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Mind the Gap: Gender Differences in Citations among Mexican Scholars

Cuidado con la brecha: diferencias de género en las citas académicas entre investigadores mexicanos

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Abstract

Objective: To quantify gender gaps in scholarly impact within Mexico's National System of Researchers (SNI). **Methodology:** A Scopus-based dataset of 2,089 active SNI researchers in Economics, Engineering, and Health Sciences for 2021 was assembled, and an Oaxaca–Blinder decomposition of log citations was applied. The outcome variable and right-tailed covariates were winsorized at the 99th percentile within each discipline to reduce the influence of extreme values, and all variables were transformed as log(x+1) to retain zero-valued observations. The study used a cross-sectional observational design and was restricted to SNI researchers identifiable in Scopus; a Heckman selection-corrected specification is reported in the Appendix. **Findings:** Women received approximately 23% fewer citations in Economics and 21% fewer in Health Sciences; in both disciplines, more than 100% of the observed gap was explained by differences in endowments, mainly

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fewer publications and shorter academic careers. In Engineering, the citation gap was not statistically significant; women exhibited lower endowments but higher returns to observable characteristics. **Implications:** The findings suggest that narrowing the citation gap requires strengthening research opportunities and career permanence rather than focusing on citation dynamics. **Originality:** This study provides the first discipline-specific Oaxaca–Blinder decomposition of the gender citation gap among SNI researchers and distinguishes between differences in citation outcomes and differences associated with academic trajectories.

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Resumen

Objetivo: Cuantificar las brechas de impacto académico por género en el Sistema Nacional de Investigadores (SNI) de México. **Metodología:** Se construyó una base con datos de Scopus para 2,089 investigadores SNI activos en 2021 en las áreas de Economía, Ingeniería y Ciencias de la Salud, y se aplicó una descomposición Oaxaca–Blinder al logaritmo de citas. La variable de resultado y las covariables con cola derecha se winsorizaron al percentil 99 dentro de cada disciplina para limitar la influencia de valores extremos, y las variables se transformaron como log(x+1) para conservar las observaciones con valor cero. El estudio utilizó un diseño observacional y transversal, y la muestra se restringió a investigadores SNI identificables en Scopus; en el apéndice se presenta una especificación con corrección por selección tipo Heckman. **Resultados:** Las mujeres recibieron aproximadamente 23% (Economía) y 21% (Ciencias de la Salud) menos citas en promedio; en ambos casos, más del 100% de la brecha se explicó por diferencias en las dotaciones, principalmente por un menor número de publicaciones y trayectorias académicas más cortas. En Ingeniería, la brecha no fue estadísticamente significativa; las mujeres presentaron dotaciones más bajas, pero mayores retornos a las características observables. **Implicaciones:** Los resultados sugieren que reducir la brecha de citas requiere fortalecer las oportunidades de investigación y la permanencia en la carrera académica más que intervenir sobre la dinámica de citación. **Originalidad:** El estudio constituye la primera descomposición Oaxaca–Blinder por disciplina de la brecha de citas entre investigadores del SNI y distingue entre las brechas en las citas y las asociadas con las trayectorias académicas.

Introduction

The dynamics of academic impact and the determinants of scholarly success are central topics in the study of science and innovation systems. The measurement of academic performance through bibliometric indicators (citation counts, number of papers, and the H-index) has become a cornerstone of how research productivity and scholarly influence are evaluated. These metrics are widely used in decisions on promotion, funding and prestige, and can shape academic careers in significant ways (Bornmann and Daniel, 2007; Ellison, 2013; Huang et al., 2020; Krauss et al., 2023). Despite their pervasiveness, the factors behind the markedly divergent career trajectories of Mexican researchers remain understudied, particularly those related to coauthorship networks and implicit gender differences.

This paper studies the gender citation gap among researchers affiliated with Mexico's National System of Researchers (SNI), the centralized governmental program that since 1984 evaluates and rewards scientific productivity through a four-rung ladder of recognition (Candidate, Levels I–III). The SNI compensation can represent up to half of a researcher's wage and conditions access to evaluation committees, grant funding and academic visibility (Gonzalez-Brambila & Veloso, 2007; Sandoval-Romero & Larivière, 2020; Galaz Fontes et al., 2020). SNI offers a particular empirical setting in which to study how observable productivity translates into recognition, for three reasons. First, it is a centralized, national system of periodic evaluation: certified committees organized by area of knowledge apply publicly defined criteria to every applicant in their area, irrespective of the applicant's home institution, in contrast with the decentralized, institution-by-institution promotion systems that dominate the international literature on gender gaps in academia (CONACYT, 2020, Arts. 11–12). Second, SNI membership comes with a periodic monetary transfer calculated by formula and tied to the level assigned in the evaluation; previous work documents that this transfer can represent up to half of a member's salary, which means that any gap in bibliometric visibility translates into a relevant income gap (Sandoval-Romero & Larivière, 2020; Dorantes-Gilardi et al., 2022). Third, in practice the evaluation weighs indexed bibliometric output heavily, directly linking the metrics we study (Scopus citations) to effective institutional recognition. The SNI thus makes the connection from published output to symbolic and monetary recognition which is very transparent and measurable. Moreover, the magnitude of the phenomenon is not marginal in the Mexican case: women remain underrepresented in senior academic ranks, particularly in STEM fields and in higher SNI levels (Dorantes-Gilardi et al., 2022; Rivera León et al., 2017), and the magnitude and sources of the citation gap have not been systematically documented within the SNI.

We focus on three disciplines, Economics, Engineering and Health Sciences, which differ substantially along three relevant margins. First, in female representation: Engineering has the lowest female share in the SNI (about 22%), Economics is intermediate (around 34%), and Health Sciences is female-majoritarian (about 55%). Second, in publication conventions: the three disciplines disseminate knowledge mainly through peer-reviewed journal articles (NSB, 2023; Savage and Olejniczak, 2022), which are likely to be indexed in Scopus, providing comparable bibliometric records. Third, in collaboration patterns, which are highly relevant for citation accumulation: research produced by larger and more diverse teams tends to receive more citations (Larivière et al., 2015; van der Wal et al., 2021), and collaboration with prominent coauthors yields lasting visibility benefits (Li et al., 2019; Dorantes-Gilardi et al., 2023; Krauss et al., 2023). These differences make discipline-specific decomposition particularly informative.

Methodologically, we apply an Oaxaca–Blinder (OB) decomposition (Oaxaca, 1973; Oaxaca and Ransom, 1994; Jann, 2008) to log citations, splitting the raw gap into an endowments component (differences in observable characteristics) and a coefficients component (differences in returns to those characteristics). We pair Scopus-based citation data with information on coauthor prominence, team size, publication output and academic age. The outcome and right-tailed covariates are winsorized at the 99th percentile within the discipline to limit the influence of extreme outliers, given the well-documented skewness of bibliometric distributions (Seglen, 1992; Aksnes et al., 2019). We report robustness to the no-winsorization alternative in Appendix C (row 2). Following Criscuolo et al. (2019) and MaCurdy and Pencavel (1986), variables are transformed as log(x+1) to retain zero-valued observations (17%–37% of the outcome variable observations).

We find substantial, discipline-specific gender gaps. In Economics and Health Sciences, women receive approximately 23% and 21% fewer citations than men, respectively, and in both cases the gap is more than fully explained by endowments, primarily lower publication output and shorter academic careers. In Engineering, where the raw gap is statistically indistinguishable from zero, women have weaker endowments but higher returns in each observable characteristic, which offsets the difference. Because the unexplained component is small (and statistically non-significant in Economics), our preferred reading of the results is that the documented citation gap reflects gaps in the underlying academic trajectories of men and women, rather than differential citation dynamics per se. We confirm the robustness of these findings to alternative transformations of the dependent variable (asinh), to dropping the (potentially endogenous) maximum coauthor H-index, to including academic age in levels with a quadratic term, to excluding the top 1% of citations and publications, to using the researcher's H-index as the dependent variable, to a Heckman correction for selection into Scopus (Appendix B), and to stratification by SNI level (Appendix C).

Our contribution is threefold. Substantively, we provide the first discipline-specific Oaxaca–Blinder decomposition of the citation gap among SNI researchers, and we document that this gap operates mainly through endowments. Conceptually, we clarify that what is often labelled as a "citation gap" is, in our setting, primarily a gap in academic trajectories; this distinction has direct implications for policy design. Methodologically, we follow current bibliometric standards in dealing with the heavy-tailed nature of citation data and document the implications of common practices through extensively checking robustness.

The paper proceeds as follows. Section 1 reviews relevant literature. Section 2 describes the data, the construction of the sample, and the empirical strategy. Section 3 presents the results. Finally, the conclusions.

1. Related literature

Coauthorship in academia has become standard practice, facilitated by advances in travel and telecommunications. Thelwall and Maflahi (2022) find that the average number of authors per article has been in ongoing expansion across all 27 broad Scopus fields. The composition of coauthorship in a team plays a substantive role in researchers' trajectories: complementary expertise can be pooled, and association with established collaborators raises long-term visibility (Li et al., 2019; Dorantes-Gilardi et al., 2023; Krauss et al., 2023). In coauthored work, major findings tend to be attributed to better-known researchers, while less established collaborators may be overlooked in the short run, although they may benefit from associations in the long run, a dynamic consistent with Merton's (1968) Matthew effect of cumulative advantage in science. DiPrete and Eirich (2006) review the cumulative advantage tradition in sociology and show how repeated small inequalities compound into large differences over time.

A standard metric to assess a researcher's prestige is the total citation count, together with citation-based composite indices such as the H-index

(Bornmann and Daniel, 2007). Total citations capture the extent to which a researcher's work has been used in the scientific community, while the H-index balances productivity and impact by counting how many publications have reached a minimum threshold of citations. The H-index was proposed by Hirsch (2005); Bornmann and Daniel (2007) show that it rewards sustained above-average impact rather than a few highly cited papers, providing a perspective distinct from total citation counts. Because the H-index summarizes the breadth and depth of an academic career in a single number, we use the maximum H-index of a researcher's coauthors as a proxy for the prominence of her collaboration network.

A persistent finding in the literature is that women in academia receive fewer citations than men. This disparity is shaped not only by citation practices but also by differences in research productivity and career trajectories. Huang et al. (2020) show that men typically experience longer and more continuous research careers, while women are more likely to exit the discipline at multiple stages, contributing to differences in citation accumulation across countries and disciplines. Spoon et al. (2023) document that, in U.S. faculty, women are 6–19% more likely to leave academia than men at each career stage. King et al. (2017) show that men self-cite more frequently than women, inflating their visible citation metrics, and in male-dominated fields the gap may be amplified by within-group citation behaviour (Dion et al., 2018). Hengel (2022) finds that women economists are held to higher standards in peer review and spend more time revising their work, mechanically reducing their publication output. Ghiasi et al. (2015) document that women engineers tend to publish in higher-impact journals than their male counterparts, which may compensate for lower publication volume.

A separate strand of literature studies what happens to gender disparities when discrimination is made salient. Hensvik and Nilsson (2025) exploit the public disclosure of substantial male bias in the competence assessments of newly minted PhDs applying for grants from the Swedish Medical Research Council and document that, post-disclosure, male-only review committees were rapidly phased out, reviewers' decision processes changed, the average male bias was eliminated, and the long-run research output of grantees assigned to previously biased committees increased by 27 percent of a standard deviation. The Mexican SNI, with its centralized evaluation system, offers a comparable institutional setting where the visibility of gender gaps in citations could plausibly affect future evaluation practices.

A growing body of work has applied the Oaxaca–Blinder framework to outcomes beyond wages, including educational attainment, health, and academic productivity. The interpretation of the coefficients component as "discrimination" is contested, since it absorbs both differential returns to observed characteristics and the contribution of any unobserved characteristic that is correlated with the group indicator (Oaxaca and Ransom, 1994; Jann, 2008). In our setting, potential unobservables include institutional prestige, journal quality, international collaboration intensity, and access to research funding, none of which we observe directly. We are therefore careful to interpret the unexplained component as the joint contribution of differential returns and omitted variables, rather than as a direct measure of discrimination.

2. Data and methodology

2.1 Sample construction and gender identification

We build the analysis sample by combining three sources. (i) The 2021 SNI registry of active researchers ("Padrón de Beneficiarios"), our starting universe, which lists for every SNI member their identifier (CVU), academic title (NOBILIS), level, discipline, institution and state. (ii) Scopus, from which we obtain, for each SNI researcher and each of her coauthors, all publication and citation records up to 2021. (iii) The researcher's coauthorship network, derived from the same Scopus records.

Gender is taken primarily from the academic-title field NOBILIS in the SNI registry, which is gender-marked in Spanish: DR./MTRO. for men and DRA./MTRA. for women. This administrative field classifies gender for 99.9% of researchers in Economics, 99.7% in Engineering, and 89% in Health Sciences. A small number of researchers carry profession-marked titles that are gender-neutral (e.g., MED., M. EN C., QUIM., BIOL., BIOQ., Q.F.B., PSIC.), almost all in Health Sciences; for these we assign gender from the researcher's given name as recorded in the SNI registry, which in Spanish is in the vast majority of cases unambiguously gendered. Cases that remain ambiguous (unisex names or initials only) are left unclassified and excluded. This name-based step affects 113 researchers in the analysis sample (111 in Health Sciences, 2 in Engineering, none in Economics). Because gender is observed at the researcher level by the evaluating institution (the SNI) rather than imputed from publication metadata, the discrimination concern raised when authors' first names are abbreviated in published articles does not apply: gender is a feature of the researcher, not of an individual publication.

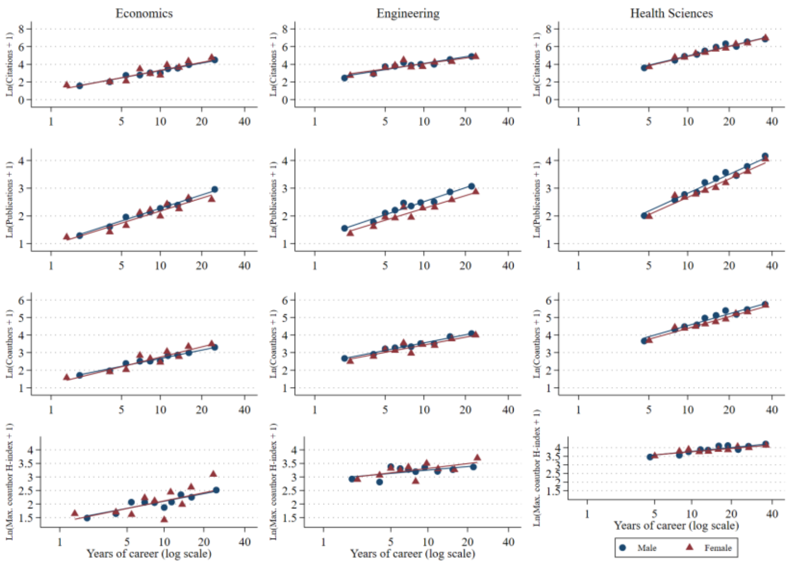
Table A1 in the appendix reports sample construction by discipline. Of the SNI researchers identifiable by gender, those without a profile in Scopus are excluded from the main analysis, since we cannot observe their citations. The selection issues raised are addressed in Section 3 and Appendix B.

2.2 Variables and treatment of heavy tails

For each researcher we construct the following variables, computed cumulatively from the first publication recorded in Scopus up to 2021. Citations: total count of citations received by all the researcher's Scopus-indexed publications. Publications: total number of publications indexed in Scopus. Coauthors: total count of coauthors across all publications. Max coauthor H-index: the largest H-index among all the researcher's coauthors, as a proxy for the prominence of her collaboration network. Years of career: number of years between the first recorded publication and 2021. We acknowledge that the maximum coauthor H-index is potentially endogenous with the outcome, because highly productive researchers are more likely to collaborate with high-impact scholars (and vice versa), so that citation accumulation and coauthor prestige may co-evolve. We address this concern in two ways: (i) in Section 3.4 and Appendix C, row (4), we report a robustness check that drops the maximum coauthor H-index from the covariates; (ii) we interpret the coefficients as descriptive associations rather than as causal effects.

Citation distributions are notoriously heavy-tailed: a small share of researchers accumulates a disproportionate share of total citations (Seglen, 1992; Aksnes et al., 2019). Two methodological choices follow from this. First, we take logarithms to compress the right tail. Because citations and other variables can take zero values for some researchers, we use the transformation $\log(x+1)$ rather than log(x), preserving the entire sample. Second, before taking logs we winsorize the three variables most affected by heavy tails, citations, publications and maximum coauthor H-index, at the 99th percentile within each discipline. Winsorization at the 1st or 99th percentile is a common convention in applied microeconomics with right-tailed outcome variables, used to limit the influence of extreme observations without discarding them; the convention is not without critics (Leone et al., 2019, who recommend robust regression as an alternative), and we report robustness to removing the winsorization in Appendix C, row (2). The remaining variables (number of coauthors, academic age) are not winsorized in the main specification, but Appendix C reports robustness to alternative treatments, including the inverse hyperbolic sine transformation (Bellemare and Wichman, 2020) and the unwinsorized version.

Figure 1
Outcome variables by years of career and gender, by discipline



Notes. Binscatter (10 quantiles of ln(years of career+1)) of log-transformed cumulative outcomes against log-transformed years of career, by gender and discipline. The Y-axis displays ln(citations+1), ln(publications+1), ln(coauthors+1) and ln(max coauthor H-index+1); the X-axis displays ln(years of career+1) and is labelled in original units (years). Citations, publications and the maximum coauthor H-index are winsorized at the 99th percentile within discipline; the number of coauthors and years of career are not winsorized. The variable definitions and transformations are identical to those used in the Oaxaca–Blinder decomposition of Tables 3–5 and the OLS regressions of Table 6. Each row uses a common Y-scale across the three disciplines to facilitate visual comparison. The unconditional male–female differences in levels (and their significance) are reported in Table 2; Figure 1 is the conditional-on-career-length counterpart of those raw differences.
Source: authors' computations from Scopus and the SNI 2021 registry.

Figure 1 documents three patterns that motivate our empirical strategy. First, in log–log scale all four outcomes rise approximately linearly with the number of years in the field, in the three disciplines and for both genders. This fact is the empirical basis for the ln(career+1) specification we adopt in Section 2.3.

Second, the gender gap visible in the binscatter is highly heterogeneous across outcomes. It is clearest in publications, where the male trajectory lies consistently above the female trajectory in all three disciplines, consistent with the M–F difference being statistically significant in Table 2 in every discipline (at the 5% level in Engineering and Health Sciences, and at the 10% level in Economics). For coauthors, Table 2 also shows significant M–F differences in Engineering and Health Sciences (and not in Economics), but the gap is visually more apparent in Health Sciences than in Engineering, where the male and female trajectories lie close to one another over most of the observed career range. By contrast, the male and female trajectories for citations and for the maximum H-index across coauthors are nearly indistinguishable in all three disciplines, consistent with the non-significant or only marginally significant differences reported in Table 2. Two implications follow. (i) When researchers are compared at comparable career lengths (as in Figure 1, but not as in the unconditional means of Table 2), the citation gap shrinks substantially: a large share of the raw citation difference reflects compositional differences in seniority and publication output, not differential citation dynamics. This anticipates the central result of Section 3, where over 100% of the raw citation gap is accounted for by endowments. (ii) The absence of a visible gender gap in the maximum H-index of coauthors suggests that women collaborate with comparably prominent peers; the citation gap, to the extent it exists, does not operate through the quality of the collaboration network.

Third, the levels and slopes of accumulation differ substantially across disciplines. Health Sciences exhibits the highest absolute levels (ln(citations+1) reaches roughly 7 by year 40, versus 4–5 in Economics and Engineering), consistent with the larger team sizes and citation densities typical of biomedical research; Engineering has the shortest observed careers in the sample and the flattest publication and coauthor gradients.

These three observations motivate three modelling choices, discussed in Section 2.3 and verified in Appendix C: (i) we condition on ln(years of career+1), consistent with the approximate log-linear relationship documented in Figure 1; (ii) we report a robustness check with years of career and its square in levels (Table A3, row 3); and (iii) we report a robustness check that drops the maximum coauthor H-index, (Table A3, row 4) a regressor, that is potentially endogenous.

2.3 Empirical strategy

We employ a three-fold Oaxaca–Blinder decomposition (Oaxaca, 1973; Oaxaca and Ransom, 1994; Jann, 2008). Let A denote male researchers (reference group) and B denote female researchers. The mean difference in log citations between groups decomposes as:

$$\Delta \ln(citations + 1) = \sum_k \beta_{B,k}\left(\bar{x}_{A,k} - \bar{x}_{B,k}\right) + \sum_k \bar{x}_{B,k}\left(\beta_{A,k} - \beta_{B,k}\right) + \sum_k \left(\bar{x}_{A,k} - \bar{x}_{B,k}\right)\left(\beta_{A,k} - \beta_{B,k}\right)$$

The $\bar{x}$ terms in the equation represent the mean of each group's observable characteristic, while the coefficients β represent the return coefficients associated with each observable characteristic. The subindex indicates the group: A for male researchers and B for female researchers. The first term is the endowments component (the part of the gap attributable to differences in observable characteristics, evaluated at women's returns). The second is the coefficients component (the part attributable to differences in returns to characteristics, evaluated at women's mean characteristics). The third is the interaction term. The decomposition relies on three identification assumptions: (i) the conditional expectation of log citations given the covariates is linear within each group; (ii) the residuals are mean-independent of the group indicator conditional on the covariates; and (iii) there is common support of the covariate distributions between groups. Assumption (i) is partly relaxed by including a robustness check with academic age in levels plus its square (Appendix C). Assumption (ii) is the standard no omitted variables requirement and is the source of the cautious interpretation of the coefficients component in Section 1. Assumption (iii) is satisfied in our data given the substantial overlap in the covariate distributions across genders. A separate concern raised in the literature is that, with cumulative outcomes and a cross-sectional design, the regressors mechanically co-evolve with seniority: older researchers naturally have more publications, more citations and more coauthors. The decomposition controls for years of the academic career in log form (ln(years of career+1)); we additionally include a specification with academic age and its square in levels (Appendix C, row 3) and verify that our conclusions are not driven by the linear-log specification of seniority.

All regressions are estimated by OLS with heteroskedasticity-robust standard errors (HC1). Standard errors for the decomposition components are likewise heteroskedasticity-robust (HC1), computed following Jann (2008), which accounts for the sampling variation of both the regression coefficients and the covariate means. We report Breusch–Pagan heteroskedasticity tests and variance inflation factors (VIF) for every regression in Appendix C (Table A5).

Table 1
SNI Sample and Population, by discipline (%)

	Economics, Sample	Economics, Pop.	Engineering, Sample	Engineering, Pop.	Health Sciences, Sample	Health Sciences, Pop.
SNI Level						
SNI-C	17.76	28.30	63.28	66.27	4.11	5.61
SNI-I	55.43	50.95	36.55	33.55	66.93	65.42
SNI-II	19.41	14.00	0.00	0.00	20.42	19.37
SNI-III	7.40	6.74	0.17	0.18	8.55	9.60
Female share						
Female (%)	32.40	33.75	22.41	22.32	55.72	55.32
# researchers						
N	608	1,364	580	1,085	901	1,229

Notes. Sample = SNI researchers active in 2021 who could be identified in Scopus. Population = full set of SNI researchers active in 2021 in each discipline. Source: authors' computations from Scopus and the SNI 2021 registry. SNI-level shares and N in the Population column refer to all SNI researchers in each discipline (full 2021 registry); Female (%) is computed over members whose gender is identifiable from the academic title or, for gender-neutral titles, the given name (1,363, 1,084 and 1,204 in Economics, Engineering and Health Sciences, respectively). No SNI-II researchers are recorded in Engineering in the 2021 SNI registry.

Table 2
Sample descriptives, by discipline and gender

Variable	Economics M	Economics F	Diff	p	Engineering M	Engineering F	Diff	p	Health M	Health F	Diff	p
Citations (mean)	88.6	79.5	9.1	0.753	99.1	74.7	24.3	0.180	640.3	522.5	117.8	0.070
Citations (SD)	(371.0)	(232.4)			(200.6)	(92.7)			(978.6)	(961.8)		
Publications (mean)	12.8	9.5	3.3	0.057	12.9	8.7	4.2	0.000	35.8	26.4	9.4	0.000
Publications (SD)	(22.2)	(13.5)			(12.5)	(7.3)			(35.6)	(25.2)		
Coauthors (mean)	28.0	24.8	3.3	0.651	39.0	30.4	8.6	0.009	216.8	172.0	44.8	0.001
Coauthors (SD)	(95.9)	(50.6)			(35.5)	(21.8)			(225.9)	(189.5)		
Max coauthor H (mean)	13.3	12.1	1.2	0.420	29.1	30.0	-0.9	0.656	61.9	57.1	4.7	0.082
Max coauthor H (SD)	(18.6)	(15.9)			(20.3)	(21.5)			(42.6)	(38.9)		
Years of career (mean)	10.7	8.5	2.2	0.000	9.2	8.0	1.2	0.046	17.4	15.7	1.7	0.007
Years of career (SD)	(7.5)	(5.7)			(6.2)	(5.0)			(9.7)	(8.9)		
H-index of researcher (mean)	3.4	3.1	0.3	0.240	4.2	3.8	0.4	0.163	10.4	9.3	1.1	0.010
N	411	197	608		450	130	580		399	502	901	

Notes. Standard deviations in parentheses below the mean. The Diff columns report the male–female difference. p is the two-sided two-sample t-test p-value (equal variances). All variables are computed cumulatively from each researcher's first Scopus-indexed publication up to 2021.

3. Results

Before turning to the three discipline-specific results, a brief note on how the role of coauthors enters the analysis. The number of coauthors appears in this paper in three distinct ways, each answering a different question: (i) in Table 2 we report the unconditional male–female difference in cumulative coauthors, which is significant in Engineering ($p=0.009$) and Health Sciences ($p=0.001$) but not in Economics; (ii) in Tables 3–5 we report the contribution of the endowment in Ln(Coauthors+1) to the male–female gap in log citations, conditional on publications, max coauthor H-index and academic age — this contribution is statistically significant only in Health Sciences (0.061**, SE 0.030); and (iii) in Table 6 we report the OLS coefficient of Ln(Coauthors+1) in the citations equation by gender and discipline, which is statistically significant only in Health Sciences (0.18* for males, 0.24** for females). The three results are mutually consistent: a sizeable raw gap in coauthors translates into a significant explainable component of the citation gap only when, conditional on the other covariates, coauthors actually predict citations — which in our sample occurs only in Health Sciences. Differences in coauthor counts in Engineering, although significant in raw terms, do not propagate into the citation gap because it is conditional on publications, the elasticity of citations with respect to coauthors is statistically indistinguishable from zero in that discipline (Table 6)

3.1 Economics

Table 3 reports the Oaxaca–Blinder decomposition for Economics. The mean of log(citations+1) is 3.10 for men and 2.88 for women, yielding a raw gap of 0.225 log points (approximately 23%), marginally statistically significant ($p < 0.10$). The endowments component is 0.343 and is highly significant, indicating that differences in observable characteristics, chiefly publications and years of career seniority, more than fully account for the raw gap (0.343 / 0.225 = 152%). The coefficients component is -0.100 and is not statistically distinguishable from zero, suggesting that returns to each observable characteristic do not differ systematically by gender. The interaction component is small and non-significant.

Decomposing the endowments component by variable, publications and academic age contribute the most to explaining the gap, in line with the descriptive evidence in Table 2. These findings are consistent with Ginther and Kahn (2004), who report that female economists publish fewer papers than their male counterparts, including those from top Ph.D. programs. The disparity in publications has been linked to women economists being held to higher standards during peer review and also to spending more time on the revision of existing work to meet publication requirements (Hengel, 2022), and to differential exit rates from academia: female assistant professors are about 6 percent more likely to leave each year than their male counterparts, with the gap widening at higher ranks (Spoon et al., 2023).

3.2 Engineering

Table 4 reports the decomposition for Engineering. The raw gap is positive (0.066 log points) but statistically indistinguishable from zero. This null result, however, masks two offsetting forces. The endowments component is positive and significant (0.285), indicating that women engineers have weaker endowments than men. The coefficients component is negative and significant (−0.245), indicating that the returns to those characteristics are higher for women. These results suggest that female engineers achieve parity in citations despite a less favourable distribution of observables, in part by extracting more impact from their collaborations with high-H-index coauthors and from each publication. One plausible explanation is that women engineers publish in higher-impact-factor journals than their male peers, consistent with Ghiasi et al. (2015).

3.3 Health Sciences

Table 5 reports the decomposition for Health Sciences, a female-majority discipline. The raw gap is 0.210 log points (approximately 21%), statistically significant. The endowments component is 0.304 (145% of the raw gap), again driven by publications and academic age. The coefficients component is marginally significant and negative (−0.088), suggesting somewhat higher returns for women. Rivera-Romano et al. (2020) document that although women account for 70–80% of the workforce of the Mexican National Institutes of Health, only 24% attain senior executive positions. In a discipline where access to laboratories and large research teams is critical for productivity, the concentration of decision-making authority and power among men can create structural barriers that limit women's publication opportunities.

Table 3
Oaxaca–Blinder decomposition, Economics

	Estimate	**Robust SE (HC1)**
Differential		
Mean ln(citations+1), Male	3.101***	(0.076)
Mean ln(citations+1), Female	2.876***	(0.113)
Difference (M–F)	0.225*	(0.137)
Aggregate decomposition		
Endowments	0.343***	(0.123)
Coefficients	−0.100	(0.071)
Interaction	−0.017	(0.031)
Endowments by variable		
Ln(Publications+1)	0.216***	(0.081)
Ln(Coauthors+1)	0.011	(0.020)
Ln(Max coauthor H-index+1)	0.031	(0.038)
Ln(Years of career+1)	0.084***	(0.031)
Coefficients by variable		
Ln(Publications+1)	−0.151	(0.420)
Ln(Coauthors+1)	−0.076	(0.406)
Ln(Max coauthor H-index+1)	0.023	(0.189)
Ln(Years of career+1)	0.039	(0.261)
N		
N (Male)	411	
N (Female)	197	

*Notes. Citations, publications and max coauthor H-index winsorized at the 99th percentile within discipline. All variables in log(x+1). Robust standard errors (HC1) in parentheses. * p<0.10, ** p<0.05, *** p<0.01.*

Table 4
Oaxaca–Blinder decomposition, Engineering

	Estimate	**Robust SE (HC1)**
Differential		
Mean ln(citations+1), Male	3.820***	(0.060)
Mean ln(citations+1), Female	3.754***	(0.098)
Difference (M–F)	0.066	(0.115)
Aggregate decomposition		
Endowments	0.285***	(0.096)
Coefficients	−0.245***	(0.079)
Interaction	0.026	(0.051)
Endowments by variable		
Ln(Publications+1)	0.306***	(0.117)
Ln(Coauthors+1)	−0.030	(0.050)

	Estimate	Robust SE (HC1)
Ln(Max coauthor H-index+1)	−0.010	(0.023)
Ln(Years of career+1)	0.018	(0.016)
Coefficients by variable		
Ln(Publications+1)	−0.012	(0.701)
Ln(Coauthors+1)	0.497	(0.980)
Ln(Max coauthor H-index+1)	−0.039	(0.481)
Ln(Years of career+1)	0.038	(0.315)
N		
N (Male)	450	
N (Female)	130	

Notes. See Table 3.

Table 5
Oaxaca–Blinder decomposition, Health Sciences

	Estimate	Robust SE (HC1)
Differential		
Mean ln(citations+1), Male	5.565***	(0.073)
Mean ln(citations+1), Female	5.354***	(0.062)
Difference (M−F)	0.210**	(0.096)
Aggregate decomposition		
Endowments	0.304***	(0.087)
Coefficients	−0.088*	(0.046)
Interaction	−0.005	(0.014)
Endowments by variable		
Ln(Publications+1)	0.151***	(0.047)
Ln(Coauthors+1)	0.061**	(0.030)
Ln(Max coauthor H-index+1)	0.021	(0.016)
Ln(Years of career+1)	0.072**	(0.031)
Coefficients by variable		
Ln(Publications+1)	0.123	(0.469)
Ln(Coauthors+1)	−0.264	(0.660)
Ln(Max coauthor H-index+1)	0.292	(0.359)
Ln(Years of career+1)	−0.189	(0.319)
N		
N (Male)	399	
N (Female)	502	

Notes. See Table 3.

Table 6
OLS regressions of Ln(citations+1) by gender and discipline

	Eco M	Eco F	Eng M	Eng F	Health M	Health F
Ln(Publications+1)	0.867*** (0.10)	0.944*** (0.19)	1.094*** (0.11)	1.100*** (0.32)	0.647*** (0.11)	0.605*** (0.11)
Ln(Coauthors+1)	0.063 (0.07)	0.094 (0.15)	−0.019 (0.10)	−0.174 (0.29)	0.182* (0.11)	0.238** (0.10)
Ln(Max coauthor H+1)	0.401*** (0.05)	0.389*** (0.08)	0.346*** (0.06)	0.359*** (0.14)	0.395*** (0.07)	0.319*** (0.06)
Ln(Years of career+1)	0.461*** (0.08)	0.443*** (0.10)	0.249*** (0.07)	0.231* (0.13)	0.712*** (0.10)	0.783*** (0.07)
Constant	−0.811*** (0.13)	−0.875*** (0.19)	−0.307 (0.24)	0.423 (0.50)	−0.903*** (0.26)	−0.851*** (0.25)
N	411	197	450	130	399	502
R-squared	0.739	0.745	0.660	0.540	0.799	0.796

*Notes. Robust standard errors (HC1) in parentheses. Variables in log(x+1); citations, publications and max coauthor H-index winsorized at the 99th percentile within discipline. * p<0.10, ** p<0.05, *** p<0.01.*

The regression coefficients in Table 6 show that, across the three disciplines and both genders, log publications and log years of career are the strongest and most consistent predictors of log citations, with elasticities of publications between 0.61 (Health-F) and 1.10 (Engineering). The maximum coauthor H-index has a positive and significant association with citations in all six gender-discipline cells, with coefficients between 0.32 and 0.40. The number of coauthors plays a more modest role and is only significant in Health Sciences. When comparing male and female coefficients within each discipline, the differences are small in absolute value, consistent with the (mostly) non-significant coefficients component in the decomposition tables.

3.4 Robustness

Table A3 of Appendix C reports a battery of robustness checks. (1) Replacing log(citations+1) with the inverse hyperbolic sine transformation, which handles zero values without an arbitrary plus one (Bellemare and Wichman, 2020), produces virtually identical decomposition estimates. (2) Removing the winsorization at the 99th percentile leaves all qualitative conclusions unchanged. (3) Including academic age in levels with a quadratic term, to allow for a non-linear age profile, yields decomposition magnitudes very similar to the main specification; the quadratic term is statistically significant on its own (consistent with concavity in the career–citations relationship) but does not change the relative contribution of endowments and coefficients. (4) Dropping the (potentially endogenous) maximum coauthor H-index from the covariates barely moves the decomposition: the endowments component remains the dominant force, and the coefficients component remains small. (5) Using the researcher's own H-index as the dependent variable yields qualitatively similar findings, with even larger relative contributions of endowments. (6) Excluding researchers in the top 1% of citations and publications within discipline preserves the pattern. (7) Stratifying the decomposition by SNI level (Table A4) shows heterogeneous and, given the much smaller cells, largely imprecise patterns: most within-cell male–female differences are not statistically significant, and where a significant gap appears it is concentrated among SNI-I economists and is again driven by endowments, so we read these results as broadly consistent with the pooled findings rather than as overturning them. Regression diagnostics are reported in Table A5: Breusch–Pagan tests reject homoskedasticity in two of the six gender-by-discipline regressions (Engineering men and Health Sciences women), which justifies the use of heteroskedasticity-robust standard errors throughout, while all variance inflation factors stay below the conventional threshold of 10 (maximum 9.55, in Health Sciences men), indicating no problematic multicollinearity.

Appendix B reports a Heckman-style selection correction. On the full 2021 SNI registry of researchers with identifiable gender, we estimate a probit for the probability of being observed in Scopus, and we re-estimate the citations equation jointly with this selection equation using the Heckman (1979) two-step estimator at the researcher × discipline level. Scopus coverage of the gender-identifiable SNI registry differs markedly across disciplines (44.6% in Economics, 53.5% in Engineering, 74.8% in Health Sciences; Table A1); within the Heckman estimation, cells with no within-cell variation in Scopus status are dropped to avoid perfect separation, so the selection equation is fitted on 608, 580 and 901 selected observations (estimation-selection rates of 44.6%, 53.5% and 74.8%). The inverse Mills ratio is not statistically significant in any of the three disciplines, indicating no detectable selection bias in the observables; the coefficient on the female indicator in the citations equation remains positive in all three disciplines (significant in Engineering and Health Sciences), consistent with the Oaxaca–Blinder decomposition. We conclude that selection into Scopus does not overturn the central finding. In Economics, 89 researchers fall into the region-by-institution cells with no within-cell variation in Scopus status and are dropped from the probit, so the estimation sample (1,274) is smaller than the universe (1,363); no such cells occur in Engineering or Health Sciences.

Conclusions

This paper documents the gender citation gap among researchers affiliated with Mexico's National System of Researchers in three disciplines: Economics, Engineering and Health Sciences. Using a Oaxaca–Blinder decomposition on Scopus-based citation records for 2,089 SNI researchers active in 2021, we find substantial discipline-specific gaps in Economics and Health Sciences (about 23% and 21%, respectively) that are more than fully explained by career opportunities, chiefly fewer publications and shorter careers for women. In Engineering, the raw gap is statistically indistinguishable from zero, but this null result reflects offsetting forces: women have weaker endowments and higher returns to those endowments.

These results are robust to alternative transformations of the dependent variable (inverse hyperbolic sine), to removing the winsorization, to including academic age in levels with a quadratic term, to dropping the maximum coauthor H-index, to using the researcher's own H-index as the outcome, to excluding the top 1% of citations and publications, to stratifying by SNI level, and to a Heckman correction for selection into Scopus.

We frame our findings in terms of gaps in academic trajectories rather than discrimination in the assignment of citations per se. The unexplained component of the decomposition, small and mostly non-significant, is the part of the gap that could in principle reflect differential returns or unobserved factors. In our setting, plausible omitted variables include institutional prestige, journal quality, international collaboration intensity, and access to research funding, none of which we observe directly. We are therefore careful not to interpret the unexplained component as a measure of citation discrimination.

The reading of the gap as a gap in trajectories has direct policy implications. In Economics and Health Sciences, where the citation disadvantage for women is primarily attributable to endowments, policies should focus on expanding research opportunities and supporting longer career trajectories: targeted grant schemes, structured mentoring programs, and family-friendly tenure and promotion policies. In Engineering, where women already obtain higher returns to each observable characteristic, the structural priority is recruitment and retention at early career stages, given that women in the field do not face a penalty in how their characteristics translate into impact.

Several limitations of our design should be acknowledged. First, the sample is restricted to SNI researchers identifiable in Scopus, which excludes researchers whose work circulates primarily in non-Scopus-indexed outlets. The Heckman correction reported in Appendix B addresses this concern econometrically but cannot fully eliminate the possibility of selection on unobservables. Importantly, this correction addresses selection into observation in Scopus, not publication bias at the article level: we observe citations only to published papers, and a fuller treatment would require data on unpublished or rejected work, which is not available for all SNI researchers. Second, our analysis is cross-sectional and based on cumulative variables, which limits our ability to distinguish cohort effects from career-length effects. Future work using longitudinal data, tracking publications and citations year by year over the course of researchers' careers, is the natural next step, and is the focus of our ongoing research. Third, the analysis is silent on the structural origin of the differences in publication output and career length between men and women, differences that the international literature attributes to a combination of higher peer-review standards (Hengel, 2022), differential exit rates (Spoon et al., 2023), and structural inequalities in access to resources (Rivera-Romano et al., 2020; Hensvik and Nilsson, 2025). Identifying which of these mechanisms is most relevant in the Mexican case remains an important agenda for future research.

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2. *CRediT Authorship Contribution Statement*

[D.A.G.]: Conceptualization, Methodology, Formal analysis, Writing – original draft, Data curation, Software, Validation, Investigation, Writing – review & editing, Supervision, Project administration, Writing – review & editing.

[M.E.G.G.]: Conceptualization, Methodology, Formal analysis, Writing – original draft, Data curation, Software, Validation, Investigation, Writing –

review & editing, Funding acquisition, Supervision, Project administration, Writing – review & editing.

[A.A.R.A.]: Conceptualization, Methodology, Formal analysis, Writing – original draft, Data curation, Software, Validation, Investigation, Writing – review & editing, Funding acquisition, Supervision, Project administration, Writing – review & editing.

[D.T.S.]: Conceptualization, Methodology, Formal analysis, Writing – original draft, Data curation, Software, Validation, Investigation, Writing – review & editing, Supervision, Project administration, Writing – review & editing.

All authors have read and agreed to the published version of the manuscript.

3. *Conflict of Interest / Competing Interests*

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

4. *Data Availability Statement*

The data that support the findings of this study are available from the corresponding author upon reasonable request.

5. *Declaration of Generative AI in the Writing Process*

The authors declared that no generative AI or AI-assisted technologies were used in the writing process or performance of this work.

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Appendix A. Sample construction

This appendix details the construction of the analysis sample. Starting from the 2021 SNI registry ("Padrón de Beneficiarios"), we (i) classify researchers by gender using the academic-title field NOBILIS or using manual classification as described in section 3.1, (ii) match them by CVU to Scopus profiles built from the researcher's full bibliographic record up to 2021, and (iii) construct researcher-level cumulative measures of citations, publications, coauthors, maximum coauthor H-index and academic age.

Table A1
Sample funnel by discipline

Step	Economics	Engineering	Health Sciences	Total
SNI 2021 registry (Padrón)	1,364	1,085	1,229	3,678
Identifiable by gender from NOBILIS	1,363 (99.9%)	1,082 (99.7%)	1,093 (88.9%)	3,538 (96.2%)
Identified by gender — manual (given name)	0	2	111	113
Total identifiable (NOBILIS + manual)	1,363	1,084	1,204	3,651
Matched to a Scopus profile (sample)	608	580	901	2,089
Female (% of sample)	32.4%	22.4%	55.7%	39.7%

Notes. Identification by NOBILIS treats DR./MTRO. as male and DRA./MTRA. as female; gender-neutral professional titles (e.g., MED., M. EN C., QUIM.) are excluded.

Appendix B. Selection correction (Heckman)

To assess whether selection into Scopus affects our estimates, we follow Heckman (1979). On the full 2021 SNI registry of researchers with identifiable gender, we jointly estimate a probit for the probability of being observed in Scopus and the citations equation, using the Heckman (1979) two-step estimator at the researcher level. The selection equation includes region (five categories) and grouped-institution indicators as exclusion restrictions; the outcome equation uses the same log-transformed cumulative covariates as the main specification, winsorized at the 99th percentile within discipline, with SNI-level dummies. Table A2 reports the results.

Table A2
Selection-corrected citations equation (Heckman 1979)

	Economics	**Engineering**	**Health Sciences**
Citations equation			
Female	0.104 (0.070)	0.261*** (0.078)	0.103** (0.043)
Ln(Publications+1)	0.870*** (0.083)	1.020*** (0.100)	0.593*** (0.065)
Ln(Coauthors+1)	0.083 (0.065)	−0.058 (0.091)	0.222*** (0.057)
Ln(Max coauthor H-index+1)	0.383*** (0.045)	0.350*** (0.056)	0.345*** (0.041)
Ln(Years of career+1)	0.473*** (0.064)	0.229*** (0.067)	0.724*** (0.049)
Constant	−0.577 (0.357)	−0.379 (0.392)	−1.153*** (0.234)
Selection equation (in Scopus)			
Female	−0.027 (0.077)	0.039 (0.093)	0.000 (0.083)
Constant	−0.249 (0.274)	0.023 (0.239)	0.266 (0.262)
Inverse Mills ratio (lambda)	−0.163 (0.297)	0.386 (0.430)	0.112 (0.196)
Identifiable by gender from NOBILIS	1,363	1,082	1,093
Identified by gender — manual	0	2	111
SNI 2021 universe (NOBILIS + manual)	1,363	1,084	1,204
N (estimation sample)	1,274	1,084	1,204
Selected observations (in Scopus)	608	580	901

*Notes. Heckman (1979) two-step estimator; standard errors in parentheses. The selection equation is a probit for being observed in Scopus, estimated on the 2021 SNI registry restricted to researchers with identifiable gender. Exclusion restrictions: region (five categories) and grouped-institution dummies. Cells with no variation in Scopus status within a discipline are dropped to avoid perfect separation. The outcome equation is ln(citations+1) on the same log-transformed cumulative covariates as the main specification, winsorized at the 99th percentile within discipline, with SNI-level dummies. * p<0.10, ** p<0.05, *** p<0.01.*

The inverse Mills ratio is not statistically significant in any of the three disciplines (Table A2), indicating no detectable selection bias on observables once the model is estimated. Selection into Scopus is least restrictive in Health Sciences (74.8% of SNI Health researchers with identifiable gender in Scopus), more selective in Engineering (53.5%), and most selective in Economics (44.6%), consistent with the differential coverage of Scopus across disciplines noted in Section 2.1. Within the

Heckman estimation, discipline cells with no within-cell variation in Scopus status are dropped to avoid perfect separation, so the selection equation is fitted on 608, 580 and 901 selected observations (i.e. estimation-selection rates of 44.6%, 53.5% and 74.8%; Table A2). The coefficient on the female indicator remains positive in all three disciplines after the selection correction and is statistically significant in Engineering and Health Sciences. We conclude that selection into Scopus does not overturn the central finding of a gender gap in citations driven by endowments.

Appendix C. Robustness

This appendix collects the robustness checks summarized in Section 3.4. Each row reports the aggregate Oaxaca–Blinder components for an alternative specification. Robust standard errors (HC1) in parentheses.

Table A3
Robustness of the Oaxaca–Blinder decomposition

Specification	Discipline	Difference	Endowments	Coefficients	Interaction	N
(0) Main	Economics	0.225* (0.137)	0.343*** (0.123)	−0.100 (0.071)	−0.017 (0.031)	608
	Engineering	0.066 (0.115)	0.285*** (0.096)	−0.245*** (0.079)	0.026 (0.051)	580
	Health Sciences	0.210** (0.096)	0.304*** (0.087)	−0.088* (0.046)	−0.005 (0.014)	901
(1) asinh(citations)	Economics	0.248* (0.149)	0.378*** (0.133)	−0.105 (0.078)	−0.025 (0.034)	608
	Engineering	0.067 (0.120)	0.297*** (0.100)	−0.261*** (0.083)	0.031 (0.053)	580
	Health Sciences	0.208** (0.098)	0.310*** (0.089)	−0.097** (0.047)	−0.006 (0.014)	901
(2) No winsorization	Economics	0.227* (0.138)	0.351*** (0.124)	−0.104 (0.071)	−0.020 (0.033)	608
	Engineering	0.073 (0.115)	0.289*** (0.096)	−0.246*** (0.079)	0.030 (0.052)	580
	Health Sciences	0.208** (0.096)	0.309*** (0.087)	−0.093** (0.046)	−0.007 (0.014)	901
(3) career + career^2	Economics	0.225* (0.137)	0.363*** (0.124)	−0.103 (0.071)	−0.034 (0.034)	608
	Engineering	0.066 (0.115)	0.277*** (0.098)	−0.253*** (0.080)	0.042 (0.056)	580
	Health Sciences	0.210** (0.096)	0.303*** (0.086)	−0.094** (0.048)	0.002 (0.015)	901
(4) Drop max coauthor H	Economics	0.225* (0.136)	0.332*** (0.121)	−0.092 (0.075)	−0.015 (0.034)	608
	Engineering	0.066 (0.114)	0.315*** (0.092)	−0.278*** (0.081)	0.030 (0.048)	580
	Health Sciences	0.210** (0.096)	0.311*** (0.085)	−0.106** (0.047)	0.005 (0.013)	901
(5) H-index as outcome	Economics	0.098** (0.047)	0.126*** (0.043)	−0.012 (0.024)	−0.016 (0.011)	607
	Engineering	0.031 (0.043)	0.129*** (0.038)	−0.108*** (0.025)	0.010 (0.016)	579
	Health Sciences	0.098** (0.042)	0.157*** (0.040)	−0.052*** (0.016)	−0.007 (0.006)	897
(6) Exclude top 1%	Economics	0.236* (0.132)	0.342*** (0.117)	−0.094 (0.072)	−0.011 (0.033)	599
	Engineering	0.023 (0.114)	0.250*** (0.095)	−0.245*** (0.079)	0.018 (0.050)	572

Specification	Discipline	Difference	Endowments	Coefficients	Interaction	N
	Health Sciences	0.165* (0.094)	0.259*** (0.085)	−0.087* (0.046)	−0.007 (0.012)	884

*Notes. Robust standard errors (HC1) in parentheses. * p<0.10, ** p<0.05, *** p<0.01. Specification (0) is the main specification reported in Tables 3–5; the remaining rows are robustness checks discussed in Section 2.4.*

Table A4
Oaxaca–Blinder decomposition by SNI level

Discipline	SNI level	Difference	Endowments	Coefficients	Interaction	N
Economics	SNI-C	−0.173 (0.325)	−0.084 (0.271)	−0.077 (0.178)	−0.012 (0.048)	108
Economics	SNI-I	0.449*** (0.157)	0.450*** (0.135)	0.025 (0.095)	−0.026 (0.050)	337
Economics	SNI-II	−0.501* (0.299)	−0.069 (0.272)	−0.424*** (0.151)	−0.008 (0.073)	118
Engineering	SNI-C	−0.176 (0.125)	0.123 (0.093)	−0.282*** (0.097)	−0.017 (0.050)	367
Engineering	SNI-I	0.056 (0.186)	0.165 (0.147)	−0.131 (0.140)	0.022 (0.087)	212
Health Sciences	SNI-C	0.027 (0.403)	0.399 (0.468)	−0.169 (0.299)	−0.204 (0.293)	37
Health Sciences	SNI-I	0.045 (0.101)	0.157* (0.087)	−0.107* (0.055)	−0.005 (0.011)	603
Health Sciences	SNI-II	0.192 (0.194)	0.237 (0.172)	−0.031 (0.110)	−0.014 (0.056)	184
Health Sciences	SNI-III	0.182 (0.415)	0.358 (0.423)	−0.172 (0.139)	−0.003 (0.097)	77

*Notes. Robust standard errors (HC1) in parentheses. Each row reports the aggregate Oaxaca–Blinder components for the subsample of researchers in a given discipline and SNI level. Cells with too few observations of either gender to estimate the decomposition (Economics SNI-III, and Engineering SNI-II and SNI-III) are omitted. Dependent variable: ln(citations+1), winsorized at the 99th percentile within discipline. * p<0.10, ** p<0.05, *** p<0.01.*

Table A5
Regression diagnostics: Breusch–Pagan tests and variance inflation factors

Discipline	Gender	N	Breusch–Pagan	p-value	Max VIF
Economics	Men	411	0.00	0.996	5.19
Economics	Women	197	0.01	0.917	6.29
Engineering	Men	450	8.12	0.004	5.66
Engineering	Women	130	0.25	0.616	5.72
Health Sciences	Men	399	2.34	0.126	9.55
Health Sciences	Women	502	6.21	0.013	7.42

Notes. Breusch–Pagan test for heteroskedasticity and maximum variance inflation factor (VIF) for each gender-by-discipline OLS regression of ln(citations+1). The null of homoskedasticity is rejected at the 5% level for Engineering men and Health Sciences women; heteroskedasticity-robust (HC1) standard errors are used throughout. All VIFs are below the conventional threshold of 10.