Cover Letter

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Dear Professors Breza, Chandrasekhar, and Viviano,

My name is Milan Makany, and I am a third-year PhD candidate at the Erasmus School of Economics and the Tinbergen Institute. My research interests lie primarily in labor economics, with a particular focus on gender, diversity, and networks. Please find below the details of my application to the NBER Workshop on Network and Development Economics, to be held on December 5, 2026.

I am submitting my project, *"Gender and Professional Network Formation: Evidence from Random Encounters in Academia"* for consideration for presentation at the workshop. While the paper is not in the field of development economics, I believe it may still be a strong fit given it asks a novel question related to the formation of networks and exploits an interesting source of exogenous variation to separate two mechanisms: opportunities to meet new ties; and preferences in tie formation, conditional on meeting.

The faculty member best placed to provide a recommendation in support of my application is Natalia Zinovyeva from the University of Warwick (natalia.zinovyeva@warwick.ac.uk).

I particularly enjoyed the opportunity to present and discuss my work with both senior researchers and with other PhD candidates and early-career academics at the NBER Summer Institute this year. Given, that this is stated as the ambition of the workshop, I would be very much excited to participate.

Thank you very much for considering my application.

Sincerely,

Milan Makany

Curriculum Vitae

Research Interests

Labor Economics, Networks, Gender, Diversity, Artificial Intelligence

Education

2024 - PhD in Economics, Erasmus School of Economics
2023-2024 MSc in Economics, University of Warwick
2020- 2023 BSc in Economics, University of Warwick

Completed Graduate Courses at the Tinbergen Institute

Econometrics of Networks	Course Information
Deep Learning	Course Information
Reinforcement Learning	Course Information
Macroeconomics III	Course Information
Econometrics II	Course Information
Health Economics	Course Information
Topics in Organizations and Markets	Course Information

Supervisors and External References

Natalia Zinovyeva (closest reference for networks project)	External Reference	natalia.zinovyeva@warwick.ac.uk
Anne Boring	Supervisor	boring@ese.eur.nl
Josse Delfgaauw	Supervisor	delfgaauw@ese.eur.nl

Additional Training

2025 Summer School: Gender Diversity in Economics, Paris School of Economics
2023 Summer School: Unstructured Data in Empirical Economics, CEMFI

Working Papers

Female Promotions and the Academic Pipeline: Evidence from a Natural Experiment
(with Manuel Bagues, Giulia Vattuone, and Natalia Zinovyeva)
CEPR, IZA, RFBerlin, Latest Version: [March 2026]

Top Researchers on Scientific Committees: Decision Outcomes, Peer Dynamics, and Opportunity Costs
(with Natalia Zinovyeva)
IZA, CAGE, Latest Version: [June 2026]

Work In Progress

Opportunities or Exploiting Opportunities? Evidence on Gender Gaps in Professional Networks from Academia

Presentations

2026 Talent Economics Conference 2026; Nederlandse Economendag; European Association of Labor Economics; KTI-KRTK Summer Workshop; NBER Summer Institute, Science of Science Funding; 4th Diversity and Human Capital Workshop, University of Exeter; Research on Monday, Erasmus School of Economics; The Organisation, Economics and Policy of Scientific Research, Politecnico di Milano; Tinbergen Institute Opening Conference: Science for Society

2025 The Organisation, Economics and Policy of Scientific Research - University of Strasbourg and Bureau d'Économie Théorique et Appliquée (BETA); PhD Seminar, Erasmus Shool of Economics; Brown Bag Seminar, Erasmus School of Economics; 10th Summer School on Data and Algorithms for ST&I Studies, KU Leuven; Vrije Universiteit Amsterdam; PhD Seminar, Tinbergen Institute

2024 Network Economics Day, Tinbergen Institute

Professional Service

Refereeing Journal of Economic Behavior & Organization;

ESE Co-organizer, PhD seminar (since 2025); Co-organizer, Health and Labor seminar (since 2026)

Teaching

2025-2026 Thesis Supervision (BSc)

2025 - 2025 Teaching Assistant in Applied Econometrics (MSc)

Awards & Prizes

2026 Paul David Best Junior Paper Award (Workshop on the Organisation, Economics and Policy of Scientific Research)

2023 Examiners' Prize for Performance in Research in Applied Economics (Prize for the Best Dissertation in BSc Economics, awarded by the Economics Department, University of Warwick)

2020 National Finalist at Economics Olimpiad (Hungarian Economic Association)

Research Interests and Motivation

I work mainly in labor economics, with a particular interest in networks, gender, and diversity. Most of my current research studies questions in these topics in the context of academia and science. The paper I am submitting to the workshop started as my master's thesis, and I have continued working on it throughout my PhD. What has kept me interested in the project is the broader question of how professional ties form, and in particular how much observed network structures reflect opportunities or preferences. As I have developed the project, I have also tried to strengthen my training in network methods. I completed the graduate course *Econometrics of Networks* at the Tinbergen Institute, which gave me a formal treatment of the econometric issues that arise when interactions and outcomes are both shaped by networks.

The project starts from a simple and mostly overlooked problem that is important for interpreting observational differences in professional networks. I am specifically interested in understanding the descriptive pattern that women tend to have smaller and more gender-segregated networks. While this observation is interesting, it is not very informative for policy without understanding why these differences arise. These patterns could reflect differences in preferences – whom people want to work with – but they could also reflect differences in opportunities – whom they get the chance to meet. In most settings these two mechanisms are challenging to separate, because professional encounters are themselves endogenous to existing networks.

The idea behind the paper is to separate these two mechanisms by exploiting the fact that researchers are randomly assigned to work together on national evaluation committees in the Italian national evaluation system, which exogenously creates professional interactions that otherwise would not have occurred. I can therefore ask whether giving researchers the same opportunity to meet new ties leads to different rates of collaboration by gender. I can also estimate whether the gender segregation that is present in observational networks is a result of gender-specific preferences or gender-specific differences in opportunities to meet new ties.

I first show that such interactions matter for network formation: researchers who serve together are about 40 percent more likely to collaborate in the future than pairs who could have served together but did not due to the luck of the draw. Interestingly, conditional on the opportunity to interact, I find neither a lower propensity of women to form new collaborations nor a preference for same-gender collaborators. I argue that these results should change the way we interpret descriptive gender differences in networks: instead of these patterns reflecting differences in ability or preferences, they are generated by gender differences in opportunities to form connections.

Although the setting of my paper is in academia rather than a development context, I think the underlying question is relevant to a broader audience interested in empirical networks. The project is fundamentally about network formation: how much of the structure we observe reflects opportunities to interact, and how much reflects choices conditional on those opportunities. Hence, I think the paper could bring an important issue to discuss at the workshop, while also benefiting from the perspectives of economists working in other subfields or studying other contexts.

From my perspective, the workshop would be particularly valuable because I see this project as a starting point. At the moment, the paper is focused on understanding gender differences in professional networks, but it raises a much broader set of questions. I am interested, for example, in how ideas spread through professional networks; whether being connected to a senior researchers affects junior scholars' careers, for example, by affecting where they eventually find jobs; and more generally how institutions can affect the formation and evolution of professional ties.

I would like to develop these questions into a broader research agenda on network formation. Discussing the current project with researchers working at the frontier of empirical network economics would help me sharpen the paper and identify which of these broader questions are most promising.

Gender and Professional Network Formation: Evidence from Random Encounters in Academia

Milan Makany*

September 10, 2026

Abstract

Gender differences in networks can arise for two reasons: unequal opportunities to meet potential connections or differences in forming new ties conditional on meeting. I separate these margins using the random assignment of evaluators to committees in Italian academia. Serving together on a committee increases the probability of coauthoring by 40 percent during the subsequent eight years relative to other pairs who could have been assigned to the same committee but were not. Conditional on meeting, women are just as likely to form new collaborations as men, and same-gender pairs are just as likely to collaborate as mixed-gender pairs.

JEL Codes: D85, J16

Keywords: Networks, Network Formation, Gender

1 Introduction

Professional ties can only form between individuals who have met. This precondition matters for how we interpret two well-documented facts about gender and networks: women tend to have fewer connections than men, and ties tend to be segregated by gender (Lindenlaub and Prummer, 2021; Ductor et al., 2023; von Essen and Smith, 2023; Ductor and Prummer, 2024). Women's smaller networks need not imply that they are less likely to form ties conditional on meeting; instead, women may have fewer opportunities to meet potential contacts. Likewise, gender homophily need not reflect a preference for same-gender ties; it may arise because women and men disproportionately encounter others of the same gender.

Empirically distinguishing between these interpretations is challenging: professional encounters are rarely observed and, even when they are, they tend to be endogenous to where individuals work, which events they attend, and whom they already connected to. In this paper, I separate these

*Erasmus University Rotterdam & Tinbergen Institute, email: makany@ese.eur.nl. I thank for useful comments Anne Boring; Josse Delfgaauw; Nathan Canen; Patricia Himml; Natalia Zinovyeva; and participants in presentations at the Network Economics Day Work Workshop; Tinbergen Institute; Erasmus School of Economics; Workshop on the Organisation, Economics and Policy of Scientific Research; Summer School on Data and Algorithms for ST&I Studies, KU Leuven; Vrije Universiteit Amsterdam.

mechanisms by exploiting a large-scale natural experiment: the random assignment of researchers to Italian national promotion committees. In each evaluation cycle, a committee is formed within each subfield by randomly drawing evaluators from a pool of eligible full professors who volunteer to participate.[1] This assignment generates exogenous variation in meetings within the network: some pairs are assigned to serve on the same committee, while other pairs who could have been assigned together are not (Appendix Figure A1 illustrates the variation in the network). This random draw allows me to separate the two mechanisms that determine network formation: the committee assignment determines encounters, while subsequent collaboration reveals which of these encounters develop into professional ties. Specifically, I test whether given the same opportunity to meet a potential contact, women and men differ in their propensity to form a new tie; and whether the gender homophily observed in existing networks also emerges when researchers encounter each other at random.

Academia provides an attractive setting to study these questions for multiple reasons. First, scientific publications provide a systematic measure of professional ties through coauthorship. Second, academia exhibits both patterns that motivate this paper: female academics tend to have fewer collaborators and scientific collaboration networks exhibit substantial gender homophily (Boschini and Sjögren, 2007; Ductor et al., 2023; Ductor and Prummer, 2024). Finally, ties are especially consequential for both productivity and career outcomes in science. Collaborators facilitate the flow of knowledge, exchange of ideas, and contribute directly to the production of research (Azoulay et al., 2010; Waldinger, 2010; Ginther and Na, 2021; Ductor and Visser, 2022) and being evaluated by ties substantially increases researchers likelihood of promotion (Zinovyeva and Bagues, 2015).

I first document that serving together on a committee leads to an increase in the probability of future collaboration. Among pairs that could have been assigned to the same subfield-level evaluation committee, those dyads that were drawn to serve together become 2.3 percentage points more likely to coauthor a publication in the subsequent eight years compared to pairs that were not drawn. This represents a 40 percent increase in collaboration probability compared to the 5.7% baseline. I find that new collaborations first start emerging three years after the initial assignment, consistent with the substantial lag associated with academic publishing.

1. In Italian academia, national qualification committees act as the first-stage filter in a two-stage promotion system. Each committee assesses whether researchers in a particular subfield are qualified to apply for promotion at an Italian university. Within economics, for instance, separate committees are formed in *Political Economy, Economic Policy, Public Finance, Applied Economics, Econometrics, Business Economics, Economic History, ...* Although committees operate in different subfields, the nature of encounters are of the same nature: evaluators are tasked with assessing whether candidates are qualified for promotion.

The collaborations generated by these encounters do not reproduce the gender differences in the descriptive collaboration network. Observationally, female researchers have significantly fewer collaborators than male researchers. Consistent with previous literature, in the sample of potential evaluators, female researchers have roughly 12% fewer collaborators than male researchers. Yet when researchers meet by being assigned to the same committee, women are no less likely to form a new collaboration. If anything, the point estimates suggest that women are more likely to establish new ties, although this difference is not statistically significant.

I observe the same contrast for gender segregation. Before the committee assignment, both male–male and female–female pairs are more likely to have collaborated in the past than mixed-gender pairs. However, once researchers are given a comparable opportunity to interact, same-gender pairs are no more likely to form a new collaboration than mixed-gender pairs.

Taken together, these results suggest that gender differences in the size and composition of professional networks are unlikely to reflect differences in the propensity to form new ties or preferences for same-gender collaborators. Instead, the relevant mechanism generating observational gender differences in professional networks are systematic differences in opportunities to meet new ties. The results also highlight the conclusion of Ductor and Prummer (2024) that increasing the representation of women may be insufficient to eliminate gender differences in collaboration networks. A change in representation need not change network structure unless it also changes the number and composition of women's professional encounters.

An important caveat is that in the Italian context committee service entails repeated and intense interactions. Such sustained exposure may reduce concerns about harassment (Wu, 2020; Gertsberg, 2026) or unequal recognition (Sarsons et al., 2021) in mixed-gender pairs. The design therefore cannot rule out potential gender differences in network formation following briefer encounters.

The paper makes three contributions to the literature. First, the paper contributes to the economics of science literature by providing large-scale causal evidence on how research collaborations form. Existing work shows that collaborators, peers, and connections shape scientific production and careers (Waldinger, 2012; Zinovyeva and Bagues, 2015; Azoulay et al., 2019), but they do provide little insight into how these ties are formed. Closest to this paper, Boudreau et al. (2017) document frictions in the formation of collaborations, even among colleagues in the same institution. They show that randomly assigning researchers to the same information session increases subsequent grant co-applications by 75%. The estimates in this paper are more modest, with joint committee service increasing collaboration by 40% on average, potentially reflecting greater fric-

tions to collaboration among researchers from different institutions.[2] Another potential justification for the smaller effect size may be that cost of co-authoring a publication is higher than writing an early-stage grant application. Some initial projects may also potentially fail to reach publication in an academic journal. I contribute to this literature by providing evidence from a large-scale natural randomization at the national-level in which researchers of different institutions are assigned to work together on the same committee. Exploiting this exogenous variation in encounters, I show that such interactions lead to new scientific collaborations.

Second, the paper contributes to the literature on gender segregation and homophily in networks. Ductor and Prummer (2024) show that gender differences in collaboration have persisted despite the substantial increase in the share of women in economics. Because they observe equilibrium collaboration networks but not the encounters from which these networks emerge, their evidence cannot distinguish whether this persistence reflects a gender differences in meetings or preferences for same-gender collaborators. I provide causal evidence that distinguishes these margins. I find neither a lower propensity among women to form new ties nor a greater propensity among same-gender pairs to collaborate. Thus, the results suggest that the relevant force generating gender homophily, is the systematic gender difference in the meeting process rather than gender-specific preferences.

Third, the paper contributes more broadly to the labor economics literature on networks and gender inequality which shows that connections affect employment outcomes and hiring decisions (Calvó-Armengol and Jackson, 2004; Bayer et al., 2008; Beaman and Magruder, 2012; Burks et al., 2015), productivity (Bandiera et al., 2009), and career advancement (Zinovyeva and Bagues, 2015; Cullen and Perez-Truglia, 2023; Hampole et al., 2026). I study an upstream margin in the formation of professional networks: whether men and women convert comparable opportunities into new connections at different rates. The random assignment of committee members allows me to distinguish unequal exposure to potential contacts from gender differences in tie formation, conditional on interaction. Consistent with the results of Boudreau et al. (2017), I find no gender differences in the propensity to form new ties. This results suggest that gender differences in the number of professional ties are unlikely to arise from gender-specific preferences or discrimination against women.

The remainder of the paper is organized as follows. Section 2 describes the institutional setting

2. As discussed in Section 2, the randomization protocol permits at most one researcher from each institution to serve on a committee. Consequently, all potential encounters in the estimation sample involve researchers from different institutions.

and the source of exogenous variation. Section 3 presents the data sources, the construction of the collaboration networks, and descriptive evidence on gender differences in network structure. Section 4 presents causal evidence on collaboration formation, heterogeneity analysis by gender, and evidence on gender homophily. Finally, Section 5 concludes.

2 Institutional Setting

The *Abilitazione Scientifica Nazionale* (ASN) is Italy's national academic qualification system. The ASN was introduced in 2012 as a mandatory first-stage filter for researchers seeking promotion to associate and full professor at Italian public universities. Evaluation committees are formed at the subfield-level and their task is to select which candidates are qualified to apply for promotion at their institution. Since the introduction of the system there have been five evaluation cycles in 2012, 2016, 2018, 2021, and 2023. In each evaluation cycle a new committee is formed within each of 184 disciplines. I exclude the 2023 exam from my sample, given too little time has passed to detect future publications, implying that over the sample period there are roughly 700 evaluation committees randomly drawn.[3] The key feature of the system is that committee members are selected by a public draw following a known randomization protocol from a predetermined pool of potential evaluators.

2.1 Assignment of Evaluators

Committees are formed separately in each academic field and consist of five members. In the 2012 cycle, four committee members were selected from full professors affiliated with Italian universities and a fifth member was selected from a separate pool of professors based in other OECD countries. Because international evaluators were not as involved in the evaluations as anticipated, in subsequent cycles they were removed and all five members were selected from professors at Italian universities. The analysis therefore focuses on Italy-based evaluators across all evaluation cycles.[4]

The selection process proceeds in three stages. First, the Ministry identifies the full professors who satisfy field-specific research-productivity requirements. Second, eligible professors decide whether to volunteer for committee service. Third, committee members are selected from the field-specific pool of potential evaluators – who are eligible and also volunteer – through a public

3. In some fields there are too few full professors to ensure randomization. I drop these exams from the sample.
4. The results are robust to including foreign evaluators serving in the 2012 cycle.

computerized draw.[5]

Eligibility requirements differ across broad disciplinary groups. Within each field researchers are required to be above the median with respect to two out of three publication output indicators. In Science, Technology, Engineering, Mathematics, and Medicine (STEMM) eligibility is based on field-specific thresholds for journal publications, citations, and the h-index. In Social Sciences and Humanities (SSH) the criteria instead include journal publications, publications in high-impact journals, and books and book chapters.

Researchers who meet the eligibility criteria are invited to volunteer for committee service through a public call. Volunteering places researchers in a field-specific pool according to their discipline. Importantly, researchers volunteer before knowing the identity or characteristics of other researchers in the same pool, implying that they cannot condition their participation on the composition of the committee.

The draw protocol orders researchers within each pool of evaluators alphabetically and assigns them an identifier number. The Ministry then generates a random sequence without replacement and applies it to the list of potential evaluators. Committee seats are filled sequentially according to the randomized sequence, subject to two institutional restrictions.

The first restriction states that on any committee there may be only one professor from a given university. When the next person in the sequence would violate this restriction, the procedure skips that individual and proceeds to the next number in the sequence. The second restriction applies in fields composed of several large subfields. It requires that the first seats be filled from the large subfields to ensure their representation, then continues to fill the remaining seats from the entire pool.

Due to these constraints, not every conceivable pairing occurs with the same probability. At the extreme, some pairings are not even feasible: for example, two researchers from the same institution can never sit on the same committee. The empirical design accounts for these systematic differences in assignment probability, and isolates the random variation induced by the draw protocol.

Selected evaluators may resign before or during the evaluation process. Consequently, realized committee membership may differ from the initial assignment. The empirical design accounts for the fact that resignations may be endogenous to the characteristics of fellow committee members by

5. Official documents describing the draw procedure are published by the ministry. The documentation for the 2012 cycle and later cycles is available online:
https://abilitazione.mur.gov.it/public/documenti/Modalita_sorteggio.pdf
https://abilitazione.mur.gov.it/public/documenti/2016/Allegato_1_Procedura_sorteggio_commissioni_ASN_2016.pdf

exploiting only the variation generated by the initial allocation prior to any potential resignations.

2.2 Interaction on Committees

Assignment to the same committee leads to long and intensive professional interaction. Committee members serve a two year term, evaluating multiple waves of applicants. There are 5-6 waves of applications depending on the cycle. Committee members are required to meet multiple times during their tenure: at least once per wave to submit their final decisions.

Committees meet for the first time shortly after evaluators are appointed. In this initial meeting committee members establish the criteria which they apply throughout their tenure.

Then, in each evaluation wave, committee members first individually assess applications based on candidates' curricula vitae and selected publications. Each member is required to examine all applications and prepare an individual written evaluation for all candidates. These individual assessments include the evaluator's judgment and vote. Following the individual assessment, committees are required to meet at least once to finalize their decision. During these in-person meetings evaluators share their individual assessments, conduct a formal vote, and produce a collective report recording the committee's decision.

The work therefore combines substantial individual preparation with repeated collective deliberation. Each evaluator is required to assess every application assigned to the committee, amounting to approximately 270 candidates on average (Italian National University Council, 2023). In addition to the initial organizational meeting, committees are required to convene after each evaluation wave, implying that members interact with each other at least six times during formal meetings.

These features distinguish the ASN assignment from a brief or incidental encounter. The treatment of being assigned to the same committee should therefore be interpreted as repeated professional interaction, rather than physical proximity or attendance at the same conference.

3 Data and Descriptive Statistics

I construct a dataset linking administrative records on Italian professors to the pool of potential ASN evaluators and the outcomes of the committee draws; and bibliographic data from IRIS and OpenAlex. The data allow me to observe potential evaluators' gender, assignment status, and co-authorship histories before and after the draw.

3.1 Data sources

Administrative data on Italian professors. I collect administrative records on all professors employed at Italian public universities between 2010 and 2023 from the Ministry of Universities and Research.[6] The data contain each professor's name, gender, affiliation, and academic rank.

ASN evaluator pools and committee assignments. I collect official ASN records on all professors who volunteered to serve as evaluators. For each field and evaluation cycle, these records identify: (i) the pool of potential evaluators, (ii) the evaluators selected in the initial draw, and (iii) the evaluators who ultimately served after resignations and substitutions.[7] The analysis uses the evaluation cycles conducted in 2012, 2016, 2018, and 2021.

Using the field-specific evaluator pools and the official assignment rules, I simulate the ex-ante probability that each researcher and each pair of researchers is assigned to the same committee. The computation takes into account the restrictions preventing two professors from the same university from serving together and the rules requiring representation of sufficiently large subfields. The empirical design ensures that those pairs who could not have served together under the assignment mechanism will therefore not be part of the relevant counterfactual.

Publication records. I construct researchers' publication and co-authorship histories by combining IRIS and OpenAlex.[8] IRIS consists of publication records reported through the institutional repositories of Italian universities and research institutions. These records are used in national research assessments and therefore provide broad coverage of researchers employed at Italian universities. To alleviate concerns related to self reporting, I augment this data with OpenAlex, an open-access bibliographic index with wide international coverage and detailed author and publication identifiers (Priem et al., 2022).

I match publication profiles to professors using names, affiliations, and research fields. Exact and unique matches are accepted directly, while common differences in initials, name order, and compound surnames are addressed through standardized matching procedures. Ambiguous or implausible matches are discarded. Among potential evaluators, 88% are matched to IRIS and 90% to OpenAlex.

6. The data are available at https://cercauniversita.mur.gov.it/php5/docenti/cerca.php, last accessed 15 November 2024.

7. The data are available at https://abilitazione.mur.gov.it/public/index.php, last accessed 25 August, 2026.

8. IRIS data is compiled from each instution's own repository. Instructions for downloading the OpenAlex snapshot is available at https://help.openalex.org/tutorials/download-the-snapshot/

I combine the two sources into a unified publication database. Publication types and author names are harmonized, and duplicate records are identified using titles, publication years, DOIs, ISSNs, journal names, and overlapping coauthors. When the same publication appears in both sources, I retain the OpenAlex record because it generally contains richer bibliographic metadata.

3.2 Dyad-level collaboration database

Two researchers are defined as collaborators when they appear as authors on the same publication. The collaboration network is undirected, and publications with more than two authors generate a link between each distinct pair of authors.

For each field and evaluation cycle, I construct all unordered pairs of researchers belonging to the corresponding pool of potential evaluators. The unit of observation is at the dyad–exam level: a pair of researchers who could have been assigned to serve together on a particular committee. The same pair may appear more than once if both researchers enter the evaluator pool in multiple cycles.

For every dyad–exam observation, I record the number of publications coauthored by the pair in each event time period: the year relative to the committee assignment. The main outcome captures whether a collaboration has formed by a given event-time year. It is equal to zero until the first year in which the pair publishes together, switches to one in that year, and remains equal to one in all subsequent years. The database also contains the characteristics of both researchers in the dyad, such as their gender, affiliation, and research output.

3.3 Sample and descriptive statistics

Table 1 summarizes the dyadic sample separately by evaluation cycle. The analysis covers 685 field-specific exams and roughly 280,000 dyad–exam observations. The 2012 cycle is the largest, containing 5,872 researchers in the pool of potential evaluators across 184 exams, resulting in roughly 123,000 potential pairs. The subsequent cycles contain fewer researchers in the pool and slightly fewer exams, resulting in fewer dyad-exam level observations.[9]

The collaboration indicators measure whether a pair had coauthored by the indicated event-time year. Across all cycles the share of dyads that are observed collaborating is steadily increasing over time. Because the length of follow-up data is different across cycles in different years, outcomes at

9. The number of exams differs because in later waves some fields had too few full professors to ensure randomization. These exams are excluded from the sample.

t=+8 are not yet observed for the 2018 and 2021 cycles, and the outcome at t=+4 is not observed for the 2021 cycle. Across all evaluation cycles, 4.2% of dyads collaborated prior to the committee assignment. This figure increases to 5.7% eight years from the random draw.

Most potential pairs consist of two men. Depending on the evaluation cycle, male–male pairs account for 59–65% of the dyadic sample, while mixed-gender pairs account for approximately 30–34%. Female–female pairs are comparatively uncommon, representing between 5.0% and 7.5% of pairs. This composition reflects the relatively low representation of women among full professors in Italian academia.

Sitting on the same committee is relatively rare because each committee contains only few evaluators relative to the size of the corresponding pool. Between 1.0% and 3.5% of potential pairs are selected together in the initial draw. Realized joint service closely tracks initial assignment, although the correspondence is imperfect because some initially selected evaluators resign and are replaced. The difference is largest in the 2016 cycle, in which 3.2% of dyads were initially drawn together but only 2.4% ultimately served together.

The final panel shows that, observationally, female researchers in the sample tend to have fewer collaborators than men. This descriptive pattern is consistent with previous observations established in the literature (Ductor et al., 2023).

4 Empirical Evidence

This section reports the empirical results on network formation. First, I analyze whether sitting on the same committee leads to a persistent increase in the probability of collaborating in the future. Second, I estimate whether there are gender differences in the propensity to form new collaborations. Finally, I analyze whether the same-sex homophily in observable networks is reproduced in a setting where researchers meet at random.

4.1 Network Formation

In order to establish that sitting on the same committee leads to an increase in the probability of collaboration, I being by estimating the following dyadic specification:

$$\text{collaborated}_{i,j,e,t+k} = \beta_0 + \beta_1 \text{drawn}_{i,e} + \beta_2 \text{drawn}_{j,e} + \beta_3 \left(\text{drawn}_{i,e} \times \text{drawn}_{j,e} \right) + \mathbf{X}'_{i,j} \mathbf{\Gamma} + \mu_e + \varepsilon_{i,j,e,t+k} \tag{1}$$

The outcome is a binary variable, indicating whether a pair of researchers i and j, who could

have been assigned to the same evaluation committee e have been observed collaborating k years following the committee draw in year t.

The key variable of interest is the interaction, indicating that both researchers served on the same committee. Given that not all pairs drawn with the same probability – due to the constraints in the randomization procedure – and that realized committee service may differ from the initial assignment because selected evaluators can resign and be replaced, I construct an instrument following Borusyak and Hull (2023):

$$\tilde{Z}_{i,j,e} = Z_{i,j,e} - \mathbb{E}[Z_{i,j,e} \mid \mathcal{W}_e],$$

where $Z_{i,j,e}$ denotes whether both researchers in the pair were initially assigned to the same committee; and the expectation denotes the probability that a pair is assigned, conditional on the composition of the evaluator pool and the assignment mechanism $\mathcal{W}_e$.[10] This residualized variable isolates the variation in joint committee service that is due to the random nature of the draw procedure.[11]

The individual service indicators control for any general effect that committee assignment may have on researchers' network formation, ruling out potential channels such as increased visibility or reputation driving the results. Similarly, I instrument these indicators with the corresponding individual-level residualized variable:

$$\tilde{Z}_{n,e} = Z_{n,e} - \mathbb{E}[Z_{n,e} \mid \mathcal{W}_e] \quad \forall n \in \{i, j\}.$$

The vector of controls includes a dummy variable indicating whether the pair has collaborated prior to the committee assignment; each researcher's productivity trajectory in the previous three years; and the research similarity of the pair as reflected by the topics they publish in.[12] The specification further includes examination fixed effects to ensure that dyads are compared within the same subfield.

I estimate Equation (1) by two-stage least squares (2SLS) and cluster standard errors at the

10. The probabilities are obtained by simulating the draw procedure one million times for each committee.

11. For example, the assignment mechanism does not allow for two researchers from the same institution to sit on the same committee, hence for them the probability that they are drawn together is zero. Without accounting for this the estimation would rely on an incorrect counterfactual.

12. Research similarity is constructed as the cosine similarity of topic vectors of all publications prior to the exam, based on the topic classifications of OpenAlex.

examination level.[13]

Figure 1 reports the effect of serving together on a committee on the change in the probability of collaboration.[14] The effect begins to emerge around three years after the draw and increases steadily thereafter. By eight years after the exam, serving together leads to an increase in the probability that a pair has collaborated by approximately 2.3 percentage points, corresponding to a 40% increase relative to the baseline collaboration probability between dyads. Because the outcome variable measures whether a collaboration has occurred by each horizon, the coefficients capture the increased cumulative emergence of new collaborations among pairs who sat on the same committee, rather than the effect on collaboration in any particular year.

4.2 Gender Differences and Homophily in Network Formation

Next, I estimate whether male and female researchers have a different propensity to form new collaborations, conditional on meeting on a committee. I begin by estimating Equation (1) on two restricted samples: (a) dyads where one of the researchers is female, (b) dyads where one of the researchers is male. Since I do not condition on the gender of the other node in the dyad, these estimates are informative about gender differences in the overall propensity to establish new collaborations.

Figure 2 reports the estimation results. Panel A. reports that female researchers are 2.9 percentage points more likely to establish a collaboration with another researcher that they met on a committee in the subsequent eight years. Similarly, Panel B. shows that this increase in probability is 2.1 percentage points for male researchers. Panel C. combines the two graphs on the same figure. While the estimates for men and women are not statistically different, points estimates suggest that, if anything, women are more likely to establish new collaborations after meeting another researcher.

To explore the source of homophily in observational networks – the identity of the other gender influencing the formation of new ties – I estimate whether pairs of different gender composition have a different propensity form a new collaboration, conditional on meeting. Specifically, I augment the baseline specification by interacting the shock of sitting on the same committee with the gender composition of the pair:

13. Appendix Table A1 shows that pre-exam dyad characteristics are uncorrelated with the shock of being drawn to the same committee once the known constraints of the assignment mechanism are accounted. Appendix Table A2 shows that the residualized instruments are strongly correlated with the draw status of researchers.

14. I report estimates up to eight years because in the longer-run I only observe outcomes for one evaluation cycle, hence these estimates are more noisy.

$$\begin{aligned}\text{collaborated}_{i,j,e,t+k} = \beta_0 + \beta_1 \text{drawn}_{i,e} + \beta_2 \text{drawn}_{j,e} + \beta_3 \text{same gender}_{i,j,e} + \beta_4 \left(\text{drawn}_{i,e} \times \text{drawn}_{j,e}\right) \\ + \beta_5 \left(\text{drawn}_{i,e} \times \text{drawn}_{j,e} \times \text{same gender}_{i,j,e}\right) + \mathbf{X}'_{i,j}\mathbf{\Gamma} + \mu_e + \varepsilon_{i,j,e,t+k}\end{aligned} \tag{2}$$

I estimate Equation (2) by 2SLS and cluster standard errors at the examination level. The interaction of the dyad's gender composition with the shock of being assigned to the same committee is instrumented with an interaction with the residual variation in the initial committee assignment: $\left(\text{drawn}_{i,e} \times \text{drawn}_{j,e} \times \text{same gender}_{i,j,e}\right)$ is instrumented by $\left(\tilde{Z}_{i,j,e} \times \text{same gender}_{i,j,e}\right)$.

The interaction term captures whether same-gender pairs are more likely to establish new collaborations, compared to mixed-gender pairs, following randomly meeting on a committee.

Table 2 contrasts the descriptive gender homophily in the collaboration network at the baseline with the formation of new ties following random exposure. Panel A. shows that in the pool of potential evaluators, descriptively, same-gender pairs are 0.4 percentage points or 13% more likely to have collaborated than mixed-gender pairs, relative to a baseline collaboration rate of 3 percent among mixed-gender pairs. However, this descriptive homophily is not reflected in the causal estimates. Being randomly assigned to the same committee increases collaboration by 2.4 percentage points for mixed-gender pairs and by 2.2 percentage points for same-gender pairs. The difference is small, negative, and statistically insignificant. Disaggregating same-gender pairs yields no evidence of a systematic same-sex preference either: the estimated effect is, if anything, larger for female-female than for male-male pairs, although the difference is imprecisely estimated.

Thus, while collaboration networks are gender-segregated in the observational data, researchers do not appear to exhibit gender-specific preferences in converting encounters into collaborations.

5 Conclusion

This paper studies whether gender differences in networks arise because men and women have different opportunities to establish new contacts or because they respond differently to opportunities to form new professional ties. I exploit the random assignment of researchers to national evaluation committees in Italy, which creates exogenous interaction between researchers. Serving together substantially increases the probability that two researchers collaborate in the subsequent years. Despite the descriptive gender gaps in networks, I find no evidence that women are less likely than men to convert these encounters into new collaborations. If anything, the estimated increase

in collaboration probability is larger for female researchers. Similarly, even though observational collaboration networks display gender homophily, random encounters between same-gender pairs are no more likely to produce collaborations than encounters of mixed-gender pairs.

These findings speak directly to an unresolved interpretation of persistent gender homophily in academic collaboration. Ductor and Prummer (2024) show that the substantial increase in women's representation in economics has not narrowed gender differences in collaboration. Holding the meeting process and same-gender preferences fixed, the framework of Currarini et al. (2009) predicts that this increase in representation should have reduced the collaboration gap. Its persistence therefore points to either an increasingly gender-segregated meeting process or stronger same-gender preferences. The results in this paper show that under exogenously occurring sustained professional encounters, neither individual researchers' gender nor pairs' gender composition affect the likelihood that an encounter develops into a collaboration.

The results of this paper have implications for policies currently implemented within the economics profession. Both the American Economic Association's CeMENT mentoring workshops and the European Economic Association's Women in Economics Mentoring and Networking Retreat are designed to support women through mentoring and network formation. CeMENT has been shown to improve the career outcomes of junior female economists (Blau et al., 2010; Ginther et al., 2020), partly through expanding their collaboration networks (Ginther and Na, 2021). Yet, because these programs create professional encounters primarily among women, they can potentially reinforce gender segregation in professional networks. Alternative policies, such as expand women's access to sustained interaction in more mixed-gender settings, for example through reserved or funded participation in conferences or research visits, may be potentially more effective in reducing gender gaps and homophily in professional networks.

While this evidence does not establish that unequal opportunities are the sole source of inequality, since discrimination may still shape who gains access to the settings in which collaborations are formed, it suggests that interventions should focus less on reducing gender differences in networking ability and rather target decreasing the differences in the opportunities to meet potential ties. It also highlights why increasing women's representation alone may be insufficient for them to integrate in professional networks: changes in the composition of the profession need not alter network structure unless they also translate into more numerous and less gender-segregated encounters.

References

Azoulay, P., C. Fons-Rosen, and J. S. Graff Zivin (2019): "Does Science Advance One Funeral at a Time?" *American Economic Review*, 109, 2889–2920.

Azoulay, P., J. S. Graff Zivin, and J. Wang (2010): "Superstar Extinction," *The Quarterly Journal of Economics*, 125, 549–589.

Bandiera, O., I. Barankay, and I. Rasul (2009): "Social Connections and Incentives in the Workplace: Evidence From Personnel Data," *Econometrica*, 77, 1047–1094, _eprint: https://onlinelibrary.wiley.com/doi/pdf/10.3982/ECTA6496.

Bayer, P., S. L. Ross, and G. Topa (2008): "Place of Work and Place of Residence: Informal Hiring Networks and Labor Market Outcomes," *Journal of Political Economy*, 116, 1150–1196.

Beaman, L. and J. Magruder (2012): "Who Gets the Job Referral? Evidence from a Social Networks Experiment," *American Economic Review*, 102, 3574–3593.

Blau, F. D., J. M. Currie, R. T. A. Croson, and D. K. Ginther (2010): "Can mentoring help female assistant professors? Interim results from a randomized trial," *American Economic Review*, 100, 348–52.

Borusyak, K. and P. Hull (2023): "Nonrandom Exposure to Exogenous Shocks," *Econometrica*, 91, 2155–2185, _eprint: https://onlinelibrary.wiley.com/doi/pdf/10.3982/ECTA19367.

Boschini, A. and A. Sjögren (2007): "Is Team Formation Gender Neutral? Evidence from Coauthorship Patterns," *Journal of Labor Economics*, 25, 325–365.

Boudreau, K. J., T. Brady, I. Ganguli, P. Gaule, E. Guinan, A. Hollenberg, and K. R. Lakhani (2017): "A Field Experiment on Search Costs and the Formation of Scientific Collaborations," *The Review of Economics and Statistics*, 99, 565–576.

Burks, S. V., B. Cowgill, M. Hoffman, and M. Housman (2015): "The Value of Hiring through Employee Referrals," *The Quarterly Journal of Economics*, 130, 805–839.

Calvó-Armengol, A. and M. O. Jackson (2004): "The Effects of Social Networks on Employment and Inequality," *American Economic Review*, 94, 426–454.

Cullen, Z. and R. Perez-Truglia (2023): "The Old Boys' Club: Schmoozing and the Gender Gap," *American Economic Review*, 113, 1703–40.

Currarini, S., M. O. Jackson, and P. Pin (2009): "An Economic Model of Friendship: Homophily, Minorities, and Segregation," *Econometrica*, 77, 1003–1045, _eprint: https://onlinelibrary.wiley.com/doi/pdf/10.3982/ECTA7528.

Ductor, L., S. Goyal, and A. Prummer (2023): "Gender and collaboration," *Review of Economics and Statistics*, 105, 1366–1378.

Ductor, L. and A. Prummer (2024): "Gender homophily, collaboration, and output," *Journal of Economic Behavior & Organization*, 221, 477–492.

Ductor, L. and B. Visser (2022): "When a coauthor joins an editorial board," *Journal of Economic Behavior & Organization*, 200, 576–595.

Gertsberg, M. (2026): "The Unintended Consequences of #MeToo: Evidence from Research Collaborations in Economics and Finance," *The Journal of Finance*, n/a.

Ginther, D. K., J. M. Currie, F. D. Blau, and R. T. A. Croson (2020): "Can mentoring help female assistant professors in economics? An evaluation by randomized trial," *AEA Papers and Proceedings*, 110, 205–09.

Ginther, D. K. and R. Na (2021): "Does Mentoring Increase the Collaboration Networks of Female Economists? An Evaluation of the CeMENT Randomized Trial," *AEA Papers and Proceedings*, 111, 80–85.

Hampole, M., F. Truffa, and A. Wong (2026): "Peer Effects and the Gender Gap in Corporate Leadership: Evidence from MBA Students," *The Quarterly Journal of Economics*, 141, 2499–2554.

Italian National University Council (2023): "Proposta su Abilitazione Scientifica Nazionale," .

Lindenlaub, I. and A. Prummer (2021): "Network Structure and Performance," *The Economic Journal*, 131, 851–898.

Priem, J., H. Piwowar, and R. Orr (2022): "OpenAlex: A fully-open index of scholarly works, authors, venues, institutions, and concepts," _eprint: 2205.01833.

Sarsons, H., K. Gërxhani, E. Reuben, and A. Schram (2021): "Gender Differences in Recognition for Group Work," *Journal of Political Economy*, 129, 101–147.

von Essen, E. and N. Smith (2023): "Network Connections and Board Seats: Are Female Networks Less Valuable?" *Journal of Labor Economics*, 41, 323–360.

Waldinger, F. (2010): "Quality Matters: The Expulsion of Professors and the Consequences for PhD Student Outcomes in Nazi Germany," *Journal of Political Economy*, 118, 787–831.

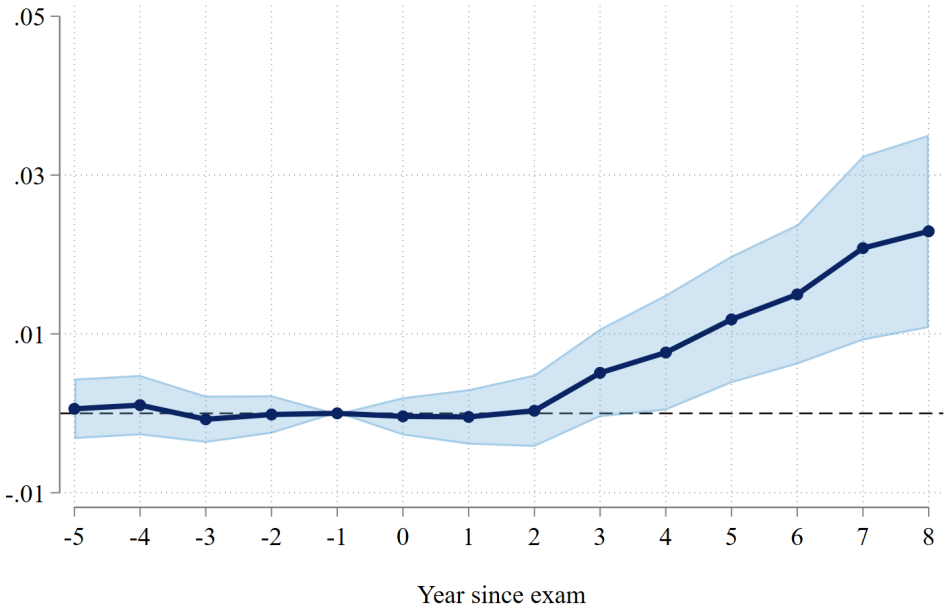
——— (2012): "Peer effects in science: Evidence from the dismissal of scientists in Nazi Germany," *The Review of Economic Studies*, 79, 838–861.

Wu, A. H. (2020): "Gender Bias among Professionals: An Identity-Based Interpretation," *The Review of Economics and Statistics*, 102, 867–880.

Zinovyeva, N. and M. Bagues (2015): "The Role of Connections in Academic Promotions," *American Economic Journal: Applied Economics*, 7, 264–292.

Figures and Tables

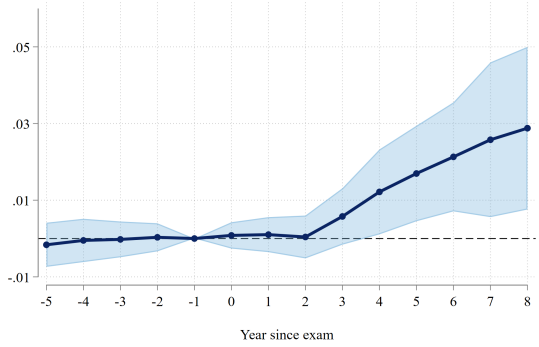
Figure 1: The effect of serving together on a committee on the probability of collaboration



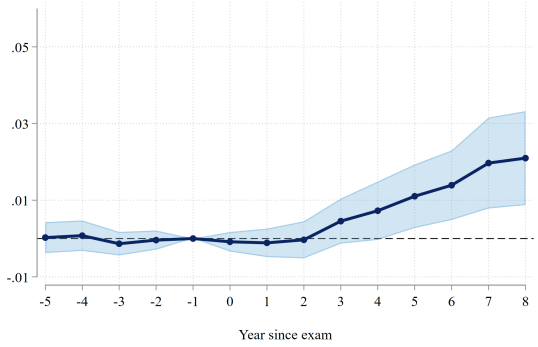
Notes: The unit of observation is at the dyad–exam level. Each marker reports a separate estimate of β_3 from Equation (1) for the indicated year relative to the exam. The dependent variable is an indicator equal to one if the two researchers have coauthored at least one publication by the given period relative to the year of the exam. Realized joint committee service is instrumented with the residualized initial-assignment shock à la Borusyak and Hull (2023). Specifications include dummy variables for the individual assignment status of researchers in the dyad; an indicator for whether the pair has collaborated in the year prior to the exam; researchers' productivity trajectory; and the research similarity of the pair. Each coefficient is identified only from exams for which the outcome is observed at the corresponding horizon. For example, the estimate at $k = 6$ exploits variation from the 2012, 2016, and 2018 cycles and does not use the 2021 cycle. Standard errors are clustered at the exam level. The shaded area denotes the 95% confidence intervals.

Figure 2: The effect of serving together on a committee on the probability of collaboration by gender

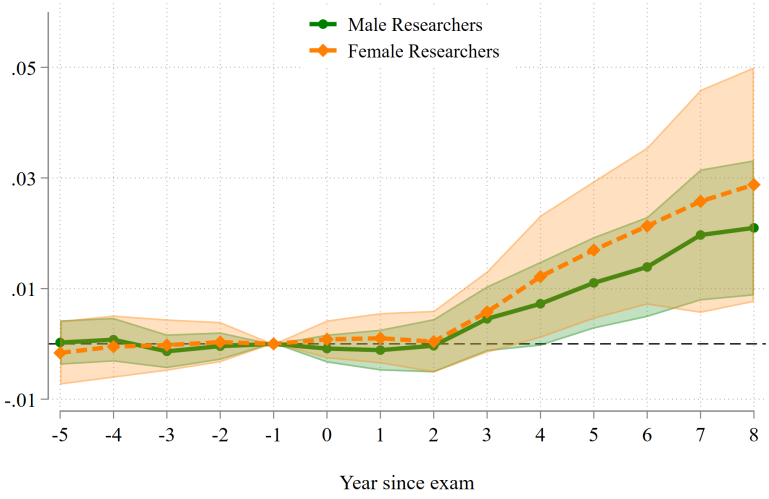
Panel A. Female researchers



Panel B. Male researchers



Panel C. Combined figure



Notes: The unit of observation is at the dyad–exam level. In Panel A. the sample is restricted to dyads where one of the researchers is female. In Panel B. the sample is restricted to dyads where one of the researchers is male. The other node in the dyad may be male of female. Panel C. overlays the two estimates; the dashed orange line displays estimates for female researchers and the solid green line displays estimates for male researchers. Each marker reports a separate estimate of β_3 from Equation (1) for the indicated year relative to the exam. The dependent variable is an indicator equal to one if the two researchers have coauthored at least one publication by the given period relative to the year of the exam. Realized joint committee service is instrumented with the residualized initial-assignment shock à la Borusyak and Hull (2023). Specifications include dummy variables for the individual assignment status of researchers in the dyad; an indicator for whether the pair has collaborated in the year prior to the exam; researchers' productivity trajectory; and the research similarity of the pair. Each coefficient is identified only from exams for which the outcome is observed at the corresponding horizon. For example, the estimate at $k = 6$ exploits variation from the 2012, 2016, and 2018 cycles and does not use the 2021 cycle. Standard errors are clustered at the exam level. The shaded areas denotes the 95% confidence intervals.

Table 1: Descriptive statistics

		Year of evaluation cycle			
	Overall	2012	2016	2018	2021
Collaboration outcomes					
Coauthored by year t=−1	0.042	0.027	0.046	0.050	0.063
Coauthored by year t=+1	0.049	0.030	0.054	0.057	0.078
Coauthored by year t=+4	0.053	0.036	0.070	0.080	–
Coauthored by year t=+8	0.057	0.044	0.087	–	–
Gender composition					
Female-female pair	0.058	0.055	0.050	0.056	0.075
Mixed-gender pair	0.313	0.305	0.299	0.316	0.339
Male-male pair	0.629	0.639	0.652	0.628	0.586
Committee assignment					
Both researchers initially drawn	0.022	0.010	0.032	0.035	0.029
Both researchers ultimately served	0.020	0.010	0.024	0.033	0.028
Pre-existing collaboration networks					
Number of prior collaborators, female researchers	22.76	13.41	20.58	23.29	33.08
Number of prior collaborators, male researchers	25.84	17.23	23.85	27.09	39.04
Female − male difference	-3.08***	-3.83***	-3.28**	-3.81**	-5.96**
	(0.91)	(0.95)	(1.45)	(1.86)	(2.40)
Number of dyads	280,436	123,463	50,894	48,409	57,670
Number of researchers	10,908	5,872	3,654	3,619	3,865
Number of exams	685	184	163	170	168

Notes: The unit of observation is a dyad–exam. Collaboration indicators are cumulative and equal one if the pair has coauthored by the indicated event-time year. Dashes indicate that the corresponding follow-up period is not yet observed. An exam denotes a field-specific evaluator pool within an evaluation cycle. The variable *Number of prior collaborators* are computed from the publication database, and may include connections who are not in the pool of potential evaluators.

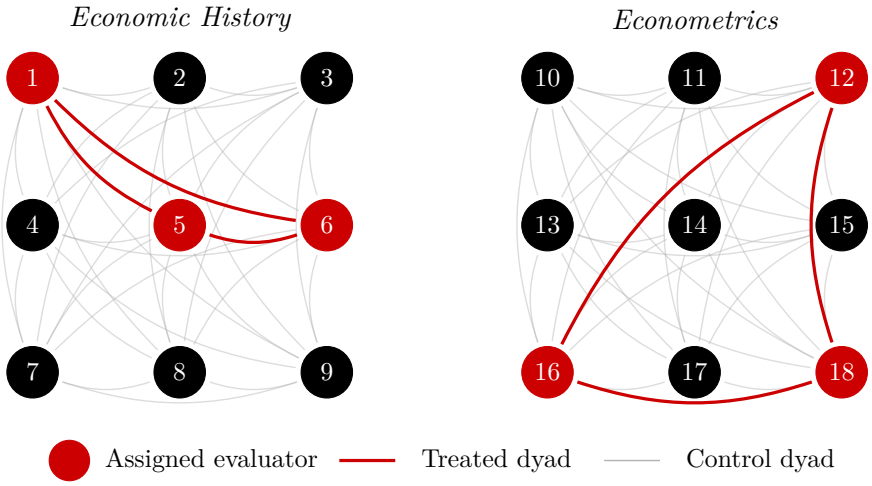
Table 2: Homophily in networks

	Collaboration	
	(1)	(2)
Panel A. Collaboration before the exam		
Mixed gender	0.030***	0.030***
	(0.001)	(0.001)
Same gender	0.034***	
	(0.000)	
Both male		0.033***
		(0.000)
Both female		0.039***
		(0.002)
Differences		
Same gender − mixed gender	0.004***	
	(0.001)	
Both female − both male		0.005*
		(0.003)
Panel B. Effect of serving together on collaboration by $t = +8$		
Mixed gender	0.024**	0.024**
	(0.010)	(0.010)
Same gender	0.022***	
	(0.007)	
Both male		0.020***
		(0.007)
Both female		0.049*
		(0.029)
Differences		
Same gender − mixed gender	-0.003	
	(0.012)	
Both female − both male		0.030
		(0.030)
Number of dyads	173,887	

Notes: The unit of observation is the dyad–exam level. Panel A reports regression-adjusted probabilities that the two researchers had coauthored at least one publication by the year prior to the exam. Panel B reports the estimated effect of serving together on the same committee on the probability that the pair has coauthored by year (t=+8), the interactions from Equation (2). Realized joint committee service in Panel B is instrumented with the residualized initial-assignment shock à la Borusyak and Hull (2023). Column (1) compares mixed-gender and same-gender dyads, while Column (2) distinguishes mixed-gender, male–male, and female–female dyads. The rows labeled *"Differences"* report the difference between same-gender and mixed-gender pairs in Column (1), and between female–female and male–male pairs in Column (2). Specifications include exam fixed effects, controls for researchers' productivity trajectories and the research similarity of the pair. Panel B additionally controls for whether the pair had collaborated prior to the exam, as well as controlling for the individual assignment status of researchers in the dyad. Standard errors are clustered at the exam level.
*** p < .01, ** p < .05, * p < .1

A Appendix Figures and Tables

FIGURE A1: THE VARIATION GENERATED IN THE NETWORK BY THE RANDOM ASSIGNMENT OF EVALUATORS



Notes: The figure provides an illustrative example of the variation in the network generated by the random assignment of evaluators. The two clusters represent separate pools of potential evaluators. Dyads are not constructed as a combination of all feasible pairs that could be drawn to the same committee. Red nodes denote evaluators who were randomly assigned to the committee. A dyad is treated when both of its members are assigned to the same committee, as indicated by the red edges. All other pairs within the same assignment pool form the control group and are shown by gray edges. For expositional clarity, the figure depicts committees of three evaluators rather than the five-member committees used in the ASN.

TABLE A1: RANDOMIZATION CHECK

	Same Affiliation				Collaboration before exam			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\text{committee}_{i,e} \times \text{committee}_{j,e}$	-0.045***	0.001	-0.000	0.000	-0.015***	-0.001	-0.001	-0.001
	(0.001)	(0.002)	(0.001)	(0.000)	(0.003)	(0.003)	(0.003)	(0.004)
$\mathbb{E}[\text{both drawn}_{i,j,e}]$		-7.602***	5.177***			-2.836***	0.457**	
		(0.450)	(1.001)			(0.192)	(0.208)	
$\mathbb{E}[\text{drawn}_{j,e} \mid \text{drawn}_{i,e} = 1]$			-21.483***				-5.536***	
			(1.081)				(0.275)	
Exam FE	✓	✓	✓	✓	✓	✓	✓	✓
BH23 IV				✓				✓

Notes: The unit of observation is at the dyad–exam level. The outcome variable in columns 1-4, *Same Affiliation*, is equal to one if the two researchers were employed by the same institution in the year prior to the draw. The outcome variable in columns 5-9, *Collaboration*, is equal one if the pair has coauthored by the year preceding the committee draw. In columns 4 and 8 and the interaction is instrumented by the deviation from its expected value under the known assignment mechanism à la Borusyak and Hull (2023) and estimated by 2SLS. All other columns are estimated by OLS. An exam denotes a field-specific evaluator pool within an evaluation cycle. Standard errors are clustered at the exam level.
*** p < .01, ** p < .05, * p < .1

Table A2: First-stage results

	$\text{committee}_{i,e} \times \text{committee}_{j,e}$	$\text{committee}_{i,e}$	$\text{committee}_{j,e}$
$\tilde{Z}_{i,j,e}$	0.799***	-0.002	-0.002
	(0.012)	(0.005)	(0.005)
$\tilde{Z}_{i,e}$	0.008***	0.889***	0.000
	(0.001)	(0.009)	(0.001)
$\tilde{Z}_{j,e}$	0.008***	0.000	0.889***
	(0.001)	(0.001)	(0.009)
Observations	421008	421008	421008
KP rk Wald F-stat	1564	1564	1564

Notes: The unit of observation is at the dyad–exam level. The instrumented variables are indicators for whether both researchers and individual researchers get drawn for the committee. The instruments are the initial draw status net the expected value under the known assignment mechanism à la Borusyak and Hull (2023).
*** p < .01, ** p < .05, * p < .1