Gender, Productivity, and Promotion in the Irish Economics Profession[1]

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Call for Research

- Examination of the diversity of authors of the economics technical paper series of Irish universities, the Central Bank of Ireland and the Economic and Social Research Institute (ESRI) technical paper series.

Motivation

- Gender difference in publications
  - Women publishing in a given journal receive more citations (Hengel & Moon 2020, Card et al. 2020) $\Longrightarrow$ (if gender-neutral citation patterns) gender biased peer-review
  - Different coauthorship patterns (Ductor et al. 2018) and different promotion returns to coauthored works (Sarsons et al. 2020)
- Research questions:
  - Do men and women publish *working papers (WPs)* at similar rates in Irish economics departments?
  - Does WP productivity predict promotion?

What we do

- Build a unique dataset of personnel in Irish economics departments
- Compare working paper output by sex
- Compare promotion rates by productivity, sex, and their interaction

What we find

- Men produce an average one to two more working papers than women over the course of 2016-2020
- More working papers predicts a higher likelihood of promotion
  - Moreso for Assistant Professors
  - Driven by coauthored papers
  - Little evidence of gender differences in promotion rates

Outline

- Motivation & literature
- Data
- Working paper descriptive statistics
- Promotion rates

Motivation

- Women in Ireland face a leaky pipeline into STEM occupations
  - Teachers underestimate primary school girls' maths ability (McCoy et al. 2021)
  - Secondary school girls do not select mathematical courses (Delaney & Devereux 2019)
  - Women perform better than men in university (Delaney & Devereux 2020)
- What happens by the time we get to STEM professions?

Dataset construction

- To answer this question we construct a novel dataset on Irish research economists.
  - Scrape working papers for the five Irish economics departments maintaining active working papers series
  - Review affiliation listed on WPs to build retrospective staff lists (of WP-publishing economists in these departments)
  - Manually scrape CVs for demographic information

Dataset construction

- CBI, ESRI, and the schools of economics of Maynooth University, Trinity College Dublin, University College Dublin
  - The CBI has four series: Research Technical Papers, Economics Letters, Financial Stability Notes, Quarterly Bulletin
  - Each other department has one working papers series
- 321 economists in these departments published 744 working papers from 2016-2020
  - *Irish5 authors*
  - Gender imputed from given name, ambiguous cases verified by web search

Dataset construction

- 287 other authors named over 2016-2020 (not affiliated with these five departments)
- 1396 total economists published 3081 working papers from 1962-2020
- Before 2016 we cannot distinguished between economists working in these departments and those working elsewhere
  - Gender guessed based on US social security record naming rates

Data

Table: Working Paper Summary Statistics

	Mean	Median	Stdev	Min	Max	N
Number Coauthors	2.0	2.0	1.1	1	14	3081
Year	2006	2009	12.1	1962	2020	3081

Table: Working Paper Summary Statistics 2016-2020

	Mean	Median	Stdev	Min	Max	N
Number Coauthors	2.4	2.0	1.2	1	10	744
Year	2018	2018	1.4	2016	2020	744

Data

Figure: Share Male Authors

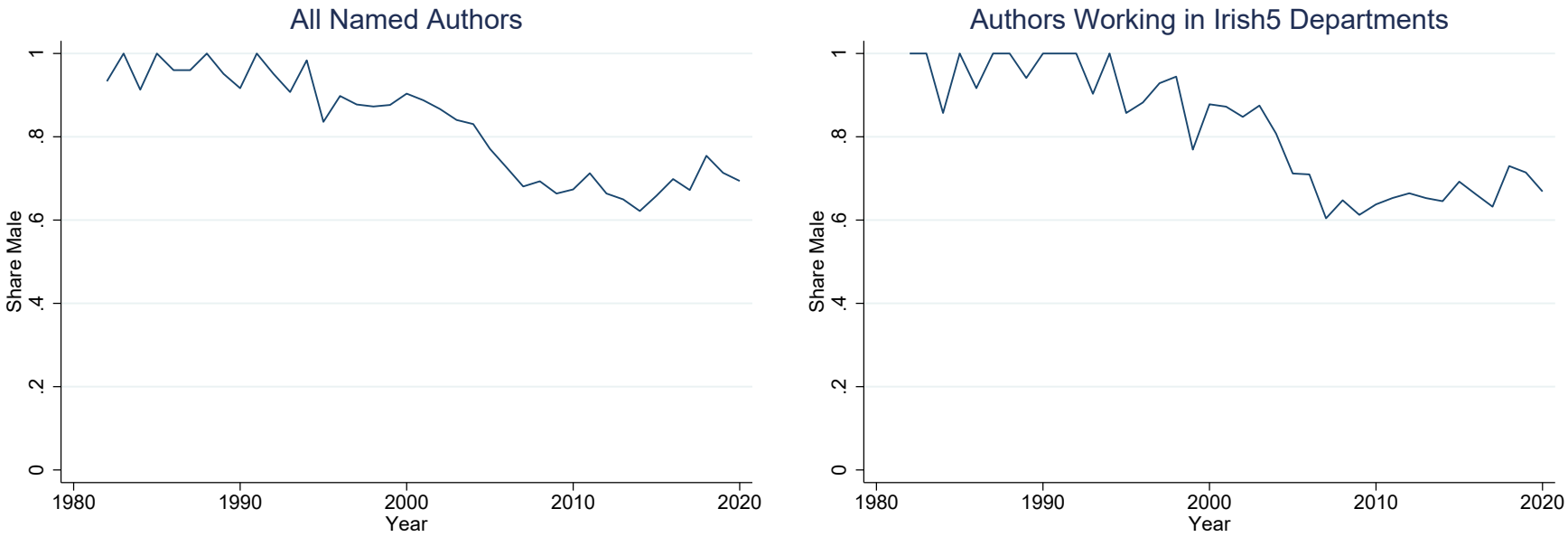

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Figure: Share Male Authors by Working Paper Series

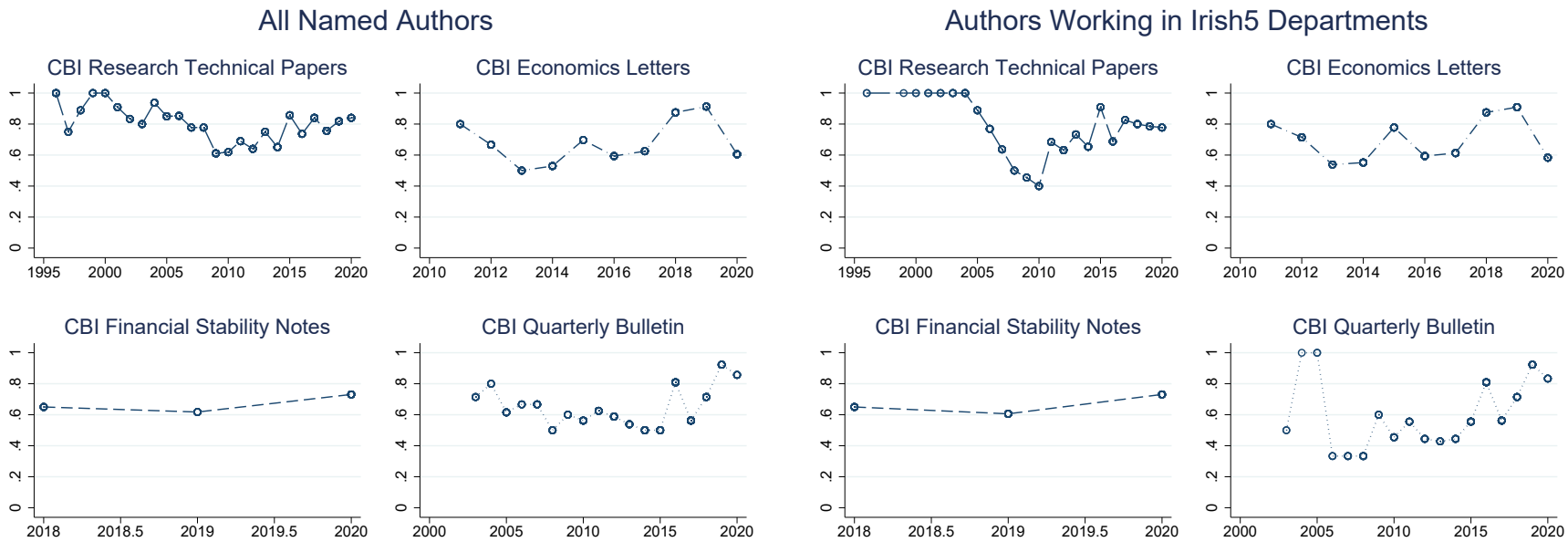

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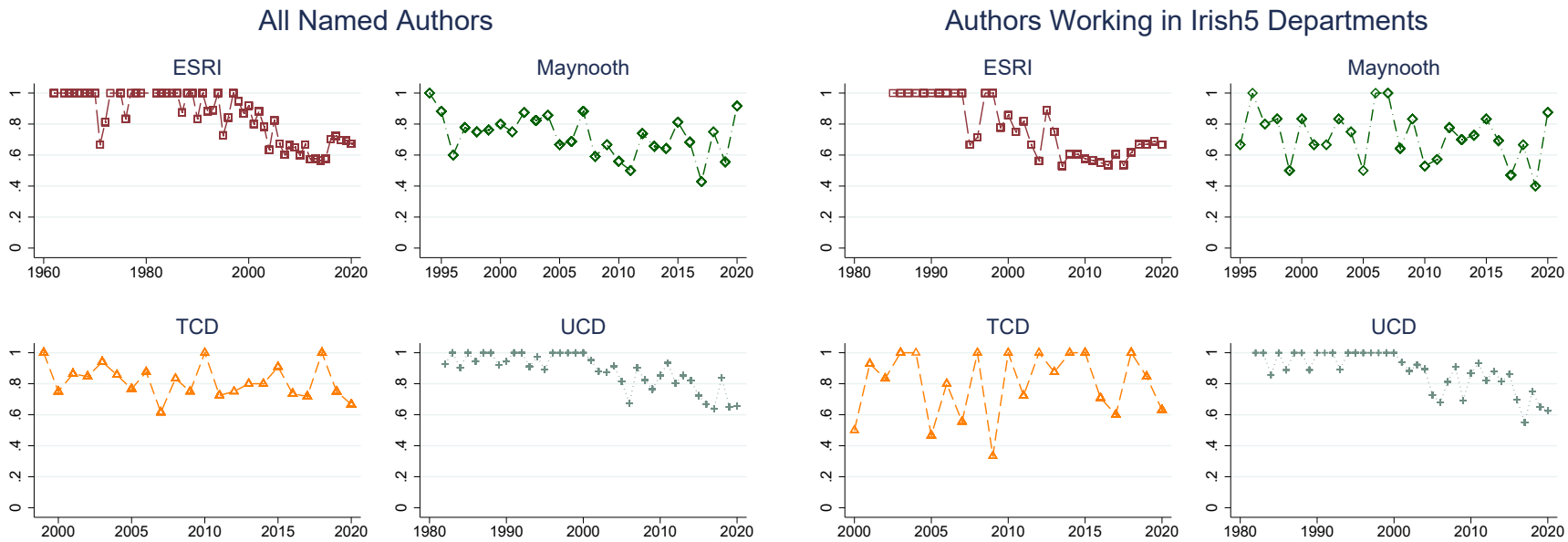
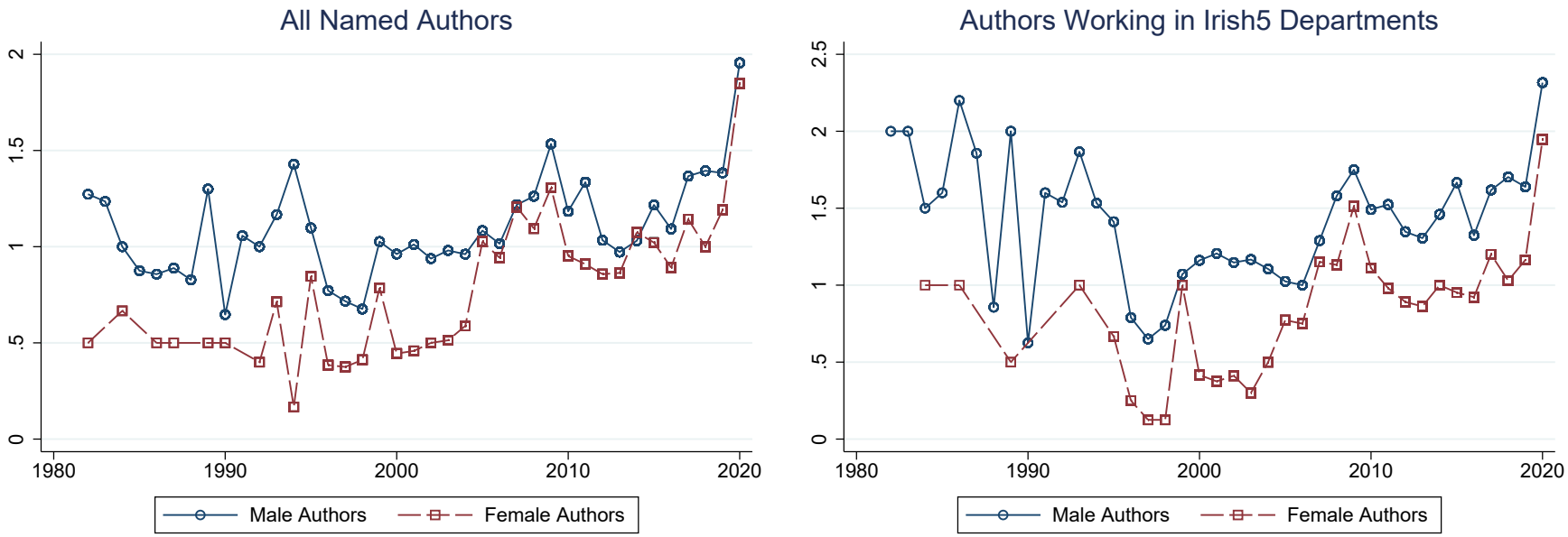
Figure: Share Male Authors by Working Paper Series



Data

Figure: Average Number Working Papers Per Publishing Author by Year



Data

- For our regression analysis we restrict the sample to Irish5 authors over the period of 2016-2020
- From CVs we collect information on experience (years since doctorate), tenure (years at institution), promotion

Data

Table: Irish5 Author Summary Statistics

	Mean	Median	Stdev	Min	Max	N
Male	0.6	1.0	0.5	0.0	1.0	321
Number Solo Papers 2016-2020	0.5	0.0	1.0	0.0	9.0	321
Number Co. Papers 2016-2020	3.6	2.0	5.1	0.0	52.0	321
Average Number Coauthors	2.7	2.7	0.9	1.0	6.5	321
Years at Institution	9.6	6.0	7.8	0.0	50.0	275
Years Since PhD	11.8	8.0	10.1	0.0	48.0	204
Promoted 2016-2020	0.3	0.0	0.5	0.0	1.0	271

Regression analysis

- Look at the conditional correlations of author characteristics on working paper output
- Explain promotion likelihood using working paper output, characteristics, and their interaction

Regression analysis – Output

Table: Working Paper Output Since 2016 by Authors in Irish Institutions

	b/se	b/se	b/se	b/se	b/se	b/se
Male	1.19**	1.69***	2.18***	2.46***	2.48***	1.96**
	(0.54)	(0.58)	(0.68)	(0.82)	(0.82)	(0.76)
Years at Job			0.021	-0.066	-0.062	-0.086
			(0.032)	(0.081)	(0.083)	(0.082)
Years Since PhD				0.15*	0.16*	0.16*
				(0.089)	(0.087)	(0.090)
Mean # Coauthors					0.31	0.25
					(0.38)	(0.41)
Promoted '16-'20						1.96
						(1.28)
Constant	3.34***	0.11	1.99***	2.37***	1.58	1.52
	(0.31)	(0.44)	(0.61)	(0.80)	(1.09)	(1.11)
Department Controls	No	Yes	Yes	Yes	Yes	Yes
N	321	321	275	199	199	191
R^2	0.012	0.11	0.12	0.16	0.16	0.16

*** $p < .01$, ** $p < .05$, * $p < .1$

Regression analysis – Promotion

Table: Promotion Since 2016 by Authors in Irish Institutions

	b/se	b/se	b/se	b/se
Male	0.062	0.057	0.053	-0.063
	(0.055)	(0.055)	(0.053)	(0.073)
Assistant	0.15**	-0.0033	0.015	-0.0025
	(0.066)	(0.084)	(0.090)	(0.088)
Associate	0.32***	0.29***	0.31***	0.30***
	(0.083)	(0.098)	(0.095)	(0.098)
# WPs, Assistant		0.036**	0.036***	0.036**
		(0.014)	(0.014)	(0.014)
# WPs, Associate		0.0038	0.0032	0.0046
		(0.0064)	(0.0068)	(0.0067)
Constant	0.15***	0.16***	0.31***	0.15***
	(0.048)	(0.048)	(0.065)	(0.048)
Department FE	No	No	Yes	No
Department $\times$ Male FE	No	No	No	Yes
N	271	271	271	271
R^2	0.070	0.096	0.18	0.14

*** $p < .01$, ** $p < .05$, * $p < .1$

Regression analysis – Promotion

Table: Promotion Since 2016 by Authors in Irish Institutions by Sex

	b/se	b/se	b/se	b/se
Male	0.031	0.031	0.034	-0.087
	(0.066)	(0.066)	(0.060)	(0.078)
Assistant	0.12	-0.018	-0.00059	-0.018
	(0.10)	(0.12)	(0.13)	(0.13)
Associate	0.27**	0.37**	0.38***	0.37**
	(0.11)	(0.15)	(0.13)	(0.15)
Assistant × Male	0.048	0.022	0.026	0.022
	(0.14)	(0.17)	(0.17)	(0.18)
Associate × Male	0.11	-0.053	-0.044	-0.045
	(0.17)	(0.21)	(0.20)	(0.21)
# WPs, Assistant		0.032*	0.037**	0.032*
		(0.017)	(0.017)	(0.017)
# WPs, Associate		-0.027	-0.027	-0.027
		(0.020)	(0.018)	(0.021)
# WPs, Assistant × Male		0.0053	-0.0017	0.0061
		(0.027)	(0.025)	(0.027)
# WPs, Associate × Male		0.033	0.032	0.034
		(0.021)	(0.019)	(0.022)
Constant	0.17***	0.17***	0.32***	0.17***
	(0.053)	(0.053)	(0.067)	(0.054)
Department FE	No	No	Yes	No
Department × Male FE	No	No	No	Yes
N	271	271	271	271
R^2	0.072	0.10	0.19	0.15

*** $p < .01$, ** $p < .05$, * $p < .1$

Regression analysis – Promotion

	b/se	b/se	b/se	b/se
Male	0.031	0.031	0.033	-0.084
	(0.066)	(0.067)	(0.061)	(0.078)
Assistant	0.12	-0.016	0.000098	-0.016
	(0.10)	(0.15)	(0.15)	(0.15)
Associate	0.27**	0.39**	0.40***	0.39**
	(0.11)	(0.16)	(0.15)	(0.16)
Assistant × Male	0.048	0.0065	0.015	0.0086
	(0.14)	(0.18)	(0.18)	(0.19)
Associate × Male	0.11	-0.068	-0.047	-0.057
	(0.17)	(0.22)	(0.22)	(0.22)
# Solo WPs, Assistant		0.029	0.034	0.029
		(0.15)	(0.17)	(0.15)
# Co. WPs, Assistant		0.032*	0.037**	0.032*
		(0.018)	(0.017)	(0.018)
# Solo WPs, Associate		-0.11	-0.075	-0.11
		(0.21)	(0.21)	(0.22)
# Co. WPs, Associate		-0.028	-0.027	-0.028
		(0.021)	(0.018)	(0.021)
# Solo WPs, Assistant × Male		-0.089	-0.077	-0.075
		(0.18)	(0.19)	(0.18)
# Co. WPs, Assistant × Male		0.021	0.011	0.020
		(0.024)	(0.024)	(0.026)
# Solo WPs, Associate × Male		0.061	0.023	0.055
		(0.24)	(0.23)	(0.23)
# Co. WPs, Associate × Male		0.036*	0.035*	0.037*
		(0.022)	(0.020)	(0.022)
Constant	0.17***	0.17***	0.32***	0.17***
	(0.053)	(0.054)	(0.067)	(0.054)
Department FE	No	No	Yes	No
Department × Male FE	No	No	No	Yes
N	271	271	271	271
R^2	0.072	0.11	0.19	0.15

Results

- Men produce one to two more working papers over the period of 2016-2020
- An extra working paper over this period increases the promotion likelihood by 3–4% for an AP
  - This effect is concentrated through coauthored papers
  - Neither of these results vary by gender
- Returns to coauthored working papers are 3–4% higher for male, compared to female Associates

Regression analysis – Promotion – Publications

Table: Promotion Since 2016 by Authors in Irish Institutions

	b/se	b/se	b/se	b/se
Male	0.050	0.038	0.028	0.55***
	(0.054)	(0.054)	(0.052)	(0.13)
Assistant	0.13**	0.14*	0.18**	0.15*
	(0.063)	(0.080)	(0.085)	(0.085)
Associate	0.32***	0.22**	0.22**	0.22**
	(0.082)	(0.11)	(0.10)	(0.11)
# Pub., Assistant		-0.0076	-0.0094	-0.0086
		(0.023)	(0.026)	(0.026)
# Pub., Associate		0.033*	0.034*	0.035*
		(0.018)	(0.018)	(0.019)
Constant	0.16***	0.17***	0.33***	0.17***
	(0.046)	(0.047)	(0.065)	(0.048)
Department FE	No	No	Yes	No
Department $\times$ Male FE	No	No	No	Yes
N	279	279	279	269
R^2	0.066	0.074	0.17	0.12

*** $p < .01$, ** $p < .05$, * $p < .1$

Regression analysis – Promotion – Publications, WPs

Table: Promotion Since 2016 by Authors in Irish Institutions

	b/se	b/se	b/se	b/se
Male	0.050	0.039	0.027	0.49***
	(0.054)	(0.053)	(0.051)	(0.13)
Assistant	0.13**	0.012	0.049	0.024
	(0.063)	(0.082)	(0.087)	(0.087)
Associate	0.32***	0.21*	0.21**	0.20*
	(0.082)	(0.11)	(0.10)	(0.11)
Job L.3 × # WPs		0.045***	0.042***	0.044***
		(0.013)	(0.013)	(0.013)
Job L.4 × # WPs		-0.012	-0.014	-0.014
		(0.011)	(0.011)	(0.011)
# Pub., Assistant		-0.034*	-0.034	-0.035*
		(0.019)	(0.021)	(0.020)
# Pub., Associate		0.063*	0.071*	0.074*
		(0.037)	(0.038)	(0.038)
Constant	0.16***	0.17***	0.33***	0.17***
	(0.046)	(0.046)	(0.065)	(0.048)
Department FE	No	No	Yes	No
Department × Male FE	No	No	No	Yes
N	279	279	279	269
R^2	0.066	0.12	0.20	0.16

*** $p < .01$, ** $p < .05$, * $p < .1$