lack of reporting by the *Chronicle of Higher Education* of presidential compensation, resulting in 6,490 observations.

11 In this case, 17 additional observations were lost due to an inability to determine the gender or race of the university president, resulting in 6,473 observations.

12 Among the institutional variables, 26 observations were lost due to a lack of information on total undergraduate enrollment, 307 observations were lost due to missing details on the race of undergraduate students, while an additional 563 observations were lost due to lack of information on university endowments. As a result, 5,577 observations were employed in our statistical analysis.

Summary statistics for the variables included in (1) above are presented in Table 1. As indicated there, total compensation of private college and university presidents is, on average, $380,897. Next, about 77.6 per cent of the private universities in the sample are led by white male presidents, while another 18.6 per cent (approximately) are led by white females. Much smaller percentages of institutions – about 2.3 per cent and 1.5 per cent – are led by led by non-white males and non-white females, respectively.[13] The typical private university in the sample enrolls about 2,697 students, while about 9.6 per cent of the observations in the sample are accounted for by institutions whose minority student enrollments reach or exceed 51 per cent of all undergraduate students enrolled.[14]

In terms of the institutional characteristics, the average institution has an undergraduate enrollment that is about 8.7 per cent black, 0.5 per cent Native American, 5.6 per cent Hispanic and 4.9 per cent Asian. Next, about 17.8 per cent (12.1 per cent) of the private institutions in the sample compete in intercollegiate athletics at the Division 1 (Division 2) level. An additional 47.2 per cent of the sample is accounted for by universities that compete at the Division 3 level, while another 18.5 per cent and 7.6 per cent of the panel are, respectively, accounted for by institutions competing at a level other than the prior three and by institutions whose intercollegiate sports activities is not categorized by *Peterson's*. Additionally, about 26.8 per cent (42.5 per cent) of the private universities in the panel reside in an urban (suburban) setting. Of the remaining institutions, 25.6 per cent reside in a small town setting, while 5.2 per cent are classified by *Peterson's* as rural setting universities. Lastly, the average university endowment exceeds $373 million, while the mean age of the universities sampled is about 122 years.

Table 2 presents presidential compensation by university size (by student enrollment) quartile. As indicated there, mean compensation at the low end of the distribution is $261,557, while it is $570,699 at the high end of the distribution. Mean presidential compensation in the middle quartiles is $319,827 and $370,856, respectively. These summary numbers support our contention that presidents of larger institutions (by student enrollment) receive larger total compensation packages than do their counterparts at smaller institutions. Next, Table 3 shows how presidential compensation varies by university setting (e.g., suburban, urban, etc.). As indicated there, presidents of universities located in rural areas earn an average of $291,026, while those affiliated with universities located in urban settings are paid an average of $455,183. Relatedly, presidents affiliated with universities located in small town and suburban settings are paid $309,377 and $388,116, respectively. These statistics support our contention that presidents of universities located in urban and suburban settings receive larger total compensation packages than those

13 These percentages indicate that the sample includes 4,325 white male presidents, 1,038 white female presidents, 128 non-white male presidents, and 86 non-white female presidents.

14 Given that the variable *MinorityInst* is based on the sum of the proportions of students from non-white backgrounds, it includes information that is also captured by the set of the proportions variables on enrollment characteristics. As such, we computed the simple correlations between *MinorityInst* and these variables. The simple correlations range from 0.03 to 0.49, indicating that there is a good deal of race variation within institution type.

received by presidents who are affiliated with universities that are located in rural and small town settings.[15]

Two specifications of (1) above are estimated by OLS. The first of these includes the broader gender and race interactions – *White × Female*, *NonWhite × Male* and *NonWhite × Female*. The second of these two specifications includes the more finely defined interactions – *NonWhite × Male × MinorityInst*, *White × Male × MinorityInst*, *NonWhite × Female × MinorityInst*, *White × Female × MinorityInst*, *NonWhite × Male × NonMinorityInst*, *NonWhite × Female × NonMinorityInst* and *White × Female × NonMinorityInst*.[16] Establishing these more refined interactions reveals that our sample includes 4,035 white male presidents of non-minority institutions, 915 white female presidents of non-minority institutions, 59 non-white male presidents of non-minority institutions, and 35 non-white female presidents of non-minority institutions. Additionally, our sample includes 290 white male presidents of minority institutions, 123 white female presidents of minority institutions, 69 non-white male presidents of minority institutions, and 51 non-white female presidents of minority institutions. Given the small number of observations in some of these categories, econometric results based on this second, more refined specification will exhibit more statistical noise, and therefore will be taken with greater caution.

Given the panel data set employed in this study, a fixed-effects approach is also used to test both of the specifications of (1) described here, wherein a fixed-effects variable, *i.id,* is included in order to control for differences between and within the institutions included in the sample (Wooldridge, 2010). Results from estimation of each of the four specifications described here are discussed in the section that follows. After this discussion, we offer concluding comments in the final section of the study.

4. Econometric results

Before turning to the econometric results presented in Table 4, it is helpful to establish the baseline effects of gender and race on pay by including a separate variable for gender and another for race. The first of these tasks is done by regressing the natural log of total presidential compensation on the control variables plus the gender dummy (*Female*). Although not shown in Table 4, the coefficient estimate of *Female* is negative and statistically significant, indicating that female presidents earn 8.7 per cent less than their male counterparts. This result sits in the middle of the estimated range (of 7 to 10 per cent) for the male faculty wage premium found in Toutkoushian (1998).[17] The second baseline is established by regressing the natural log of total presidential compensation on the control variables plus the race dummy (*NonWhite*). Although not shown in Table 4, the coefficient estimate of *NonWhite* is positive and statistically

15 Basic regressions indicate that larger universities provide significantly greater (at the .01 level) presidential compensation packages than smaller ones, and that universities located in small towns, suburban and urban areas provide compensation packages to presidents that significantly exceed (at the .10, .01 and .01 level, respectively) those provided to their counterparts at rural universities. In this latter case concerning university setting, the parameter estimates increase monotonically.

16 The omitted variable from this series is *White × Male × NonMinorityInst*.

17 The other OLS results in this case are similar to those presented in Table 4. As such, discussion of these is reserved for our presentation of the OLS results in Table 4.

significant, indicating that non-white presidents earn 7.1 per cent more than their white counterparts. However, this result is due entirely to the presence of an outlier in the sample. When removed, the estimate of *NonWhite* is no longer significant, suggesting that white and non-white presidents are compensated in a similar fashion.[18] The other OLS results are very similar to those found above, and discussed later in this section.

The results of OLS estimation of the more refined (1) above are included in columns 2 and 3 of Table 4. The first set of results comes from a model that regresses the natural log of total presidential compensation on the control variables plus three interaction terms – *NonWhite × Male, NonWhite × Female, and White × Female*. This regression produces an R^2 of 0.393, while eight of the primary coefficient estimates are significant at the 0.10 level or better. First, the coefficient estimate for *White × Female* is negative and statistically significant, indicating that white female presidents of private universities earn 9.8 per cent less per year than their white male counterparts. This result is also consistent with that found in the earlier study of the compensation of university presidents by Monks and McGoldrick (2004). Interestingly, non-white female presidents are compensated at level that is comparable to their white male counterparts, as are private university presidents who are non-white males.

The second set of OLS results comes from a model that regresses the natural log of total presidential compensation on the control variables plus the seven more refined interaction terms discussed above. This regression produces an R^2 of 0.395, while 10 of the primary coefficient estimates are significant at the 0.10 level or better. In this case, white female presidents of private universities whose student bodies consist mostly of non-white students receive 19 per cent less in total compensation than their white male counterparts at private universities whose student bodies consist mostly of white students. When white female presidents are compared to their male counterparts at similar institutions (i.e., private universities whose student bodies consist mostly white students), the male-female difference in total compensation falls to nine per cent. Interestingly, the total compensation of white male presidents at mostly non-white institutions is one per cent above that of their white male counterparts who lead mostly white institutions, although this difference is not statistically significant. Thus, although gender appears to matter, the institutional structure also plays a role in the determination of executive compensation. Lastly, the results also suggest that non-white female presidents of mostly white institutions are the highest paid executives, although this result is driven entirely by an outlier in the sample.[19]

18 When this outlier is omitted before conducting the prior regression, the coefficient estimate for *Female* is again negative and significant, indicating in this case that female presidents earn 9.8 per cent less than their male counterparts.

19 When this outlier is omitted from the sample, this variable, *NonWhite × Female × NonMinorityInst*, is no longer significant. In this case, white female presidents of private universities whose student bodies consist mostly of non-white students receive 18.9 per cent less in total compensation than their white male counterparts at private universities whose student bodies consist mostly of white students. Also, when white female presidents are compared to their male counterparts at similar institutions (i.e., private universities whose student bodies consist mostly white students) in this case, the male-female difference in total compensation falls to 9.1 per cent. These results are almost identical to those found in version (2) of Table 4 when the outlier is included.

In terms of the other OLS results, presidents of private universities that offer Division 1 athletics are paid significantly less than their counterparts at Division 2 and 'non-listed' institutions, while they are paid significantly more than their counterparts at 'other' institutions. These differentials range from 5.4 to 5.8 per cent. Next, presidents of private universities located in urban areas are paid about the same as those at private universities located in rural areas, while presidents of private universities located in small towns are paid about 10.4 per cent less than those at private universities located in rural areas. Additionally, presidents of large private universities, and of relatively wealthy private universities (as measured by the log of an institution's endowment) are paid significantly more than their counterparts at relatively small, and relatively less wealthy, institutions. Lastly, presidential compensation appears to be increasing over time in real terms, as almost all 12 of the variables in the 'year' series are positively signed, with most reaching the 0.10 level of significance or better.

Before turning to the fixed-effects estimations presented in Table 4, baseline estimates similar to those for the OLS estimations discussed above are established for gender and race in the fixed-effects case. Although not shown in Table 4, the coefficient estimate of *Female* is negative and statistically significant, indicating that female presidents earn five per cent less than their male counterparts. When the outlier is removed, the results suggest that female presidents earn 7.1 per cent less than their male counterparts. For the second baseline, the coefficient estimate of *NonWhite* is positive and statistically significant, indicating that non-white presidents earn 25 per cent more than their white counterparts. However, this result is largely due to the presence of an outlier in the sample. When removed, the estimate of *NonWhite* is, although significant, smaller in magnitude, suggesting that non-white presidents earn 12.4 per cent more than their white counterparts.

The results of fixed-effects estimation of the more refined (1) above are included in columns 4 and 5 of Table 4. The first set of results comes from a model that regresses the natural log of total presidential compensation on the control variables plus three interaction terms – *NonWhite* × *Male*, *NonWhite* × *Female*, and *White* × *Female*. This regression produces an R^2 of 0.193, while four of the primary coefficient estimates are significant at the 0.10 level or better.[20] First, the coefficient estimate for *White* × *Female* is negative and statistically significant, indicating that white female presidents of private universities earn six per cent less per year than their white male counterparts. This result is about three-fifths of the size of its OLS counterpart in column 2 of Table 4. Interestingly, both non-white males and non-white females earn substantially *more* than their white male counterparts. The former salary differential is 27.3 per cent, while the latter is 19.2 per cent, although the latter is again driven entirely by an outlier in the sample.[21]

20 As indicated in Table 4, the fixed-effects regressions include fewer regressors than their OLS counterparts.

21 When this outlier is omitted from the sample, this variable, *NonWhite* × *Female*, is no longer significant. In this case, the coefficient estimate for *White* × *Female* is negative and statistically significant, indicating that white female presidents of private universities earn 6.9 per cent less per year than their white male counterparts. This result is almost one percentage point larger (in absolute value) than that found in version (3) of Table 4 when the outlier is included.

The second set of fixed-effects results comes from a model that regresses the natural log of total presidential compensation on the control variables plus the seven more refined interaction terms discussed above. This regression produces an R^2 of 0.195, while again five of the primary coefficient estimates are significant at the 0.10 level or better. In this case, white female presidents of private universities whose student bodies consist mostly of white students receive 6.5 per cent less in total compensation than their white male counterparts at private universities whose student bodies consist mostly of white students. In contrast, the compensation of white female presidents of mostly non-white private universities is essentially the same as their white male counterparts at mostly white universities. Thus, the institutional structure again appears to play an important role in the determination of executive compensation. Interestingly, both non-white males at mostly white universities and non-white females at mostly white universities earn substantially *more* than their white male counterparts at mostly white universities. The former salary differential is 36.7 per cent, while the latter is 23 per cent, although the latter is once again driven entirely by an outlier in the sample.[22]

In terms of the other fixed-effects results, presidents of private universities whose student bodies consist of a larger portion of black undergraduate students are compensated significantly less than their counterparts at institutions with relatively smaller percentages of black students. Additionally, presidents of large private universities are paid significantly more than their counterparts at relatively small institutions. This result is consistent with the results from the OLS estimation in columns 2 and 3 of Table 4. Lastly, presidential compensation appears to be increasing over time in real terms, as all 12 of the variables in the 'year' series are positively signed, with most reaching the 0.10 level of significance or better. This latter result also exhibits an almost perfect monotonic trend.

5. Further empirical exploration

Admittedly, our econometric approach to the compensation of private university presidents fails to control for the productivity of the presidents included in the sample. As such, as a human capital framework, our model is limited in its ability to separate the effects of employee productivity differences from gender and race discrimination in the determination of executive compensation. Productivity of presidents in our sample could be proxied by their ages and tenure in the position, and inclusion of these variables (i.e., *Age* and *Tenure*) would lead to increased precision in our investigation of discrimination. Unfortunately, data for constructing *Age* are not included in the *Chronicle of Higher Education* database, and efforts to obtain them from university webpages indicate that they are available publicly for only a very small subset of the sample.

22 When this outlier is omitted from the sample, this variable, *NonWhite* × *Female* × *NonMinorityInst*, is no longer significant. In this case, white female presidents of private universities whose student bodies consist mostly of white students receive 7.5 per cent less in total compensation than their white male counterparts at private universities whose student bodies consist mostly of white students. In contrast, the compensation of white female presidents of mostly non-white private universities is essentially the same as their white male counterparts at mostly white universities. The former of these two results is one percentage point larger, in absolute value, than that found in version (4) of Table 4 when the outlier is included.

Next, although data on 'time at institution' is no longer available in recent iterations of the Chronicle's database, it was captured in earlier iterations that existed when we began building our sample. However, we were able to build a subsample including data for constructing *Tenure* for only about 25 per cent of our overall sample (i.e., for about 1,400 observations). Thus, results based on this subsample that includes *Tenure* generate more statistical noise than those discussed earlier, so we proceed with caution. Here, the coefficient estimate for *White × Female* is negative and statistically significant, indicating that white female presidents of private universities earn 12.8 per cent less per year than their white male counterparts. This result compares to that in version (1) of Table 4 indicating that white females face a 9.8 per cent penalty when *Tenure* is not included in the model. The differences between these two percentages is largely driven by the differences in the samples.[23] As in version (1) of Table 4, there is no significant difference between the compensation of white males and non-white males when *Tenure* is included.[24] Lastly, attempts to replicate the other specifications and econometric approaches in Table 4 were hindered by the small size of the subsample.

Next, we combined the years into four time periods -- 1998-2000, 2001-2003, 2004-2006, and 2007-2010 – in order to better exploit the panel nature of the dataset by investigating whether the gender and racial biases have changed over time. OLS estimation of a specification that interacts gender and race dummies with dummy variables for these time periods suggest that while larger wealthier institutions provide greater compensation to university presidents than their smaller and less wealthy counterparts, the male-female compensation gap (favoring males) grows over time, reaching 9.8 percentage points in period three and 17.4 percentage points in period four. In terms of the racial component, the male coefficient estimates for these interactions yield mixed results, indicating a non-white penalty that is 3.1 percentage points, –4.9 percentage points, and 2.2 percentage points over the last three time periods. Repeating this process in both cases, but with each year considered separately, yields similar, although statistically noisier, results.

6. Conclusion

This study updates and extends earlier economics research on the compensation of college and university presidents by examining a 13-year panel containing data on the total compensation packages of private college and university presidents in the U.S. The econometric model presented above captures president-level information on gender that is interacted with both race and institution type in order to draw inferences about both the male-female and white-non-white pay gaps (favoring males and whites, respectively) at the highest level in higher education. The latter of these two explorations has not heretofore been included in economics studies examining the compensation of college and university presidents.

23 In other words, if a regression of the version (1) specification in Table 4, which excludes *Tenure*, is conducted using this subsample, white females are found to earn 14.2 per cent less than their white male counterparts.

24 Non-white females are found to earn 57.5 per cent more than their white male counterparts when *Tenure* is included. However, this result is again driven by the outlier, which is even more prominent in the subsample.

Results from both OLS and fixed-effects estimations suggest that white female presidents are paid significantly *less* – ranging from six to 9.8 per cent – than their white male counterparts, depending on the racial makeup of the student body of the institution to which a president is affiliated. Secondarily, we also find that non-white male presidents earn more than their white male counterparts. This gap is also sensitive, although to a lesser degree, to the racial makeup of the student body of the institution to which a president is affiliated. Lastly, returning to the foundational literature as a way of summarizing the remaining results, we note that the study by Monks and McGoldrick (2004) concludes that the remuneration of university presidents rises with tenure, and also with the size and wealth of the institution to which they are affiliated. Our remaining results confirm each of these conclusions, and more.

Overall, the findings presented in this study suggest that future research on the compensation of presidents of public universities in the U.S. would be beneficial. Future research could partition total compensation of university presidents into its subcomponents of base salary, bonuses, and other forms remuneration in order to explore whether gender and/or race discrimination is more or less prevalent in different components of executive compensation in higher education. Limitations of the data set used in this study precluded such an exploration. Future research could also explore the possibility that minority candidates bring more qualifications to leadership roles, which may be explained by inequities in the labor market. For example, Wang and Kelan (2013) report an increase in the average level of qualifications and independence of female directors who were appointed to the boards of Norwegian companies following the introduction of gender quotas – a result they attribute this to a change in the promotions process.

Lastly, future research could also focus on two additional aspects of the employment of university presidents in the U.S. The first of these concerns the apparent decision, given summary statistics reported in this study, of presidential candidates to select into the public university domain on the basis of gender and race. If the distribution of presidents by gender and race across the organizational domain is non-random, then future research could integrate this earlier stage in the employment process by way of a simultaneous system of equations. Finally, the second of these future research opportunities also involves a simultaneous system approach to extend our analysis into a later stage of the employment of university presidents. More specifically, this suggestion takes an interdisciplinary approach to the relationship between the racial characteristics of a university's student body and that of its president by testing whether a more diverse student body cohort increases the likelihood of the appointment of a university president from a minority background, as well as whether the presence of a leader from a non-traditional background increases the diversity of the student body cohort.

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Table 1. Variable Descriptions and Summary Statistics

Variable	*Description*	*Mean*	*Std Dev*
Presidential Characteristics			
TotComp	Total presidential compensation (2010 dollars).	$380,897	$287,728
White × *Male*	Dummy variable equal to 1 if the university president is a white male, and 0 otherwise.	0.7755	0.4173
Nonwhite × *Male*	Dummy variable equal to 1 if the university president is a non-white male, and 0 otherwise.	0.0230	0.1498
White × *Female*	Dummy variable equal to 1 if the university president is a white female, and 0 otherwise.	0.1861	0.3892
Nonwhite × *Female*	Dummy variable equal to 1 if the university president is a non-white female, and 0 otherwise.	0.0154	0.1232
Institutional Characteristics			
UGEnrollment	Total undergraduate enrollment.	2,697.1	2,558.0
RatioBlack	Ratio of black students to total undergraduate enrollment.	0.0867	0.1311
RatioNative	Ratio of native American students to total undergraduate enrollment.	0.0056	0.0097
RatioHispanic	Ratio of Hispanic students to total undergraduate enrollment.	0.0563	0.0761
RatioAsian	Ratio of Asian students to total undergraduate enrollment.	0.0493	0.0630
MinorityInst	Dummy variable equal to 1 if total undergraduate enrollment is at least 51% non-white, and 0 otherwise.	0.0956	0.2940
Division1	Dummy variable equal to 1 if the university participates in NCAA athletics at the Division 1 level, and 0 otherwise.	0.1775	0.3821
Division2	Dummy variable equal to 1 if the university participates in NCAA athletics at the Division 2 level, and 0 otherwise.	0.1214	0.3266
Division3	Dummy variable equal to 1 if the university participates in NCAA athletics at the Division 3 level, and 0 otherwise.	0.4716	0.4992
DivisionOther	Dummy variable equal to 1 if the university participates in athletics at a level other than the NCAA Division 1, Division 2, or Division 3 level, and 0 otherwise.	0.1854	0.3887
DivisionNL	Dummy variable equal to 1 if the level at which the university participates in athletics is not listed, and 0 otherwise.	0.0767	0.2662
Urban	Dummy variable equal to 1 if the university resides in an urban setting, and 0 otherwise.	0.2675	0.4427
Suburban	Dummy variable equal to 1 if the university resides in an suburban setting, and 0 otherwise.	0.4250	0.4944
SmallTown	Dummy variable equal to 1 if the university resides in a small town setting, and 0 otherwise.	0.2559	0.4364
Rural	Dummy variable equal to 1 if the university resides in a rural setting, and 0 otherwise.	0.0516	0.2213
Endowment	Market value of each university's endowment (millions).	373.85	1,569.4
UnivAge	Age of each institution.	122.2	47.7

Data Sources: Data on presidential compensation is provided by the *Chronicle of Higher Education*. Data on other presidential characteristics is taken from university websites. Institutional data collected from *Peterson's* licensed undergraduate dataset.

Table 2. Presidential Compensation by Institution Size Quartile

Enrollment	*Mean Compensation*	*Frequency*
< 1,307	$261,557	1,392
1,307 – 1,949	$319,827	1,396
1,950 – 3,050	$370,856	1,391
> 3,050	$570,699	1,398

Table 3. Presidential Compensation by Campus Setting

Setting	*Mean Compensation*	*Frequency*
Rural	$291,026	288
Small Town	$309,377	1,427
Suburban	$388,116	2,370
Urban	$455,183	1,492

Table 4. Regression Results

Variables	*OLS (1)*	*OLS (2)*	*Fixed Effects (3)*	*Fixed Effects (4)*
NonWhite × *Male*	0.014		0.273***	
	(0.050)		(0.069)	
NonWhite × *Female*	0.088		0.192***	
	(0.060)		(0.071)	
White × *Female*	–0.098***		–0.060**	
	(0.018)		(0.023)	
NonWhite × *Male* × *MinorityInst*		–0.100		–0.019
		(0.082)		(0.137)
White × *Male* × *MinorityInst*		0.010		–0.003
		(0.037)		(0.035)
NonWhite × *Female* × *MinorityInst*		–0.150		0.040
		(0.094)		(0.144)
White × *Female* × *MinorityInst*		–0.190***		0.006
		(0.051)		(0.055)
NonWhite × *Male* × *NonMinorityInst*		0.032		0.367***
		(0.065)		(0.080)
NonWhite × *Female* × *NonMinorityInst*		0.270***		0.230***
		(0.084)		(0.082)
White × *Female* × *NonMinorityInst*		–0.090***		–0.065**
		(0.019)		(0.023)
ln*UGEnrollment*	0.181***	0.177***	0.212***	0.214***
	(0.012)	(0.012)	(0.036)	(0.036)
RatioBlack	–0.074	–0.082	–1.075***	–1.079***
	(0.063)	(0.086)	(0.257)	(0.257)
RatioNative	–0.800	–0.760	–2.112	–2.068
	(0.708)	(0.711)	(1.447)	(1.447)
RatioHispanic	–0.001	0.070	0.319	0.318
	(0.096)	(0.106)	(0.335)	(0.336)
RatioAsian	1.241***	1.246***	0.232	0.325
	(0.125)	(0.135)	(0.343)	(0.346)
Division2	0.063**	–0.060**		
	(0.025)	(0.026)		
Division3	0.030	0.027		
	(0.019)	(0.019)		
DivisionOther	–0.050**	–0.055**		
	(0.023)	(0.023)		
DivisonNL	0.087**	0.086**		
	(0.035)	(0.035)		
Urban	0.015	0.011		
	(0.033)	(0.033)		
Suburban	–0.012	–0.017		
	(0.032)	(0.032)		
SmallTown	–0.106***	–0.106***		
	(0.032)	(0.032)		
ln*Endowment*	0.120***	0.121***	0.009	0.010
	(0.006)	(0.006)	(0.014)	(0.014)

UnivAge	7.42e–5 (1.7e–4)	7.42e–5 (1.7 e–4)		
1999-Year	0.001 (0.038)	–1.43e–4 (0.038)	0.034 (0.024)	0.034 (0.024)
2000-Year	0.067* (0.036)	0.065* (0.036)	0.085*** (0.023)	0.085*** (0.023)
2001-Year	0.080** (0.035)	0.079** (0.035)	0.109*** (0.023)	0.108*** (0.023)
2002-Year	0.149*** (0.035)	0.148*** (0.035)	0.190*** (0.023)	0.189*** (0.023)
2003-Year	0.213*** (0.035)	0.213*** (0.035)	0.227*** (0.023)	0.226*** (0.023)
2004-Year	0.214*** (0.034)	0.214*** (0.034)	0.250*** (0.023)	0.249*** (0.023)
2005-Year	0.271*** (0.034)	0.271*** (0.034)	0.316*** (0.023)	0.313*** (0.023)
2006-Year	0.264*** (0.035)	0.263*** (0.035)	0.322*** (0.024)	0.320*** (0.024)
2007-Year	0.306*** (0.038)	0.304*** (0.038)	0.354*** (0.026)	0.351*** (0.026)
2008-Year	0.309*** (0.037)	0.307*** (0.037)	0.386*** (0.027)	0.382*** (0.027)
2009-Year	0.430*** (0.037)	0.428*** (0.037)	0.483*** (0.027)	0.479*** (0.027)
2010-Year	0.328*** (0.038)	0.327*** (0.038)	0.407*** (0.027)	0.401*** (0.028)
constant	10.56*** (0.100)	10.57*** (0.100)	10.84*** (0.273)	10.83*** (0.273)
n	5,577	5,577	5,577	5,577
R^2	0.393	0.395	0.193	0.195
Number of ipeds			695	695

Notes: The numbers in parentheses are standard errors. ***(**)[*] denotes the .01(.05)[.10] level of significance.