Gender's Role in Manuscript Acceptance: Sex in the Journal

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Women authors fare poorly at the hands of referees in some economics journals, especially when the review process is not blind. Using data on the 155 manuscripts submitted to the NJARE for publication during the period 1984–88, we found no evidence of differential referee acceptance rates for manuscripts with female and male lead authors.

Thus it is quite possible that the name "Miss" transmits through the board or division some vibration which is not registered in the examination room.

Virginia Woolf
Three Guineas

Women earn less than men in similar occupations. For woman PhD economists, Sawhill reports that wages are some 86% of men's after controlling for other characteristics, and Lee [1981] estimated that women AAEA members earned nearly $3800 less than their male counterparts annually, even when the effects of experience, publications, and the like were removed. Economists typically define sex discrimination as a male-female wage difference that cannot be fully attributed to differences in relevant individual characteristics, such as training and experience. Discrimination is then measured as the portion of the earnings differential not explained by values of these characteristics (Goldin and Polachek, Madden, Oaxaca). However, it is also acknowledged that these regression-based measures may underestimate discrimination because the levels of the characteristics may themselves be endogenous outcomes of discrimination (Kuhn).

In an academic setting, one major determinant of wage differentials is journal publication (Broder and Ziemer). Some measure of publishing success will properly be included in most econometric models of academic wage determination. But if a woman is less likely than a man to have the same article published, then a regression of wages on journal articles and other factors will overestimate the "explained" part of the male-female wage gap, and underestimate the residual due to discrimination.

This differential likelihood is exactly what has been reported by Ferber and Teiman, who found that in economics journals not employing a double-blind review process, the acceptance rates of manuscripts with at least one female author were significantly lower relative to those for male authored papers relative to set of journals using a double-blind review. In this context, double-blind means the author and reviewer do not, in principal, know one another's identities.

In practice refereeing processes are never totally blind. As reviewers we are often quite sure we know who the author is, either from self-citation or because we may know who is working on what. The present purpose is to assess whether, other influences removed, women have a more difficult time getting manuscripts accepted than men in a professional agricultural economics journal, even under a double-blind review process. Data on manuscripts submitted to the *Northeastern Journal of Agricultural and Resource Economics* (NJARE) during 1984–88 have been used for this purpose.

Discrimination Theories

Most analyses of discrimination in economics start with Gary Becker's discrimination coefficient, defined as the ratio of the wage rates of two groups, one subject to discrimination and the other not. The most widely used empirical measure was de-

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fined by Oaxaca as follows. If male mean earnings are greater than female mean earnings, but the two groups have different observable characteristics, use regression analysis to separate the wage differential into the proportion attributable to differences in these human capital characteristics (the explained residual) and the proportion of the gap remaining unexplained. The unexplained part of the wage differential is then directly associated with gender.

Economists are generally satisfied with strong statistical findings, and in this instance so have been the courts: a "smoking gun" is not needed to provide compelling evidence of legal discrimination (Ashenfelder and Oaxaca). Some care must be taken, however, in interpreting such statistical findings as accurate measures of discrimination. One objection to the Oaxaca discrimination measure, as suggested previously, is that when wages are regressed on characteristics other than gender, in an attempt to remove the explainable portion of the wage gap, one may improperly remove from the unexplained residual differences that are themselves the result of discrimination (Blau and Ferber, Kuhn). For the academic economist in a publish or perish environment, if journal acceptance rates are lower for women, as Ferber and Tieman found, then a regression of wages on productivity measures including journal articles will "account for" too much of the wage gap, and leave too little to represent the unexplained, possibly discrimination-caused, residual. This we examine in greater detail for this Journal.

Model

We postulate that journal acceptance rate by referees, Y, depends upon a set of characteristics of the authors (A), the reviewer (R), and the manuscript (M):

$$Y = f(A, R, M).$$

Author characteristics include both gender and rank, the latter viewed as a measure of experience. They also include whether the authors are from an elite university, and whether they are from the journal's home region. Submitters from elite universities might have an "edge" if their identities were guessed. Proponents of blind reviews argue that author affiliation acts as a "signal" to the referee—if she or he is from a prestigious university, the referee may opt to save time and give a less thorough review. The regional variable captures the possibility that Northeast reviewers are prejudiced against "foreign" submitters (or their subject matter).

The vector of reviewer characteristics includes gender of the reviewer, whether the reviewer was a member of the editorial board, and whether the referee is from an elite institution. Finally, since subject matter and methodology may have a bearing on acceptance rates we consider them as manuscript variables. As a general comment, we note that one would not expect or wish to see a high degree of predictive power from this model, since the quality of individual manuscripts, an unobservable, should be the major determinant of the reviewer's verdict.

Data

Author and reviewer characteristics were identified for all manuscript records of the NJARE during 1984–88. Data were available for two independent initial reviews of each of 155 manuscripts submitted to the journal during the 5-year period. Manuscripts were reviewed according to a double-blind process. Of the 155 papers, 24 had a female lead author. These figures compare favorably with female membership in the NJARE's parent organization, currently about 10%.[1]

Data on author characteristics include gender (1 for female, 0 for male)[2]; academic rank (professor, associate, assistant, graduate student, USDA or "other"); whether or not the author is with an "elite" academic department, defined as one whose faculty rate among the top twenty in citations (Beilock and Polopolus); and the author's geographic region, specifically Northeast or otherwise. Reviewer characteristics include dummy variables for gender; membership on the Journal's editorial board; and affiliation with an elite academic department. Reviewer recommendations to the editor fell into the following categories: 1) accept with no revisions or only minor ones, 2) accept only with major revisions, and 3) reject. For the regression analysis, categories 2) and 3) were grouped together, yielding a dichotomous variable, because revisions of papers in category two were required to be subjected to another review. In this sense they were similar to rejected papers, some of which were subsequently revised, submitted, and published.

The means of the variables are shown in Table 1. Assistant professor lead authors were by far most

[1] On the national level, Lee and Offutt found women representing about 4% of their academic sample, with one-third of the agricultural economics departments having no women faculty. Women represented 9% of all agricultural economists in the employment sample.

[2] Gender of the lead author was used. Regression analysis using gender of the submitting author, or presence of any female author, yielded essentially the same results for the preliminary 1984–86 data set.

Table 1. Variable Means

Variable	All Data	Male Authors	Female Authors
Y*	.394	.386	.438
Author Characteristics			
Gender	.155	—	—
Professor	.052	.061	.000
Assoc. Professor	.155	.183	.000
Asst. Professor	.458	.473	.375
Graduate Student	.168	.100	.542
USDA	.110	.122	.042
Elite University	.413	.389	.542
Northeast Region	.606	.580	.750
Reviewer Characteristics			
Gender	.100	.095	.125
Editorial Board	.352	.321	.521
Elite University	.342	.347	.313

*A dichotomous representation of the reviewer's judgement, with a 1 representing the recommendation to accept with at most minor revision. All other variables are also dichotomous with a 1 representing women, assistant professors, board members, elite universities and location in the Northeast.

prevalent at 46% of the manuscripts. Graduate students followed at 17%, associate professors at 15%, USDA at 11%, other at 6% and full professors at 5%. No women associate or full professors submitted manuscripts during the period, and 54% of the women submitters were graduate students.

During the three earlier years, 1984–86, 98 manuscripts were submitted, 12 with female lead authors. Manuscripts with male lead authors received positive evaluations by referees in 38% of the cases; those by female lead authors fared less well with a 25% acceptance rate. This pattern reversed for the 57 manuscripts submitted during the next two years, twelve with a female lead author. In this period the male acceptance rate was 39%, compared with 63% for females. Overall, the 131 articles by males were reviewed as acceptable with at most minor revisions in 39% of cases, and the 24 articles by women in 44%.

Before analyzing whether the author reviewer or manuscript variables explain differences in acceptance rate, it is important to recognize that female authors might choose subject matter or a methodology that is more or less frequently accepted by reviewers.[3] An examination of 1984–86 articles by subject and methodology did reveal certain gender differences, the most significant being that 49% of male authored papers but only 25% of female authored papers used econometrics as the principal methodology. Nevertheless, male and female authors were about equally likely in our sample to choose subjects or methodologies with higher than average acceptance rates. Papers in the subject areas of rural development, agricultural policy, resources, finance, and international trade were more often accepted than those in production, marketing, methodology, agricultural labor, and "other". Papers relying on theory, programming, and econometrics fared better than those with methodologies designated as statistical/simulation or non-quantitative.

Regression Results

Logit techniques were applied to the data in order to separate gender from other influential factors, and to try to determine whether gender discrimination has been practiced in the Journal. Since each of 155 papers was sent to two referees, the data set involved 310 observations.

Results of the Logit estimations for female lead authors, male lead authors, and all authors are presented in Table 2. The dependent variable is a dichotomous representation of the reviewer's judgment, with a 1 representing a recommendation to accept or accept with minor revisions, 0 otherwise. Author characteristics were represented by dummy variables for gender, rank (1 for assistant professor, 0 otherwise), and two institutional dummies, for eliteness of the department and location in the Northeast region. For reviewers, the model included three dummy variables: for gender, mem-

[3] Lee [1982] and Redman report that women are more predominant in the fields of trade, development, human resources, consumer economics, and general economics; they are less so in farm management/production, agricultural marketing, and agricultural finance.

Table 2. Logit Model Estimation*

Variable	Pooled	Male	Female
Constant	−0.3586	−0.3733	0.1683
Author Gender	0.2340 (0.7064)	—	—
Author Rank (Assistant Professor)	−0.1701 (−0.7043)	−0.3193 (−1.2115)	1.6075 (1.7930)
Author from Elite University	0.1815 (0.7133)	0.3694 (1.3500)	−2.2010** (−2.0379)
Author from Northeast	0.1954 (0.7615)	0.0901 (0.3310)	2.4106** (2.1020)
Reviewer Gender	0.4801 (1.2418)	0.5416 (1.2586)	0.1685 (0.1523)
Editorial Board Reviewer	−0.5514** (−2.1229)	−0.2551 (−0.9056)	−2.8532** (−3.0518)
Reviewer from Elite University	−0.2714 (−1.0600)	−0.3509 (−1.2615)	−0.9960 (−1.0928)
Maddala R^2	.030	.031	.313
χ^2	9.473	8.131	18.029**
n	310	262	48

*Asymptotic t-statistics in parentheses.
**Significant at .05 level (two tailed).

bership on the editorial board, and eliteness of the reviewer's department.[4]

As can be seen from the estimations, application of the logit model to the data on manuscripts over the past five years has produced basically negative results. At the 5% level we could not reject the null hypothesis that the male and female lead author data could be pooled. Yet the pooled and the male model produced negligible values of Maddala R^2, and were not statistically significant. The R^2 for the model with female lead authors was much larger (.313) and significant, but these results do not inspire confidence when one remembers that the 48 observations represent only 24 distinct manuscripts. The rather large coefficients, probably resulting from insufficient independent variability among regressors, give rise to unbelievable predicted probabilities of success. For example, the logit model estimated with female lead author data alone, forecasts only a 0.003[5] probability of success for someone not an assistant professor, from an elite institution outside the Northeast, with a male editorial board member reviewer from an elite institution. On the other hand it predicts a 0.987 probability of success for a woman author with the opposite personal and referee characteristics. In contrast, the pooled model predicted a much more reasonable range of probabilities of success under the best and worst case scenarios: for male authors all probabilities fell between 0.206 and 0.622, and for female lead authors, between 0.246 and 0.675.

A finding of discrimination based on gender is not supported for the five years of manuscript submissions analyzed here. Rates of acceptance by reviewers were similar for male and female lead authors; in fact women have a 44% acceptance rate compared to 39% for men. Because the characteristics of male and female authors and their reviewers were different, one must look further before concluding that author gender has not been a factor in referee judgements. The failure of econometric

[4] Models using subject and methodology dummies showed no independent contributions to explanation of likelihood of acceptance; in the interests of brevity, we do not report these regressions. Similarly, logistic regression were performed separately for the 1984–86 data and the 1987–88 data. Since the test for pooling could not be rejected, we have not reported them here.

[5] For the logit model, $E(Y_j) = p(Y_j = 1) = \exp^{(X_j\beta)}/(1 + \exp^{(X_j\beta)})$, where exp is the exponential and X_j is the row vector of values of the exogenous variables.

procedures to detect that influence supports the conclusion of non-discrimination.

Conclusions

In a publish-or-perish academic environment, salary levels are determined by a variety of factors, not the least of which is publication rate. If one of the factors independently determining salary is gender, then discrimination is in evidence. The economist's standard approach to wage discrimination involves regressing salary differentials on exogenous factors to see whether the gender gap is explained away by the non-gender factors. This procedure may fail to find discrimination if some of the factors, like publication rate, are endogeneous outcomes of discrimination.

Using the reviews of manuscripts submitted to NJARE during 1984–88 for possible publication, we found the recommended acceptance rate by reviewers to be 38.6% for articles with male lead authors and 43.8% for articles with female lead authors—a narrow gap. We did not find evidence of discrimination after controlling for experience, methodology, or any of the author or reviewer characteristics available.

The standard reaction to negative results such as these is disappointment; we are conditioned to find pleasure in rejecting null hypotheses. In the present case, however, the negative finding should be a source of some pride to NJARE and the membership of NAREA who review the manuscripts. Discrimination has been demonstrated in some economics journals not following a double-blind review procedure. Our negative findings encourage the view that manuscript quality, omitted variables, and chance primarily influence reviewer acceptance rates in the NJARE, that the double-blind review may be reasonably effective, and that in the instances when blindness is inevitably lost, reviewers in this journal seem not to consider author gender as a factor in acceptance.

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