

Diversity and the Evaluation of Economic Research: the case of Italy

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Abstract

Especially in the wake of the Great Recession, calls for more diversity within economics are usually limited to appealing for greater diversity in the economists' backgrounds, while diversity of opinion and approaches is often neglected. Through a large-scale natural experiment encompassing two entire cohorts of Italian economists, we document how candidates for academic positions in economics, especially top-rank positions, are pushed to increasingly conform to a standardized research profile. We find evidence both of a gender glass ceiling and of substantial heterogeneity in the candidates' chances to qualify for an academic position, depending on their gender characteristics.

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Context and aims

- The economists' infamous failure to predict the financial crisis of 2007-2008 and the ensuing Great Recession has given new impulse to advocate for diversity in the economics profession. In a surprisingly explicit report, the Independent Evaluation Office (IEO, 2011) of the International Monetary Fund (IMF) denounces how an environment that is prone to group thinking and discourages diversity and "*contrarian views*" led the Fund to deemphasize macroeconomic and financial risks during the years of the Great Moderation.
- At the same time, the Federal Reserve has repeatedly underlined how diversity of backgrounds is an enriching factor for the development of economic theory and the understanding of economic reality. A growing literature, recently summarized by Bayer and Rouse (2016), focuses on gender diversity in particular, while sociologists and historians of economics focus on geography and nationality by looking at the institutional dominance of a handful of US universities (Fourcade et al., 2015).
- In this work we aim to contribute to the debate on the usefulness and extent of pluralism in economic research (Van Dalen, 2003), by adopting an extensive perspective that includes both diversity of backgrounds ('diversity') and diversity of methods and approaches ('pluralism'). We analyse the case of academic economics in Italy, which is especially interesting for both the size and the transparency of a recently introduced national centralized procedure for recruitment and promotion (De Paola and Scoppa, 2015; Corsi et al., 2017; Bagues et al., 2017). In the Italian context, data on the diversity of staff are only available concerning gender and age, while information on staff's race and/or other backgrounds is generally unavailable. For this reason, in line with the bulk of literature on diversity in economics, we focus on **gender diversity in particular**.
- By analysing the large-scale **national scientific qualification procedure (ASN)**, we provide further new evidence of the gender glass ceiling in academia. At the same time, we also document the substantial risk posed by the fact that, in order to find employment and progress in an academic career, both women and men must increasingly adapt to and pursue a standardized and very specific research profile. This risk arises from the well-known biases of metrics-based assessments of research

– which have been fundamental in the Italian ASN, but are increasingly widespread elsewhere – in favour of the already consolidated research fields and lines of inquiry, at the expense of competing methods and research paradigms.

- We show that not all women suffer from discrimination to the extent of not being admitted to or not proceeding in an academic career; and not all men enjoy a status of relative advantage. Crucially, even after controlling for observable characteristics, a candidate's chances to qualify as associate or full professor at the Italian ASN depended not only on his or her productivity, but also on their research interests.¹ Thus, for a fuller understanding of diversity in economics it is necessary to consider not only diversity of backgrounds, but diversity of ideas as well.

Diversity in economics

- Extant literature on diversity in economics is characterized by two parallel approaches. One strand of literature analyses the contributions of women economists to the discipline; the other focuses on social and institutional constraints to equal opportunities for men and women economists, especially investigating on the organization of human resources within research centres.
- Within the second strand, a recent topic of debate concerns the gender impact (if any) of quantitative research assessment methods on gender. There is ample evidence that in quantitative terms men have been outperforming women in terms of research output. For this reason, some authors ask whether the equal application of bibliometric indexes may produce indirect discrimination, and argue for the creation of gender-specific rankings aimed at providing a more nuanced representation of men and women researchers' relative performance (Abramo et al., 2015). In contrast, analysing undisclosed non-public data from the periodic research quality assessment of Italian universities, which included a random sample of papers evaluated using both bibliometric indicators and peer review, Jappelli et al. (2015) argue that bibliometric evaluation does not penalize women with respect to men.

¹ We investigate research interests and methods to the extent made possible by an analysis of publications' metadata, namely titles, keywords, abstracts and especially JEL codes.

- While these considerations apply across disciplines, in most countries economics in particular exhibits the highest gender gaps in tenure and promotion rates, average salaries and job satisfaction among both the social sciences (Ginther and Kahn, 2006) and math-intensive fields (Ceci et al., 2014). Reviewing this evidence, Bayer and Rouse (2016), conclude that “*the field of economics is behind others in its progress on diversity concerns*” (p. 238).
- In the case of Italy, in 2016 women represented 37.1% of the academic staff.² In economics, the share of women was even lower (29.9%); 16% of full professors in economics were women, 33% of associate professors, and 44% of researchers. As a consequence, for women there was a classic pyramidal hierarchy structure, with 20% of women employed as full professors at the top, followed by the associate professors (36%), and researchers at the base of the pyramid (44%). By contrast, for men the hierarchy structure takes on the shape of a reverse pyramid, with the largest share represented by full professors (44%), followed by the associate professors (32%), and finally by researchers (24%).
- To contextualise this evidence with respect to other scientific disciplines, in its periodic report *She Figures*, the European Commission proposes the measurement of a Glass Ceiling Index (GCI). The index compares the proportion of women in academia with the proportion of women in top academic positions (in Italy, full professors). Thus, the GCI ranges between 0 and infinity: a GCI of 1 indicates that there is no difference between women and men in terms of their chances of being promoted; and a GCI greater than 1 indicates that women are less represented in full professorship positions than in academia generally (the “*glass ceiling*” effect). In Italy, in 2016 the GCI was 1.68 in academia generally, with values e.g. of 1.28 in the humanities and arts and 1.71 in mathematics and computer sciences.³ In economics, the GCI was 1.84 in 2016, compared to 2.55 in 2000. Thus, there has been some

² For all figures in this section, the source of the data is the website of the Ministry of Research and University updated to 12/31/2016, available at: <http://cercauniversita.cineca.it/php5/docenti/cerca.php>. For economics, we consider the disciplinary field formally known as “Political economy, SECS-P01”. However, researchers that in an international context may be considered as economists may be employed in Italian universities within a different subfield of the social sciences, e.g. public policy, econometrics, etc.

³ We consider here two broad research areas as classified by the Ministry of Research and University: area 01 – Mathematics and computer sciences; and 10 – Humanities and Arts.

progress towards reducing the glass ceiling, although women continue to be less represented in full professorship in economics than in academia generally, even with respect to traditionally male-dominated fields such as mathematics.

The Italian institutional context

- In Italy the “*quality*” of both research centres and individual researchers is assessed at a centralized level, respectively for financing and for recruitment and promotion aims. Concerning the evaluation of individuals, a 2010 reform of the university system (Law 240/2010) created a **national scientific qualification (ASN)** procedure, changing the rules for access to associate and full professor positions.⁴ “*Professore associato*” is now the lower tenured rank in Italian academia, roughly corresponding to a senior lecturer or associate professor position; and “*professore ordinario*” is the higher rank (corresponding to full professor).⁵ Individuals who obtain a national qualification as associate or full professors can then compete for a job at the corresponding rank at any Italian university. Therefore, obtaining a qualification is a necessary condition for employment as tenured faculty in Italy, but it is not a guarantee of employment; indeed to day several candidates who qualify as associate or full professors are still employed in their previous lower positions, or may even be unemployed.
- The reform distinguishes between two broad cultural areas: the life and natural sciences, defined by law as “*bibliometric areas*”, and the social sciences and humanities, the “*non-bibliometric areas*”. Within the ASN, different sorts of bibliometric indicators are prescribed for the evaluation of candidates in the bibliometric and non-bibliometric areas. For the non-bibliometric areas, which

⁴ The ASN proceeded in two annual rounds in 2012 and 2013, and was then interrupted. In 2016, a new procedure was introduced, in which the same methods and criteria are adopted, but instead of yearly rounds there are now quarterly, so-called “rolling” calls for applications. In this work we only consider the 2012 and 2013 yearly rounds, because the results of the first round of rolling calls are not yet known.

⁵ Until the reform, and for a short transitory period thereafter, there was a further lower-rank tenured position, “*ricercatore universitario*”, roughly corresponding to a lecturer or assistant professor. Thus, in the sample of individuals that we consider in this work there could be candidates for obtaining a qualification as associate professor, who already had tenure at the time (we include them among the “tenured professors candidates for promotion”).

include economics, the bibliometric thresholds were defined in terms of numbers of publications.⁶

- The procedure evolved into five steps: (i) candidates applied by responding to a public call; (ii) after the deadline for applications had elapsed, the Ministry for Research and Evaluation randomly selected the five members of the commission for each discipline, from a pool of candidate commissioners (who had to be full professors in an Italian university and meet the same above-mentioned bibliometric threshold criteria); (iii) once the names of the components of the commissions were drawn and made public, candidates had a certain timeframe to decide whether to withdraw from the procedure.⁷ In the meantime the Ministry computed the bibliometric indicators for all candidates and passed them to the commission; (iv) after the deadline for withdrawing passed, the commission analysed the CVs, publications and bibliometric indexes of all candidates who had not withdrawn; and finally (v) the Ministry published the commission's assessment of all candidates for a same discipline simultaneously. All commissions were obliged to publicly report all material related to their work (i.e. the candidates' CVs, each candidate's score in the three measures above, and the commission's narrative evaluation of each candidate) on a public website. Such transparency allowed the whole procedure to be used for research purposes.

⁶ Specifically, it was expected that a qualified candidate would have a higher number than the median of the then tenured economics professors in Italy, of the following:

(i) research monographs, excluding edited volumes, published in the past 15 years (10 for candidates to associate prof.);

(ii) journal articles and book chapters published in the past 10 years (5 for candidates to associate prof.);

(iii) journal articles in "top journals", the so-called *A-list*, published in the past 15 years (10 for candidates to associate prof.).

For all three, the candidates' number of publications was normalized by "academic age", i.e. the time since the first recorded publication, subtracting periods of parental leave. The drafting of the *A-list* for each discipline was delegated by the National Agency for the Evaluation of Research and the University System (Anvur) to an ad hoc working group made up of five full professors based in an Italian university. In principle, these thresholds were formally a reference point and not a mandatory minimum requirement for the commissions.

⁷ Not qualifying at the ASN has the only consequence of not being eligible as a candidate for the subsequent year. However, it is possible that candidates incurred or perceived a reputational cost that induced many to not apply or to withdraw.

Empirical evidence

- We have collected the CVs, bibliometric indicators and final results of all candidates to the 2012 and 2013 rounds for economics from the ASN website. We then have matched this information with all the publications indexed in EconLit and Google Books by those candidates, as well as by all tenured economics professors in Italy in the same years.⁸ These two databases have allowed us to consider relevant metadata for each publication: abstract, keywords, and JEL codes, for EconLit, and abstract and keywords for Google Books.
- We have computed each candidate's main JEL code, defined as the candidate's most used single-letter JEL code, and we have used this information to create a proxy of how much a candidate's research topic may be viewed as mainstream or fashionable: such measure is provided by the share of the candidate's main JEL code in all articles published in the top 10 economics journals in the decade preceding the first ASN round (2003-2012).
- We have computed the feminization of each candidate's main JEL code, as an indicator of (lack of) prestige of the research field (Dolado et al., 2008). This value is obtained by computing for each single-letter JEL code the share of publications in EconLit authored by women.

Table 1: Italian ASN – Qualified candidates

	Candidates for full professorship		Candidates for associate professorship	
	Candidates	Qualified (%)	Candidates	Qualified (%)
Total	345	48.3	525	47.7
Women	75 (22%)	31.6	181 (35%)	39.8

- We have defined 'heterodox' a candidate who has published at least two 'heterodox' publications (Corsi et al. 2010). In turn, these are defined by a mix of JEL codes,

⁸ EconLit is the database maintained by the American Economic Association (AEA), indexing a large number of journals, working paper series, Ph.D. theses, books and book chapters in economics. Entries in EconLit are catalogued according to a standardized index of research methods and topics, denoted by alphanumeric symbols called "JEL codes". JEL codes are frequently chosen by the publications' authors, but they are attributed by AEA in an unknown, possibly relevant number of cases.

keywords and journal rankings.⁹ This procedure is aimed at capturing those candidates that most likely could be identified as heterodox by the ASN commission.

- As shown in table 1, of the 345 candidates for a qualification to full professorship in economics and the 525 candidates for associate professorship in 2012 and 2013, women constituted respectively 22% and 35%. This shows that women are underrepresented among candidates even with respect to their presence in the immediately lower academic rank (as mentioned above, in the same period roughly one third of associate professors and a bit less than half of assistant professors were women). In the subsequent stage, less than 10% of candidates decided to withdraw their application, once the names of the commission members were made public. Such a low figure may indicate that most potential candidates had already internalized the selection criteria and had not applied in the first place if they thought they would not meet those standards; another possibility is that their uncertainty concerning the criteria was not reduced after the selection of the commission members. In any case, the majority of candidates who decided to exit the competition were women (58.3%), even more so if they already had tenure in a lower academic rank (63.3%).

Table 2: Italian ASN - Bibliometric criteria

	I criterion: # of monographs	II criterion: # of journal articles and book chapters	III criterion: # of articles in "A-list" journals (*)
Women			
Met the threshold	100%	77.7%	74.7%
Mean value	0.7	15.5	3.2
Men			
Met the threshold	100%	82%	82%
Mean value	0.8	18.5	4.4

(*) http://www.anvur.org/attachments/article/254/Area13_CLA_III_Quad.pdf

Note: the commission in charge of granting the ASN had no legal obligation to grant a qualification to every candidate who met the bibliometric criteria, but in general it was expected to do it. Thresholds in all three indicators were defined as the respective median values among tenured professors of economics in Italian universities: in both rounds considered here (2012 and 2013) these values were estimated by the National Agency for the Evaluation of Research (ANVUR) respectively at 0 (normalized number of books), 12.11 (normalized number of journal articles and book chapters) and 1.5 (normalized number of articles in A-list journals) for full professorship; and respectively 0, 11 and 2 for associate professorship.

⁹ The lists of relevant JEL codes, keywords and journals are taken from Corsi et al. (2010), which we follow and to which we refer for more details on the procedure to identify heterodox economists using EconLit metadata.

- Table 2 highlights that the differences between men's and women's scores in the three bibliometric criteria defined by the law are not substantial. By definition, all candidates met the first criterion, on the number of books standardized by academic age, because the median number of books written by tenured Italian economists was estimated to be zero and thus all candidates matched or exceeded this value. A vast majority of candidates met the other two criteria as well, thus suggesting that these were widely regarded as necessary conditions for obtaining a qualification. However, this pattern corresponds to a more mixed picture in terms of candidates' publications (see table A1 in annex). While the kind and number of publications was not an explicit criterion of the ASN, which was instead based on the above described bibliometric indicators, the former were the only information available to candidates when applying and when deciding whether to withdraw. As mentioned, the bibliometric indicators were computed and made public by the Ministry only at later stages. On average, women candidates wrote a similar number of books to men, but fewer book chapters and journal articles. Among men, the candidates who qualified to associate professorship wrote more publications than those who did not qualify, while for women the difference is not statistically significant. For both men and women the successful candidates to associate professorships wrote more journal articles than their unsuccessful counterparts; however, the successful candidates wrote significantly fewer books. For candidates to full professorship, this peculiar finding is confirmed across the board: on average successful candidates wrote a smaller number of all kinds of publications (with the only exception of journal articles for women). Finally, among women the candidates who withdrew from the competition had written significantly fewer books and book chapters, but not fewer journal articles; for men they had only written fewer book chapters.

Does breaking the glass ceiling imply homologation?

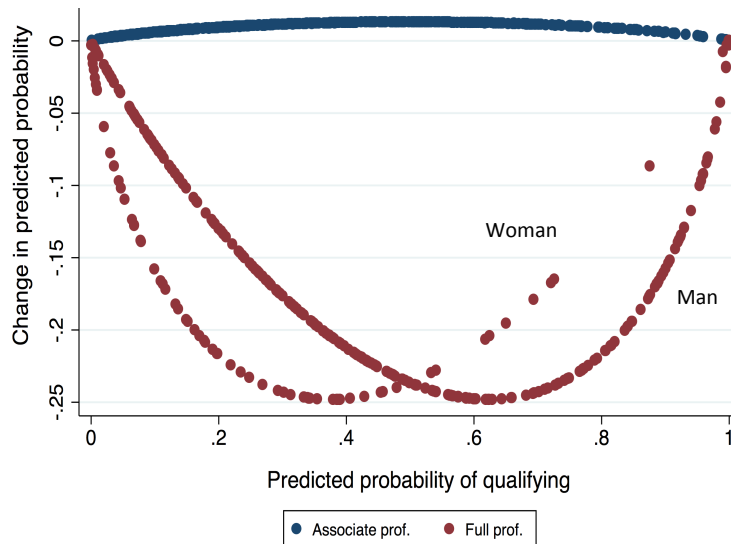
- We ran separate censored probit regressions on the full sample of candidates and on those whose current or last employment was in an Italian university. In general, we were able to find many possible factors correlated with the results of the ASN, thus

considering only the candidates who did not withdraw from the competition, age does not appear to have significantly affected a candidate's chances of qualifying as full professors. In contrast, younger candidates were less likely to be awarded the national qualification as associate professors, even after controlling for their characteristics and bibliometric indicators.

- Significantly, an opposite pattern is found for women: whereas being a woman did not affect the chances of candidates as associate professors, once the other observable characteristics are taken into account, this proved to be a substantial hurdle in the competition for qualification to full professorship. Thus, the glass ceiling observed in academic economics does not depend on lower bibliometric indicators, as suggested for example by Abramo et al. (2016), but it manifests itself as a residual, lower probability to access the highest academic rank, independently of the perceived quality of research or other observable characteristics.
- To investigate this residual further, we estimate the impact on each candidate (i) of their gender, by computing the difference between her predicted probability of qualifying (Pr) if she was a woman (W), and the predicted probability to qualify if she was a man (M), given all her other observed characteristics (X). Therefore we computed the predicted advantage for men from being a man, and for women the predicted disadvantage from being a woman.
- As shown in figure 1, for candidates for associate professor the change in the predicted probability to qualify is very close to zero along the whole distribution. However, the picture is radically different for candidates as full professors. Since the predicted probabilities are always constrained to take on values between 0 and 1, along the predicted probability to qualify we expect to observe an impact either in a U or an inverse-U shape. This shape implies that in our model, for candidates with very high or very low predicted probabilities of qualifying, their sex did not provide a significant boost (for men) or hindrance (for women). However, for all intermediate candidates, for whom we estimated roughly similar probabilities of qualifying and of

not qualifying, being a woman implied a significant reduction in the predicted probability to qualify as full professor.¹⁰

Figure 1: The impact of being a woman on the predicted probability to qualify (%)



Conclusions

- Rodrik (2016) writes, “[b]ecause economists go through a similar training and share a common method of analysis, they act very much like a guild” (p. 171). In his comment, Rubinstein (2017) asks the rhetorical question: “[w]hy should we expect economists to behave differently than any other group seeking to protect its territory by constructing barriers to entry?” (p. 165).
- In this work, we show that in the Italian case the barriers to entry to an academic profession in economics are significant at the stage of both access to tenure and promotion. Some of such barriers are not specific to economics, namely the gender glass ceiling or, in the Italian context, the added difficulties of being a younger researcher. The case of the ASN allowed us to show that the characteristics of candidates’ scientific production and institution, and even their connections with the judging commission were not enough to explain why women had a significantly lower

¹⁰ The two distributions apparent in the figure, for the case of candidates to full professorship, apparently would suggest that, at the same level of predicted probability to qualify, the predicted advantage for men is not exactly equal to the predicted disadvantage for women. But in fact, this difference is insignificant, given the sample size.

probability to obtain a qualification as full professors, or young people as associate professors. However, these barriers to entry seem more or less difficult to overcome depending on the candidates' choices of publication outlets and, crucially, research topics and methods.

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ANNEX

Table A1: Italian ASN - Productivity of candidates

		Candidates for full professorship		Candidates for associate professorship		Withdrawn candidates
		<i>Qualified</i>	<i>Not qualified</i>	<i>Qualified</i>	<i>Not qualified</i>	
Women						
Publications	mean	28.7	38.6	19	17.9	19.4
		$t(74) = 2.03^*$		$t(179) = -0.55$		$t(361) = 0.24$
	s.d.	11.2	22.7	14.4	13	12.7
Journal articles	mean	16	15.7	9.9	7.8	11.1
		$t(74) = -0.14$		$t(179) = -2.2^*$		$t(361) = -0.86$
	s.d.	8.1	7.5	6.5	5.8	7.1
Books	mean	1	2	0.6	1	0.3
		$t(74) = 1.76^*$		$t(179) = 1.88^*$		$t(361) = 1.98^*$
	s.d.	2.2	2.4	1.2	1.8	0.7
Book chapters	mean	3.4	9.3	4	5.1	1
		$t(74) = 3.04^{**}$		$t(179) = 1.51$		$t(361) = 2.81^{**}$
	s.d.	2.7	9.3	4.9	4.8	2.5
Men						
Publications	mean	32.5	41.8	24.8	18.2	24.4
		$t(267) = 3.08^{**}$		$t(342) = -3.57^{**}$		$t(885) = 0.39$
	s.d.	20.9	27.9	18.5	15.5	18.4
Journal articles	mean	17.4	21.4	14	8.8	13.5
		$t(267) = 2.43^*$		$t(342) = -4.96^{***}$		$t(885) = 0.34$
	s.d.	11.6	15.5	11.2	8.2	9.9
Books	mean	0.9	2.4	0.7	1.4	0.9
		$t(267) = 5.15^{***}$		$t(342) = 2.61^{**}$		$t(885) = 0.72$
	s.d.	1.6	3	1.3	3.6	1.6
Book chapters	mean	5.2	9.8	4.1	4.5	3
		$t(267) = 4.43^{***}$		$t(342) = 0.68$		$t(885) = 1.95^*$
	s.d.	7.6	9.3	5.9	5.3	4.5

Note: the table reports the candidates' number of publications at the time of applying for the ASN. The classification of publication types was obtained from EconLit and Google Scholar. For withdrawn candidates, the statistics report comparisons with all non-withdrawn candidates.