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Female Representation in the Academic Finance Profession

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ABSTRACT

We present new data on female representation in the academic finance profession. In our sample of finance faculty at top-100 U.S. business schools during 2009 to 2017, only 16.0% are women. The gender imbalance manifests in several ways. First, after controlling for research productivity, women hold positions at lower ranked institutions and are less likely to be full professors. Results also suggest that they are paid less. Second, women publish fewer papers. This gender gap exists in research quantity, not quality. Third, women have more female coauthors, suggesting smaller publication networks. Time-series data suggest shrinking gender gaps in recent years.

WE PRESENT NEW DATA ON FEMALE representation in the academic finance profession. The paper contributes to the rapidly growing literature examining the status of women in the economics profession (e.g., Lundenberg and Stearns (2019), Boustan and Langan (2019), Hengel and Moon (2020), Chari and Goldsmith-Pinkham (2018)) and to the vast literature on gender representation more broadly (see, for example., Ginther, Kahn, and McCloskey (2016) for a survey).[1] To date, there is no large-sample empirical evidence on gender

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[1] See also Bayer and Rouse (2017) for a review of earlier papers in economics.

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balance and career outcomes in academic finance. Finance academia is a useful setting for an examination of these issues because it is a fairly well-defined area and faculty productivity is largely observable. The finance field is also historically male. In our sample of finance faculty from the top-100 U.S. business schools over the 2009 to 2017 period, only 16.0% are women.[2]

Our analysis is primarily descriptive; however, the data point to at least three important forms of gender imbalance in the academic finance profession. First, focusing on the population of finance faculty during our sample period, we find that after controlling for research productivity, women hold positions at lower ranked institutions, are less likely to have tenure than men, and are less likely to be full professors. We also find some evidence that women are paid less than men during the 2009 to 2017 sample period. When we turn our attention to career trajectories of individual faculty members and examine career outcomes exactly X years post-PhD, the patterns are similar but the gap is largest when we look at the rank of the institution and full professor status. We find less significant gender differences in the case of tenure, where we only find evidence of a gender gap at six years post-PhD.

Second, focusing on the composition of faculty members' research portfolios, we find that women publish fewer papers in number, although this gap is mainly due to fewer papers in lower tiered journals. The analyses of gender gaps in institution rank, tenure status, and full professor status, and salary all control for the number of publications of each faculty member, but the quantity and composition of publications are of independent interest. This is because successful publishing records are strongly associated with positions at highly ranked institutions, higher rates of tenure, promotions to full professor, and lower rates of exit from the profession. We estimate a total publication gap between male and female faculty of approximately 17.3%. Publication gaps have been well documented in economics and other broad fields (e.g., Bentley (2011), McPherson et al. (2013), Antecol, Bedard, and Stearns (2018), Ghosh and Liu (2020)), but our narrower focus on the finance subfield allows us to control for potentially important confounding factors. Closer examination of the quantity gap reveals that it is driven mainly by publications that are not in top journals, especially those that are coauthored.[3] On average, we do not find a significant difference between men and women in the number of solo publications or top publications. The latter finding is consistent with no difference in the quality of papers written by women. If anything, using citations as a proxy for quality, we find evidence that the quality of papers written by women is higher than that for men. This result is in line with Card et al. (2020), who report

[2] This percentage is consistent with Chari and Goldsmith-Pinkham (2018), who report that women comprise 14.6% of all individuals on the finance programs at the NBER Summer Institute. This is the lowest female representation of all of the economics subfields that they report.

[3] We define top publications as papers published in the top-3 finance journals and the top-5 economics journals. The top-3 finance journals are *The Journal of Finance*, *Journal of Financial Economics*, and *Review of Financial Studies*. The top-5 economics journals are *American Economic Review*, *Econometrica*, *Journal of Political Economy*, *Review of Economic Studies*, and *Quarterly Journal of Economics*.

that female-authored papers receive 25% more citations than otherwise similar male-authored papers, and with Hengel and Moon (2020), who report that in top economics journals, articles that are authored by men are cited less than articles authored by women.

Our third finding is related to coauthorship on published papers. On average, women tend to have fewer coauthors than their male colleagues. The finding that women tend to have smaller networks of successful collaborations is not particularly surprising, given that women tend to publish fewer papers. However, consistent with findings in economics (e.g., McDowell, Singell, and Stater (2006), Boschini and Sjogren (2007)), we also find that women in finance tend to have *more* female coauthors than their male colleagues. This finding is in line with AFFECT (2018), which reports that if the first author on a published paper in finance is female, that paper is more likely to have another female coauthor.[4] Given that the finance profession is only 16.0% female during our sample period, these complementary findings together suggest that women have smaller publication networks. We also find that women have fewer coauthors from within their own PhD cohorts, which may indicate a social networking constraint and could be relevant if coauthor seniority is considered in promotion cases.

The career outcomes that we document could be driven by factors found to affect the status of women in other fields, such as child-rearing policies (Antecol, Bedard, and Stearns (2018)), time and family considerations (Goldin (2014), Ginther (2006), Ginther and Hayes (1999)), discrimination and stereotypes (Nosek et al. (2009), Reuben, Sapienza and Zingales (2014), or psychological attributes such as risk tolerance and attitudes towards competition (Bertrand (2018)). We emphasize that while unfair treatment of women is one potential explanation for our findings, it is not the only one. We do not take a stand on the question of what drives gender disparities. The main goal of this paper is to present basic facts that might motivate additional work to uncover the factors that drive the differences that we observe in the data.

The three main findings highlighted above might, at face value, suggest a poor outlook for women entering the profession. A closer look at the year-by-year regressions reveals a more optimistic picture. When we examine relationships between gender and various measures of success within the population of finance faculty each year, the gender gap (i.e., imbalance that cannot be explained by differences in observable productivity or seniority) shrinks or even disappears during the last years of the sample. In the last years of the sample, we find that research productivity (not gender) explains most of the variation in where a faculty member is employed, whether the faculty member has tenure, and whether the faculty member exits the profession. These changes are occurring at the same time as another slow-moving trend in the data: more women are entering the profession and obtaining tenure. Of the finance faculty who have tenure over the entire 2009 to 2017 sample period,

[4] AFFECT (2018) differs from our analysis in that their focus is at the publication rather than individual faculty level, and some of the results could be driven by particularly prolific women.

9.7% are women. The corresponding percentage of female finance faculty who obtain tenure during the sample period is 24.3%. We further find that 20.4% of rookie new hires (i.e., 2009 to 2017 graduates, where PhD year equals the first year of employment as an assistant professor) are women.

The conditions for women taking a first tenure-track job in finance appear to be improving over time. However, two important exceptions are worth noting. First, unlike in economics (Antecol, Bedard, and Stearns (2018), Ghosh and Liu (2020)), we do not observe shrinking differences in publication rates between men and women. Second, even after controlling for publications, we find more persistent gender gaps at the very top of the academic ladder (i.e., among full professors, which is driven by differences among faculty 16 or more years post-PhD).

The literature offers much discussion about the "leaky pipeline," whereby representation of women declines at each phase in the progression from student to tenure (for a survey of the literature and interventions, see Buckles (2019)). To identify the most important sources of underrepresentation of women in the academic finance profession, we would ideally track people from the very beginning phases of their academic careers: PhD applicants, admitted PhD students, graduates from PhD programs, initial academic placements, and subsequent tenure rates. Although our data do not allow us to comment on each of these important phases of the academic career, we are able to shed some descriptive light on the source of potential leaks in the pipeline after one obtains a tenure track job. If the low representation of women in finance were due entirely to the small numbers entering the profession from PhD programs (i.e., a pipeline issue), then the women who do enter finance academia would see their careers progress along trajectories that are similar to men. That is, we would not observe important gender gaps in career outcomes after we control for research productivity.

The low representation of women in finance that we document could have implications beyond the careers of the faculty members that we study. For example, female faculty might serve as role models that impact the career choices of female MBA students. Consistent with this idea, Lim and Meer (2020) and Carrell et al. (2010) use randomization approaches to study whether female role models increase female student interest and performance in traditionally male-dominated subject areas. Both of these papers report that female instructors positively impact the performance and future pursuits of women in the subject areas without changing the outcomes of men. If the same holds true in finance, then efforts to increase female representation in academic finance could have spillover effects in the broader finance industry.

The paper proceeds as follows. In Section I, we describe the data and sample selection. In Section II, we provide comparative descriptive statistics on placement, rank, and research productivity. In Section III, we present regression results. Section IV concludes.

I. Data

A. School Ranking

We begin with the *U.S. News & World Report* Best U.S. Business Schools rankings each year from 2009 to 2017. We define a top-100 school as any school that appears in the top-100 rankings at any point during the 2009 to 2017 sample period. *U.S. News & World Report* assigns low values to higher-ranked schools (e.g., a ranking of 1 maps to the highest ranked school, while a value of 15 maps to the school with the 15th highest rank).

B. Business School Faculty Rosters

To construct annual rosters of finance faculty, we merge the *U.S. News & World Report*'s top-100 list with the faculty roster data that we obtain from Academic Analytics (AcA). AcA collects and disseminates (on a subscription basis) information on faculty and research activity of faculty at more than 400 universities across most departments and schools in the United States. The AcA faculty rosters come from two sources: direct submissions from universities and snapshots of university websites as of November 1 of each calendar year. AcA provided us with a directory of business school faculty for the years 2009 to 2017. The data include all faculty names, faculty titles, names of the institutions at which faculty are employed, names of institutions from which faculty received their PhDs, and PhD year. We focus the analysis on ladder faculty (i.e., those with the title of "Assistant Professor," "Associate Professor," or "Professor"). For an institution to be included in the sample, we require both a *U.S. News & World Report* top-100 ranking at any point during the sample period and AcA coverage of that institution in at least one year over the 2009 to 2017 period. These filters result in 97 "top-100" business schools, which we list in Table I.[5]

C. Finance Faculty

From the AcA list of ladder business school faculty, we need to identify the subsample of finance scholars. AcA classifies faculty by subfield: finance, accounting, business administration, business various, management, management information systems, and marketing, but these classifications are noisy. While they are usually consistent, we encounter two issues with the AcA

[5] The AcA roster data are complete over the entire sample period for 88 schools. For the remaining nine schools, we hand-collect rosters from snapshots of business school websites using the Internet's Wayback Machine. Incomplete coverage occurs most often during the first half of the sample period. The schools with incomplete coverage in AcA are: Babson College, Brigham Young University, Chapman University, Georgetown University, Northeastern University, Northern Arizona University, San Diego State University, Stevens Institute of Technology, and University of California (Riverside). As a group, these schools do not differ systematically from the full sample in their gender representation or average ranking. We do find, however, that their historical websites are particularly difficult to navigate. This may explain the incomplete coverage in AcA.

Table I
Sample of Top-100 Business Schools

This table lists the sample of top-100 business schools. To be included in the sample, the school must appear in the *U.S. News & World Report* list of top-100 U.S. business schools at least once during the 2009 to 2017 sample period. We also require coverage in the Academic Analytics database in at least one year during the sample period. *Mean Ranking* is the average *U.S. News & World Report* ranking over the sample period. *Publication Tier* is based on the alternative ranking variable, equal to the quartile of research productivity, where productivity is measured as the average (across all sample years) number of top publications by finance faculty members at the institution. The top publication measure is calculated in each year as the mean number of top publications by finance faculty at the institution. *%Female* is the fraction of faculty-year observations in which the faculty member is female.

			All Faculty		Tenured Faculty	
Institution	Mean Ranking	Publication Tier	Faculty-Yr Obs.	% Female	Faculty-Yr Obs.	% Female
Harvard University	1.2	1	270	11.1%	165	6.7%
Stanford University	1.6	1	143	11.9%	99	9.1%
University of Pennsylvania	2.9	2	361	11.1%	233	7.7%
MIT	4.2	1	168	16.7%	106	24.5%
University of Chicago	4.2	1	300	9.3%	200	4.5%
Northwestern University	4.6	1	243	19.3%	148	18.2%
UC Berkeley	7.0	1	183	19.1%	143	22.4%
Dartmouth College	8.2	1	89	10.1%	64	12.5%
Columbia University	8.7	1	339	11.5%	253	7.1%
Yale University	10.8	1	148	16.9%	101	13.9%
New York University	11.6	1	367	7.6%	267	3.4%
University of Michigan	12.3	1	156	12.2%	114	10.5%
Duke University	12.4	1	148	12.8%	112	8.0%
University of Virginia	12.4	2	227	19.8%	199	18.6%
UCLA	14.8	1	143	6.3%	115	6.1%
Cornell University	16.2	1	131	22.1%	83	15.7%
UT Austin	16.7	1	216	12.5%	144	13.9%
Carnegie Mellon	17.9	2	124	10.5%	77	0.0%
UNC Chapel Hill	18.9	2	198	14.6%	125	12.0%
Wash U (St. Louis)	20.8	2	151	10.6%	77	0.0%
Emory University	21.0	1	105	5.7%	71	0.0%
Indiana University	22.0	3	224	24.1%	144	25.0%
Georgetown University	23.0	2	156	18.6%	116	15.5%
USC	23.9	2	286	6.6%	161	2.5%
The Ohio State	26.1	1	143	26.6%	90	35.6%
University of Minnesota	27.8	2	127	13.4%	77	6.5%
Vanderbilt University	27.9	1	90	0.0%	62	0.0%
University of Notre Dame	28.3	2	217	10.6%	154	8.4%
Georgia Tech	28.3	2	87	10.3%	53	11.3%
University of Washington	28.4	2	157	12.7%	113	15.9%
Arizona State University	28.9	2	172	26.2%	121	19.8%
University of Wisconsin	29.2	2	124	15.3%	96	13.5%
Brigham Young University	31.4	3	152	0.0%	118	0.0%
Rice University	31.8	2	115	15.7%	78	23.1%
Texas A&M University	33.1	3	107	8.4%	75	5.3%

(*Continued*)

Table I—*Continued*

Institution	Mean Ranking	Publication Tier	All Faculty		Tenured Faculty	
			Faculty-Yr Obs.	% Female	Faculty-Yr Obs.	% Female
University of Rochester	36.8	1	112	17.0%	68	7.4%
University of Florida	39.8	2	128	0.0%	97	0.0%
UT Dallas	39.8	2	154	15.6%	94	10.6%
Boston University	40.1	3	159	8.2%	97	2.1%
UC Davis	40.2	1	56	30.4%	46	26.1%
University of Illinois	40.2	2	192	15.1%	106	0.9%
Michigan State	40.7	2	141	16.3%	113	8.0%
Penn State	41.8	2	169	15.4%	114	12.3%
Boston College	42.0	1	180	13.9%	138	13.8%
University of Maryland	42.3	1	174	12.6%	117	1.7%
Purdue University	43.7	1	91	40.7%	49	38.8%
UC Irvine	46.1	1	52	34.6%	38	31.6%
University of Georgia	53.8	3	150	16.0%	70	12.9%
University of Arizona	56.1	2	90	18.9%	44	20.5%
George Washington	56.1	4	137	25.5%	116	21.6%
Rutgers	57.4	3	190	16.8%	123	15.4%
Northeastern University	58.3	4	159	34.0%	109	22.9%
Babson College	58.7	3	116	33.6%	105	34.3%
University of Missouri	59.9	3	84	28.6%	49	20.4%
University of Arkansas	60.0	4	87	4.6%	62	0.0%
Baylor University	61.6	4	155	0.6%	135	0.0%
University of Pittsburgh	62.3	2	86	19.8%	61	26.2%
UMASS Amherst	62.3	3	81	16.0%	65	10.8%
University of Connecticut	62.3	4	153	7.2%	105	4.8%
University of Alabama	62.9	4	159	2.5%	119	3.4%
University of S. Carolina	64.1	3	137	13.1%	100	18.0%
University of Tennessee	66.0	4	98	11.2%	81	12.3%
Iowa State University	66.7	4	121	22.3%	70	18.6%
Case Western Reserve	67.2	3	87	19.5%	62	6.5%
North Carolina State	69.9	4	49	20.4%	37	8.1%
William & Mary	70.8	4	113	23.9%	91	13.2%
University of Utah	71.0	2	132	19.7%	96	16.7%
Louisiana State University	72.0	3	96	25.0%	67	10.4%
University of Oklahoma	73.6	2	88	14.8%	65	0.0%
University of Cincinnati	74.8	3	89	2.2%	67	0.0%
SUNY Buffalo	76.6	3	101	5.0%	51	0.0%
University of Louisville	77.0	4	62	27.4%	54	20.4%
Syracuse University	77.1	4	105	21.0%	78	11.5%
U. Colorado (Boulder)	77.9	3	124	8.9%	81	11.1%
University of Miami	80.1	3	112	16.1%	78	16.7%
CUNY	81.1	3	268	23.5%	214	18.7%
Auburn University	82.6	4	116	19.8%	97	18.6%
Stevens Inst. of Tech.	83.0	4	28	39.3%	9	0.0%
Fordham University	88.8	4	222	27.0%	134	14.2%
SUNY Binghamton	91.0	3	66	4.5%	41	0.0%
University of Kentucky	92.0	3	100	23.0%	63	20.6%
University of Oregon	92.6	3	93	21.5%	38	23.7%

(*Continued*)

Table I—*Continued*

Institution	Mean Ranking	Publication Tier	All Faculty		Tenured Faculty	
			Faculty-Yr Obs.	% Female	Faculty-Yr Obs.	% Female
University of Houston	93.3	3	165	9.7%	126	7.1%
SUNY Albany	94.0	4	53	50.9%	39	43.6%
Oklahoma State University	94.6	4	111	11.7%	90	12.2%
Drexel University	96.2	2	133	11.3%	106	7.5%
Chapman University	98.9	4	38	15.8%	24	0.0%
University of Mississippi	99.7	4	88	20.5%	54	33.3%
University of Delaware	100.0	4	101	31.7%	68	23.5%
University of Kansas	100.6	3	76	5.3%	51	2.0%
Howard University	101.1	4	62	30.6%	45	15.6%
Clemson University	101.5	4	82	23.2%	55	20.0%
American University	104.1	3	89	39.3%	79	36.7%
San Diego State University	104.6	4	133	15.8%	100	10.0%
Mississippi State	106.7	4	64	4.7%	44	6.8%
Northern Arizona U.	107.0	4	41	17.1%	33	21.2%
UC Riverside	109.0	3	70	37.1%	27	14.8%

classifications. First, classification can vary over time for the same individual. Second, some finance faculty are listed in other subfields and some nonfinance faculty have finance designations. Misclassification could result from, for example, multiple subject area listings on business school websites. If a faculty member is identified as finance faculty at least once during our sample period and if that person is not also classified as accounting faculty, we assign that person to the initial list of finance faculty. We then refine the list using publication and CV information.

Starting with the initial list of finance faculty, we create four groups of faculty for which we manually check the official school websites and faculty members' CVs and/or public LinkedIn pages to determine whether they should be classified as finance. Group 1 consists of all faculty who do not have an initial finance assignment but for whom more than 25% of their papers published in a Tier A or a Tier B finance journal (as defined in Currie and Prandher (2011)).[6] Group 2 comprises all recent graduates (those with graduation years 2009 or later) who do not have an initial finance assignment and who have zero publications. Groups 1 and 2 help us detect finance faculty that are not classified

[6] The These journals are *The Journal of Finance*, *Review of Financial Studies*, *Journal of Financial Economics*, *Journal of Financial and Quantitative Analysis*, *Journal of Money, Credit and Banking*, *Journal of Banking and Finance*, *Mathematical Finance*, *Journal of Financial Intermediation*, *Journal of Corporate Finance*, *Financial Management*, *Journal of Empirical Finance*, *Journal of International Money and Finance*, *Journal of Financial Markets*, *Financial Analysts Journal*, *Review of Finance*, *Journal of Risk and Insurance*, *Quantitative Finance*, *Journal of Financial Research*, *Journal of Futures Markets*, *Journal of Portfolio Management*, *Journal of Business Finance and Accounting*, *Finance and Stochastics*, *Financial Review*, *Journal of Derivatives*, *Journal of International Financial Markets, Institutions and Money*, and *Journal of Real Estate Finance and Economics*.

as finance in AcA. Group 3 comprises all faculty initially classified as finance but who do not have at least five publications in a Tier A or Tier B finance journal or at least three publications in a Top 3 finance journal (*The Journal of Finance*, *Journal of Financial Economics*, and *Review of Financial Studies*). Group 4 comprises all faculty with zero publications but an initial finance classification.[7] Groups 3 and 4 help us detect nonfinance faculty that are misclassified as finance in AcA. As a result of this process of refining the finance faculty classifications, we identify 2,011 unique finance faculty members employed by the top-100 schools during the 2009 to 2017 period.[8] We emphasize that all of our analyses condition on having a job at a top-100 school at some point during the sample period; we do not observe individuals with PhDs who do not take jobs at these institutions.

D. Tenure and Full Professor Status

AcA assigns tenure status for all faculty with an "Associate Professor" or a "Professor" title, consistent with the policies at the majority of institutions. We use the "Professor" title to infer full professor status. Tenure is more complicated because several schools have both tenured and untenured associates (and there are a couple of schools in which all associates are untenured). We refine the AcA tenure status classification for these schools using a variety of sources. First, we check the faculty handbooks of all top-100 business schools to determine whether there are both tenured and untenured associate professors as well as term limits. Nineteen schools have both tenured and untenured associates, and the tenure status of 33 individuals is ambiguous based on title. For these individuals, we first perform an Internet search for the faculty member's CV. Many of these faculty (approximately 50% of cases) indicate on their CVs the year in which they obtain tenure. If tenure year is missing from the CV and if the faculty member is from a top-50 program during the 2009 to 2014 period (the subsample in Brogaard, Engelberg, and Van Wesep (2018) that overlaps with our data), we use the tenure status variable from Brogaard, Engelberg, and Van Wesep (2018). In cases in which we are unable to identify tenure year from CVs or from Brogaard, Engelberg, and Van Wesep's (2018) data, we rely on the AcA tenure flag.

We hand-check the CVs of all individuals with an AcA title change during the sample period to confirm the year of the title change. We rely on faculty web

[7] We also manually check the CVs of faculty members who appear to be visitors. AcA generally does not include visiting faculty but in a few cases, AcA data incorrectly classify visitors as full-time faculty. Potential visiting faculty members are those who remain at a given institution for only one year. We also hand-check CVs when faculty remain at a given institution for two years before returning to their previous institution.

[8] Our classification system, along with potentially incomplete coverage in AcA, could cause us to include some faculty who are not finance faculty and to exclude some faculty who are indeed finance scholars. Our manual checks of the data help mitigate these concerns. As long as the gender balance of the subsamples of incorrectly included or excluded faculty is similar to that of the full sample, we do not expect misclassification errors to bias our findings.

pages and/or public LinkedIn pages when CVs are unavailable. In some cases, the AcA title change appears one year later than the title change reported on the CV. In those cases, we rely on the title change year from the CV. When the CV title change year is unavailable, we rely on the AcA title dates.

E. Research Output

We rely on the Scopus database at Scopus.com for faculty publications and citations data. The Scopus data include a unique author identifier, the article's title, the journal's name, coauthor names, the publication date, and citations data.[9] We merge the AcA roster and Scopus by faculty name and institution. For multiple potential matches or when we are unable to match on name and institution, we match on name and then hand-check the Scopus publications against the faculty member's CV. To minimize the potential for errors in name matching, we examine only those publications from the Scopus journals in the following areas: Economics, Econometrics, and Finance; Business, Management, and Accounting; and Decision Sciences.[10] We limit attention to these areas because, in a couple of cases, faculty with common names are given credit for publications in science journals by faculty members with the same name but that are in different departments at the same institution.

Journal publications are the main measure of output because, like other subfields in economics, finance is an articles-based field. We use publications through year t in the various regressions of year t outcome variables. We do so because publication lags are such that most publications are known to authors and their employers well in advance of actual publication dates.

F. Gender

AcA uses genderize.io to infer faculty gender using the faculty member's first and middle names. Whenever the gender probability is greater than 90% based on genderize.io, gender is provided in the AcA. Gender is missing for 382 individuals. Because of the importance of gender in our context, we hand-check the gender variable to fill in missing gender and to make any appropriate corrections.[11] This process results in gender classification for all but two faculty members, leaving a sample of 2,009 unique faculty members for the analysis.

[9] Some faculty change their names. We examine Scopus for name changes and find that the author ID generally preserves name changes.

[10] The list contains 2,694 journal titles, including all of the major finance, economics, accounting, and marketing outlets. Although our approach would miss a publication by a finance faculty member in, for example, *Nature*, such publications are sufficiently rare that the error we introduce is likely to be smaller than the error that we would introduce by potentially misattributing science journal articles to finance faculty.

[11] Gender is missing or incorrect in AcA for approximately 19% of the sample. We conduct the manual-check in two stages. First, we examine the faculty member's photograph on the university's website. If the photo is unavailable, we rely on pronouns used on the RateMyProfessor website to infer gender.

G. Transitions

To characterize faculty exits, we conduct a CV search for the first employer after the faculty member exits the sample. When we are unable to locate a CV, we relied on public LinkedIn pages and university websites on the Way Back Machine. Faculty leave the sample for several reasons: transition to a nontenure-track position, such as Lecturer; accepting a job in government or the private sector; transition to a university outside of the top-100 U.S. business schools, such as a non-U.S. school; moving to an economics department; moving to a lower tiered business school; retirement; or death. Our sample contains 364 exits, 79 of which are exits to government, the private sector, or nonladder positions.

H. Salary (Public Institutions)

We obtain salary data for faculty at 37 of the 60 public institutions in the sample. Most states have Freedom of Information Acts that require public employers to provide salary information for all employees. We submitted data inquiries to all 60 institutions, and we include salary data from all schools that sent usable data in response to our requests. We merge the salary data with AcA data based on institution, faculty name, and department (where department is available). We obtain salary and total compensation information for 4,123 faculty-year observations. Because most schools report nine-month salaries rather than total compensation, we focus on the 3,614 observations for which we have nonmissing nine-month salary data.[12]

II. Comparative Descriptive Statistics

A. Gender Composition of Finance Faculty

Table II summarizes the gender composition of finance faculty. The sample of top-100 schools during the 2009 to 2017 period contains 2,009 individual unique faculty members, of which 16.0% are women. In addition to the full sample of top-100 schools, Table II shows the gender composition for the subsample of top-30 and top-10 institutions based on *U.S. News & World Report* rankings, as well as institutions in the first quartile of research productivity, public institutions, and private institutions. The percentage of female faculty declines at top programs. The percentages of female faculty at top-30 and top-10 institutions are 14.3% and 13.1%, respectively. Public institutions tend to have more female faculty than do private institutions.

[12] We treat as missing the seven observations in which reported salaries are zero, as well as salaries in which we observe large (>40%) year-to-year increases or decreases for the same individual. This can occur because salaries are reported for calendar (and not academic) years. Individuals receive only a fraction of the nine-month salary during the first or last calendar year of employment. To reduce the influence of outliers, we winsorize the remaining salary data at the 0.5% and 99.5% levels.

Table II
Summary Statistics

This table reports the number of unique faculty members in the sample. *All Institutions* is the full sample of business schools, defined as any school that appears in the *U.S. News & World Report*'s list of top-100 U.S. business schools list at least once during the 2009 to 2017 sample period and also covered in the Academic Analytics database at least once in the sample period. "Recent Graduates" are those faculty who completed their PhDs during the 2009 to 2017 sample period. *Top30* is the subsample of schools with a *U.S. News & World Report* ranking of 30 or better at any point over the sample period. *Top10* is the subsample of schools with a rank of 1 to 10 in *U.S. News & World Report* at least once over the sample period. *Publication Tier* 1 is based on the alternative ranking variable and indicates those institutions in the first quartile of research productivity, measured as the average number of top publications by faculty employed by the institution. *Public* and *Private* indicate public and private institutions, respectively. *%Female* is the fraction of faculty-year observations in which the faculty member is female.

	All Institutions		Top 30		Top 10	
	Total	%Female	Total	%Female	Total	%Female
# Unique Faculty	2,009	16.0%	979	14.3%	411	13.1%
# Faculty with Tenure for All Years, 2009 to 2017	1,058	9.7%	511	8.8%	223	9.9%
# Faculty Untenured for All Years, 2009 to 2017	681	21.7%	341	20.2%	140	17.1%
# Recent Graduates	545	20.4%	270	19.6%	101	17.8%
# Faculty Obtaining Tenure during 2009 to 2017	309	24.3%	142	21.1%	54	14.8%
# Faculty Promoted to Full during 2009 to 2017	216	19.0%	120	15.8%	57	19.3%
	Male	Female	Male	Female	Male	Female
# Years since PhD in Tenure Year	8.62	8.71	7.94	8.30	7.33	8.88
# Years since PhD in promotion year for Faculty promoted to Full during 2009 to 2017	14.83	14.93	13.28	13.74	12.39	11.36
	Publication Tier 1		Public		Private	
	Total	%Female	Total	%Female	Total	%Female
# Unique Faculty	610	15.1%	1,177	16.7%	904	15.7%
# Faculty with Tenure for All Years, 2009 to 2017	319	10.0%	617	11.5%	482	9.1%
# Faculty Untenured for All Years, 2009 to 2017	216	21.6%	402	20.1%	326	23.9%
# Recent Graduates	162	21.0%	320	17.8%	245	22.9%

(*Continued*)

Table II—*Continued*

	Publication Tier 1		Public		Private	
	Total	%Female	Total	%Female	Total	%Female
# Faculty Obtaining Tenure during 2009 to 2017	87	18.4%	199	26.1%	110	20.9%
# Faculty Promoted to Full during 2009 to 2017	82	24.4%	118	22.9%	90	13.3%
	Male	Female	Male	Female	Male	Female
# Years since PhD in Tenure Year	7.73	8.63	8.41	8.62	8.99	8.91
# Years since PhD in promotion year for Faculty promoted to Full during 2009 to 2017	13.08	14.05	16.32	16.42	13.17	12.17

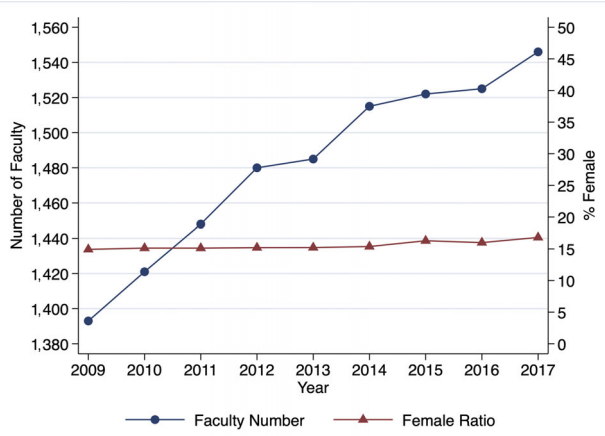

Figure 1. Sample of finance faculty by year. This figure shows the number of faculty and the percentage of faculty who are female by year. (Color figure can be viewed at wileyonlinelibrary.com)

Figure 1 illustrates the very slow changes in the composition of faculty. In 2009, the sample is 14.9% female, and, by 2017, this percentage rises to 16.8%. By comparison, women accounted for 19.7% of all economics faculty in 2009 and 23.1% in 2017 (CSWEP (2019)). Female representation in finance lags economics, and both lag the overall population of college and university faculty. AAUP (2019) reports that women made up 40.1% of full-time college and university faculty across all disciplines in 2008 to 2009 and 44.8% of all faculty in 2018 to 2019.

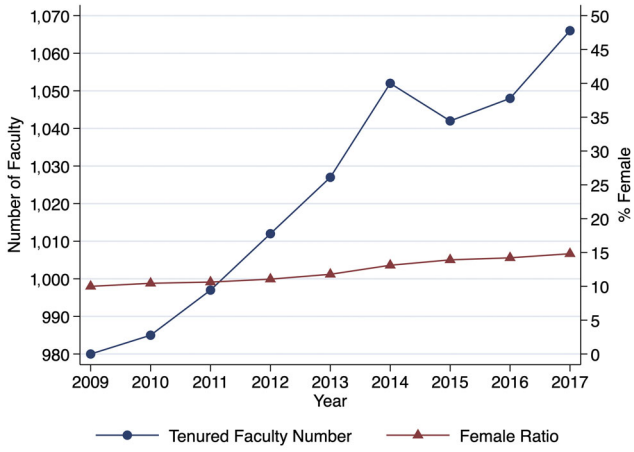

Figure 2. Sample of tenured finance faculty by year. This figure shows the number of tenured faculty and the percentage of tenured faculty who are female by year. (Color figure can be viewed at wileyonlinelibrary.com)

In finance, the changes in female representation have been somewhat faster among tenured faculty, as depicted in Figure 2. In 2009, 10% of the samples of tenured faculty are women. By 2017, that number rises to 14.8%. Despite the slow change in the total fraction of faculty that are female, we observe important changes in the gender balance among newly tenured faculty. In particular, of the 1,058 faculty who have tenure throughout our sample period, only 9.7% are women, but women comprise 24.3% of the 309 faculty obtaining tenure and 19% of the faculty promoted to full professor during our sample period.[13,14]

The gender balance has been stickier at the new assistant professor ranks. Women comprise 20.4% of recent graduates (faculty with graduation dates from 2009 onward), and Figure 3 shows only a small increase over time in the fraction of women graduates who are entering the sample each year.

The faculty in our sample come from a wide range of PhD institutions. Internet Appendix Table IA.I lists each institution in the sample, along with the fraction of graduates from our sample of top-100 schools that are female.[15]

[13] These numbers line up with those of Fishe (1998). The focus of that paper is on promotion to full professor, but female representation is consistent: of the 51 full professors at top 20 departments from 1980 to 1991, we count four (i.e., 8%) women; of the 68 promoted full professors at departments ranked 21–96, seven (10%) are women.

[14] On average, men obtain tenure somewhat earlier in their careers than do women (especially at top schools). Our data are based on calendar time and not tenure clock time, so it is possible that maternity leaves and differential use of child-rearing leaves factor into this difference. The additional time for women to obtain tenure in our sample is shorter than the findings in Kahn (1993). However, Kahn (1993) concentrates on both economics and management fields and uses older data, from 1970 to 1989.

[15] The Internet Appendix is available in the online version of this article on *The Journal of Finance* website.

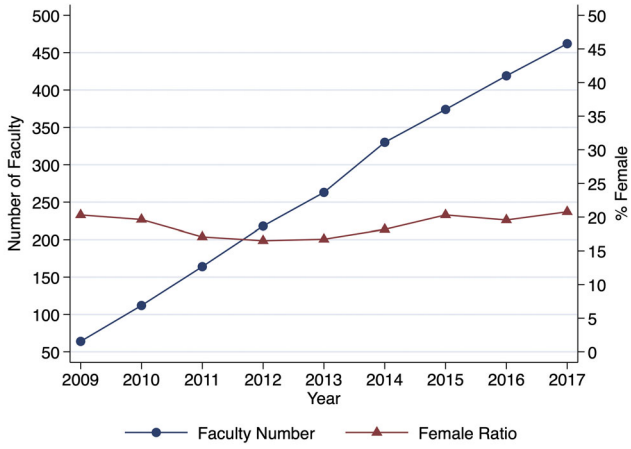

Figure 3. Faculty graduating with a PhD in 2009 and thereafter. This figure shows the number of faculty graduating with a PhD in 2009 to 2017 ("recent graduates") and the percentage of recent graduates who are female by year. (Color figure can be viewed at wileyonlinelibrary.com)

Women do not appear less likely to graduate from top programs. However, they do come from a more dispersed set of programs.[16] Differential dispersion might be important if research networks stem from graduate schools.

B. Faculty Publications

Finance is an articles-driven field. If research productivity determines placement and promotion, then publication differences between men and women can shed some light on why female representation within the profession is low, especially in top programs.

Table III summarizes the publication records of male and female faculty. In interpreting the data, it is important to emphasize that women tend to be newer to the profession than men. In our sample of faculty-year observations, the mean number of years since obtaining a PhD is 18.5 for men and 12.1 for women. Still, the patterns in the table can be informative.

The summary statistics in Table III show that female faculty have fewer publications than males: the average female in our sample has approximately 51% (7.24/14.33) the total publications of the average male. This publication difference is particularly high at lower tiered journals.[17] When we consider only top-3 finance and top-5 economics journals, the average female publica-

[16] See Figures IA.1 and IA.2.

[17] *Total Publications* includes all publications in journals in the Scopus Business and Economics category. *Top Publications* are all publications in the top-3 finance journals and in the top-5 economics journals (footnote 3 lists the top journals in each field). *Top Solo-Authored Publications* are all top publications that are solo authored, and *Other Solo-Authored Publications* are all solo-authored publications that are not in a top journal.

Table III
Faculty Publications

This table reports the mean number of publications by faculty members in the sample. *Total Publications* comprises all publications in the business and economics category, as defined by Scopus. *Top Publications* comprises all publications in the top-3 finance and top-5 economics journals. The top-3 finance journals are *The Journal of Finance*, *Journal of Financial Economics*, and *Review of Financial Studies*. The top-5 economics journals are *American Economic Review*, *Econometrica*, *Journal of Political Economy*, *Review of Economic Studies*, and *Quarterly Journal of Economics*. Table II defines "All," "Top 30," "Top 10," "Pub. Tier 1," "Public," and "Private" institution categories. "At Tenure Year" includes those faculty who obtain tenure during the 2009 to 2017 period and shows the publication record as of the year in which the faculty member receives tenure. "At Promotion to Full Year" includes those faculty who are promoted to full professor during the 2009 to 2017 period and shows the publication record as of the year in which the faculty member is promoted to full professor. "Recent graduates" are those faculty who completed their PhDs during the 2009 to 2017 sample period

	All		Top 30		Top 10	
	Male	Female	Male	Female	Male	Female
Total Publications						
All Faculty	14.33	7.24	15.41	8.65	18.21	9.06
Untenured Faculty	2.47	2.25	2.54	2.08	3.31	2.60
Tenured Faculty	19.00	11.43	20.91	13.52	24.20	13.59
At Tenure Year	8.09	6.47	9.07	6.27	9.89	7.63
At Promotion to Full Year	13.95	12.29	14.03	12.74	15.05	12.00
Recent Graduates	1.60	1.15	1.75	0.91	2.21	0.78
Top Publications						
All Faculty	4.64	2.83	6.78	4.56	8.41	4.73
Untenured Faculty	1.18	0.96	1.57	1.26	2.25	1.58
Tenured Faculty	6.00	4.39	9.01	7.01	10.89	6.93
At Tenure Year	3.79	2.67	5.63	3.97	6.63	5.25
At Promotion to Full Year	6.12	5.84	8.20	8.00	9.44	8.36
Recent Graduates	0.82	0.53	1.06	0.60	1.53	0.37
Top Solo-Authored Publications						
All Faculty	0.67	0.36	1.08	0.64	1.43	0.68
Untenured Faculty	0.19	0.15	0.27	0.24	0.44	0.30
Tenured Faculty	0.86	0.54	1.42	0.94	1.82	0.95
At Tenure Year	0.48	0.44	0.76	0.83	0.98	1.13
At Promotion to Full Year	0.64	0.49	0.84	0.58	0.98	0.73
Recent Graduates	0.12	0.09	0.16	0.11	0.27	0.13
Other Solo-Authored Publications						
All Faculty	2.38	1.00	2.99	1.44	4.00	1.64
Untenured Faculty	0.40	0.34	0.42	0.38	0.61	0.51
Tenured Faculty	3.15	1.56	4.09	2.23	5.36	2.44
At Tenure Year	1.20	1.03	1.37	1.33	1.33	1.38
At Promotion to Full Year	1.65	1.32	1.58	1.68	1.61	1.64
Recent Graduates	0.26	0.16	0.26	0.16	0.34	0.23

(*Continued*)

Table III—*Continued*

	Pub. Tier 1		Public		Private	
	Male	Female	Male	Female	Male	Female
Total Publications						
All Faculty	18.78	9.43	13.54	7.26	15.28	7.22
Untenured Faculty	3.13	2.26	2.27	2.18	2.71	2.34
Tenured Faculty	25.17	14.85	18.01	11.01	20.17	12.14
At Tenure Year	9.16	7.06	7.73	6.29	8.71	6.87
At Promotion to Full Year	15.05	12.70	13.80	13.04	14.18	10.92
Recent Graduates	2.04	0.86	1.41	1.27	1.83	1.02
Top Publications						
All Faculty	8.72	5.36	3.48	2.67	6.02	3.06
Untenured Faculty	1.95	1.46	0.85	0.86	1.59	1.08
Tenured Faculty	11.48	8.32	4.53	4.00	7.75	5.04
At Tenure Year	5.93	5.06	3.08	2.42	5.00	3.22
At Promotion to Full Year	9.03	8.35	5.00	5.48	7.31	7.25
Recent Graduates	1.28	0.61	0.61	0.49	1.07	0.57
Top Solo-Authored Publications						
All Faculty	1.40	0.73	0.41	0.30	0.98	0.45
Untenured Faculty	0.35	0.29	0.12	0.16	0.28	0.13
Tenured Faculty	1.83	1.07	0.53	0.40	1.25	0.76
At Tenure Year	0.93	0.81	0.34	0.40	0.72	0.52
At Promotion to Full Year	1.08	0.65	0.51	0.41	0.80	0.67
Recent Graduates	0.20	0.16	0.06	0.09	0.18	0.08
Other Solo-Authored Publications						
All Faculty	3.81	1.38	1.81	0.85	3.05	1.23
Untenured Faculty	0.56	0.44	0.35	0.39	0.46	0.27
Tenured Faculty	5.14	2.10	2.39	1.18	4.05	2.20
At Tenure Year	1.54	1.19	1.11	1.10	1.36	0.87
At Promotion to Full Year	1.95	1.40	1.59	1.19	1.71	1.67
Recent Graduates	0.28	0.22	0.21	0.19	0.31	0.13

tion ratio jumps to 61% (2.83/4.64) of the top publications of the average male. When we condition on tenure status, the year in which the person receives tenure, the year in which the person is promoted to full professor, or when we focus on the subsample of recent graduates, the ratio of female publications to male publications increases even further, but it generally remains less than one (with the exception of top-10 and top-30 programs, where women have slightly more top solo-authored publications than men by their tenure year). Not surprisingly, the number of top publications for both men and women are higher at top schools. In the regression analysis that follows, we control for years since PhD and the institution at which the faculty member is employed to help clarify the interpretation of the differences that we observe in Table III.

Publication records are an important indicator of faculty productivity, but the publication record data in Table III and in the regressions that follow come with an important caveat: we do not observe productive activities out-

side of publications. Differential engagement in nonresearch tasks can possibly explain some of the gender differences in the publication rates that we observe. Babcock et al. (2017) report that women, more than men, volunteer for tasks that benefit the organization rather than their individual career advancement prospects. Winslow (2010) reports that female faculty spend more time on teaching. Guarino and Borden (2017) provide survey evidence that female faculty engage in more service activities than do men. El-Alayli, Hansen-Brown, and Ceynar (2018) report that students perceive female professors to be more nurturing. They argue that this perception can lead to more burden for female professors. If similar patterns exist among finance faculty, then the publications-based measures of productivity for women are biased downward. If nonresearch services are valued, this would bias toward results that indicate more favorable outcomes for women in regressions that condition only on publication records.

III. Regression Analysis

Before turning to the regressions, we emphasize that the paper is primarily descriptive. The regressions allow us to control for important variables such as cohort and institution fixed effects. Our objective is to provide a comprehensive view of the status of women in the academic finance profession, but we are unable to make strong causal statements. In addition, because our data cover only nine years, we do not follow faculty through their entire careers. This means that survivorship is a concern, especially among the population of more experienced faculty. To help address this concern, and to aid in the overall interpretation, we supplement the cross-sectional regressions with analyses of exit patterns among recent graduates.

In the career outcome analyses that follow, we take two complementary approaches to analyzing potential gender differences in the rank of the institution at which the individual is employed, tenure, and full professor status. First, to study the entire sample of finance faculty, we run year-by-year cross-sectional regressions of career outcomes on gender and various controls. These analyses allow us to make statements about the population of finance faculty during the sample period. Second, we examine career trajectories at the individual faculty level. Recently, Heckman and Moktan (2020) study tenure outcomes by the end of the first employment spell and Sarsons et al. (2021) examine tenure outcomes by six to eight years after initial appointment to a tenure-track position. In the spirit of these recent papers on tenure and promotion in economics, we ask the following question: conditional on having a position at a top-100 school at some point during our sample period, what is the rank of the institution at which the person is employed, the likelihood of having tenure, and the likelihood of being a full professor by year X post-PhD. We define X at different windows, depending on the career outcome of interest (for example, $X = 6$, 8, 10, and 12 years post-PhD for the tenure analyses, while $X = 10$, 12, 14, 16, 18, and 20 years post-PhD for the full professor regressions).

Table IA.II provides summary statistics for all of the variables used in the regressions. Along with the faculty-level findings from Tables I and II and Figures 1 through 3, the unconditional means in Table IA.II show greater employment of women by lower ranked institutions, lower tenure rates among female faculty, and somewhat lower salaries for women compared to men. We provide more formal analyses of these patterns in the regressions that follow.

A. Institution Rank

Table II suggests that women are underrepresented in the profession, especially at top-ranked schools. We begin this section with a more formal analysis of the representation of women among top-100 programs.

Table IV presents results of cross-sectional regressions in which the dependent variable is *Institution rank*, defined as the mean *U.S. News & World Report* ranking during each year over the 2009 to 2017 sample period. These regressions offer an initial look at potential gender differences in the composition of faculty at top-100 business schools as one varies the institution rank. The explanatory variable of interest is *Female*, a dummy equal to 1 if the faculty member is female. We also control for rank in the profession (*Tenured*, a dummy equal to 1 if the faculty member has tenure during year t), professional experience (*YearsSincePhD*, the number of calendar years since the faculty member earned a PhD), status in the profession/subfield popularity (*Citations*, defined as ln(number of citations+1)), and research productivity (*Top Pubs*, defined as ln(number of top publications+1), where the number of top publications is the total number of top-3 finance and top-5 economics publications through year t; and *Other Pubs*, defined as ln(number of other publications+1), where the number of other publications is the number of publications through year t in all outlets that are not top publications). We take natural logs of the citation and publication variables following Heckman and Moktan (2020) and Sarsons et al. (2021). We distinguish top publications to account for the findings in Heckman and Moktan (2020) that publishing in top journals predicts career outcomes in economics. We estimate pooled regressions using data over the entire 2009 to 2017 sample period, and we cluster standard errors by year and unique faculty identifier.

Table IV reveals that, after controlling for research output, female faculty tend to hold positions at lower ranked schools during most years that we study. Recall that lower values of *Institution rank* are associated with higher school ranking (for example, a value of one maps to the highest ranked school). In column (1) of Table IV, the estimated coefficient of 6.443 on the *Female* dummy (significant at the 1% level) implies that in 2009, all else equal, women held jobs at schools ranked more than six places lower than male faculty. By 2014, we estimate a gender gap of four rankings. Rankings are noisy, and a four-rank difference between many of the schools in Table I may not be large in magnitude in some cases. However, we should also note that Heckman and Moktan (2020) consider movement of five ranks from one's current institution to be a significant move. Moreover, the directional result is clear, as is a trend:

Table IV

After Controlling for Research Productivity, Are Female Faculty More Likely to Be Employed by Lower Ranked Institutions?

This table reports results of OLS regressions in which the dependent variable is *Institution Rank*, defined as the mean *U.S. News & World Report* ranking over the 2009 to 2017 sample period. Lower values of *Institution rank* are associated with higher school ranking (i.e., a value of one maps to the highest ranked school). The explanatory variables are: *Female*, a dummy equal to 1 if the faculty member is female; *Tenured*, a dummy equal to 1 if the faculty member has tenure during year t; *Citations*, defined as ln(number of citations+1), where the number of citations is calculated through year t; *Top Pubs*, defined as ln(number of top publications+1), where the number of top publications is the total number of top-3 finance and top-5 economics publications through year t; and *Other Pubs*, defined as ln(the number of other publications+1), where the number of other publications is defined as publications through year t in all outlets that are not top publications. Columns (1) through (9) show results from year-by-year regressions. We also include PhD year fixed effects in the specification. *% Female Faculty* is the percentage of women of all faculty-year observations. $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

	(1) 2009	(2) 2010	(3) 2011	(4) 2012	(5) 2013	(6) 2014	(7) 2015	(8) 2016	(9) 2017
Female	6.443***	6.019***	5.943***	4.537**	4.318**	4.071**	2.969	0.847	0.778
	(2.131)	(2.048)	(2.008)	(1.987)	(1.975)	(1.941)	(1.895)	(1.905)	(1.820)
Tenured	−0.723	1.457	6.398*	5.009	0.207	3.579	2.496	3.421	2.828
	(3.758)	(3.677)	(3.456)	(3.428)	(3.232)	(3.202)	(3.263)	(3.331)	(3.128)
Citations	−2.741***	−1.859**	−1.921**	−2.137**	−1.911**	−2.102**	−1.856**	−1.775**	−0.873
	(0.876)	(0.852)	(0.842)	(0.841)	(0.830)	(0.836)	(0.831)	(0.836)	(0.808)
Top Pubs	−16.128***	−18.103***	−17.924***	−17.835***	−17.591***	−17.325***	−17.807***	−17.573***	−18.708***
	(1.473)	(1.409)	(1.355)	(1.354)	(1.339)	(1.332)	(1.316)	(1.309)	(1.268)
Other Pubs	9.006***	8.187***	7.885***	7.317***	7.305***	7.539***	7.761***	7.912***	7.220***
	(1.231)	(1.192)	(1.159)	(1.162)	(1.143)	(1.146)	(1.149)	(1.156)	(1.123)
N	1,362	1,393	1,422	1,455	1,460	1,490	1,495	1,499	1,520
% Female Faculty	14.90	15.08	15.05	15.12	15.14	15.30	16.25	16.01	16.71
Adj. R^2	0.301	0.327	0.327	0.326	0.319	0.320	0.323	0.314	0.325
PhD Yr. FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

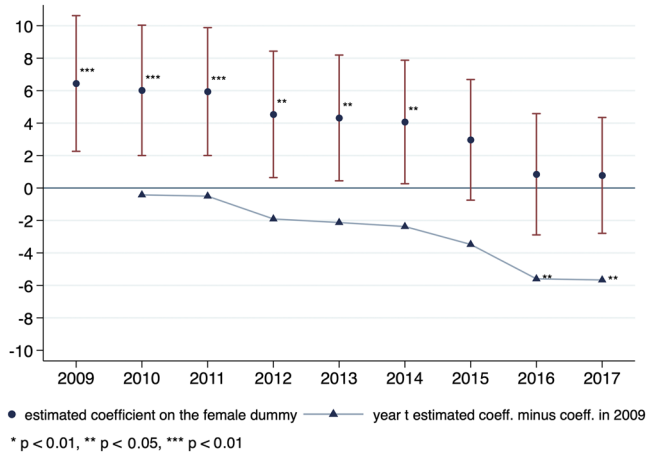

Figure 4. Are female faculty more likely to be employed by lower ranked schools? The figure shows the point estimates and 95% confidence intervals around the coefficients on the *Female* dummy for each year in the Table IV regressions. The figure also plots the difference between the estimated coefficient on the *Female* dummy in year t and the estimated coefficient in 2009. (Color figure can be viewed at wileyonlinelibrary.com)

Figure 4 shows a steady decline in the estimated gender gap over time. In 2017, the coefficient is 0.778 and is statistically indistinguishable from zero. The difference in the estimated coefficients between 2009 and 2017 is significant at the 1% level.[18]

The coefficients on the other control variables in Table IV also deserve mention. Not surprisingly, we find that faculty with more citations and top publications are at higher ranked schools, and more publications not in top journals are associated with employment at a lower tiered school.

Under our second approach, we focus on the rank of the institution at which an individual is employed at exactly X years post-PhD, where $X = 1$, 4, 8, 12, and 16 years. To be included in the sample the 1-, 4-, 8-, 12-, and 16-year post-graduation dates must occur during the 2009 to 2017 sample period (thus, the analyses include only graduates between 1993 and 2016, with the exact sample depending on the value of X). Each regression includes only one observation per faculty member. The results are in Table V. Consistent with Figure 4 and Table IV, we observe a significant gender gap in the institution rank at each value of X, with the exception of $X = 1$. The economic magnitude of the gender gap at the 4-, 8-, 12-, and 16-year marks varies from 6.4 to 9.6 ranks. At the one-year mark, the estimated coefficient is much smaller (1.6) and is statistically insignificant. The faculty included in this sample obtained their PhDs between 2008 and 2016, which may indicate a shrinking placement gap among very recent graduates.

[18] The average gender gap in institution rank shown in Table IV is driven by untenured faculty members during the first two-thirds of the sample period (Table IA.III).

Table V

Are Female Faculty More Likely to Be Employed by Lower Ranked Institutions 1, 4, 8, 12, and 16 Years Post-PhD?

This table reports results from estimating a linear probability model in which the dependent variable is *Institution rank X* years post-PhD. *Institution rank* is defined as the mean *U.S. News & World Report* ranking over the 2009 to 2017 sample period. *X* years post-PhD is measured at $X = 1$, 4, 8, 12, and 16. Explanatory variables are: *Female*, a dummy equal to 1 if the faculty member is female; *Tenured*, a dummy equal to 1 if the faculty member is tenured (columns (3) through (5) only); *Citations*, defined as ln(number of citations+1), where the number of citations is calculated through year *t*; *Top Pubs*, defined as ln(number of top publications+1), where the number of top publications is the total number of top-3 finance and top-5 economics publications through year *t*; and *Other Pubs*, defined as ln(the number of other publications+1), where the number of other publications is defined as publications through year *t* in all outlets that are not top publications. *% Female Faculty* is the percentage of women of all faculty-year observations. $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

	1 Year (1)	4 Years (2)	8 Years (3)	12 Years (4)	16 Years (5)
Female	1.606	9.625***	6.828**	6.440**	6.616**
	(3.503)	(3.055)	(2.726)	(2.752)	(2.998)
Tenured			4.588	8.872**	7.827
			(2.823)	(3.700)	(4.885)
Citations	−0.436	0.427	1.816	2.570*	1.198
	(2.267)	(1.435)	(1.326)	(1.336)	(1.384)
Top Pubs	−17.992***	−23.206***	−26.227***	−26.999***	−24.455***
	(5.311)	(3.318)	(2.680)	(2.435)	(2.387)
Other Pubs	1.832	8.665***	5.638***	4.681**	4.794**
	(4.564)	(2.477)	(2.008)	(1.982)	(2.026)
N	482	526	560	542	543
% Female Faculty	19.09	22.05	23.39	21.59	18.6
Adj. R^2	0.040	0.217	0.327	0.341	0.327
PhD Year FE	Yes	Yes	Yes	Yes	Yes

Taken together, the results in Figure 4 and in Tables IV and V show a gender gap in placement that is shrinking over time. Any observed gaps could be the result of discrimination. They could also be the result of faculty preferences. For example, joint career decisions might differentially impact the personal constraints and geographical preferences of women. It might be the case that women make different tradeoffs than men and choose lower ranked schools to fit with partners' careers. We do not examine these mechanisms.

In Tables IV and V, we define institution rank based on *U.S. News & World Report* rankings of MBA programs. This ranking is correlated with research ranking, but the MBA rankings place substantial weight on variables such as recruiter assessments and MBA student placements and starting salaries. To address this potential concern, we construct an alternative ranking variable using faculty publication data: *Alternative Rank* is measured as the equal-weighted average (across all sample years) of the mean number of top publications by individual finance faculty members at the institution. Tables IA.IV and IA.V report results of regression analyses that are analogous to those

shown in Tables IV and V, respectively. Similar to the main tables, Table IA.IV shows a gender gap in placement during the first three years of the sample that becomes statistically insignificant in the later years and Appendix Table IA.V shows a significant gender gap in the research ranking of the employer at years 4, 8, and 12 post-PhD.

Broadly consistent with our findings, Ghosh and Liu (2020) examine the rank of first placement within economics and find that women have a 9% lower probability of obtaining a first job in a U.S. economics department. However, the authors do not examine potential changes in the placement gap over time, as we do.

B. Tenure Status

Figure 2 reveals that less than 15% of tenured finance faculty are female in each year of the sample. Table II shows that this gender imbalance among tenured faculty is present at both top schools and lower ranked schools. In interpreting the averages, it is useful to control for cohort effects (because women tend to be more recent graduates) as well as publication records.

Our focus is on understanding gender differences in tenure among all finance faculty. Similar to the institution rank analyses, we employ two approaches in analyzing tenure status. First, we study the entire sample of finance faculty in each year over the sample period. Second, in the spirit of recent literature on tenure and promotion in economics (Sarsons et al. (2021), Heckman and Moktan (2020)), we ask the following question: conditional on having a position at a top-100 school at some point during our sample period, what is the likelihood of having tenure by year X post-PhD? We define X as 6, 8, 10, and 12 years post-PhD for the tenure analysis. Unfortunately, given the nine-year sample period, we are limited in what we can say about tenure rates among new graduates. The median time to obtain tenure is greater than eight years for both men and women, and thus, our data are inappropriate for a formal examination of the career trajectories of recent graduates (although we can use the recent graduate subsample to examine exit rates; see Section III.D).

Under the first approach, we use the entire sample of faculty and estimate a linear probability model in which the dependent variable is a dummy equal to 1 if the faculty member has tenure in year t. These year-by-year cross-sectional regressions help us understand potential changes over time. Explanatory variables are *Female*, *Citations*, *Top Pubs*, and *Other Pubs*. The disaggregation of publications into top and other publications (*Top Pubs* and *Other Pubs*, respectively) is important, given the findings in Heckman and Moktan (2020) that in top-35 economics departments, publishing in a top-5 economics journal strongly predicts tenure rates. The regressions also include both PhD year and institution fixed effects, so we control for both cohort and the institution at which the faculty member is employed.

The results from the initial tenure analysis are reported in Table VI, Panel A. We observe a significant gender gap in tenure rates across male and female finance faculty during the first half of the sample period, but that gap

Table VI

Are Female Faculty Equally Likely to Have Tenure?

This table reports results from a linear probability model in which the dependent variable is a dummy variable equal to 1 if the faculty member has tenure during year t. Explanatory variables in Panel A are: *Female*, a dummy equal to 1 if the faculty member is female; *Citations*, defined as ln(number of citations+1), where the number of citations is calculated through year t; *Top Pubs*, defined as ln(the number of top publications+1), where the number of top publications is the total number of top-3 finance and top-5 economics publications through year t; and *Other Pubs*, defined as ln(the number of other publications+1), where the number of other publications is defined as publications through year t in all outlets that are not top publications. Panel B reports results from the extended specification following Sarsons et al. (2021), where we divide the top publication and other publication variables into solo-authored and coauthored publications and we interact all publications variables with the *Female* dummy. The disaggregated publications variables are *Top Coauth Pubs*, defined as the number of coauthored publications in top-3 finance and top-5 economics journals through year t; *Other Coauth Pubs*, all coauthored publications that are not in top journals; *Top Solo Pubs*, the number of solo-authored publications in top-3 finance and top-5 economics journals through year t; and *Other Solo Pubs*, all solo-authored publications through year t that are not in top journals. We transform each of the publication variables into ln(publication variable +1). All regressions include both PhD year and institution fixed effects. $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

Panel A. Base Specification

	(1) 2009	(2) 2010	(3) 2011	(4) 2012	(5) 2013	(6) 2014	(7) 2015	(8) 2016	(9) 2017
Female	−0.045***	−0.038**	−0.063***	−0.058***	−0.061***	−0.012	−0.007	0.011	0.007
	(0.016)	(0.015)	(0.016)	(0.016)	(0.017)	(0.017)	(0.016)	(0.015)	(0.016)
Citations	−0.001	−0.002	0.008	0.005	0.007	0.011	0.019***	0.022***	0.018**
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Top Pubs	0.033***	0.037***	0.030***	0.029**	0.027**	0.032**	0.024**	0.030***	0.032***
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.011)	(0.012)
Other Pubs	0.041***	0.036***	0.029***	0.045***	0.045***	0.043***	0.031***	0.016*	0.021**
	(0.010)	(0.009)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
N	1,361	1,392	1,422	1,455	1,460	1,490	1,495	1,499	1,520
% Female Faculty	14.92	15.09	15.05	15.12	15.14	15.3	16.25	16.01	16.71
Adj. R^2	0.826	0.834	0.818	0.817	0.790	0.788	0.803	0.811	0.793

(*Continued*)

Table VI—*Continued*

Panel B. Extended Specification

	(1) 2009	(2) 2010	(3) 2011	(4) 2012	(5) 2013	(6) 2014	(7) 2015	(8) 2016	(9) 2017
Female	−0.085***	−0.078***	−0.130***	−0.095***	−0.114***	−0.046	−0.009	−0.003	−0.014
	(0.026)	(0.027)	(0.029)	(0.029)	(0.031)	(0.029)	(0.027)	(0.027)	(0.028)
Citations	0.003	0.000	0.009	0.007	0.011	0.013*	0.021***	0.023***	0.020***
	(0.007)	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Top Coauth Pubs	0.020*	0.028**	0.028**	0.024**	0.022*	0.028**	0.019	0.029**	0.030***
	(0.012)	(0.011)	(0.012)	(0.011)	(0.012)	(0.012)	(0.012)	(0.011)	(0.012)
Fem*Top Coauth Pubs	0.021	0.026	0.029	0.020	−0.006	−0.013	−0.007	−0.001	−0.019
	(0.023)	(0.022)	(0.022)	(0.022)	(0.023)	(0.023)	(0.021)	(0.021)	(0.021)
Other Coauth Pubs	0.027***	0.021**	0.015	0.032***	0.023**	0.032***	0.028***	0.007	0.015
	(0.010)	(0.009)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Fem*Other Coauth Pubs	0.028	0.012	0.022	−0.012	0.033	0.030	−0.002	−0.012	−0.001
	(0.021)	(0.020)	(0.021)	(0.020)	(0.021)	(0.020)	(0.019)	(0.019)	(0.018)
Top Solo Pubs	0.025*	0.021	0.004	0.013	0.009	0.004	0.005	−0.003	−0.007
	(0.014)	(0.014)	(0.014)	(0.014)	(0.015)	(0.015)	(0.015)	(0.015)	(0.016)
Fem*Top Solo Pubs	−0.040	−0.029	0.028	0.020	0.004	0.075	0.061	0.106**	0.129***
	(0.043)	(0.042)	(0.044)	(0.043)	(0.045)	(0.046)	(0.043)	(0.043)	(0.044)
Other Solo Pubs	0.007	0.016*	0.014	0.008	0.020*	0.007	−0.003	0.010	0.001
	(0.010)	(0.010)	(0.010)	(0.010)	(0.011)	(0.011)	(0.010)	(0.010)	(0.011)
Fem*Other Solo Pubs	−0.003	0.026	0.017	0.074**	0.037	−0.030	−0.013	0.007	0.025
	(0.034)	(0.033)	(0.034)	(0.033)	(0.035)	(0.034)	(0.033)	(0.032)	(0.032)
N	1,361	1,392	1,422	1,455	1,460	1,490	1,495	1,499	1,520
% Female Faculty	14.92	15.09	15.05	15.12	15.14	15.3	16.25	16.01	16.71
Adj. R^2	0.825	0.833	0.818	0.817	0.790	0.787	0.802	0.811	0.793

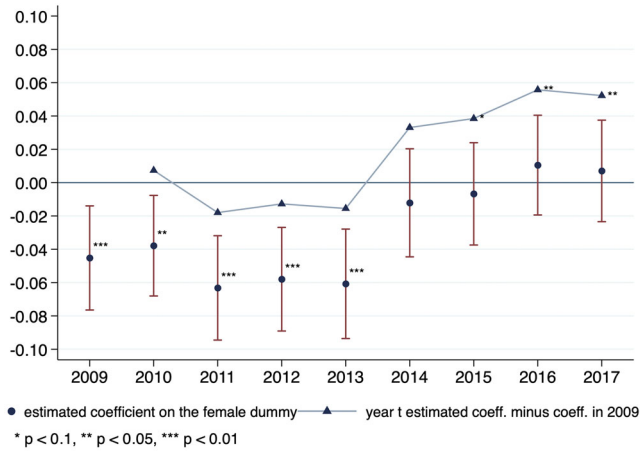

Figure 5. Are female faculty equally likely to have tenure? Year-by-year analysis. The figure shows the point estimates and 95% confidence intervals around the coefficients on the *Female* dummy for each year in the Table VI regressions. The figure also plots the difference between the estimated coefficient on the *Female* dummy in year t and the estimated coefficient in 2009. (Color figure can be viewed at wileyonlinelibrary.com)

disappears by the end of the sample period. For example, the estimated coefficient of −0.045 on the *Female* dummy in 2009 implies that, all else equal, women are 4.5% less likely to be tenured than men. This is the gap that we observe after controlling for publications and citations, which are the most important variables in explaining tenure. By 2017, the estimated coefficient on *Female* is 0.007, which is statistically indistinguishable from zero. Figure 5 plots the estimated coefficients on the *Female* dummy over time, as well as differences between the time t coefficient and what we observe in 2009. Between 2009 and 2013, women are between 3.8% and 6.1% less likely to be tenured than men. By 2014, this gap is indistinguishable from zero and remains so through 2017. Thus, female representation among senior female faculty is, indeed, improving.[19]

The coefficients on the control variables in Table VI are also of interest. Not surprisingly, we find that the number of years since PhD, citations, top publications, and other publications are all positively related to tenure status. The estimated coefficient on *Other Pubs* is larger than that on *Top Pubs* in the pooled regressions shown in Table VI, but this difference is not statistically

[19] The regressions in Table VI include institution fixed effects. In Panel A of Table IA.VII, we replace institution fixed effects with the institution ranking variable. The results are similar to the findings in Table VI and Figure 5. On average, we find slightly higher tenure rates of faculty at lower ranked schools. Importantly, the estimated coefficients on all of the other variables are similar to those in Table VI and in Figure 5. Given our choice of a linear probability model, in Panel B of Table IA.VII, we also check that our results are robust to a logit specification. Similar to Panel A, we replace the institution fixed effects with the institution ranking variable. Again, the results are qualitatively similar to those shown in Table VI.

significant. Still, it is somewhat curious that other publications are as important as top publications. One possible explanation is that evaluation standards differ across the top-100 schools. In Table IA.VI, we repeat the Table VI, Panel A, analysis for the subsample of top-30 schools. The estimated coefficients on both top and other publications are significant. The gap in relative importance is increasing over time, with only top publications having an effect by the end of the sample period. The estimated coefficient on top publications increases in magnitude over time, while the estimated coefficient on other publications goes from being statistically significant in 2009 to insignificant after 2015. Similar to Table VI and Figure 5, for the subsample of top-30 schools, we find that women are 4.5% less likely to have tenure in the beginning of the sample period, while there is no significant difference between men and women by 2017.

Sarsons et al. (2021) report that women receive less credit for coauthored work. In Panel B of Table VI, we repeat the Panel A regressions after dividing publication variables into solo-authored or coauthored publications. In addition, we follow Sarsons et al. (2021) and interact all publication variables with *Female*, a dummy variable equal to 1 if the faculty member is female. As in Panel A, we find a negative and significant coefficient on the *Female* dummy that declines over time. The main difference is that the estimated direct effects of *Female* are larger than what we report in Panel A.

When we examine the interactions, unlike Sarsons et al. (2021), we do not find evidence that women are penalized for their coauthored work. The estimated coefficients on *Fem*TopCoauthor Pubs* and on *Fem*Other Coauthor Pubs* are insignificant in all of the regressions shown. If anything, there is some evidence that women receive more credit for their solo work (in the later years of the sample). Time-series variation may explain the difference between our coauthorship results and those in Sarsons et al. (2021). Specifically, the Sarsons et al. (2021) sample period runs from 1985 through 2014, ending precisely when our results show improvements in the gender gap. Separate from the gender findings, Panel B of Table VI shows that top coauthored publications are more important than top solo publications. It is possible that collaborations result in better papers (see, for example, Hollis (2001)), but we do not examine this possibility here.

Table VII presents results of the tenure analyses using the second approach. In particular, we ask whether female faculty at top-100 schools are as likely to have tenure as men at exactly 6, 8, 10, and 12 years post-PhD. We emphasize that, to be included in the regressions, a faculty member must appear in the AcA data at least once in our sample period and the 6-, 8-, 10-, or 12-year mark postgraduation must occur during the 2009 to 2017 sample period (thus, the analyses only include faculty that graduate between 1997 and 2011). We do not observe a significant gender gap at 8, 10, or 12 years post-PhD (columns (3), (5), and (7), respectively). At six years post-PhD, the estimated coefficient of −0.086 in column (1) implies that, after controlling for research productivity,

Table VII

Are Female Faculty Equally Likely to Have Tenure 6, 8, 10, and 12 Years Post-PhD?

This table reports results from estimating a linear probability model in which the dependent variable is a dummy variable equal to 1 if the faculty member is tenured by X years post-PhD, where $X = 6$, 8, 10, or 12. Explanatory variables are: *Female*, a dummy equal to 1 if the faculty member is female; *Citations*, defined as ln(number of citations+1), where the number of citations is calculated through year t; *Top Pubs*, defined as ln(number of top publications+1), where the number of top publications is the total number of top-3 finance and top-5 economics publications through year t; and *Other Pubs*, defined as ln(the number of other publications+1), where the number of other publications is defined as publications through year t in all outlets that are not top publications. In columns (2), (4), (6), and (8), we estimate the extended specification where the top publications and other publications variables are divided into solo-authored or coauthored publications. We follow Sarsons et al. (2021) and interact these publications variables with the *Female* dummy. All specifications include institution and PhD year fixed effects. $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

	6 Years		8 Years		10 Years		12 Years	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Female	−0.086**	0.070	−0.029	0.021	−0.019	−0.094	−0.030	−0.042
	(0.035)	(0.067)	(0.043)	(0.088)	(0.040)	(0.078)	(0.036)	(0.072)
Citations	−0.013	−0.014	−0.001	−0.001	0.071***	0.068***	0.057***	0.054***
	(0.017)	(0.016)	(0.021)	(0.020)	(0.019)	(0.019)	(0.017)	(0.017)
Top Pubs	0.199***		0.313***		0.197***		0.115***	
	(0.039)		(0.047)		(0.042)		(0.037)	
Other Pubs	0.137***		0.210***		0.123***		0.112***	
	(0.027)		(0.030)		(0.027)		(0.026)	
Top Coauth Pubs		0.197***		0.304***		0.189***		0.117***
		(0.037)		(0.044)		(0.041)		(0.035)
Fem*Top Coauth Pubs		−0.069		−0.031		0.037		0.027
		(0.061)		(0.067)		(0.054)		(0.051)
Other Coauth Pubs		0.122***		0.189***		0.124***		0.091***
		(0.030)		(0.035)		(0.032)		(0.028)
Fem*Other Coauth Pubs		−0.126**		−0.032		0.009		0.015
		(0.056)		(0.060)		(0.055)		(0.051)
Top Solo Pubs		0.127**		0.139**		0.051		0.043
		(0.050)		(0.059)		(0.050)		(0.043)
Fem*Top Solo Pubs		0.097		0.078		0.111		0.028
		(0.114)		(0.137)		(0.113)		(0.102)
Other Solo Pubs		0.175***		0.142***		0.039		0.080**
		(0.042)		(0.047)		(0.038)		(0.033)

(*Continued*)

Table VII—*Continued*

	6 Years		8 Years		10 Years		12 Years	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Fem*Other Solo Pubs		−0.214**		−0.026		0.036		−0.106
		(0.107)		(0.106)		(0.095)		(0.086)
N	520	520	556	556	554	554	536	536
% Female Faculty	23.65	23.65	23.56	23.56	22.92	22.92	21.64	21.64
Adj. R^2	0.204	0.237	0.416	0.423	0.543	0.542	0.624	0.624
PhD Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Institution FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

women are 8.6% less likely to have tenure by year 6.[20] This could be due to discrimination, longer tenure clocks (for example, because of maternity leaves), or a tendency for women to exit the profession early in their careers. That we do not find important gender differences at longer horizons suggests that women take longer to obtain tenure but catch up by year 8. This result is also consistent with women who have experienced less favorable career outcomes exiting prior to year 8. Unfortunately, our data do not allow us to distinguish these possibilities. In Figure IA.3, we show Kaplan-Meier curves for men and women that are consistent with the results in Table VII, where the likelihood of obtaining tenure for women is lower than that for men until year 8.

Columns (2), (4), (6), and (8) of Table VII present results using the extended specification based on Sarsons et al. (2021). Interestingly, the results suggest that the negative effect of gender at the six-year horizon is driven by female faculty with more publications that are not in top journals, both solo and coauthored.[21] The other estimated coefficients are similar to those in column (1) and there are no significant gender interactions at 8-, 10-, and 12-year horizons. In extended analysis (see Table IA.XI), we further decompose the sample into late and early cohorts, where the early cohort maps to faculty years since PhD that are less than the sample median for each regression. We find that the insignificant gender gap at the 10- and 12-year horizons appears to be driven by the later (i.e., more recent) cohort. The interaction between *Female* and early cohort is significant and negative at those horizons. We interpret this result as further evidence that the gender gap in tenure rates is decreasing over time.

C. Full Professor Status

The widely observed "leaky pipeline" shows fewer women at each stage of one's academic career (Buckles (2019) provides a survey). It is therefore instructive to extend the tenure analyses shown in Tables VI and VII to examine the gender balance in the population of full professors.

Table VIII takes an approach similar to that in Table VI. We use the full sample of faculty (excluding assistant professors) and estimate a linear probability model in which the dependent variable is a dummy variable equal to

[20] The tenure regressions in Table VII employ a linear probability model. To check the robustness of the results to this specification, we estimate logit regressions where we replace institution fixed effects with the continuous institution ranking variable. We proceed in two steps. First, we reestimate the Table VII regressions using the continuous ranking variable as a control instead of the fixed effects to ensure that the findings are not due to the institution fixed effects. Next, we use the modified specification to estimate logit models. Table IA.VIII reports results for the regressions in Table VII after replacing institution fixed effects with the institution ranking variable. In Table IA.IX, we estimate a logit model. The findings are all consistent with those in Table VII.

[21] In Table IA.X, when we introduce the interaction of citations with gender, we find that the gender gap at year 6 post-PhD in the baseline specification (column (1)) comes from the sample of women with more citations. However, once we decompose publications into top/nontop and solo/coauthored, we continue to find that the negative gender effect comes from publications by women that are not in top journals. In later analysis, we use citations as a proxy for quality to examine the hypothesis that publications by women in these outlets are of lower quality.

Table VIII

Are Female Faculty Equally Likely to Be Full Professors?

This table reports results from a linear probability model in which the dependent variable is a dummy variable equal to 1 if the faculty member is a full professor during year t. The sample excludes assistant professors. The explanatory variables are: *Female*, a dummy equal to 1 if the faculty member is female; *YearsSincePhD*, the natural log of the number of calendar years since the faculty member earned a PhD; *Citations*, defined as ln(number of citations+1), where the number of citations is calculated through year t; *Top Pubs*, defined as ln(number of top publications+1), where the number of top publications is the total number of top-3 finance and top-5 economics publications through year t; and *Other Pubs*, defined as ln(the number of other publications+1), where the number of other publications is defined as publications through year t in all outlets that are not top publications. PhD Year and institution fixed effects are included in the specification. $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$

	(1) 2009	(2) 2010	(3) 2011	(4) 2012	(5) 2013	(6) 2014	(7) 2015	(8) 2016	(9) 2017
Female	−0.120***	−0.141***	−0.108***	−0.091**	−0.084**	−0.059*	−0.071**	−0.083**	−0.065*
	(0.041)	(0.041)	(0.039)	(0.039)	(0.037)	(0.035)	(0.035)	(0.034)	(0.033)
Citations	0.039**	0.042***	0.050***	0.052***	0.057***	0.042***	0.034**	0.031**	0.037**
	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)
Top Pubs	0.048*	0.062**	0.057**	0.067***	0.062***	0.071***	0.090***	0.101***	0.098***
	(0.025)	(0.025)	(0.024)	(0.024)	(0.024)	(0.023)	(0.024)	(0.023)	(0.023)
Other Pubs	0.117***	0.108***	0.104***	0.105***	0.098***	0.104***	0.106***	0.101***	0.097***
	(0.021)	(0.021)	(0.020)	(0.020)	(0.019)	(0.019)	(0.019)	(0.019)	(0.019)
N	953	958	974	988	1,006	1,031	1,021	1,029	1,048
% Fem. Faculty	9.86	10.33	10.47	10.83	11.53	12.9	13.71	14.09	14.69
Adj. R^2	0.484	0.459	0.462	0.452	0.476	0.477	0.471	0.476	0.468
PhD Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Institution F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

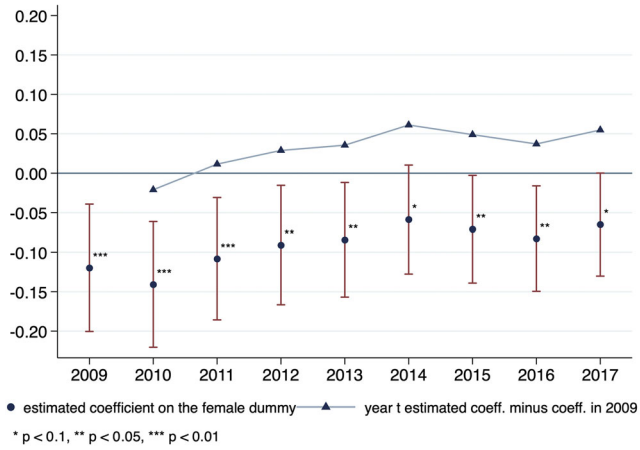

Figure 6. Are female faculty equally likely to be full professors? Year-by-year analysis. The figure shows the point estimates and 95% confidence intervals around the coefficients on the *Female* dummy for each year in the Table VIII regressions. The figure also plots the difference between the estimated coefficient on the *Female* dummy in year t and the estimated coefficient in 2009. (Color figure can be viewed at wileyonlinelibrary.com)

1 if the faculty member is a full professor during year t. Unlike the results in Table VI, we find gender gaps in each year of the sample. Figure 6 shows that the gender gap among full professors remains statistically significant in each year, and, while the estimated magnitude of the gap appears to be declining, the decrease is not statistically significant. In other words, the gender gap at the top of the ladder within the academic finance profession remains.

In Table IX, we shift our focus to the likelihood that a faculty member is a full professor by X years after obtaining a PhD For those faculty promoted to full professor during the sample period, the average number of years since PhD as of the promotion year is 14.83. In Table IX, we test whether the female faculty in our sample are as likely as their male counterparts to be full professors at $X = 10$, 12, 14, 16, 18, and 20 years after earning their PhDs. The estimated coefficients on the *Female* dummy are all negative, but they are significant for years 16, 18, and 20 post-PhD. Over these horizons, the estimates imply that female faculty are 13.1%, 21.3%, and 20.2% less likely than men to be full professors, respectively. These faculty also represent the later cohorts (PhD years between 1989 and 2001 versus PhD years between 1995 and 2007 for those in the $X = 10$, 12, and 14 regressions). Unlike the evidence in Figure 6 for the full population of faculty, Table IX suggests that the gender balance among full professors may be improving over time.[22]

[22] Tables IA.XII and IA.XIII repeat the analyses in Tables VIII and IX but report regressions using the continuous ranking variable as a control instead of the fixed effects to ensure that the findings are not due to the institution fixed effects. We then use the modified specification to estimate logit models. The results are qualitatively similar, although the *Female* dummy is significant

Table IX

Are Female Faculty Equally Likely to be Full Professors 10, 12, 14, 16, 18, and 20 Years Post-PhD?

This table reports results from estimating a linear probability model in which the dependent variable is a dummy variable equal to 1 if the faculty member is a full professor by X years post-PhD, where $X = 10$, 12, 14, 16, 18, and 20. Explanatory variables are: *Female*, a dummy equal to 1 if the faculty member is female; *Citations*, defined as ln(number of citations+1), where the number of citations is calculated through year t; *Top Pubs*, defined as ln(number of top publications+1), where the number of top publications is the total number of top-3 finance and top-5 economics publications through year t; and *Other Pubs*, defined as ln(the number of other publications+1), where the number of other publications is defined as publications through year t in all outlets that are not top publications. All specifications include institution and PhD year fixed effects and standard errors are clustered by year and unique faculty identifier. $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

	10 Years (1)	12 Years (2)	14 Years (3)	16 Years (4)	18 Years (5)	20 Years (6)
Female	−0.017	−0.061	−0.041	−0.131*	−0.213**	−0.202**
	(0.047)	(0.058)	(0.066)	(0.069)	(0.084)	(0.082)
Citations	−0.002	0.048	0.106***	0.093**	0.127***	0.140***
	(0.026)	(0.031)	(0.035)	(0.036)	(0.038)	(0.034)
Top Pubs	0.205***	0.222***	0.263***	0.161***	0.100*	0.086
	(0.055)	(0.061)	(0.059)	(0.060)	(0.059)	(0.055)
Other Pubs	0.115***	0.130***	0.182***	0.192***	0.147***	0.138***
	(0.033)	(0.041)	(0.044)	(0.045)	(0.050)	(0.046)
N	297	307	322	321	300	306
% Female faculty	21.55	19.87	18.01	15.58	13.00	12.09
Adj. R^2	0.405	0.445	0.417	0.435	0.355	0.401
PhD Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Institution FE	Yes	Yes	Yes	Yes	Yes	Yes

D. Exits

To understand the tenure patterns that we observe, it is useful to examine exits from the profession. In Table IA.XIV and Figures IA.5 and IA.6, we show t+1 faculty-year transitions, given that a faculty member is untenured as of year t.[23] At least unconditionally, women do not appear to be exiting the profession at higher rates than men. To examine this result more formally, we conduct two sets of regression analyses. The first are analogous to the

only at the 18- and 20-year horizons (using the continuous ranking variable) and significant at the 18-year horizon using the logit specification. Figure IA.4 shows Kaplan-Meier failure estimates. As can be seen from the figure, women are less likely to be full professors in most years (through year 20) post-PhD. Unlike in Figure IA.3, which shows Kaplan-Meier estimates for tenure, women do not eventually catch up in attaining full professor status.

[23] Following Heckman and Moktan (2020), we define a lateral move as movement to an institution within five ranks of the period t institution. Up (down) moves are defined as year t+1 movements to institutions that are five ranks higher (lower) than the period t institutions. Among individuals who obtain tenure, Table IA.XIV shows that the majority obtain tenure at their period t institution and downward moves are much more common than lateral or upward moves. This is true for both men and women.

Table X
Do Women Exit Early?

This table reports results of a linear probability model in which the dependent variable is a dummy variable equal to 1 if the faculty member exits to the government, the private sector, or a nonladder position by six years post-PhD (for full sample) and by 3, 4, 5, and 6 years post-PhD (for the recent graduates subsample). Recent graduates are faculty with ladder positions at a top-100 school that earned PhDs between 2009 and 2017. Explanatory variables are: *Female*, a dummy equal to 1 if the faculty member is female; *Citations*, defined as ln(number of citations+1), where the number of citations is calculated through year t; *Top Pubs*, defined as ln(number of top publications+1), where the number of top publications is the total number of top-3 finance and top-5 economics publications through year t; and *Other Pubs*, defined as ln(the number of other publications+1), where the number of other publications is defined as publications through year t in all outlets that are not top publications. Institution and PhD year fixed effects are included in the specification. Standard errors are clustered by year and unique faculty identifier. $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

	Full Sample	Recent Graduates			
	(1) 6 Years	(2) 3 Years	(3) 4 Years	(4) 5 Years	(5) 6 Years
Female	0.043	−0.005	−0.005	0.037	0.086
	(0.033)	(0.026)	(0.044)	(0.058)	(0.075)
Citations	0.004	0.002	−0.003	0.038	0.023
	(0.016)	(0.011)	(0.019)	(0.026)	(0.037)
Top Pubs	−0.117***	−0.038	−0.083*	−0.200***	−0.236***
	(0.035)	(0.029)	(0.047)	(0.062)	(0.075)
Other Pubs	−0.016	−0.020	−0.023	−0.079*	−0.081
	(0.025)	(0.025)	(0.037)	(0.045)	(0.057)
N	508	357	282	232	162
% Female Faculty	23.82	18.49	18.09	17.24	20.99
Adj. R^2	0.058	0.058	0.082	0.043	0.084
PhD Year FE	Yes	Yes	Yes	Yes	Yes
Institution FE	Yes	Yes	Yes	Yes	Yes

regressions in Table VII, in which we examine gender differences in obtaining tenure by year X. We are particularly interested in the six-year horizon for the analysis of exits because we observe significant differences in the tenure status of men and women at this horizon. In the second approach, which closely maps to the regressions that we would ideally run for tenure outcomes absent any data constraints, we follow all new faculty from their first academic placement to 3, 4, 5, and 6 years following receipt of their PhD, and we examine gender differences in exit at these horizons.

Column (1) of Table X reports results on exits by sample faculty as of 6 years post-PhD. We do not detect strong evidence that women are exiting the profession early. Low publication rates at top journals are the most important predictor of exit by year 6. Results of analyses in which we replace institution fixed effects with the institution ranking variable (Table IA.XV, column (1)) are similar. Results in Table X continue to hold if we use a logit specification (Table IA.XV, column (2)). Columns (2) through (5) of Table X focus on the subsample

of recent graduates and show exits by 3, 4, 5, and 6 years post-PhD. We do not observe significant differences between men and women at any horizon.[24] The most important determinant of exit is low publication output in top journals.

E. Research Output: Publications

Thus far, we have focused on differences between men and women in employer rank, tenure and full professor status, and exits. The gender gaps in career outcomes that we document in the previous analyses represent the part of the gender imbalance in the profession that is unexplained by differences in research productivity. Besides the gender gap, in all regressions, we find that the quantity of publications consistently predicts the outcome variables of interest. We therefore take a more formal look at publication differences between men and women. Table III shows that women tend to publish less (unconditionally). If women in the profession tend to publish less than men, then these output differences can contribute to some of the gender imbalance that we observe in the profession. In this section, we estimate panel regressions using the full sample of faculty from 2009 to 2017 to test for evidence of a gender gap in publications.

There are two important caveats in the analysis that follows. First, we do not consider potential gender bias in the publication process. For example, consistent with a higher bar for female authors, Card et al. (2020) report that, conditional on publication, female-authored papers in economics receive 25% more citations.[25] Second, we do not observe productive activities outside of publications. This is relevant if there is differential engagement in nonresearch tasks between men and women. Indeed, Guarino and Borden (2017) report survey evidence that female faculty engage in more activities per year than do men.

Table XI reports results from panel regressions in which the dependent variable is *Total Publications*, defined as ln(number of total publications+1) through year t. As in the previous regressions, the coefficient of interest is that on *Female*, a dummy equal to 1 if the faculty member is female. The other explanatory variables are *Tenured, YearsSincePhD*, as well as institution and PhD year fixed effects. Unlike the earlier cross-sectional regressions, the panel regressions include both PhD year fixed effects and *YearsSincePhD* to control for cohort and seniority effects, respectively.[26] We do not include the *Citations*

[24] Table IA.XVI reports results of tests analogous to columns (2) through (5) of Table X except that we replace institution fixed effects with the ranking variable (Panel A) and estimate a logit model (Panel B). In both cases, we fail to find evidence that women exit early. In Figure IA.7, we plot Kaplan-Meier curves for exits by men and women that are consistent with the findings in Tables X and Table IA.XVI.

[25] Moreover, Hengel and Moon (2020) find that female-authored papers are better written than male-authored papers. In our analysis, we are only able to make statements about differences in publication rates.

[26] Because individual faculty members appear in the panel data across multiple years, *YearsSincePhD* varies across time. For example, consider 2009 graduate at the start of the sample. In 2009, the individual's *YearsSincePhD* value is 0 in 2009 and it is 8 in 2017. Compare this with

Table XI
Gender Differences in Research Output

This table reports results of panel regressions in which the dependent variable is *Total Publications*, defined as ln(number of total publications + 1), where the number of total publications by the faculty member are calculated through year *t*. The explanatory variables are: *Female*, a dummy equal to 1 if the faculty member is female; *Tenured*, a dummy equal to 1 if the faculty member has tenure during year *t*; and *YearsSincePhD*, the natural log of the number of calendar years since the faculty member earned a PhD. Column (1) reports results of a pooled regression without fixed effects. Column (2) is identical to column (1) but includes PhD year fixed effects. Column (3) includes both PhD year and institution fixed effects. Column (4) shows regression results for the subsample of recent graduates (i.e., faculty earning PhDs between 2009 and 2017). PhD year and institution fixed effects are included in the specification. Standard errors are clustered by year and unique faculty identifier. $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

	Full Sample			Recent Graduates
	(1)	(2)	(3)	(4)
Female	−0.180***	−0.221***	−0.190***	−0.123**
	(0.036)	(0.036)	(0.037)	(0.046)
Tenured	0.733***	0.599***	0.619***	0.800***
	(0.038)	(0.036)	(0.034)	(0.129)
YearsSincePhD	0.594***	0.648***	0.659***	0.519***
	(0.025)	(0.033)	(0.035)	(0.043)
N	13,145	13,145	13,145	2,349
Num. of Unique Faculty	1,985	1,985	1,985	540
% Female Faculty	15.92	15.92	15.92	20.19
Adj. R^2	0.630	0.659	0.707	0.469
PhD Year FE	No	Yes	Yes	Yes
Institution FE	No	No	Yes	Yes

variable (a proxy for publication quality), given that the number of citations is a function in part of the number of publications.

Column (1) of Table XI does not include any fixed effects. We add PhD year fixed effects in column (2) and we include both PhD year and institution fixed effects in column (3). Column (3) is our preferred specification because the institution fixed effects help us control for different publication norms at a given institution, and the PhD year fixed effects allow us to absorb differential publication rates across cohorts within our eight-year sample.

Several useful observations emerge from Table XI and from the results of the year-by-year analysis shown in Figure 7. First, consistent with the summary statistics, even after controlling for tenure status, PhD cohort, and current institution, women tend to publish less than men. For example, the estimated coefficient of −0.190 on *Female* in column (3) implies that, all else equal, women produce roughly 17.3% fewer published papers than their male

a 2001 graduate. For that individual, *YearsSincePhD* is 8 in 2009 and it is 16 in 2017. The PhD year fixed effects account for average differences across cohorts, while *YearsSincePhD* accounts for potential changes in the outcome variable as a faculty member becomes more advanced in her career. We do not include *YearsSincePhD* in the year-by-year cross-sectional regressions, nor is it included in regressions examining outcomes by year X post-PhD.

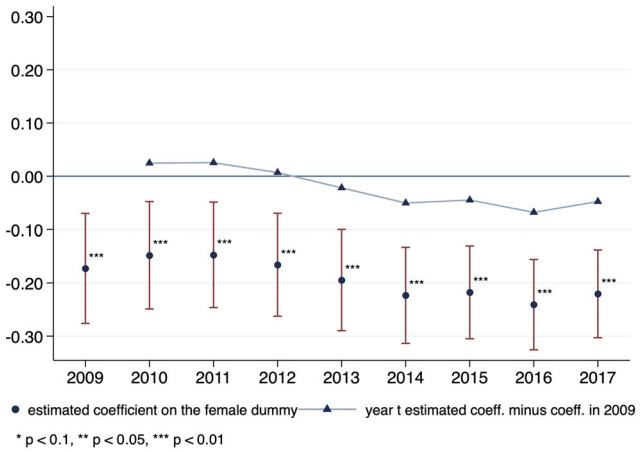

Figure 7. Are there gender differences in research output? Year-by year analysis. The figure shows the point estimates and 95% confidence intervals around the coefficients on the *Female* dummy for each year of regressions in which the dependent variable is *Total Publications*, defined as the number of total publications by the faculty member through year t^*.
*The full specification and estimated coefficients are in Table IA.XVII.
(Color figure can be viewed at wileyonlinelibrary.com)

colleagues. Moreover, unlike the earlier tables, Figure 7 shows no evidence that this publication gap is decreasing over time.[27] This result is roughly in line with recent evidence in economics (Ghosh and Liu (2020)). In column (4) of Table XI, we focus on the subsample of recent graduates. The estimated coefficient of −0.123 on the *Female* dummy implies that recently graduated women produce 11.5% fewer publications than their male counterparts, a smaller gap than in the full sample. In Table IA.XVIII, we repeat the Table XI analysis, after splitting the sample according to tenure status. Consistent with the findings in columns (3) and (4) of Table XI, we find that the publication gap to be less pronounced among untenured faculty.

To shed more light on the publication differences in Table XI, we decompose total publications into top publications and other publications. We then further divide these publication groups into top solo publications, top coauthored publications, other solo publications, and other coauthored publications (these are the publication variables that we use in the extended specifications based on Sarsons et al. (2021)). The results are reported in Table XII. We find that the publication gap for women documented in Table XI is driven mainly by coauthored publications in lower tiered journals. We do not find statistically significant differences in either solo-authored or coauthored publications at top journals. If female faculty are time-constrained (see, for example, Guarino and Borden (2017)), then it is possible that women publish fewer papers but they focus on their most impactful work. The fact that we do not observe

[27] The full results of the year-by-year regressions in Figure 7 are available in Table IA.XVII.

Table XII

Gender Differences in Research Output, by Publication Type

This table reports results of panel regressions that are identical to those in column (3) of Table XI, except *Total Pubs* is decomposed into publication type. Dependent variables are: *Top Pubs*, the total number of top-3 finance and top-5 economics publications through year t; *Other Pubs*, the publications through year t in all outlets that are not top publications; *Top Coauth Pubs*, the number of coauthored publications in top-3 finance and top-5 economics journals through year t; *Other Coauth* publications, all coauthored publications that are not in top journals; *Top Solo Pubs*, the number of solo-authored publications in top-3 finance and top-5 economics journals through year t; and *Other Solo Pubs*, all solo-authored publications through year t that are not in top journals. We transform each of the publication variables into ln(publication variable+1). The explanatory variables are: *Female*, a dummy equal to 1 if the faculty member is female; *Tenured*, a dummy equal to 1 if the faculty member has tenure during year t; and *YearsSincePhD*, the natural log of the number of calendar years since the faculty member earned a PhD. Institution and PhD year fixed are included in the specification. All regressions are pooled and include data for all faculty-years. Standard errors are clustered by year and unique faculty identifier. $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

	Top Pubs (1)	Other Pubs (2)	Top Solo (3)	Other Solo (4)	Top Coauth (5)	Other Coauth (6)
Female	−0.066	−0.181***	0.003	−0.073*	−0.072	−0.164***
	(0.042)	(0.040)	(0.024)	(0.034)	(0.043)	(0.039)
Tenured	0.497***	0.550***	0.108***	0.187***	0.519***	0.515***
	(0.040)	(0.041)	(0.022)	(0.038)	(0.041)	(0.038)
Years since PhD	0.476***	0.403***	0.113***	0.105***	0.434***	0.378***
	(0.026)	(0.034)	(0.009)	(0.013)	(0.028)	(0.035)
N	13,145	13,145	13,145	13,145	13,145	13,145
Unique Faculty	1,985	1,985	1,985	1,985	1,985	1,985
% Female Faculty	15.92	15.92	15.92	15.92	15.92	15.92
Adj. R^2	0.591	0.639	0.336	0.366	0.550	0.595
PhD Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Institution FE	Yes	Yes	Yes	Yes	Yes	Yes

important differences in top publications is consistent with this view. We also examine citations data. Table IA.XIX, Panel A, reports results of regressions in which we do not control for the number of publications. Unlike Table XI, we find no significant gender gap in citations during most years of the sample. This is surprising given that women publish fewer papers than men.[28] In Table IA.XIX, Panel B, we control for top and other publications and we find that women are cited more than men when they do publish. The same holds when we focus on citations only in top and other publications (Panels C and D, respectively). Consistent with Table XII, the results in Table IA.XIX suggest that women write higher quality papers when they do publish.

[28] We thank an anonymous referee for encouraging this line of analysis.

F. Coauthors

It is clear that publications are related to more favorable career outcomes. The extended specifications in the tenure analysis (Tables VI and VII) reveal that coauthored publications are more important in explaining tenure status than solo-authored publications. It is possible that collaborations result in higher quality work, which is rewarded in the profession. Given that published coauthored work tends to be at least as important as solo-authored work in explaining tenure, it is useful to explore potential gender differences in coauthor networks.

We examine three potential network channels through which successful collaborations (i.e., publications) might occur: same gender, common cohort, and common institution. We examine the role of gender in coauthor networks because evidence from other fields suggests that women tend to work with other women. If the same holds in the finance profession, then this would suggest that womens' coauthor networks are limited (since our data show that the profession is only 16% female). AFFECT (2018) presents data on the gender composition of coauthor teams on papers at finance journals and reports evidence of gender clustering on published works. Our analysis complements theirs in that we focus on the individual faculty level (rather than the publication level, which places more weight on differences among highly prolific faculty) and ask whether a given faculty member is more or less likely to have a female coauthor. Doing so allows us to control for factors such as tenure status, institution, cohort, and author status within the profession (i.e., citations), all of which might explain differential gender composition of coauthor teams. Beyond gender, we also examine the role of common cohorts, especially among faculty who studied at the same PhD institution at the same time. Both of these factors could be important social networking channels. We also look at potential collaborations among individuals working at the same institution at the same time, as research relationships might evolve through day-to-day contact within one's own department.

Table XIII reports results of panel regressions in which the dependent variable is the natural log of the number of coauthors of an individual faculty member through year t. We consider six coauthor variables: *All Coauthors* (column (1)) indicates all unique coauthors, *Top-100 Coauthors* (column 2) is the number of unique coauthors from top-100 schools, *Female Top-100 Coauthors* (column (3)) is the number of unique female coauthors from top-100 schools, *Same Cohort* (column (4)) is the number of unique coauthors from top-100 schools that have obtained their PhDs within four years of the faculty member, *Same PhD and Cohort* (column (5)) indicates the number of unique coauthors from the same PhD program who have obtained their PhDs within four years of the faculty member, and *Same Institution* (column (6)) is the number of unique coauthors who were employed by the same institution as the individual faculty member at some point in time during years $t-3$ to $t-1$ relative to the publication date.

Table XIII
Gender Differences in Coauthor Networks

This table reports results of panel regressions in which the dependent variable is the number of unique coauthors through year t, where *All Coauthors* (column (1)) indicates the number of unique coauthors; *Top-100 Coauthors* (column (2)) indicates the number of unique coauthors from the sample of top-100 schools; *Female Top-100 Coauthors* (column (3)) indicates the number of unique female coauthors from top-100 schools; *Same Cohort* (column (4)) indicates the number of unique coauthors through year t from top-100 schools who graduated within four years of the faculty member; *Same PhD and Cohort* (column (5)) indicates the number of unique coauthors from the same PhD program who obtained their PhDs within four years of the faculty member; and *Same Institution* (column (6)) indicates the number of unique coauthors employed by the same institution as the faculty member at some point during years $t-3$ to $t-1$ relative to the publication date. We transform each of the coauthor variables into ln(coauthor variable +1). In Panel A, the explanatory variables are: *Female*, *Tenured, YearsSincePhD*, and *Citations*. In Panel B, we add publication variables *Top Pubs* and *Other Pubs* as explanatory variables. These explanatory variables are defined in Table XII. All standard errors are clustered by year and unique faculty identifier. $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$.

Panel A. Full Sample (Baseline Specification)

	All Coauthors (1)	Top-100 (2)	Female Top-100 (3)	Same Cohort (4)	Same PhD and Cohort (5)	Same Institution (6)
Female	−0.126***	−0.073*	0.057**	−0.081**	−0.034	−0.014
	(0.029)	(0.034)	(0.024)	(0.030)	(0.021)	(0.024)
Tenured	0.055	0.097**	−0.028	0.148***	0.059**	0.169***
	(0.033)	(0.034)	(0.024)	(0.035)	(0.022)	(0.030)
YearsSincePhD	0.072**	0.027	−0.010	0.031	0.020	0.084**
	(0.024)	(0.022)	(0.013)	(0.018)	(0.011)	(0.025)
Citations	0.334***	0.248***	0.080***	0.123***	0.038***	0.059***
	(0.008)	(0.009)	(0.008)	(0.008)	(0.005)	(0.007)
N	13,176	13,176	13,176	13,176	13,176	10,421
Num Unique Faculty	1,989	1,989	1,989	1,989	1,989	1,909
% Female Faculty	15.99	15.99	15.99	15.99	15.99	16.29
Adj. R^2	0.778	0.609	0.226	0.428	0.214	0.252
PhD Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Institution FE	Yes	Yes	Yes	Yes	Yes	Yes

(*Continued*)

Table XIII—*Continued*

Panel B. Full Sample (With Publication Controls)

	All (1)	Top-100 (2)	Fem. Top-100 (3)	Same Cohort (4)	PhD & Cohort (5)	Same Inst. (6)
Female	−0.024	−0.020	0.073**	−0.061*	−0.033	0.016
	(0.025)	(0.032)	(0.024)	(0.030)	(0.021)	(0.024)
Tenured	−0.062**	0.042	−0.045	0.129***	0.060**	0.137***
	(0.026)	(0.033)	(0.024)	(0.034)	(0.022)	(0.029)
YearsSincePhD	0.116***	0.068***	0.004	0.052**	0.025*	0.100***
	(0.021)	(0.020)	(0.013)	(0.017)	(0.011)	(0.026)
Citations	0.116***	0.059***	0.018*	0.027*	0.018*	−0.027**
	(0.010)	(0.012)	(0.009)	(0.012)	(0.008)	(0.010)
Top Pubs	0.250***	0.448***	0.154***	0.273***	0.075***	0.173***
	(0.019)	(0.027)	(0.019)	(0.024)	(0.016)	(0.022)
Other Pubs	0.542***	0.185***	0.052**	0.040*	−0.017	0.122***
	(0.016)	(0.023)	(0.016)	(0.020)	(0.015)	(0.016)
N	13,176	13,176	13,176	13,176	13,176	10,421
Num Unique Faculty	1,989	1,989	1,989	1,989	1,989	1,909
% Female Faculty	15.99	15.99	15.99	15.99	15.99	16.29
Adj. R^2	0.866	0.675	0.255	0.471	0.226	0.293
PhD Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Institution FE	Yes	Yes	Yes	Yes	Yes	Yes

In Panel A of Table XIII, we examine whether differences exist in the size of coauthor networks after controlling for PhD cohort, institution, tenure status, and citations. This set of regressions allows us to characterize the size of an individual's network of successful collaborations, where success is defined as the number of publications. The estimated coefficient on the *Female* dummy captures the gender difference in the total number of coauthors in published work. Several useful observations emerge from Table XIII, Panel A. First, women have significantly smaller coauthor networks. The estimated coefficient of −0.126 in column (1) of Table XIII, Panel A, implies that, all else equal, women have approximately 11.8% fewer coauthors than their male counterparts. Within the pool of top-100 coauthors, we find that women have approximately 7.5% fewer coauthors than do men (column (2)).[29] The findings in columns (1) and (2) might not be surprising, given the observations in Tables XI and XII that women tend to publish less. However, even though women tend to publish less, column (3) of Panel A implies that women have 5.9% more female coauthors. That is, the second key observation from the table is that women are more likely to publish with other women. These findings are consistent with AFFECT (2018), but their methodology is different from ours. AFFECT (2018) focuses on the publication level, rather than the individual faculty level, and their results could be driven by particularly prolific women. In column (4) of Panel A, we examine whether a gender difference exists in the number of coauthors from one's own PhD cohort. The estimated coefficient of −0.081 on *Female* implies that women have 7.7% fewer coauthors from within their own cohorts. This result may indicate a social networking constraint. When we dive deeper and ask whether the same-cohort finding stems from fewer productive relationships from graduate school (column (5)), we find a negative but statistically insignificant estimated coefficient on *Female*. We also fail to find important gender differences in coauthorship with colleagues from one's own institution (column (6)). When we examine the estimated coefficients on the control variables, we find that more seasoned faculty and faculty with more citations have larger coauthor networks.

In Panel B of Table XIII, we add controls for the number of publications. We do so to shed light on the extent to which the gender differences in coauthor networks that we observe in Panel A are distinct from the finding that women publish less. Different from Panel A, the estimated coefficients on the *Female* dummy in Panel B capture gender differences in the size of coauthor teams. In this set of regressions, we observe insignificant estimated coefficients on the *Female* dummy in both columns (1) and (2), suggesting that women and men have similar coauthor teams when they do publish. However, we find that coauthor teams of women tend to include other women. The estimated coefficient of 0.073 on the *Female* dummy in column (3) of Panel B suggests that women publish with 7.6% more women on their coauthor teams (not including themselves). We also find that the coauthor teams of female faculty tend to

[29] McDowell, Singell, and Stater (2006) also find that women are less likely to coauthor. This may help explain research productivity differences between men and women.

include members from different PhD cohorts. The estimated coefficient of −0.061 on *Female* implies that women publish on teams that include 5.9% fewer coauthors from the same PhD cohort (column (4)). As in Panel A, the results in Panel B do not show a significant difference in same-cohort coauthors from the same graduate program or in coauthors employed by the same institutions.

To summarize, Panels A and B of Table XIII reveal that, even though women tend to publish less, they are more likely than men to have successful collaborations with other women. Given that the profession consists of less than 20% women, female faculty may be limited by the pool of potential collaborators. In addition, we find that the structures of collaboration networks differ in that women are less likely to have successful collaborations with others from their own cohorts. This difference might be important if, for example, coauthor characteristics are considered in promotion cases. Interestingly, however, when we examine the subsample of recent graduates in Table IA.XX, we do not observe statistically significant gender differences in coauthor networks, suggesting that the main findings are driven by more senior women. Consistent with this view, when we sort the sample according to tenure status in Table IA.XXI, we find that women tend to work with other women in both groups (untenured and tenured), but the subsample of tenured faculty is driving the same-cohort findings.

In all of the Table XIII regressions, we control for citations to account for a faculty member's status within the profession and any differences in the popularity of the individual's subfield. This is important because there are differences in the subject areas in which men and women publish. In our sample, 49.1% of men publish in mainly asset pricing (*Journal of Economic Literature* (JEL) code G1), while only 38.7% of women do. By contrast, 40.1% of women publish in mainly corporate finance and governance (JEL code G3), while only 29.6% of men do. Financial institutions and services (JEL code G2) are more balanced, accounting for 17.1% and 20.1% of all males and females, respectively. As a further check that the observed differences in coauthor network structure are not due to subfield effects, we extend the regressions to include subfield controls, where an individual's subfield maps to the most frequent JEL code of all of the faculty member's published finance articles through year t. The results, reported in Table IA.XXII, are similar to those in Table XIII.

G. Salary

Is there evidence of a gender wage gap in academic finance? Unconditional wage differences have been documented in other fields (see, for example, Binder et al. (2010), Monks and Robinson (2000), Ginther and Hayes (1999)), but research productivity and academic rank explain much of this difference in pay. As a final exploration of potential gender differences in career outcomes within the academic finance profession, we obtain salary data for the faculty at 37 of the 60 public institutions in our sample. Most states have Freedom of Information Acts that require public employers to make public salary informa-

Table XIV
Is There Evidence of a Gender Wage Gap?

This table reports results of panel regressions in which the dependent variable is the natural log of the faculty member's nine-month salary. The explanatory variables are defined in Table IV. Columns (1) through (3) include only the *Female* dummy and various fixed effects. Columns (4) through (6) include controls. All standard errors are clustered by year and unique faculty identifier. $^{*}p < 0.1$; $^{**}p < 0.05$; $^{***}p < 0.01$

	Full Sample						Recent Grads
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Female	−0.052	−0.057	−0.057*	−0.065*	−0.052*	−0.038	−0.014
	(0.033)	(0.033)	(0.027)	(0.028)	(0.027)	(0.024)	(0.013)
Tenured				−0.055	0.014	0.040	0.044
				(0.030)	(0.028)	(0.024)	(0.026)
Years isnce PhD				−0.131***	0.000	0.029	0.044***
				(0.019)	(0.021)	(0.017)	(0.008)
Citations				0.046***	0.050***	0.042***	0.009*
				(0.013)	(0.013)	(0.011)	(0.005)
Top Pubs				0.171***	0.159***	0.104***	0.030*
				(0.025)	(0.025)	(0.023)	(0.014)
Other Pubs				0.002	−0.007	0.029	−0.003
				(0.017)	(0.017)	(0.016)	(0.009)
N	3,614	3,614	3,614	3,614	3,614	3,614	661
Unique Faculty	624	624	624	624	624	624	173
% Female	17.15	17.15	17.15	17.15	17.15	17.15	19.08
Adj. R^2	0.004	0.181	0.478	0.424	0.513	0.652	0.824
PhD Year FE	No	Yes	Yes	No	Yes	Yes	Yes
Institution FE	No	No	Yes	No	No	Yes	Yes

tion for all employees. Our requests for salary data for the 2009 to 2017 period are fulfilled, at least, in part, in the majority of cases. Table IA.XXIII lists the institutions and years for which we have salary data. We use all available data in the analysis.

Table XIV and Figure 8 show results of regressions in which the dependent variable is the natural log of the faculty member's nine-month salary. We prefer the specification in column (6) because it allows us to compare wages of faculty within the same institution after controlling for their productivity and seniority. The point estimate of 0.038 in the pooled regressions in column (6) suggest a gender wage gap of approximately 3.7% during the entire 2009 to 2017 sample period but it is not statistically significant. The wage gap is also insignificant in the subsample of recent graduates (column (7)).[30] However, consistent with the employer rank and tenure regressions, Figure 8 shows

[30] Ginter and Hayes (1999) report that salary differences can be explained largely by faculty rank. In Table IA.XXV, we add faculty title to the tenure status and PhD cohort controls and all results are similar to those in Table IA.XXIV. When we control for rank by examining tenured and untenured faculty separately in Table IA.XXVI, we find a statistically significant gender wage gap of approximately 1.8% among untenured faculty, and a larger point estimate but statistically insignificant difference in salary among faculty with tenure.

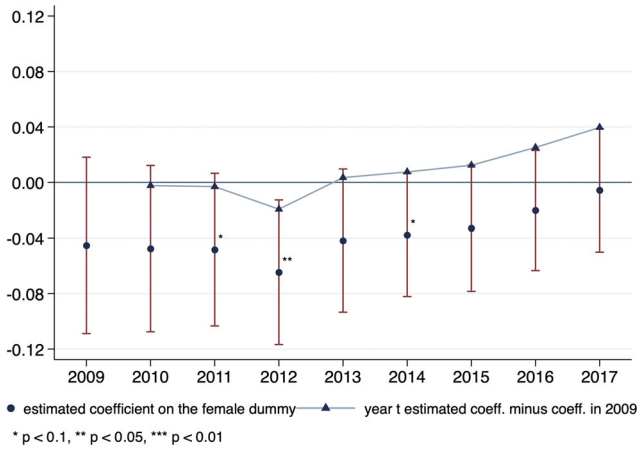

Figure 8. Is there evidence of a gender wage gap? Year-by year analysis. The figure shows the point estimates and 95% confidence intervals around the coefficients on the *Female* dummy for each year of regressions in which the dependent variable is ln(nine-month salary). The figure also plots the difference between the estimated coefficient on the *Female* dummy in year *t* and the estimated coefficient in 2009.[**]
[**]The full specification and estimated coefficients are in Table IA.XXIV.
(Color figure can be viewed at wileyonlinelibrary.com)

that the pay gap is significant during some of the early years of the sample and goes away by 2015. Given the public scrutiny on salary information, it is somewhat surprising that any gap exists in any year. Interestingly, the largest estimated wage gaps are in 2011 and 2012, just as many schools began to recover from the financial crisis. It is possible that the postfinancial crisis wage adjustments were faster for men than for women. The full year-by-year results of the regressions shown in Figure 8 are available in Table IA.XXIV.

When we examine the estimated coefficients on the other explanatory variables in the salary regressions, we find that salary is positively related to years of professional experience,[31] number of citations, and number of top publications, consistent with the literature.[32] Overall, the salary analysis provides further evidence that the status of women in the profession has been improving over time. While the level of the gender pay gap in academic finance is much smaller than in the overall U.S. economy, the convergence that we are observing is in line with Blau and Kahn (2017).

[31] In column (4) of Table XIV, we observe a negative relationship between *YearsSincePhD* and salary. This result appears to be due to salary inversion, where salaries for new hires rise quickly over time (see, for example, Homer, Hunt, and Runyon (2020) for evidence at business schools in the California State system). After we control for cohort effects (which capture rising salaries of new hires), the relationship between experience and salary becomes positive, as expected.

[32] That salaries increase with the number of publications (especially top publications) is consistent with the findings of Swidler and Goldreyer (1998).

IV. Conclusions

We present comprehensive data on female representation in the academic finance profession over the 2009 to 2017 period. Although the paper is primarily descriptive, the data allow us to shed new light on questions related to gender balance in the profession. The data reveal that, after controlling for research productivity, women have positions at lower ranked institutions and are less likely to be full professors. We also find lower tenure rates among men and women during the early years of the sample. The same is true for the pay gap. In addition, we find significant research productivity differences among men and women, with women publishing fewer papers than their male counterparts. These differences are driven primarily by publications in lower tiered journals. Gender gaps in placement, publications, and salary have been documented in the social sciences and in science, technology, engineering, and math (see, for example, Long (1992), Kyvik and Teigen (1996), Bentley (2011), Ginther, Kahn, and McCloskey (2016), Carr et al. (2018)). Our findings provide further evidence that these results appear to be systematic across disciplines.

A closer look at the portfolio of published work by finance faculty shows potentially important differences in the coauthor networks of women. When women coauthor, they are less likely to have coauthors from within their own cohort. They also tend to coauthor with other women. Given the importance of coauthored publications in explaining many of the outcome variables that we consider (i.e., tenure status, exits from the profession, and salary), the finding that women tend to coauthor with other women, together with the fact that women comprise only 16.0% of the sample of finance faculty, suggest that women have smaller publication networks. A larger flow of women into the profession could expand the pool of potentially successful collaborations.

Much has been written about the "leaky pipeline" in academia, whereby the representation of women declines at each stage of the academic career. Although we do not observe finance faculty at each stage in the pipeline, the analysis in this paper can still shed some light on this issue. If the low representation of women in finance were due entirely to small numbers of women entering the profession from PhD programs (i.e., a pipeline issue), then the women who do enter finance academia would see their careers progress along trajectories that are similar to those of men. Specifically, we would not observe important gender differences in career outcomes after controlling for research productivity.

Despite the evidence of gender gaps during the 2009 to 2017 sample period, we also find that the status of women in the profession is improving. In the last years of our sample, the evidence that women are at lower ranked schools, are less likely to have tenure, or receive lower wages disappears. However, the research productivity gap remains. Mentoring programs may help reduce the publication gap. For example, Blau et al. (2010) conduct a randomized trial with mentoring interventions, in which junior women participate in small group workshops with senior female economists working in similar research areas. The authors report that the mentoring program increased

publication rates in top journals among female economists by 25%. Of course, one implementation challenge within the academic finance profession could be the supply of mentors, given our finding of a persistent gender gap in the composition of full professors. Efforts to increase rates of promotion beyond tenure might increase gender balance within the profession at all levels.

Female representation can be limited by bias. It can also be limited by conditions that do not allow female scholars to thrive (for example, limited networks). We do not take a stand on which of these factors drive the differences that we observe, but we hope that the basic facts in this paper will encourage future work to reduce gender gaps in the profession.

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Supporting Information

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Appendix S1: Internet Appendix.
Replication Code.