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Increasing the Share of Female Faculty within Humanities Departments: Does the Gender of University Leaders Matter?

by

Cassandra M. Benson, Todd R. Jones, Sarah J. Prenovitz, and Ronald G. Ehrenberg*

Abstract

The past two decades witnessed substantial growth in the percent of doctorate degrees awarded to women. In 2013, women in the humanities earned over half of all doctoral degrees (51.2%). However, evidence shows that women have continued to remain largely underrepresented among faculty. Using unique data collated from the *National Humanities Department Surveys*, *Integrated Postsecondary Education Data System (IPEDS)*, and data we collected on the gender of presidents, provosts, and deans, we examined whether the gender of key university administrators predicts the proportion of faculty in the humanities who were female among full-time tenured or tenure-track, full-time non-tenured, and part-time non-tenured faculty. OLS estimates indicate a statistically significant association between administrator gender and the share of full-time tenured and tenure-track faculty that is female. However, instrumental variables estimation suggest more mixed results, leading us to conclude that there is no stable relationship between administrators' gender and the proportion of faculty in humanities departments employed in different faculty types (full-time tenured and tenure-track, full-time non-tenure-track, and part-time non-tenure-track) that is female.

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I. Introduction

Between 1983 and 2013 the percentage of females earning doctoral degrees from American universities increased from 33.7 to 46.2. In the humanities women earn the majority of doctorate degrees (51.2%).¹ While the percentage of female faculty increased over this same time period, females largely remain underrepresented relative to their share of new doctoral recipients. Recent reports by the National Research Council (NRC) have elucidated this discrepancy and sparked increased research efforts to explain the gender gap. Previous literature has examined the impact of female faculty in introductory courses on the academic outcomes of female students (Rothstein, 1995; Rask and Bailey, 2002; Robst et al., 1999).

This project looks at a different level of the academic pipeline, the effect of administrators on faculty hiring decisions in the humanities. We seek to explain the gender composition of female faculty in the humanities based on the gender composition of the institution's leaders, specifically the president, provost, and deans. When exploring this, we hold constant the overall gender share by faculty type at the university as well as other institution characteristics.

This report adds to the burgeoning body of literature on the role that gender composition of corporate leaders and corporate boards plays in influencing the outcomes of corporations, including the gender mix of management. While closely related to Ehrenberg et al. (2010), this report exclusively focuses on the humanities and extends the methodology to include an instrumental variable approach in an effort to estimate a causal effect of a female president on female faculty employed in different faculty types. The remainder of this paper is as follows: section 2 provides a description of the data, section 3 presents the empirical method, section 4 presents regression estimates, and section 5 concludes with a brief discussion.

II. Data

The *National Humanities Department Surveys* (NHDS), collected by the Academy of Arts and Sciences provides the primary data used in this analysis. The NHDS was conducted in 2008² and 2012 and provides the number of faculty by type (full-time tenured and tenure-track, full-time non-tenure-track, and part-time non-tenure track) within responding departments.³ The proportion of women in each type serve as our dependent variables. For example, the proportion of full-time tenure-track faculty members from a department that is female is calculated as:

$$HumShare_{ftt} = \frac{\#women \text{ full time tenure track}}{\#men \text{ full time tenure track} + \#women \text{ full time tenure track}} \quad (1)$$

¹ Both sets of statistics are taken from "Doctorate Recipients from US Universities 2013, Table 14: Doctorate recipients, by sex and broad field of study: Selected years, 1983-2013."

<http://www.nsf.gov/statistics/sed/2013/data/tab14.pdf>

² The 2008 NHDS survey corresponds to department statistics in 2007.

³ We combine full-time tenured and tenure-track and part-time tenured and tenure-track together (we refer to this type simply as full-time tenure-track) as part-time tenured and tenure-track faculty represent only a small fraction of the sample.

where *HumSharefft* denotes the share of full-time tenure-track faculty within the responding humanity department that is female. Similar calculations are made for full-time non-tenure-track and part-time non-tenure-track faculty (denoted as *HumShareftnt* and *HumShareptnt* respectively).

We use the 2007 and 2012 Integrated Postsecondary Data System (IPEDs) *Fall Staff Surveys* to supplement the NHDS data. Faculty counts, by type, at each institution to which the department belongs is used to calculate the gender shares of full-time tenure-track, full-time non-tenure-track and part-time non-tenure-track faculty for each institution as a whole (denoted as *InstSharefft*, *InstShareftnt*, and *InstShareptnt* respectively).

We constructed data on the university administrators using the 2003-2011 editions of the *Higher Education Directory* (2012). The *Higher Education Directory* provided a collection of the names of the president/chancellor, provost/vice president for academic affairs, and deans supervising humanities departments for each institution with a responding department.⁴ We coded each administrator's gender via internet searches.

Table 1 reports correlations of the president's gender from each year (female takes on value 1 and male 0). As can be seen by the diagonal, correlations between subsequent years are very high, with the highest correlation occurring between the president's gender in 2010 and 2011. This reflects the fact that presidents can hold the same position for many years.

To account for the high levels of correlation, and to gain statistical power, we construct the main explanatory variables by taking the average value of the gender variables over the several years before the survey. For example, if the president was a man for two years, followed by a female for two years, the president variable would have a value of 0.5.

For the 2008 analysis, we use administrators from 2003-2006 (these variables are referred to as *avPres0306*, *avProv0306*, and *avDean0306*), and for 2012, we use administrators from 2007-2011 (these variables are referred to as *avPres0711*, *avProv0711*, and *avDean0711*).⁵ Table 2 presents correlations between the types of administrators after they have been aggregated into these two time periods. Correlations between *avPres0306* and *avPres0711* are the highest at 0.674, reflecting that presidents may remain in office for an extended period of time. Similarly, correlations between provosts and deans remain high between the two periods. The correlation among the three different types of administrators remains below 0.35, which reduces concerns of multicollinearity.

In addition to the gender of administrator variables and the institution-wide gender share variables, we use the following control variables in some specifications: research expenditures per student, total enrollment, indicator variables for the institution's Carnegie Classification,⁶

⁴ We included deans who most likely supervised the humanity department of interest.

⁵ In a robustness specification check described below, we use 9 years of administrator data for the 2012 cross sectional analysis. In this specification we use administrators from 2003-2011 (these variables are referred to as *avPres0311*, *avProv0311*, and *Dean0311*).

⁶ The omitted category is research/doctoral universities.

whether the institution is public or private, and undergraduate students' entrance test scores.⁷ Finally, in an instrumental variable specifications, to reduce bias from the exclusion restriction, we include the concurrent share of female faculty at the university as a whole.⁸

The top panel of table 3 presents summary statistics of the dependent variables, the share of full-time tenure-track, full-time non-tenure-track, and part-time non-tenure-track humanities faculty who are female (these are denoted *HumShareftt*, *HumShareftnt*, and *HumShareptnt*, respectively). The sample is restricted to departments who responded to both waves of the NHDS survey. Women make up nearly half of all tenured and tenure track positions in both 2008 and 2012. For both non-tenure track types, women make up over half of all positions.

The second panel of table 3 presents the main explanatory variables of interest, the average gender background of our key administrators. The mean average share of presidents between 2003 and 2006 (*avPres0306*) is 0.19, which indicates that the position of president is predominantly held by men. However, in the 2012 cross section (*avPres0711*) the mean share is 0.21, which indicates that a slightly larger number of institution/years had a female president. A key take-away from the center panel, the share of females in administrator positions increases between 2003-06 and 2007-11 for all three positions, with the largest increase occurring for provosts.

The third panel of table 3 presents summary statistics for most of the remaining control variables including the university share of female faculty in each tenure-track. Of important note in both 2008 and 2012, by comparing the top panel to the third panel, we can see that the full-time tenure-track, full-time non-tenure-track, and part-time non-tenure-track faculty in humanities department all have a higher percentage of females than exist at the university-wide level. Lastly, in 2012, at the institution-level, there are smaller shares of female faculty in full-time tenure-track and full-time non-tenure-track. The final panel of table 3 includes the institution wide share of female faculty in 1995, 2000, 2008, and 2012, which are used during the instrumental variables estimation.

We also include department field-of-study indicators for each field of study (omitting English). A positive coefficient on one of these variables means that this particular field has a larger share female faculty than does English, holding constant all other variables in the model. Table 4 presents a frequency table of the responding fields for both surveys. It is important to note that in 2008, only eight fields were surveyed, while in 2012, fifteen fields were included in the survey. Analysis was restricted to the 680 departments, and 8 fields, that responded to both surveys.⁹

⁷ With weights determined by the fraction of students reporting the ACT and SAT, we compute the test score variable by taking the weighted average the 75th percentile scores of incoming students, (with SAT scores converted to their ACT equivalent).

⁸ These variables are denoted *InstShareFem*, and are not broken down into tenure track types.

⁹ Estimates using all departments (unrestricted to departments who responded to both surveys) are similar to results presented here. Those tables are available upon request.

III. Analytical Framework

Our empirical strategy considers the two surveys separately.¹⁰ We first estimate equations of the form:

$$HumShare_{it}^{track\ j} = \alpha + \delta_1 avPres_{it} + \delta_2 avProv_{it} + \delta_3 avDean_{it} + \gamma InstShare_t^{track\ j} + \beta X_{it} + \varepsilon_{it} \quad (2)$$

This equation indicates that the share of the humanities department i of type j in time t that is female is a function of the fraction of the administrator types who were female over the previous several years, the share of track j faculty at the same institution who were female, and a vector of control variables, X_{it} , described above.

Because standard errors of departments from the same institution may be correlated, we cluster standard errors at the institution level. For control variables that are missing, we code them as 0 and include a dichotomous variable that is 1 if missing and 0 if not missing.¹¹ We also code missing administrator gender observations as 0, but the additional variable is the fraction of the years that the gender variable was not reported.

In a second specification, in order to control for the possibility that the gender of the president depended on the share of female faculty at the university, we create an instrumented variable for the gender of the president¹² by using the share of female faculty at the university approximately twelve years prior (in the 2007 data from 1995 is used to construct the instrument, in the 2012 cross section we use data from 2000).¹³

The first stage takes the form:

$$av\widehat{Pres}_{it} = \alpha + \theta_1 InstShareFemale_{i\ t-12} + \theta_2 InstShareFemale_{it} + \beta X_{it} + \mu_{it} \quad (3)$$

where the dependent variable is the average gender of the president over the preceding years in year t , $InstShareFemale$ in time $t-12$ is the share of female faculty (across all faculty types¹⁴) twelve years prior and $InstShareFemale$ in time t is the share of female faculty (across all faculty types) in the current time period (either 2007 or 2012). We include the concurrent share of female faculty at the institution to isolate the effect of the president's gender on the share of

¹⁰ In addition to the cross-section estimation, we also conducted analysis (not reported) in which we considered changes over time. However, the results do not yield insights in addition to those already presented. A lack of much variation between the two periods may have prevented us from finding meaningful results, if there were any to find.

¹¹ We code missing test score observations as taking the mean of the non-missing values.

¹² We do not instrument for the gender of the provost or dean because we lose statistical power in those specifications; results from these models do not yield useful insights.

¹³ In similar specifications we instrument for the gender of the president using the share of female faculty 12 years prior multiplied by the share of female students at the university 12 years prior. These results are presented in tables 7 and 8.

¹⁴ Types here are the three faculty tracks that we examine full-time tenured and tenure-track, full-time non tenure-track, and part-time non tenure-track.

women in each faculty type. This is to address the concern that the share of female faculty twelve years prior does not meet the exclusion restriction.

There are two assumptions that an instrumental variable (IV) must meet: first, the instrument must be associated with the treatment ($\text{Cov}(Z, X)$ should be large); second, the instrument must not be correlated with the error term ε_{it} from the second stage (this is the exclusion restriction). The share of female faculty has been shown to be correlated with the gender of the president as shown in Ehrenberg et al. (2010) and therefore, it meets the first assumption. In addition, as shown in tables 7 and 8, the first stage F-statistics of most regressions are above 10 as recommended by Stock and Yogo (2005).

The exclusion restriction is more difficult to ensure. Here, it is plausible that the share of female faculty twelve years prior affects the share of female faculty in each type in time t . To attempt to address this concern, we include the contemporaneous share of female faculty at the university in the instrumental variable equation. By including the contemporaneous share of female faculty at the university we control for the variation of female share in each type due to the share of women currently at the university. If this solves the aforementioned concern, the remaining variation in the share of women in different faculty types is due to the predicted gender of the president.

The second-stage takes the form:

$$\begin{aligned} HumShare_{it}^{track\ j} = & \alpha + \delta_1 av\widehat{Pres}_{it} + \delta_2 avProv_{it} + \delta_3 avDean_{it} + \gamma InstShare_{it}^{track\ j} \\ & + \pi InstShareFemale_{it} + \beta X_{it} + \varepsilon_{it} \end{aligned} \quad (4)$$

where the dependent variable is the share of female faculty of each type j , $InstShare$ is the share of female of each type j at the institution as a whole, $av\widehat{Pres}_{it}$ is the predicted gender of the president (and is instrumented by the share of female faculty 12 years prior), and $InstShareFemale$ in time t is the share of female faculty (of all types) in the current time period (either 2007 or 2012). The concurrent share will pick up the association between a higher female share at the university, thus the instrumented gender of the president can be interpreted as the causal effect of the administrator's gender on the share of faculty in each type that is female.

IV. Results

Table 5 presents OLS estimates for the effect of administrator gender on the share of faculty in each type who is female. Columns 1 and 2 present estimates for full-time tenure-track without controls and with controls, respectively. Across both specifications, the gender of the president is positive and statistically significant. This indicates that having more years with a female president is associated with a higher share of full-time tenure-track humanities faculty that is female.

Columns 3 and 4 present similar estimates for full-time non-tenure-track faculty. Here the president has no significant relationship with shares of female faculty; however, the gender of the provost does matter. Having more years with a female provost is associated with a higher share of female among the full-time non-tenure-track faculty even after controls are included.

The gender of the dean appears not to matter across all faculty types. These results indicate that there seems to be a relationship between the gender of presidents and provosts and the share of humanities full-time tenured and tenure-track faculty that are female. The coefficients of the field indicators are consistent across specifications. In addition, these field coefficients are highly correlated with the share of female PhDs produced in each field in the preceding years.¹⁵

Table 6 presents similar OLS estimates for the 2012 survey. Columns 1 and 2 again present estimates for the proportion of full-time tenure-track humanities faculty who are female. In this cross-section, the average gender of the president has a positive and statistically significant association with the share of female humanities faculty who are full-time tenure-track, similar to the 2008 cross section. Columns 3-6 show somewhat similar results; the gender of administrators has a positive, yet primarily insignificant, association with the share in each type of tenure-track that is female. Here in all specifications, there are statistically significant associations for each of the field variables. Again, note that these coefficients are highly stable between tables 5 and 6, providing a good consistent measure of the field specific effect on female shares in each type.

Recognizing that the gender of the president is potentially endogenous, we next estimate the relationship between administrator's gender and the share of female faculty in each type using instrumental variables techniques. Ehrenberg et al. (2010) find that the gender of the president is associated with the share of faculty at the entire university who are female. Therefore, using the share of faculty that is female in 1995 (2000), we predict the gender of the president in 2007 (2012), as shown above in our IV equations.

Table 7 presents IV estimates for the 2008 cross-section. Column 1 uses the share of female faculty at the institution 12 years prior to instrument for the gender of the president. Column 2 uses the interaction of the share of faculty who are female and the share of students who are female 12 years prior to instrument for the gender of the president. As seen in columns 1 and 2, the gender of the president no longer has a statistically significant effect on the share of full-time tenured or tenure-track humanities faculty that is female. In fact, the point estimates are negative, although not statistically different from zero. Columns 3-4 and 5-6 present analogous results for full-time non-tenure-track and part-time non-tenure-track humanities faculty. Column 4 shows that having more years with a female president increases the share of full-time non-tenure track faculty that is female. However, this is not consistent with the estimate in column 3, which is statistically insignificant. Columns 3 and 4, corroborate table 5 showing that the gender of the Provost continues to have a positive and statistically significant association with the share of women who are full-time non-tenure-track.

Table 8 presents IV estimates for the 2012 cross section; we find a positive and statistically significant association between the gender of the president and the share of full-time tenured or tenure-track humanities faculty that is female in column 1.¹⁶ Column 1 uses the share of university wide faculty who are female in 2000 as the instrument and elicits a coefficient of 0.18 which is statistically significant at the 5 percent level. This estimate can be interpreted in the following way, having a female president for all years 2007-2011 would increase the share of

¹⁵ The correlation of full-time tenure-track with PhDs produced is above 0.9 and the correlation of part-time non-tenure and full-time non-tenure is above 0.7.

¹⁶ We lose 6 observations in our IV estimates because data for the instrument is missing.

full-time tenured and tenure track faculty that is female by 18 percentage points. Thus having a female president for just one of those years would increase the share of full-time tenured or tenure track that is female by 3.6 percentage points. Given that a typical president remains in office for approximately ten years, this estimate suggests that hiring a female president will increase the share of full-time tenured and tenure track humanities faculty that is female by 36 percentage points, a large increase.

Column 2 uses the interaction of the share of female faculty and share of female students at the university in 2000 as an instrument for the gender of the president. This garners a coefficient of 0.109 but it is not statistically significant. Other coefficients remain similar to those presented in table 6; across all regression estimates, the field indicators remain consistent. The fact that the point estimates on the president's gender are larger than in the OLS regression could be evidence for the endogeneity of the gender of the president.

V. Extensions and Conclusion

This paper examined the relationship between the gender of key university administrators and the share of faculty who are female within three types using data from the two waves of the NHDS. We find statistically-significant coefficients indicating a positive relationship between the gender share of the administrators and the gender share of the faculty, particularly the gender of the president. Cross sectional analyses in 2008 and 2012 both indicate that the gender of the president is positively associated with a higher share of full-time tenured and tenure track humanities faculty who is female.

Using instrumental variable techniques in an effort to isolate the causal effect of president's gender on the proportion of full-time tenured and tenure track faculty who is female, we find inconclusive results. The 2012 cross section IV estimates imply that the gender of the president does increase the share of full-time tenured and tenure track faculty who is female, and the effect is causal; but the 2008 cross section IV estimates do not.

We conducted three extensions to further examine the relationship between administrator gender and employment types of humanities faculty. First, using only the 2012 NHDS survey we utilized 9 years of data for administrator background, allowing a longer time frame for administrators to make an impact on faculty composition. These results were similar to those presented in table 6.¹⁷ Second, rather than using the share of women in each type, we estimated level equations where our dependent variable of interest is the number of female faculty in each department. These estimates did not provide any additional insights into the relationship between administrator gender and female faculty employed in different types.¹⁸ Lastly, we estimated equations to determine which faculty type women were likely to be hired into. Thus, using the share of women in each type, where the dependent variable for full-time tenured and tenure-track is calculated as below:

¹⁷ These estimates are available upon request.

¹⁸ These estimates are available upon request.

$$HumShare_{ftt} = \frac{\#women \text{ full time tenure track}}{\#women} \quad (2)$$

with similar equations for full-time non-tenure track and part-time non-tenure track women. These estimates did not provide any additional insight into the relationship between administrator gender and female faculty positions.

Overall, our results suggest that having a female president or female administrators is positively associated with the share of full-time tenured and tenure-track humanities faculty that is female. However, the inconsistent IV estimates between the 2008 and 2012 cross sections is perplexing. These contradictory estimates suggest that additional research is needed to determine the causal impact of administrator gender on faculty shares. However, the 2012 IV estimates suggest that the gender of an institution's president is both large and statistically significant factor in increasing the share of women in full-time tenure track positions. A single president who remains in office for ten years could increase the share of full-time tenured and tenure track faculty that is female by 36 percentage points. It should be noted that these estimates are not externally valid to non-humanities departments. Perhaps female administrators focus their attentions differently among various departments, but that analysis is beyond the scope of the data used in this report.

References

Ehrenberg, Ronald G., George H. Jakubson, Mirinda L. Martin, Joyce B. Main, & Thomas Eisenberg. (2012) "Diversifying the Faculty Across Gender Lines: Do Trustees and Administrators Matter?" *Economics of Education Review* 31(1), 9-18.

Stock J, Yogo M. (2005) "Testing for Weak Instruments in Linear IV Regression. In: Andrews DWK Identification and Inference for Econometric Models. Identification and Inference for Econometric Models. New York: Cambridge University Press; pp. 80-108.

Rask, K. and Bailey, E. (2002) "Are Faculty Role Models? Evidence from Major Choice in an Undergraduate Institution." *The Journal of Economic Education*, 33 (2), 99-124

Robst, J., Keil, J., and Russo, D. (1999) "The Effect of Gender Composition of Faculty on Student Retention." *Economics of Education Review*, 17 (4), 429-439

Rothstein, D. (1995) "Do Female Faculty Influence Female Students' Educational and Labor Market Attainments?" *Industrial and Labor Relations Review*, 48 (3), 515-530

Table 1: Correlations of Pres across Years

	Pres2003	Pres2004	Pres2005	Pres2006	Pres2007	Pres2008	Pres2009	Pres2010	Pres2011
Pres2003	1								
Pres2004	0.826	1							
Pres2005	0.773	0.916	1						
Pres2006	0.691	0.831	0.914	1					
Pres2007	0.542	0.673	0.734	0.827	1				
Pres2008	0.467	0.605	0.666	0.748	0.908	1			
Pres2009	0.411	0.545	0.604	0.685	0.822	0.895	1		
Pres2010	0.399	0.496	0.556	0.637	0.738	0.811	0.901	1	
Pres2011	0.383	0.47	0.529	0.609	0.708	0.780	0.86	0.933	1

Table 2: Correlations of avg. Pres, avg. Provost, and avg. Dean for 2003-2006 and 2007-2011

	avPres0306	avProv0306	avDean0306	avPres0711	avProv0711	avDean0711
avPres0306	1					
avProv0306	0.097	1				
avDean0306	-0.038	-0.013	1			
avPres0711	0.666	0.067	0.069	1		
avProv0711	0.038	0.468	-0.027	-0.036	1	
avDean0711	0.020	-0.094	0.584	0.095	-0.035	1

Table 3: Summary Statistics

Variable	<u>2008</u>	<u>2012</u>
	Mean (Std. Dev.)	Mean (Std. Dev.)
HumShareftt	0.461 (0.238)	0.476 (0.239)
HumShareftnt	0.547 (0.381)	0.555 (0.384)
HumShareptnt	0.532 (0.345)	0.552 (0.338)
	<u>Years 0306</u>	<u>Years 0711</u>
avPres	0.199 (0.372)	0.212 (0.381)
avProv	0.263 (0.379)	0.316 (0.377)
avDean	0.196 (0.343)	0.199 (0.334)
	<u>2008</u>	<u>2012</u>
InstShareftt	0.357 (0.110)	0.278 (0.191)
InstShareftnt	0.512 (0.143)	0.385 (0.259)
InstShareptnt	0.369 (0.244)	0.494 (0.120)
Research Exp./1000 Student	3.865 (7.506)	4.597 (8.631)
Enrollment (in thousands)	13.031 (12.999)	13.963 (13.981)
75th Percentile ACT Test Score	27.236 (3.315)	27.555 (3.435)
Public	0.460 (0.499)	0.460 (0.499)
	<u>2008</u>	<u>2012</u>
InstShareFemale (current year)	0.411 (0.078)	0.428 (0.062)
	<u>1995</u>	<u>2000</u>
InstShareFemale (lagged year, instrument)	0.336 (0.095)	0.363 (0.089)
Number of Observations	680	680

Table 4: Fields of Study

	2007 Freq.	2007 Perc.	2012 Freq.	2012 Perc.	Analysis Sample ¹⁹	Analysis Sample Perc.
Linguistics	85	9.45%	87	6.45%	63	9.26%
Religion	126	14.02%	134	9.94%	100	14.71%
History	168	18.69%	152	11.28%	133	19.56%
Art History	170	18.91%	160	11.87%	126	18.53%
English	137	15.24%	142	10.53%	106	15.59%
Foreign Language	158	17.58%	128	9.50%	109	16.03%
MLA Comb Eng/FL	42	4.67%	34	2.52%	32	4.71%
History of Science and Technology	13	1.45%	13	0.96%	11	1.62%
Folklore			9	0.67%		
Musicology			50	3.71%		
Classics			152	11.28%		
Communication			127	9.42%		
Philosophy			160	11.87%		
Total	899	100.00%	1348	100.00%	680	100.00%

¹⁹ Analysis sample is restricted to departments which responded to both waves of the NHDS survey.

Table 5: OLS Estimates of the Effect of Administrator Gender on Female Faculty Composition in 2008

VARIABLES	<u>Full-Time Tenure</u>		<u>Full-Time Non-Tenure</u>		<u>Part-Time Non-Tenure</u>	
	(1)	(2)	(3)	(4)	(5)	(6)
avPres0306	0.054** (0.024)	0.040* (0.022)	0.058 (0.054)	0.038 (0.046)	0.055 (0.042)	0.065* (0.039)
avProv0306	-0.016 (0.024)	-0.025 (0.022)	0.081 (0.055)	0.110** (0.056)	0.041 (0.044)	0.045 (0.041)
avDean0306	0.012 (0.025)	0.009 (0.023)	-0.023 (0.058)	-0.041 (0.054)	0.031 (0.043)	0.033 (0.044)
InstShareftt08	0.570*** (0.112)	0.693*** (0.127)				
InstShareftnt08			0.326* (0.182)	0.404** (0.202)		
InstShareptnt08					-0.097 (0.176)	-0.068 (0.167)
Linguistics		-0.042 (0.035)		0.077 (0.080)		0.067 (0.076)
Religion		-0.245*** (0.023)		-0.288*** (0.061)		-0.293*** (0.047)
History		-0.129*** (0.018)		-0.151*** (0.055)		-0.185*** (0.045)
Art History		0.113*** (0.028)		0.177*** (0.066)		0.037 (0.052)
Foreign Lang.		0.020 (0.026)		0.168*** (0.048)		0.104** (0.044)
MLA Comb Eng/FL		0.057* (0.034)		0.037 (0.068)		0.137** (0.058)
History of Science/Tech		-0.186*** (0.054)		-0.178 (0.202)		-0.035 (0.264)
Carnegie Classification: Comprehensive		0.008 (0.027)		0.049 (0.060)		0.076* (0.044)
Carnegie Classification: Research		0.002 (0.030)		0.077 (0.072)		0.066 (0.059)
Public		0.011		0.042		-0.014

		(0.023)		(0.054)		(0.045)
Total Enrollment (in Thousands)		0.001 (0.001)		-0.002 (0.002)		-0.001 (0.002)
75th Percentile ACT Test Score		0.009** (0.004)		0.003 (0.007)		0.011* (0.006)
Research Expenditures per 1000 students		-0.002* (0.001)		0.005 (0.004)		-0.004 (0.003)
Constant	0.247*** (0.042)	-0.015 (0.125)	0.362*** (0.096)	0.166 (0.240)	0.557*** (0.092)	0.280 (0.182)
Observations	651	651	387	387	469	469
R-squared	0.062	0.325	0.030	0.225	0.017	0.200

Notes: Robust standard errors are in parentheses. * indicates statistical significant ant the 10% level, ** indicates statistical significance at the 5% level, and ***indicates statistical significance at the 1% level.

Table 6: OLS Estimates of the Effect of Administrator Gender on Female Faculty Composition in 2012

VARIABLES	<u>Full-Time Tenure</u>		<u>Full-Time Non-Tenure</u>		<u>Part-Time Non-Tenure</u>	
	(1)	(2)	(3)	(4)	(5)	(6)
avPres0711	0.070** (0.027)	0.059** (0.025)	-0.012 (0.055)	-0.016 (0.052)	0.050 (0.046)	0.041 (0.040)
avProv0711	0.013 (0.027)	-0.012 (0.025)	0.017 (0.053)	0.004 (0.053)	0.070 (0.044)	0.038 (0.039)
avDean0711	0.017 (0.028)	0.022 (0.025)	0.008 (0.059)	-0.020 (0.057)	-0.000 (0.051)	0.010 (0.044)
InstShareftt12	0.292* (0.159)	0.237 (0.172)				
InstShareftnt12			0.788*** (0.270)	0.910*** (0.257)		
InstShareptnt12					0.168 (0.246)	0.261 (0.236)
Linguistics		0.004 (0.037)		0.066 (0.083)		0.073 (0.088)
Religion		-0.192*** (0.027)		-0.252*** (0.070)		-0.285*** (0.049)
History		-0.110*** (0.021)		-0.211*** (0.058)		-0.213*** (0.045)
Art History		0.136*** (0.032)		0.007 (0.080)		0.159*** (0.053)
Foreign Lang.		0.063** (0.029)		0.100* (0.054)		0.136*** (0.045)
MLA Comb Eng/FL		0.076* (0.041)		0.118* (0.070)		0.153** (0.060)
History of Science/Tech		-0.136** (0.054)		0.070 (0.198)		-0.108 (0.074)
Carnegie Classification: Comprehensive		-0.032 (0.028)		-0.022 (0.062)		-0.011 (0.042)
Carnegie Classification: Research		-0.049 (0.033)		0.090 (0.074)		0.077 (0.058)

Public		0.025 (0.026)		0.039 (0.053)		0.015 (0.038)
Total Enrollment (in Thousands)		0.001 (0.001)		-0.003 (0.002)		-0.001 (0.002)
75th Percentile ACT Test Score		0.003 (0.004)		0.002 (0.008)		0.009 (0.006)
Research Expenditures per 1000 students		-0.001 (0.001)		0.000 (0.003)		-0.005 (0.003)
Constant	0.342*** (0.059)	0.303** (0.142)	0.138 (0.152)	0.034 (0.263)	0.431*** (0.129)	0.178 (0.228)
Observations	611	610	356	356	409	408
R-squared	0.028	0.266	0.030	0.167	0.014	0.298

Notes: Robust standard errors are in parentheses. * indicates statistical significant ant the 10% level, ** indicates statistical significance at the 5% level, and ***indicates statistical significance at the 1% level.

Table 7: IV Estimates of the Effect of Administrator Gender on Female Faculty Composition in 2008

VARIABLES	<u>Full-Time Tenure</u>		<u>Full-Time Non-Tenure</u>		<u>Part-Time Non-Tenure</u>	
	(1)	(2)	(3)	(4)	(5)	(6)
avPres0306	-0.121 (0.107)	-0.083 (0.081)	0.233 (0.219)	0.318** (0.151)	0.150 (0.163)	-0.037 (0.133)
avProv0306	-0.014 (0.022)	-0.016 (0.021)	0.100* (0.056)	0.096* (0.057)	0.040 (0.042)	0.052 (0.042)
avDean0306	0.001 (0.025)	0.003 (0.024)	-0.035 (0.055)	-0.030 (0.055)	0.032 (0.044)	0.033 (0.044)
InstShareftt08	0.615** (0.284)	0.583** (0.270)				
InstShareftnt08			0.423* (0.253)	0.435* (0.261)		
InstShareptnt08					-0.059 (0.186)	-0.115 (0.178)
Linguistics	-0.030 (0.039)	-0.032 (0.037)	0.068 (0.078)	0.065 (0.079)	0.063 (0.074)	0.072 (0.076)
Religion	-0.236*** (0.025)	-0.238*** (0.024)	-0.300*** (0.062)	-0.301*** (0.064)	-0.300*** (0.048)	-0.293*** (0.047)
History	-0.129*** (0.019)	-0.128*** (0.019)	-0.157*** (0.055)	-0.159*** (0.056)	-0.184*** (0.045)	-0.184*** (0.045)
Art History	0.121*** (0.029)	0.119*** (0.028)	0.167** (0.067)	0.164** (0.068)	0.039 (0.051)	0.040 (0.051)
Foreign Lang.	0.020 (0.027)	0.021 (0.027)	0.154*** (0.048)	0.150*** (0.050)	0.103** (0.044)	0.106** (0.043)
MLA Comb Eng/FL	0.058 (0.038)	0.058 (0.037)	0.039 (0.066)	0.042 (0.066)	0.141** (0.056)	0.131** (0.058)
History of Science/Tech	-0.189*** (0.052)	-0.188*** (0.052)	-0.124 (0.221)	-0.099 (0.220)	-0.020 (0.265)	-0.051 (0.251)
Carnegie Classification: Comprehensive	0.005 (0.028)	0.006 (0.027)	0.066 (0.063)	0.073 (0.065)	0.077* (0.045)	0.067 (0.045)
Carnegie Classification: Research	-0.009 (0.033)	-0.007 (0.032)	0.100 (0.082)	0.112 (0.083)	0.069 (0.061)	0.043 (0.062)

Public	0.010 (0.024)	0.010 (0.023)	0.058 (0.056)	0.063 (0.057)	-0.010 (0.046)	-0.023 (0.045)
Total Enrollment (in Thousands)	0.002* (0.001)	0.002* (0.001)	-0.003 (0.003)	-0.003 (0.003)	-0.002 (0.002)	-0.001 (0.002)
75th Percentile ACT Test Score	0.011*** (0.004)	0.011*** (0.004)	0.004 (0.008)	0.004 (0.008)	0.010 (0.007)	0.010 (0.007)
Research Expenditures per 1000 students	-0.002 (0.002)	-0.002 (0.001)	0.004 (0.004)	0.003 (0.004)	-0.005 (0.003)	-0.003 (0.003)
Share of University Faculty Female '08	0.348 (0.286)	0.324 (0.271)	-0.180 (0.500)	-0.286 (0.471)	-0.154 (0.304)	0.046 (0.277)
Constant	-0.173 (0.159)	-0.142 (0.146)	0.182 (0.301)	0.199 (0.309)	0.348 (0.269)	0.306 (0.270)
Observations	649	649	386	386	467	467
R-squared	0.267	0.291	0.196	0.162	0.194	0.190
First Stage F-Stat	20.03	43.43	14.35	35.27	21.28	35.28
Instrument	Faculty	Faculty* Students	Faculty	Faculty* Students	Faculty	Faculty* Students

Notes: Robust standard errors are in parentheses. * indicates statistical significant ant the 10% level, ** indicates statistical significance at the 5% level, and *** indicates statistical significance at the 1% level.

Table 8: IV Estimates of the Effect of Administrator Gender on Female Faculty Composition in 2012

VARIABLES	<u>Full-Time Tenure</u>		<u>Full-Time Non-Tenure</u>		<u>Part-Time Non-Tenure</u>	
	(1)	(2)	(3)	(4)	(5)	(6)
avPres0711	0.180** (0.089)	0.109 (0.081)	0.024 (0.264)	0.070 (0.187)	0.111 (0.133)	0.131 (0.130)
avProv0711	0.001 (0.028)	-0.007 (0.027)	0.017 (0.058)	0.022 (0.054)	0.029 (0.038)	0.030 (0.038)
avDean0711	0.010 (0.029)	0.018 (0.027)	-0.015 (0.060)	-0.020 (0.059)	0.003 (0.045)	0.000 (0.045)
InstShareftt12	-0.050 (0.408)	-0.001 (0.395)				
InstShareftnt12			1.087*** (0.275)	1.087*** (0.273)		
InstShareptnt12					0.182 (0.271)	0.178 (0.270)
Linguistics	-0.002 (0.036)	0.003 (0.036)	0.061 (0.082)	0.060 (0.082)	0.076 (0.085)	0.077 (0.085)
Religion	-0.202*** (0.027)	-0.201*** (0.026)	-0.246*** (0.069)	-0.248*** (0.069)	-0.277*** (0.049)	-0.275*** (0.050)
History	-0.104*** (0.023)	-0.110*** (0.022)	-0.206*** (0.058)	-0.202*** (0.057)	-0.211*** (0.045)	-0.209*** (0.045)
Art History	0.130*** (0.032)	0.132*** (0.031)	0.009 (0.077)	0.010 (0.077)	0.162*** (0.053)	0.162*** (0.053)
Foreign Lang.	0.067** (0.029)	0.063** (0.029)	0.098* (0.051)	0.099* (0.051)	0.144*** (0.045)	0.145*** (0.045)
MLA Comb Eng/FL	0.068* (0.040)	0.071* (0.041)	0.120* (0.067)	0.119* (0.068)	0.163*** (0.060)	0.163*** (0.060)
History of Science/Tech	-0.151*** (0.059)	-0.144*** (0.055)	0.054 (0.205)	0.042 (0.198)	-0.154 (0.101)	-0.165 (0.100)
Carnegie Classification: Comprehensive	-0.028 (0.029)	-0.032 (0.028)	-0.019 (0.072)	-0.012 (0.066)	-0.001 (0.043)	0.000 (0.044)
Carnegie Classification: Research	-0.046 (0.034)	-0.049 (0.034)	0.073 (0.077)	0.076 (0.075)	0.095* (0.057)	0.097* (0.058)
Public	0.031 (0.027)	0.029 (0.026)	0.028 (0.050)	0.028 (0.051)	0.020 (0.038)	0.020 (0.038)

Total Enrollment (in Thousands)	0.001 (0.001)	0.001 (0.001)	-0.002 (0.002)	-0.002 (0.002)	-0.001 (0.001)	-0.001 (0.001)
75th Percentile ACT Test Score	0.004 (0.004)	0.003 (0.004)	0.000 (0.008)	0.001 (0.008)	0.010* (0.006)	0.010* (0.006)
Research Expenditures per 1000 students	-0.002* (0.001)	-0.002* (0.001)	-0.000 (0.003)	-0.000 (0.003)	-0.006* (0.003)	-0.006* (0.003)
Share of University Faculty Female '12	0.122 (0.424)	0.182 (0.412)	-0.676 (0.590)	-0.750 (0.519)	0.074 (0.379)	0.042 (0.383)
Constant	0.334** (0.147)	0.308** (0.141)	0.288 (0.295)	0.296 (0.298)	0.125 (0.244)	0.136 (0.243)
Observations	608	608	356	356	407	407
R-squared	0.237	0.265	0.173	0.169	0.292	0.287
First Stage F-Stat	25.44	61.30	7.806	21.63	19.47	25.57
Instrument	Faculty	Faculty* Students	Faculty	Faculty* Students	Faculty	Faculty* Students

Notes: Robust standard errors are in parentheses. * indicates statistical significant ant the 10% level, ** indicates statistical significance at the 5% level, and ***indicates statistical significance at the 1% level.