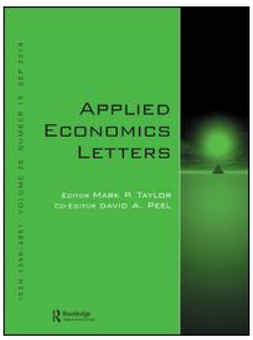

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ARTICLE

Coauthorship and the gender gap in top economics journal publications

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ABSTRACT

Coauthorship has become the new norm in academics since the early 1970s because it enhances productivity. However, the gender gap in economics journal publication continues to persist, which explains why there are fewer women than men in the economics profession. This study investigates the role of coauthorship in the gender gap in top economics journals for untenured faculty members in the US. We construct a unique dataset from the CVs of academic economists from the top 96 PhD-granting economics departments in the US. Our results suggest that, compared to men, women are matched with less productive unique coauthors because women begin their academic careers in lower-ranked economics departments than men, which is associated with institutional gender bias. This poor-quality matching can explain approximately 0.60 fewer publications in the top 20 economics journals during the untenured period.

KEYWORDS

Unique coauthor; coauthor publications; solo publications; journal ranking; gender bias

JEL CLASSIFICATION

I21; J16; J44; J71

I. Introduction

The likelihood of publishing in the top 20 economics journals declines more than two times for untenured faculty members who work in schools other than the top 20 US schools. Figure 1 shows that even within these elite universities, untenured female faculty members publish less than their male counterparts, and the gap has grown over the last two decades. As a result, women are 21 percentage points less likely to obtain promotions to tenured positions in economics than men (Ginther and Kahn 2004). This gender gap in promotion for tenure can explain why women are significantly underrepresented in top academic positions in the field of economics (Blackaby, Booth, and Frank 2005). For this reason, in this study, we specifically focus only on untenured faculty members.

We seek to determine the role of coauthorship to explain the persistent gender gap in top economics journal publications. McDowell, Singell, and Stater (2006) show that the gender gap in top economics journal publications is highly correlated with the institutional gender bias that exists in the male-dominated profession. We examine an alternative explanation, which is the relationship between a researcher's number of unique coauthors and the total number of coauthored publications in various ranked economics journals.

To investigate this issue, we first examine the role of one's first job in being matched with highly productive coauthors, who usually have strong academic networks. McDowell and Melvin (1983), Barnett, Ault, and Kaserman (1988), Melin and Persson (1996), Hudson (1996), Laband and Tollison (2000), Chung, Cox, and Kim (2009), Ductor (2015), Besancenot, Huynh, and Serranito (2017) and others find that intellectual collaboration positively affects research productivity. In addition to productivity, a large number of prior studies including Saloner (1985), Laband and Piette (1994), Marmaros and Sacerdote (2002), Erickson and Jacoby (2003), Goyal, Leij, and Moraga-Gonzalez (2006) and Brogaard, Engelberg, and Parsons (2014) show that academic connections significantly affect publication in top economics journals.

According to the assortative matching hypothesis research collaboration most likely occurs between authors with similar abilities and can explain why the faculties of top-ranked schools mostly work with researchers from similarly ranked institutions (Fafchamps, Van der Leij, and Goyal 2010). Therefore, the first job in one's

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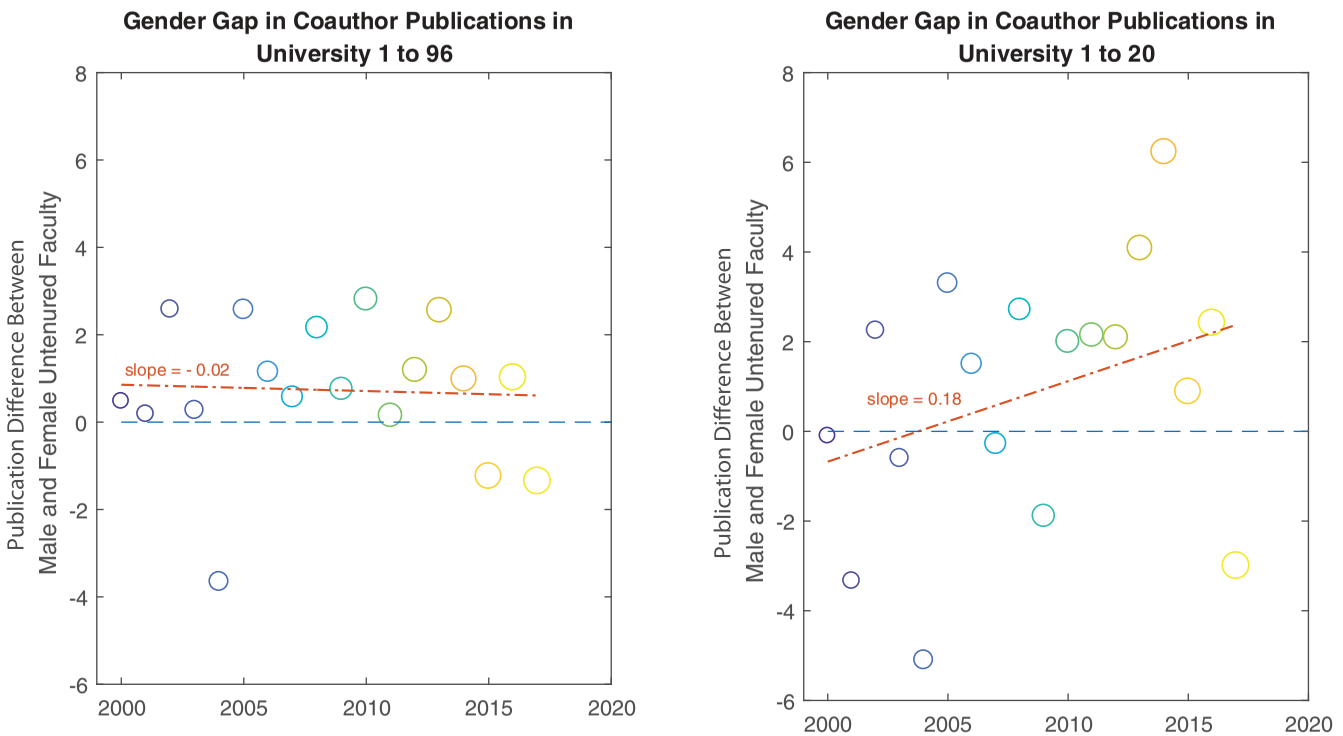

Figure 1. Gender gap in economics journal publications of untenured faculty group by university rank.

We use the 2017 US News and World Report to rank the economics departments that have PhD programs. In both the panels, the dashed red line represents the best linear fit of the data.

academic career is highly associated with why women are matched with relatively lower-quality coauthors. We test the hypothesis that women start their academic careers in relatively lower-ranked economics departments than men for two main reasons. First, during their PhD programs, female economists are less productive than males in terms of journal publications, and second, women face employer discrimination when they seek to enter higher-ranked academic institutions (Kolpin and Singell 1996).

Singell and Stone (1993), Kahn (1993) and McMillen and Singell (1994) discuss how the first job affects an individual's entire academic career. Specifically, Waldinger (2010) shows the extent to which the productivity of a research scholar increases in top-ranked academic institutions due to knowledge spillover. Besancenot, Huynh, and Serranito (2017) argue that publishing in top economics journals has become increasingly difficult as the subject area has become more complex, which requires advanced techniques and specialization. Therefore, having one's first job in a relatively lower-ranked school negatively affects the ability of a scholar to find better-quality coauthors, which may lead to a smaller number of both total publications and coauthored publications.

Using data from the academic CVs of scholars in the top 96 PhD-granting economics departments, we find that female economists have a 9% lower probability of obtaining first employment in the top 20 US economics departments, and this result is highly correlated with institutional gender bias. Although women in the top 20 schools are equally productive as men in terms of solo publications, they are matched with less productive unique coauthors, resulting in 0.60 fewer publications in the top 20 economics journals during the untenured period. The remainder of this paper is organized as follows. We discuss our empirical strategy and explain our results in Section 2, and we conclude the paper in Section 3.

II. Empirical approach

Data

Using the internet archive 'WayBackMachine' we first make a historical faculty list from 2000 to 2017 for the top 96 PhD-granting economics department in the US and then construct a unique dataset using the CVs of all assistant professors who were up for tenure during that period at those institutions. The data include individuals' complete academic work histories, where and when they received their PhDs, their primary research fields and their number of publications. We also collect information on gender, year of PhD, the number of publications during the PhD, and the year and institution at which they first received tenure. Our final sample size is 852. We provide a detailed discussion of our data collection procedure and description of each variable in the Appendix.

We use the 2017 US News and World Report to rank economics departments with PhD programs.[1] Because there is no consensus on economics journal rankings (Laband 2013), following Sarsons (2017), we use the journal rankings reported by the IDEAS project of Research Papers in Economics (RePEc), which provides an exhaustive list of over 1,000 economics journals.[2] The summary statistics for the data are shown in Tables 1 and 2 of the Appendix.[3] We show the gender gap in publications by journal ranking and university ranking in Figure 2 and find that the gap is often close to zero for different ranked schools.

Model

Our model specification is

$$y_i = \beta_0 + \beta_1 \text{Female}_i + \beta_2 \text{Unique Coauthor}_i + \beta_3 X + \mu_s + \gamma_F + \tau_t + \varepsilon_i \quad (1)$$

where y_i is the dependent variable. We use four different types of y_i: (i) total number of publications,

[1] In 2017, US News and World Report ranked the top 90 economics departments. However, there were 6 ties; thus, there are 96 top-ranked PhD-granting economics departments.
[2] RePEc ranking is based on the journals' impact factor. Another journal list source is Econlit provided by the American Economic Association. However, Econlit does not offer any journal rankings.
[3] Note that we also provide a detailed discussion of the descriptive statistics in the Appendix.

Table 1. Gender differences in untenured faculty members' total number of publications, solo publications and coauthored publications from university 1 to 96.

	Dependent Variable: Number of Publications										
	Publications by Journal Rank					Solo Publications			Publications With Coauthors		
	All	Rank 1–20	Rank 21–80	Rank 81–150	Rank 151–300	(1)	(2)	(3)	(4)	(5)	(6)
Female	−1.042***	−0.272**	−0.370**	−0.132	−0.233	−0.159*	−0.128	−0.098	−1.038**	−1.049**	−0.907***
	(0.340)	(0.128)	(0.156)	(0.111)	(0.167)	(0.070)	(0.067)	(0.073)	(0.278)	(0.279)	(0.196)
Total Unique Coauthors	0.601***	0.059***	0.103***	0.042***	0.056***	−0.055*	−0.052*	−0.065**	0.693***	0.700***	0.664***
	(0.059)	(0.021)	(0.025)	(0.011)	(0.018)	(0.023)	(0.023)	(0.023)	(0.082)	(0.081)	(0.055)
Tenure at First Attempt	0.892**	−0.374*	0.143	0.169	0.017	0.281**	0.245**	0.197**	0.843**	0.878**	0.707***
	(0.400)	(0.192)	(0.203)	(0.130)	(0.252)	(0.072)	(0.077)	(0.074)	(0.248)	(0.228)	(0.161)
Nonwhite	−0.241	0.762	−0.879**	−0.010	0.488	−0.353	−0.343	−0.376	0.391	0.420	0.216
	(0.994)	(0.601)	(0.431)	(0.310)	(0.426)	(0.981)	(0.955)	(0.923)	(0.684)	(0.687)	(0.533)
Total Department Faculty	−0.005	0.044***	−0.021***	−0.015***	−0.022***	−0.002	−0.001	−0.000	−0.023**	−0.022**	−0.003
	(0.015)	(0.006)	(0.008)	(0.004)	(0.005)	(0.006)	(0.005)	(0.006)	(0.008)	(0.008)	(0.011)
Moved Up	1.249	0.251	1.047*	−0.365	−0.023	−0.998	−1.319***	−1.294**	2.572*	2.654*	2.445
	(1.111)	(0.360)	(0.588)	(0.228)	(0.339)	(0.502)	(0.322)	(0.332)	(1.166)	(1.313)	(1.222)
Moved Down	0.797	−0.005	0.137	0.137	−0.058	−0.230	−0.160	−0.066	0.696***	0.729**	0.837***
	(0.869)	(0.407)	(0.542)	(0.390)	(0.359)	(0.472)	(0.453)	(0.474)	(0.167)	(0.183)	(0.121)
Research Field FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PhD Graduation Year and Tenure Attempt Year FEs	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes
Attempted Tenure School FEs	Yes	Yes	Yes	Yes	Yes			Yes			Yes
$*$	0.417	0.185	0.121	0.118	0.201	0.033	0.059	0.070	0.527	0.529	0.574
No of Observations	646	646	646	646	646	646	646	646	646	646	646

The numbers in the first parentheses of each column represent the PhD-granting school level clustered robust standard errors. The notation $*\mu_s$ represents the statistical significance levels: $**p < 0.05$, $***p < 0.01$ and $***p < 0.01$.

Table 2. Logit model estimates of conditional probability of the first job in differently ranked universities.

	Graduated From 1–96 University			Graduated From 1–25 University			Graduated From 26–96 University		
	Uni 1–20	Uni 21–40	Uni 41–96	Uni 1–20	Uni 21–40	Uni 41–96	Uni 1–20	Uni 21–40	Uni 41–96
Female	−0.094***	0.027	0.064**	−0.103***	0.018	0.064***	−0.039	0.065	0.007
	(0.020)	(0.037)	(0.032)	(0.029)	(0.037)	(0.010)	(0.091)	(0.097)	(0.108)
Nonwhite	−0.272***	0.090***	0.171***	−0.316***	0.112***	0.184***	−0.131**	−0.001	0.134**
	(0.020)	(0.026)	(0.034)	(0.002)	(0.018)	(0.001)	(0.065)	(0.048)	(0.057)
Publications During	−0.002	0.021***	−0.026***	−0.009	0.023*	−0.014**	0.013	0.015	−0.046
the PhD Program	(0.014)	(0.008)	(0.010)	(0.007)	(0.013)	(0.006)	(0.033)	(0.019)	(0.038)
Years Took to Finish	−0.022	−0.006	0.030***	−0.001	−0.009***	0.015***	−0.054**	−0.003	0.048
the PhD Program	(0.016)	(0.007)	(0.010)	(0.005)	(0.001)	(0.005)	(0.027)	(0.010)	(0.033)
Work Experience Prior	−0.032***	0.024***	−0.002	−0.035***	0.020***	0.005	−0.011	0.030***	−0.027
to Graduate School	(0.005)	(0.006)	(0.010)	(0.006)	(0.002)	(0.007)	(0.013)	(0.011)	(0.027)
Graduate School Rank FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
All Other Control and FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.114	0.031	0.108	0.072	0.027	0.034	0.112	0.094	0.134
No of Observations	633	633	633	470	470	470	163	163	163

All other control variables are shown in Appendix Table 1. The notation $*$ represents the statistical significance levels: $*p < 0.10$, $**\gamma_F$ and $***\tau_t$.

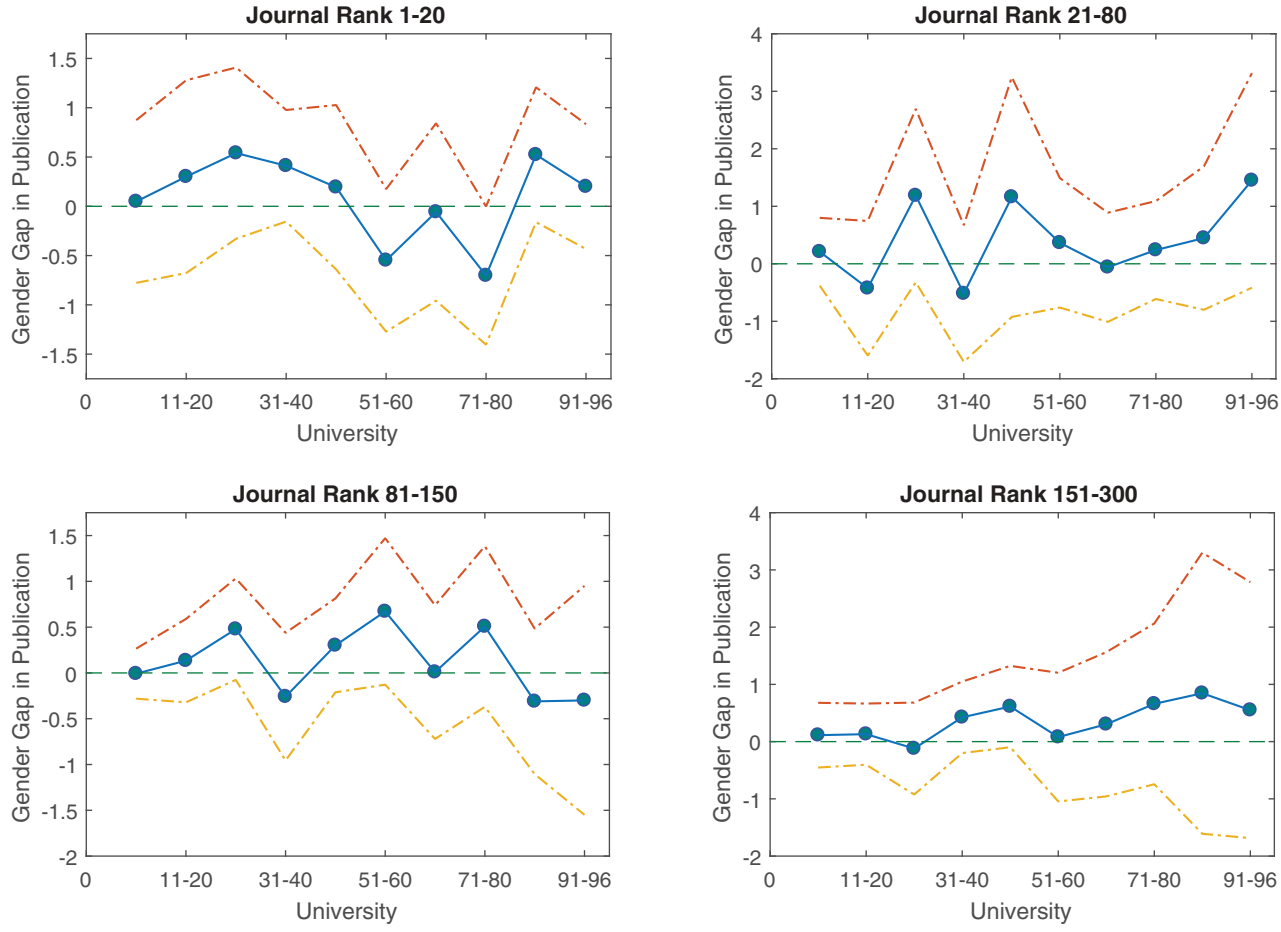

Figure 2. gender gap in economics journal publications of untenured faculty group by university rank.

We use the 2017 US News and World Report to rank the economics departments that have PhD programs, and we rank the journals from RePEc/IDEAS rankings. The gender gap in publication is defined as the difference between the average number of publications by male and female faculty members for a given school group. The red and yellow dotted lines represent the 95% upper and lower confidence intervals.

(ii) solo publications, (iii) coauthored publications, and (iv) publications by journal rank. The control variable X includes academic work history, the department's number of faculty members, whether the faculty received tenure in the first attempt, race, and a 5-year group dummy based on when an individual finished his/her PhD; μ_s are employed school group dummies; and γ_F and τ_t are research field and tenure year fixed effects. The coecient β_1 measures the conditional mean difference in the number of publications during the untenured period.

Results

The OLS estimates of the specification of equation (1) are shown in Table 1. The numbers in the first parentheses show the clustered standard errors by PhD graduating school. The left panel estimates show that the conditional mean difference in the number of total publications across all journal rankings is approximately 1.02 for untenured faculty members. This gender difference might exist because those women faced the same options and opportunities, made different choices in their careers, or faced implicit discrimination such as editors' favoritism and funding sources (Kahn 1993, 2004). Other important mechanisms are the timing of motherhood (Mason and Goulden 2002, 2004) and work-life balance in academics (Misra, Lundquist, and Templer 2012). In this study, we provide an alternative explanation, which is the role of coauthorship.

The fixed effect model estimates in the middle panel of Table 1 show that the difference in solo publications by men and women are not statistically significant. In addition, the right panel estimates suggest that the existing gender gap in total

publication is entirely driven by the difference in coauthored publication. Hudson (1996), Laband and Tollison (2000), and Hamermesh and Oster (2002) show that female representation in academia has improved over time because women have been engaging more in collaboration. Consistent with this finding, Figure 1 shows that in economics, the gender gap in coauthored publications has decreased over time. In contrast, the same gap has increased in the top 20 universities in the last two decades.[4] Addressing this puzzle is the major motivation of this study.

The seminal work by Laband and Piette (1994) and a recent study by Colussi (2018) show that the editors of top journals favor their colleagues, coauthors and former graduate students. Thus, the popularity of coauthorship reflects the importance of social connections in academia (Hamermesh 2013; Ductor 2015). We therefore want to test the hypothesis that women have fewer coauthored publications because they are matched with relatively less productive coauthors compared to men. To test this hypothesis, we first estimate whether the conditional probability of entering elite universities is the same for male and female graduates because the initial advantages of working in a better-ranked school directly affect the academic networks needed to find good-quality coauthors and to be productive in research (McMillen and Singell 1994; McDowell, Singell, and Stater 2006).

To estimate the conditional entry probability in schools with different rankings, we divide the top 96 schools into three categories: ranks of 1–20, 21–40 and 41–96. Conditional on the number of publications during the PhD and the PhD graduate school rank fixed effects, the estimates of a logit model show that female economists are 9.4 percentage points less likely to obtain their first job in the top 20 schools. In contrast, women are 6.4 percentage points more likely to enter the economics departments that are ranked 41–96, suggesting that women face some barriers to entering top-ranked schools, which are most likely related to institutional gender norms in those elite schools.[5] These findings are consistent with Kolpin and Singell (1996), who also show that employment discrimination exists in the top-ranked economics departments.

The right panel estimates in Table 3 suggest that on coauthored publications, the marginal contribution of female coauthors is approximately 0.17 less than that of male coauthors. As a result, in the left panel we find that the impact of an additional unique coauthor on top 20 journal publications is 0.05 less for females than for males. Table 4 further investigates the heterogeneous impacts of unique coauthors on journal publications based on rankings of the employed schools. As shown, the coefficient of the interaction term between the female dummy variable and the total number of unique coauthors is −0.40 for the total number of publications and −0.25 for coauthored publications, which suggests that in the top 20 ranked schools, the marginal contributions of an additional coauthor on the total number of publications and coauthored publications are less for women than for men.

Furthermore, Appendix Table 4 shows no differences in solo publications between men and women in the top 20 schools. Thus, the results in Tables 3, 4 and Appendix Table 4 unanimously suggest that untenured female faculty members from the top 20 schools are matched with relatively less productive coauthors than males.[6] Ivanova-Stenzel and Kubler (2011) argue that women seem to perform worse in mixed-gender groups, which could be the reason why women may have lower-quality coauthors in a male-dominated profession. Another potential explanation is that because women are historically less represented in top-ranked academic institutions, according to the assortative matching hypothesis some highly productive researchers may believe that only a small fraction of women have abilities similar to theirs.

The matching of relatively poor-quality coauthors leads to lower academic productivity, which

[4]Appendix Table 5 shows that the conditional mean differences in coauthored publications and in the total number of publications are statistically significant for untenured faculty from the top 20 ranked schools for the 2010–2017 period.

[5]In Appendix Table 3, we show that female economists have fewer journal publications during their PhD programs. Therefore, we use the number of journal publications prior to the first job and all other relevant characteristics of the graduate school as control variables to obtain the results in Table 2.

[6]Furthermore, in Appendix Table 5, we show that the gender differences in total and coauthored publications have increased in the top 20 schools since 2010.

Table 3. Gender differences in untenured faculty members' total number of publications, solo publications and coauthored publications from university 1 to 96.

Dependent Variable: Number of Publications											
	Publications by Journal Rank					Solo Publications			Publications With Coauthors		
	All	Rank 1–20	Rank 21–80	Rank 81–150	Rank 151–300	(1)	(2)	(3)	(4)	(5)	(6)
Female × Unique Coauthor	−0.200***	−0.045**	−0.050*	−0.027*	−0.033	−0.032	−0.031	−0.029	−0.194*	−0.196*	−0.165**
	(0.059)	(0.020)	(0.027)	(0.015)	(0.023)	(0.026)	(0.025)	(0.024)	(0.087)	(0.086)	(0.062)
Total Unique Coauthors	0.648***	0.070***	0.115***	0.048***	0.064***	−0.048	−0.044	−0.058*	0.738***	0.746***	0.703***
	(0.059)	(0.023)	(0.026)	(0.011)	(0.020)	(0.026)	(0.026)	(0.026)	(0.081)	(0.080)	(0.052)
Tenure at First Attempt	0.921**	−0.367*	0.152	0.173	0.023	0.285**	0.248**	0.200**	0.869**	0.906**	0.732***
	(0.404)	(0.194)	(0.203)	(0.131)	(0.251)	(0.074)	(0.079)	(0.075)	(0.259)	(0.238)	(0.164)
Nonwhite	−0.179	0.777	−0.858**	−0.002	0.501	−0.347	−0.339	−0.369	0.431	0.461	0.270
	(0.992)	(0.600)	(0.425)	(0.309)	(0.427)	(0.984)	(0.956)	(0.923)	(0.692)	(0.694)	(0.543)
No of Department Faculty	−0.006	0.043***	−0.021***	−0.016***	−0.022***	−0.003	−0.001	−0.001	−0.024**	−0.023**	−0.004
	(0.014)	(0.006)	(0.008)	(0.004)	(0.005)	(0.006)	(0.005)	(0.006)	(0.008)	(0.008)	(0.010)
Moved Up	1.130	0.226	1.023*	−0.382*	−0.040	−1.016	−1.338***	−1.315**	2.468*	2.549*	2.348*
	(1.075)	(0.361)	(0.576)	(0.228)	(0.337)	(0.510)	(0.331)	(0.339)	(1.075)	(1.221)	(1.131)
Moved Down	0.785	−0.009	0.130	0.136	−0.062	−0.234	−0.163	−0.066	0.670***	0.706**	0.825***
	(0.874)	(0.413)	(0.550)	(0.391)	(0.355)	(0.477)	(0.458)	(0.481)	(0.153)	(0.182)	(0.122)
Research Field FEs	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PhD Graduation Year and Tenure Attempt Year FEs	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes
Attempted Tenure School FEs	Yes	Yes	Yes	Yes	Yes			Yes			Yes
Adjusted R^2	0.425	0.188	0.122	0.122	0.202	0.034	0.060	0.071	0.537	0.539	0.581
No of Observations	646	646	646	646	646	646	646	646	646	646	646

The numbers in the first parentheses of each column represent the PhD-granting school level clustered robust standard errors. The notation $*$ represents the statistical significance levels: $*$ $p < 0.10$, $**$ $p < 0.05$ and $***$ $p < 0.01$.

Table 4. Heterogeneous impacts of unique coauthors on total and coauthor publications by employed university rank.

Dependent Variable: Number of Publications								
	Total Publications by Rankings of Employed University				Co-authored Publications by Rankings of Employed University			
	All	Uni 1–20	Uni 21–40	Uni 41–96	All	Uni 1–20	Uni 21–40	Uni 41–96
Female × Unique Coauthors	−0.230*	−0.404***	−0.122	−0.292	−0.186	−0.251***	0.066	−0.348
	(0.098)	(0.054)	(0.234)	(0.222)	(0.119)	(0.040)	(0.195)	(0.212)
Unique Coauthors	0.657***	0.652***	0.594***	0.718***	0.708***	0.633***	0.559***	0.869***
	(0.074)	(0.033)	(0.130)	(0.173)	(0.057)	(0.023)	(0.095)	(0.141)
Female	0.521	2.135***	−0.646	0.932	0.391	0.939**	−1.085	1.558
	(0.677)	(0.209)	(1.332)	(1.583)	(0.803)	(0.325)	(1.383)	(1.437)
Tenure at First Attempt	0.985***	1.170***	1.155	0.471	0.797***	0.344***	0.741	0.736
	(0.190)	(0.137)	(0.804)	(0.358)	(0.163)	(0.049)	(0.918)	(0.389)
Nonwhite	0.155	−0.099	0.644	−0.996	0.430	0.607	2.905	−1.478
	(1.341)	(0.641)	(2.801)	(1.889)	(0.571)	(0.564)	(2.468)	(0.993)
PhD Graduation Age	−0.119	−0.041	−0.002	−0.206	−0.081	−0.116**	−0.002	−0.039
	(0.066)	(0.037)	(0.335)	(0.104)	(0.045)	(0.042)	(0.203)	(0.063)
Total Department Faculty	−0.007	0.025	−0.035	0.160	−0.006	0.000	−0.018	0.067
	(0.016)	(0.018)	(0.026)	(0.161)	(0.010)	(0.007)	(0.021)	(0.110)
Moved Up	0.893	2.803***	−1.560**	1.018	1.959	4.044***	−0.617	3.138
	(1.214)	(0.168)	(0.405)	(1.985)	(1.237)	(0.161)	(0.417)	(1.756)
Moved Down	0.767	0.997	0.064	−2.159	0.808***	1.853***	−0.820	−1.370
	(0.561)	(1.294)	(1.835)	(1.271)	(0.113)	(0.351)	(0.832)	(0.939)
All Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.427	0.507	0.247	0.458	0.574	0.614	0.441	0.613
No of Observations	621	192	156	273	621	192	156	273

The numbers in the first parentheses of each column represent the PhD-granting school level clustered robust standard errors. The notation * represents the statistical significance levels: $*p<0.10$, $**p<0.05$ and $***p<0.01$.

Table 5. Heterogeneous impacts of unique coauthors on total publications by rankings of university and economics journal rank.

Dependent Variable: Total Number of Publications						
	Journal 1–20			Journal 21–80		
	Uni 1–20	Uni 21–40	Uni 41–96	Uni 1–20	Uni 21–40	Uni 41–96
Female × Unique Coauthors	−0.145***	0.040	−0.029	−0.089***	0.189	−0.011
	(0.019)	(0.086)	(0.028)	(0.010)	(0.106)	(0.018)
Unique Coauthors	0.128***	0.032	0.046*	0.098***	0.188	0.085
	(0.024)	(0.025)	(0.018)	(0.010)	(0.121)	(0.042)
Female	1.007***	−0.769**	0.038	0.255*	−1.962**	−0.301
	(0.098)	(0.245)	(0.160)	(0.100)	(0.700)	(0.256)
Tenure at First Attempt	−0.670**	0.241	−0.575***	−0.092	0.413	0.360
	(0.168)	(1.025)	(0.133)	(0.191)	(0.561)	(0.189)
Nonwhite	3.142***	0.734	−0.529	−0.375	0.100	−0.713
	(0.263)	(2.084)	(0.272)	(0.390)	(0.767)	(0.508)
PhD Graduation Age	−0.197***	−0.163***	−0.037	−0.111**	0.092	−0.159**
	(0.043)	(0.026)	(0.037)	(0.030)	(0.258)	(0.043)
Total Department Faculty	−0.004	−0.003	−0.014	0.016***	−0.001	0.013
	(0.008)	(0.015)	(0.023)	(0.003)	(0.006)	(0.022)
Moved Up	1.216***	−0.736*	−0.413*	1.213***	1.863	0.099
	(0.065)	(0.274)	(0.202)	(0.046)	(0.992)	(0.258)
Moved Down	−0.228	−0.070	−1.146*	−0.024	−0.244	−0.343
	(0.353)	(0.748)	(0.485)	(0.117)	(0.777)	(1.570)
All Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.154	0.057	0.123	0.065	0.163	0.059
No of Observations	165	144	246	165	144	246

The numbers in the first parentheses of each column represent the PhD-granting school level clustered robust standard errors. The notation * represents the statistical significance levels: $*p<0.10$, $**p<0.05$ and $***p<0.01$.

negatively affects the number of top-ranked journal publications (Hollis 2001). Consequently, we show the heterogeneous impacts of women's lower-quality coauthors on the number of top-ranked journal publications by three school groups in Table 5. Combining the results from both the panels in Table 5 we find that the lower-quality matched coauthors can explain women's approximately 0.60 fewer publications in top 20 and 0.36 fewer publications in 21–80 ranked

journals.[7] We have performed various robustness tests to support the results in Table 1–5. The detailed discussion of those robustness check results is shown in the Appendix.

III. Conclusion

The main contribution of this paper is to analyze to what extent, if any, coauthorship can explain the persisting gender gap in top-ranked economics journals. Consistent with Kolpin and Singell (1996) and McDowell, Singell, and Stater (2006), we find that gender plays a role in obtaining first employment in a top-ranked economics department and because of that women are matched with relatively lower-quality coauthors even though they are equally productive as men regarding the number of solo publications. The matching of poor-quality coauthors can explain women's approximately 0.60 fewer publications in the top 20 journal publications.

The direct consequence of having relatively lower-quality matched coauthors is that it significantly reduces the likelihood that untenured female faculty members receive tenure in prestigious elite schools. Thus, this study provides a potential explanation for why women are significantly underrepresented in top academic positions in economics even though they have made a significant improvement in educational attainment over the last three decades.

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[7]Note that in Table 5 the coefficient of the interaction term between the variable female and number of unique coauthors is −0.15 for top 20 journals and −0.09 for 21–80 ranked journals and Appendix Table 2 shows that in the top 20 schools the average number of unique coauthors for females is close to 4. Thus, the total impact of lower-quality coauthors for females is approximately −0.60 (= 4 × −0.15) in the top 20 and −0.36 (= 4 × −0.09) in 21–80 ranked journals.

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