Do Gender Differences Exist In The Publication Productivity Of Accounting Faculty?

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ABSTRACT

Prior studies on gender differences in the research output of accounting faculty have provided contradictory findings. The current study examines the publication productivity of male and female associate professors of accounting at doctoral and nondoctoral granting institutions and shows that no gender effect exists in the publication output of faculty at nondoctoral institutions. At doctoral institutions, however, men publish at greater rates than women in the top tier accounting journals and also in a broadened set of academic accounting journals. No gender effect exists when the journal list is expanded to include academic and professional journals. In addition, results show that a gender selection bias for coauthors occurs as men tend toward male coauthors and women gravitate toward female collaborators. With women underrepresented at the associate professor level at doctoral institutions, this gender selection bias may put women at a disadvantage for finding suitable research partners, which could explain their lower publication productivity.

INTRODUCTION

n the early 1980's, women in tenure track accounting faculty positions comprised only 8.4% of all accounting faculty in U.S. universities (Norgaard, 1989). By 2004, women had made significant inroads into the accounting academy as Jordan et al. (2005) report that women held almost 25% of all tenure track accounting faculty appointments, and the percentage was even higher (i.e., 37%) at the assistant professor rank. Although expectations for scholarly activity obviously differ between faculty at doctoral and nondoctoral granting institutions, accounting faculty at both types of programs agree that published research is the most important factor in decisions regarding promotion, tenure, and salary (Epps, 1991).

With women now comprising a significant portion of the accounting academy and with published research believed by all to be the primary measure of faculty accomplishments, a natural question is whether gender differences exist in the publication productivity of academic accountants. Although not a new topic, prior research addressing this issue provides conflicting results and, thus, fails to answer the question adequately. By examining the publication productivity of male and female academic accountants at both doctoral and nondoctoral granting institutions, the current study reveals that some gender differences exist, especially with regard to publications in academic journals.

LITERATURE REVIEW

Because publication productivity plays such a significant role in faculty evaluations, promotions, mobility, and even in prestige among faculty, it is not surprising that numerous studies exist regarding the publication output of accounting faculty. Several of these analyzed factors affecting publication productivity, publication requirements for promotion, and the quality of accounting programs in terms of research activity (e.g., see Englebrecht et al.,

1994; Maranto and Streuly, 1994; Street and Baril, 1994; Omundson et al., 1991; Saftner, 1988; Milne and Vent, 1987; Campbell and Morgan, 1987; Cargile and Bublitz, 1986; Bublitz and Kee, 1984; Bazley et al., 1975). A smaller stream of research has examined gender issues regarding publication productivity.

Although not analyzing research productivity of academic accountants but rather of a broad cross section of university faculty, Sax et al. (2002) concluded that factors affecting publication output are virtually identical for men and women. Surprisingly, they found that family-related matters, such as caring for dependent children or parents, produce almost no effect on publication productivity. Instead, professional variables, like research orientation and desire for recognition, play important roles. Similarly, Yining et al. (2006) examined key factors that motivate business faculty to conduct research and concluded that untenured faculty are motivated by extrinsic rewards (e.g., job security and higher pay) while tenured faculty are driven by intrinsic rewards (e.g., prestige).

Collins et al. (1998) examined tenure outcomes for accounting faculty to ascertain if gender discrimination plays a part in these important decisions. After controlling for factors that would be expected to affect tenure decisions (e.g., publication productivity), they found no gender differences in the award of tenure. In a similar study, Omundson and Mann (1994) looked at the publication productivity of male and female accounting faculty promoted to the associate and full professor ranks. Their results suggest that promoted men and women publish at approximately the same rate. The findings of Collins et al. (1998) and Omundson and Mann (1994) do not imply that male and female accountants publish at equal rates but only that gender is not a factor affecting tenure and promotion decisions.

Only three studies could be located that directly examined gender differences in the research output of academic accountants, and each one came to a different conclusion. Using a matched pair design, Streuly and Maranto (1994) compared the research productivity of 305 male and 305 female academic accountants who received their doctorates between 1960 and 1986. They found no statistically significant difference between men and women on any measure of publication productivity. Both gender groups had achieved comparable levels of research quality, quantity, and impact (as measured by citations). Dwyer (1994) examined the research accomplishments of 112 male and 27 female accounting faculty members, all of whom received their doctorates in 1981. She evaluated research output for the six-year period 1983 through 1988 and found that women published significantly less than men in academic journals. The significant difference existed both for academic articles unweighted for coauthors and for those weighted or adjusted for the number of coauthors. No significant gender difference occurred in the publication rate for articles in professional journals.

The third study (Rama et al., 1997) took a different route than did Streuly and Maranto (1994) and Dwyer (1994) in that it examined the publication productivity of accounting faculty promoted from assistant to associate professor. The authors identified 281 accounting faculty promoted to the associate professor rank at AACSB accredited institutions during the period 1989 through 1994. For faculty at doctoral granting institutions, Rama, et al. (1997) found no significant gender differences in the publication productivity of promoted faculty. However, at nondoctoral granting institutions, promoted female accounting faculty had significantly more publications than men in the top 15 academic journals and in all academic journals examined. If it is true as Collins et al. (1998) and Omundson and Mann (1994) conclude that gender plays no role in tenure and promotion decisions, then the higher output of promoted female faculty noted by Rama et al. (1997) would not have resulted from either a "lowering of the promotion bar" for male faculty or a higher hurdle for women. The gender discrepancy in publication productivity for promoted faculty could only have occurred because women published at higher rates than men.

Two factors create a need for the current research examining gender differences in the publication productivity of accounting faculty. First, great discrepancy exists in the findings of the three prior studies on this topic. Streuly and Maranto (1994) report no gender differences in publication productivity. Dwyer (1994) suggests that male accounting faculty publish significantly more in academic journals than do women, while Rama et al. (1997) conclude exactly the opposite for faculty at nondoctoral granting institutions. These contradictory findings in the prior research leave the question unanswered and a void in the literature. Does a gender gap exist in the publication productivity of accounting faculty?

Second, the three prior studies are somewhat dated as even the most recent one (i.e., Rama et al., 1997) used data that are now 12 to 17 years old. As mentioned earlier, female representation in the accounting academy has increased significantly in the last 15 years, and other circumstances that existed in earlier periods have changed as well. As an example, Carolfi et al. (1996) noted that female accounting faculty were more successful at obtaining employment at smaller and medium-sized universities than they were at larger ones. Similarly, Collins et al. (1998) stated that female accounting faculty were underrepresented at doctoral granting institutions relative to women at nondoctoral institutions. Using more recent data, however, Jordan et al. (2005) show that in 2004 the underrepresentation of female faculty at doctoral institutions relative to nondoctoral ones no longer exists, at least with respect to assistant professors (i.e., relatively recent hires). With the hiring changes that have occurred in the last several years, a new gender mix exists in the accounting academy, which warrants revisiting the issue of possible gender differences in publication productivity.

METHODOLOGY

To determine if gender differences exist in the publication productivity of accounting faculty, data were collected on a sample of male and female accounting faculty employed at both doctoral and nondoctoral granting AACSB accredited institutions. Distinct analyses were conducted for the two types of programs because prior research (Milne and Vent, 1987; Englebrecht et al., 1994) demonstrated that faculty at doctoral institutions generally publish at higher rates than faculty at nondoctoral programs. For the 62 accounting programs that have consistently granted doctorates since 1978 and for 100 randomly selected nondoctoral institutions with at least undergraduate AACSB business school accreditation, publication data were collected for all associate professors listed in the 2004-2005 Hasselback *Accounting Faculty Directory* who had been hired in the period 1995 through 1999.

Associate professors were included only if hired between these dates to increase the likelihood the selected faculty would have been research active in the last several years. If they had not been research active since being hired, the faculty would likely not have been promoted and tenured at their current institutions. Associate professors who had been on faculty for many years were not included to reduce the probability of capturing nonpublishing faculty because, as Yining et al. (2006) note, research activities are negatively correlated with years of academic employment. These selection criteria resulted in samples of 43 men and 18 women at doctoral institutions and 30 men and 24 women at nondoctoral programs.

To determine the number of articles published, the Business Source Elite database available on Ebscohost was searched using the names of faculty as authors. Care was exercised with female faculty to ensure that any name changes were taken into account. The Business Source Elite database contains references to 1,100 business and accounting journals; however, neither it nor any other database is all inclusive. As such, there obviously would be some articles published and not discovered in the current project, which represents a limitation of the study. However, it is not a crucial limitation because there is no *a priori* reason to believe men and women publish in the omitted journals at rates different from their publication rates in the journals captured in the study. Book reviews and committee reports were not counted as articles.

The number of articles per faculty member were not weighted or adjusted for coauthors for two reasons. First, any such weighting scheme is highly arbitrary and its results lack true meaning. Prior research that adjusted publications for coauthors have typically done so by simply dividing each article by the number of coauthors on that article (e.g., see Dwyer, 1994). This method assumes that each coauthor contributed to the article in equal proportions, which often is not the case. Another weighting scheme would be to assign greater weight to the lead or primary author and progressively less weight to the secondary, tertiary, etc. authors. Again, though, any such weight assigned to the coauthors is highly arbitrary and could easily affect the outcome of the research. Second, it was believed that adjusting for coauthors in the current study was unnecessary. As Streuly and Maranto (1994) note, if one gender coauthors more than the other, that gender will likely publish more articles as a result and comparisons of unweighted articles between genders would be unreliable. However, if both genders coauthor at approximately the same rate, it follows that no weighting for coauthors is needed. As will be shown in the next section, coauthorship rates did not differ significantly between genders; therefore, no coauthor adjustments were made.

Publication productivity was evaluated based on output in top tier academic journals, a broadened set of academic accounting journals, and all journals. Swanson (2004) identified the major academic journals in each business discipline. In accounting, they are *Journal of Accounting and Economics*, *Journal of Accounting Research*, *Contemporary Accounting Research*, and *The Accounting Review*. In addition to these four, the current study also includes in the top tier the three major finance journals from Swanson's study. The finance journals are included because academic accountants are often cross trained in finance in their PhD programs and, thus, frequently publish in finance journals. The top finance journals are *The Journal of Finance*, *Journal of Financial Economics*, and *Journal of Financial and Quantitative Analysis*.

The broadened set of academic journals comprises 31 of the 41 journals identified by Prather-Kinsey and Rueschhoff (2004) as quality academic accounting journals. The list is reduced to 31 because these journals are referenced in the Business Source Elite database while the 10 omitted ones are not. The journals making up this second tier of academic accounting journals are presented in Table 1. The third set of journals contains all journals referenced in the Business Source Elite database, including accounting and nonaccounting journals as well as academic and professional journals.

Table 1
Broadened Set of Academic Accounting Journals (by Year of Origin)

Journal	Year of Origin
The Accounting Review	1926
ournal of Accounting Research	1963
Abacus	1965
The International Journal of Accounting	1965
Journal of Business Finance & Accounting	1969
Accounting and Business Research	1970
Γhe British Accounting Review	1974
Accounting and Finance	1975
Accounting Organizations & Society	1976
Journal of Accounting, Auditing & Finance	1977
The Accounting Historians Journal	1977
Journal of Accounting & Economics	1979
Journal of American Taxation Association	1979
Auditing: A Journal of Practice & Theory	1981
Journal of Accounting Literature	1982
Journal of Accounting and Public Policy	1982
Issues in Accounting Education	1983
Journal of Accounting Education	1983
Contemporary Accounting Research	1984
Financial Accountability and Management	1985
Journal of Information Systems	1986
Accounting Horizons	1987
Accounting, Auditing and Accountability	1988
Pacific Accounting Review	1988
Behavioral Research in Accounting	1989
Journal of International Financial Management & Accounting	1989
Journal of Management Accounting Research	1989
Critical Perspectives in Accounting	1990
Management Accounting Research	1990
Journal of International Accounting, Auditing, & Taxation	1992
The European Accounting Review	1992

Note: These 31 academic accounting journals are identified by Prather-Kinsey and Rueschhoff (2004) as quality journals and are also referenced in the Business Source Elite database

RESULTS

Before analyzing the publication productivity of male and female accounting faculty, the academic training of the men and women are evaluated by examining the perceived quality of the institutions where they received their doctoral degrees. If one gender is disproportionately trained at high quality institutions, *a priori* evidence exists suggesting that this gender should publish at a higher rate. The doctoral granting institutions for the subjects are separated into two categories based on their classification in the 2006 *U.S. News & World Report* (USNWR) ranking of research comprehensive universities. One category contains all universities identified by USNWR as tier one or two institutions, while the other classification comprises universities noted by USNWR as tier three or four institutions. Table 2 provides this information for the male and female accounting faculty examined in the current study.

Table 2
Quality of Academic Training for Men and Women

USNWR classification of	Doctoral	linstitutions	Nondoctoral	institutions
PhD granting institution	Men	Women	Men	Women
Tier 1 or 2	41 (95.3%)	16 (88.9%)	18 (60.0%)	17 (70.8%)
Tier 3 or 4	2 (4.7%)	2 (11.1%)	12 (40.0%)	7 (29.2%)
Total	43 (100%)	<u>18 (100%)</u>	30 (100%)	<u>24 (100%)</u>
α level	.57	43	.56	73

Note: α levels are for two-tailed proportions tests to determine if the percentage of faculty receiving PhDs at tier 1 or 2 schools differs between men and women. Tests are conducted within each institution type (i.e., doctoral and nondoctoral granting).

Notice from Table 2 that men and women do not differ significantly by quality of academic training. For example, the proportion of male faculty at nondoctoral institutions trained at tier one or two schools is 60% while the proportion of female faculty at nondoctoral institutions who received their doctorates from tier one or two universities is 70.8%. Even though these percentages are not exactly equal, a two-tailed proportions test reveals that they do not differ at a statistically significant level (i.e., $\alpha = .5673$). Likewise, a proportions test for faculty at doctoral granting institutions suggests no statistically significant difference between the proportions of men and women trained at tier one or two institutions (i.e., $\alpha = .5743$).

Also, before publication productivity could be compared between genders, coauthorship rates had to be examined. Table 3 provides mean coauthorship rates for men and women at both doctoral and nondoctoral granting institutions for all articles published. Notice that the coauthorship rates differ very little between men and women within each institution type. As an example, for men at doctoral institutions, the average number of coauthors per article is 2.34. It is only slightly less at 2.32 per article for women at doctoral institutions. Similar results occurred for men and women at nondoctoral programs. Within each institution type, the coauthorship rates do not differ between men and women at a statistically significant level (i.e., α levels of .9591 and .3453 for doctoral and nondoctoral institutions, respectively). As mentioned earlier, because of this finding, no adjustments are made for the number of coauthors when comparing the publication productivity between the genders.

Table 4 provides summary statistics for the number of articles published by men and women at both doctoral and nondoctoral institutions. Panels A, B, and C present information for the three journal categories (i.e., top tier accounting and finance journals, broadened set of academic accounting journals, and all journals, respectively). Information is reported for the mean and median number of articles per faculty member as well as for the first and third quartiles. Statistical analyses are performed using nonparametric median tests rather than t-tests for means. As Hintze (1992) notes, tests of means can be heavily influenced by the presence of outliers or extreme

values. This is especially true for relatively small sample sizes like the ones examined here. Medians and statistical tests for differences between medians are affected much less by these extreme values.

Table 3
Coauthorship Rates for Men and Women

	Doctoral institutions			Nondoctoral institutions		
	<u>Men</u>	Women	<u>α level</u>	<u>Men</u>	Women	<u>a level</u>
Mean number of coauthors per article	2.34	2.32	.9591	2.14	2.24	.3453

Note: α levels are for two-sample t-tests for the difference between the mean number of coauthors per article for men and women within each institution type.

Table 4
Summary Statistics for Publication Productivity of Men and Women

Panel A (Top tier journals):

Doctoral institutions			Nondoctoral institutions			
	No. of articles published by:		No. of articles published by:			
	<u>Men</u>	Women	<u>α level</u>	<u>Men</u>	<u>Women</u>	<u>α level</u>
Mean	3.23	2.11		.375	.136	
75 th percentile	5.00	4.00		0	0	
Median	3.00	1.50	.0158	0	0	N/A
25 th percentile	1.00	0		0	0	

Panel B (Broadened set of academic accounting journals):

	Doctoral institutions No. of articles published by:		Nondoctoral institutions No. of articles published by:			
	Men	Women	<u>α level</u>	Men	Women	<u>α level</u>
Mean	5.88	4.83		1.52	2.08	
75 th percentile	8.00	8.00		2.00	3.50	
Median	6.00	3.50	.0027	1.00	1.50	.2366
25 th percentile	3.00	2.00		0	0	

Panel C (All journals):

Doctoral institutions		Nondoctoral institutions				
	No. of articles published by:		No. of articles published by:			
	<u>Men</u>	Women	<u>α level</u>	<u>Men</u>	Women	<u>α level</u>
Mean	8.02	7.28		4.73	5.13	
75 th percentile	11.0	10.0		6.00	7.50	
Median	8.00	7.00	.1684	4.50	4.50	.5722
25 th percentile	5.00	5.00		2.00	3.00	

Note: α levels are for one-sample median tests comparing the values for the men to the median value for the women within each institution type for each journal category.

Notice in Panel A of Table 4 that men at doctoral institutions seem to publish more frequently in the top tier journals than do women. Every summary statistic for the number of articles published by men exceeds the comparable statistic for women. The median test shows that this difference in publication rates is statistically significant (i.e., $\alpha = .0158$). Panel A also reveals that very few faculty of either gender publish in these top tier journals at nondoctoral institutions. As such, no statistical test could be conducted for this group.

Panel B demonstrates that, at doctoral institutions, men outpublish women in the broadened set of academic accounting journals as well. For example, the median number of articles published for men and women are 6 and 3.5, respectively. These medians differ at a statistically significant level (i.e., $\alpha = .0027$). At nondoctoral universities, however, very little gender difference exists in publication rates for the broadened set of academic accounting journals. For example, the median number of articles for men and women are 1 and 1.5, respectively, and these medians do not differ at a statistically significant level (i.e., $\alpha = .2366$).

When considering all journals referenced in the Business Source Elite database, Panel C reveals that virtually no gender difference in publication rates occurs at either type of institution. As an example, the median number of articles published by men and women at doctoral institutions is 8 and 7, respectively; the medians do not differ at a statistically significant level (i.e., $\alpha = .1684$). Even less gender effect exists at nondoctoral universities.

In summary, no gender difference in publication productivity exists at nondoctoral institutions for any category of journal quality. However, at doctoral programs, male accounting faculty appear to publish in academic journals at a higher rate than women. This finding is similar to the results of Dwyer (1994) who found that male accounting faculty published in academic journals at a higher rate than women but that no gender difference existed in publication rates in professional journals. Dwyer (1994) offers a plausible explanation for this result in that difficulty in finding research collaborators may disadvantage female researchers. McDowell and Smith (1992) suggest that coauthor decisions are related to gender. That is, men seek out male coauthors and women tend toward female coauthors. If women are underrepresented in the pool of potential coauthors, Dwyer (1994) notes that woman will have disproportionate difficulty in identifying compatible research collaborators. This, in turn, could lead to lower research productivity for women relative to men.

This theory is tested using data from the current study on gender productivity at doctoral institutions. No analysis is needed for nondoctoral programs since gender differences in publication rates do not exist within these institutions. It is true that female associate professors seem to be underrepresented at doctoral institutions. In our sample, only 18 (29.5%) of the 61 associate professors at doctoral universities are women. However, at nondoctoral institutions, where no gender differences exist in publication productivity, women comprise almost 45% of the total associate professor positions. This underrepresentation of women at doctoral institutions should only matter, though, if women tend more toward women as coauthors than men do. Table 5 provides information on the genders of coauthors for male and female faculty at doctoral institutions.

Table 5
Gender Coauthor Summary for Faculty at Doctoral Institutions

	Number and gender of coauthors outside of sample:				
In sample:	<u>Men</u>	Women			
Men	364 (79.0%)	114 (65.1%)			
Women	97 (21.0%)	61 (34.9%)			
Total	461 (100%)	<u>175 (100%)</u>			
α level	.00.	004			

Note: α level is for a two-sample proportions test to determine if the percentages above differ between men and women.

The results in Table 5 show a gender selection bias for coauthors. Men coauthor with men (as opposed to women) 79% of the time, while women coauthor with men only 65.1% of the time. Men coauthor with women only 21% of the time, while women choose female collaborators 34.9% of the time. A proportions test reveals that these gender selection percentages differ between men and women at a statistically significant level (i.e., $\alpha = .0004$). Clearly, men show a stronger bias toward male coauthors than do women, and women demonstrate a stronger tendency toward female coauthors than do men. As Dwyer (1994) suggests, the smaller pool of female accounting faculty may put women at a competitive disadvantage relative to men as women seek out research collaborators. This could explain why female accounting faculty at doctoral institutions publish at lower rates than their male counterparts (i.e., women have fewer research collaborators and, as a result, experience more restricted opportunities to publish than men).

SUMMARY AND CONCLUSION

Because of the great importance placed on publication productivity in evaluating accounting faculty, studies on factors affecting publication success represent a relevant line of research. Prior studies examining gender differences in the publication activities of accounting faculty provided conflicting results. The current study evaluates the publication productivity of a group of male and female associate professors of accounting at both doctoral and nondoctoral granting AACSB accredited institutions. The results indicate that no gender difference exists in the publication efforts of faculty at nondoctoral programs, regardless of the journal type considered.

At doctoral institutions, however, male faculty publish at higher rates than women, both in top tier accounting and finance journals and in a broadened set of academic accounting journals. No gender difference exists when the set of journals is expanded to include all academic and professional journals. A possible explanation for the discrepancy in the publication output between male and female associate professors could be a gender selection bias for research collaborators. Women tend to seek other women as coauthors, and female associate professors of accounting are underrepresented at doctoral granting institutions. As such, women may be at a competitive disadvantage, relative to men, in finding compatible research collaborators, which could be restricting their publication opportunities.

SUGGESTIONS FOR FUTURE RESEARCH

To capture faculty in their peak publication period, the present study examines only associate professors who had been hired at their current institutions five to ten years earlier. No attempt is made to examine gender differences in publication productivity over the entire career cycle of accounting faculty. After tenure and promotion to the associate professor rank are attained, the pressure to publish decreases. Future studies could examine publication productivity in the post-tenure years to determine if gender differences exist in the latter stages of the career cycle when extrinsic rewards (e.g., job security) give way to intrinsic rewards (e.g., recognition) as the primary motivator for faculty research.

Englebrecht et al. (1994) note that publication productivity differs among accounting faculty based on their primary areas of research interests. Faculty publish in tax and auditing at higher rates than in other areas, such as financial or cost/managerial. Future studies could determine if gender differences exist in the choice of research interests. If so, this could help explain gender discrepancies in publication productivity.

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NOTES