Gendered careers: women economists in Italy

Marcella Corsi, Carlo D'Ippoliti and Giulia Zacchia[*]

Recent reforms of the Italian university system introduced a centralized national qualification competition (called ASN), necessary for accessing all academic positions in the country. Following a well-known international trend, the new mechanism is founded on rigid standardized indexes of "scientific productivity" based on bibliometric indicators. In economics, women's lower success rate (35%) compared to men's (44%) is often connected to lower productivity. We provide evidence matching all candidates' CVs with their record of publications on EconLit, showing that women's typical career profiles, e.g. in terms of type of publications, topics and methods of inquiry, were penalized regardless of scientific productivity. Our work aims not only at documenting, through a large scale natural experiment, the causes of the underrepresentation of women in academia (especially in top positions) and within economics, but also at raising the issue of new incentives and constrains that increasingly push women to uniform their careers and their research interests to those of their men colleagues.

1. Context and motivation

The global trend of re-organizing the academic world according to the competitive logic of a global marketplace imposes considerable changes in the working conditions in academia. In several countries, the growing pressure for audit and evaluation of public spending on higher education and research has driven to the widespread use of "research assessments," both for the allocation of public funding and for the management of human resources within universities. One specific instrument in this trend is the use of metrics to quantify "research output" and its "impact" in terms of citations.

A significant number of researchers, journals and scientific societies signed a joint declaration calling for critical approach to research performance metrics and proposing a redefinition of "responsible" metrics that should account for diversity and reflexivity (2013 San Francisco DORA; HEFCE, 2015). This implies that metrics should reflect and support the plurality of research and researchers, and all systemic and potential effects of indicators should be anticipated before using them on a large scale. Yet, in a recent article Bayer and Rouse, 2016, conclude that "the field of economics is behind others in its progress on diversity concerns" (p. 238). From a gender perspective, economics exhibits the highest gender gaps in tenure and promotion rates, salaries and job satisfaction among both the social sciences (Ginther, Kahn, 2006) and math-intensive fields (Ceci, Ginther, Kahn, Williams, 2014).

Increasingly, women (and men) must adopt to a standardized and stereotypically 'manly' research profile, in order to find employment and then progress in an academic career. In this paper we analyze the case of Italy, which exhibits common features with several other countries such as a severe gender gap, the massive use of bibliometric indicators, rankings and indexes, and a centralized system of research evaluation. Italy is a very instructive example at the international level both for the laudable transparency of its new "national scientific qualification" (ASN) system, and because it historically exhibit substantial diversity

---

[*] Sapienza University of Rome: marcella.corsi@uniroma1.it, carlo.dippoliti@uniroma1.it,

of research programs in economics, which is now being quickly compressed (Corsi et al., 2016).

The paper is organized as follows: section 2 presents a literature review on diversity in economics profession; section 3 introduces the Italian context, giving some evidence about the underrepresentation of women in academia and the glass ceiling effect in economics in Italian universities. Section 4 describes the data and methodology used for the identification of 'institutional discrimination,' and in section 5 we present the results of our analysis.

2. Diversity in the economics profession

The economists' failure at predicting the recent financial crisis gave a new impulse to the advocacy for diversity in the economics profession. In a widely discussed report after the crisis, the Independent Evaluation Office (IEO) of the International Monetary Fund encouraged thoughtful and diverse opinions within the Fund, denouncing how an environment that discouraged diverse and dissenting views led the Fund to deemphasize macroeconomic and financial risks and vulnerabilities during the years of the "great moderation" (IEO, 2009). Similarly, the Federal Reserve underlined how diversity is an enriching factor for the development of economic theory and for the understanding of current reality.[1]

Indeed, extant literature is characterized by two parallel approaches to the analysis of diversity in the economics profession.

One strand of literature analyses the contribution of women to the discipline. Within this first category, we can however distinguish different approaches. On the one hand, Dimand et al. (2000, 2011), Ciccarelli and Ciccarelli (2003) and Madden et al. (2004), following a historical-narrative approach, analyze the contributions of women economists of the past that do not appear in the standard history of economic thought texts. Groenewegen and King (1994) provide a statistical analysis of women's contributions from 1900 to 1939 in top economic journals, analyzing 112 women authors of 222 articles. Madden (2002) provides a broader survey of women researchers, including less known titles, by considering 1160 women authors of economics journal articles published between 1900 and 1940.

On the other hand, several researchers focus on gender differences in the economists' methodologies, research approaches and interests. Thus, Davis (1997), Davis et al. (2011), Hedengren et al. (2010) and Stastny (2010) find that women typically reach a much stronger consensus, especially on issues of equity and fairness both in the economics profession and in policy recommendations calling for greater government intervention in the economy. Albelda (1997) focuses on how men economists are much less interested in topics such as women's labour force participation, the impact of fiscal and monetary policies on women and families, wage discrimination, and the economic status of minority women. More recently, May et al. (2014) report significant gender differences in the approach to policies such as minimum wages, health insurance and equal opportunities in the labor market. Finally, some studies examined the evolution of gender differences in scientific production in economics. For example, Forget (1995) analyses the evolution of PhD's dissertations in economics from 1912 to 1940 in the USA, while Dolado et al. (2008), studying the scientific production of tenured economists in top international departments, address cohorts' differences in the research fields' preferences of men and women. For the case of Italy, Zacchia (2016) finds that progressively more competitive environment heavily founded on bibliometrics, forced women to adopt a 'homologation' strategy to reach the top of the academic career. She reports evidence of a double converge path for Italian academic economists in the last decade:

---

[1] Opening speech of the National Summit on Diversity in the Economics Profession by Janet Yellen, Federal Reserve Board, Washington (DC), 30th October 2014.

women and men tend to converge to the same research interests and concurrently men tend to homologate at a faster pace to a univocal concept of excellence in research. This consistent reduction in diversity in economics, mainly identified with the concept of pluralism of research, is particularly evident when studying how women reduce their scientific production in less mainstream fields, mainly heterodox economics and history of economic thought, in the last decades.

The second strand of literature focuses on institutions and human resources' organization within research centers. The main object of analysis here is how universities can best provide a research environment that benefits from the creativity and productivity of diverse research groups. From this perspective, equality is central both in terms of equal opportunities for individuals and of performance of organizations. Acker (1990) argues that organizations are gendered processes where "advantage and disadvantage, exploitation and control, action and emotion, meaning and identity, are patterned through and in terms of a distinction between male and female, masculine and feminine" (Acker, 1990, p. 146). Universities are not different, and it is important to stress that all internal processes, department organization, research activities, criteria for evaluation and career paths in academia are all gendered (Acker, 2008; Johansson and Śliwa, 2014).

Concerning the case of Italy, gender discrimination in academia has been recently documented through behavioral and experimental studies focusing on gender differences in competitive environments, and on the impact of the gender composition of selection committees on the likelihood of obtaining tenure in Italian universities (Scoppa and De Paola 2015, 2016; Abramo et al. 2016; Bagues et al. 2016). The results of these studies are controversial: Abramo et al. 2016 and Bagues et al. 2016 find no empirical support to suggest that the presence of (a few) women in evaluation committees has a statistically or economically significant positive effect on the chances of success of women candidates. Strikingly, Bagues et al. 2016, in most subsamples, find that gender-mixed committees tend to be less favorable towards female candidates than all-male committees are. On the contrary, Checchi et al. 2015 and De Paola et al. 2015 report a positive role of women presence in commission in promoting women candidates. Nevertheless, De Paola et al. (2016) find that the introduction in 2012 of the new recruitment and promotion system in Italian universities has not increased women's probability of being effectively promoted both for associate and full professorship (for women, the probability of being promoted is, ceteris paribus, 12% and 20% less than that of their men colleagues, respectively).

In this work, we analyze the intersection of these two strands of literature. We study how the use of standardized bibliometric measures in the decisions on promotion to associate or full professors can influence scientific production economics. We document the a trend towards homologation and lack of pluralism in terms of research fields concentration, and how this trend differently affects women and men economists.

3. The glass ceiling in economics

In order to quantify the difficulties faced by women in gaining access to the top position we compute the Glass Ceiling Index (GCI) for Italian academic economists. The GCI is a measure proposed by the European Commission in its *She Figures* report. The index compares the proportion of women in academia with the proportion of women in top academic positions (full professors). The GCI can range from 0 to infinity: a GCI of 1 indicates that there is no difference between women and men in terms of their chances of being promoted; a score of less than 1 implies that women are more represented at the top level than in academia generally; and a GCI greater than 1 indicates that women are less

represented in full professorship positions than in academia generally. Thus, the higher the value of the GCI, the stronger the glass ceiling effect.

In Italy, the GCI accounts for 1.71 in 2015 in academia generally, ranging from 1.29 for the humanities and arts to 1.78 for mathematics and computing.[2] In economics, the GCI is even higher: 1.85 in 2015, compared to 2.55 in 2000.[3] Thus, there has been some progress towards reducing the glass ceiling effect, although women continue to be less-represented in full professorship in economics than in academia generally.

In 2015, women represent 36.5% of the Italian academic staff. In economics, the share of women is even lower (30.3%); 16% of full professors in economics are women, as well 32% of associate professors, and 46% of researchers. As a consequence, for women there is a classic pyramid structure of employment, with 19% of women full professors at the top, followed by the associate professors (27%), and researchers at the base of the pyramid (54%). By contrast, for men the hierarchical structure takes on the shape of a reverse pyramid, with the largest share represented by full professors (41%), followed by the associate professors (30%), and finally by researchers (29%). With respect to year 2000, the pyramidal structure stayed the same for both sexes, even as the share of women full professors grew from to 15% to 19%.

The underrepresentation of women in economic research in Italy is much smaller at the PhD level. In a context in which the number of students has almost doubled (from 45 in 2002 to 108 in 2014, the last year for which data are available), the share of women pursuing a PhD in economics remained roughly constant: from 41.8% in 2002 to 42.5% in 2014.[4] Thus, one could talk of a 'leaky pipeline' effect for women economists in Italy's universities.

3.1 The Italian institutional context

In Italy the quality of both research centers and individuals is assessed at a centralized level, respectively for financing and for hiring and promotion aims. Concerning the evaluation of individuals, recently a 2010 reform of the university system (Law 240/2010) created a "national scientific qualification" (ASN) system in order to access associate and full professor positions. "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 professor can then compete at the local level, for a job at the corresponding rank at any Italian university. Thus, having obtained a qualification is a necessary condition for employment as tenured faculty in Italy, but it is not a guarantee of employment, and indeed to day several candidates who qualified as associate or full professors are still employed in their previous lower position, or may even be unemployed.

---

[2] We consider two main research areas classified by Ministry of Research and University: 01 - Mathematics and computing, and 10 – Humanities and Arts.

[3] Data by Ministry of Research and University, updated to 12/31/2015, available at: http://cercauniversita.cineca.it/php5/docenti/cerca.php We consider the scientific field formally known as "Economics, SECS-P01". Some economists are employed in Italian universities within a different subfield, e.g. public policy, econometrics, etc.

[4] Data by the Ministry of Research and University, available at:
http://statistica.miur.it/scripts/postlaurea/vpostlaurea.asp?submit1=Torna+indietro

[5] Until the reform, and for a short transitory period thereafter, there was a further lower-ranked tenured position, "ricercatore universitario", roughly corresponding to a lecturer or assistant professor. Thus, in the sample of individuals that we consider there could be some candidates for a qualification even as associate professors, who already had tenure (we include them among the "tenured professors candidates for promotion").

The reform distinguishes 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. According to Law 240/2010, these indicators should have been complemented by further qualitative criteria (such as being on the editorial board of scientific journals, etc.), but in fact the achievement of precisely defined thresholds in the bibliometric indexes proved to be decisive, as will be shown in the next section.

For the non-bibliometric areas, including economics, the bibliometric thresholds were defined in terms of numbers of publications.[6] Specifically, it was expected that a qualified candidate would have a number higher than the median of the then tenured economics professors in Italy, of the following:

(*i*) research monographs, excluding edited volumes;
(*ii*) journal articles and book chapters;
(*iii*) journal articles in "top journals", the so-called *A-list*.

The candidates' numbers of publications were normalized by "academic age", i.e. time since the first recorded publication, subtracting periods of parental leave.

These thresholds were formally a reference point and not a mandatory minimum requirement for the commissions, composed of five full professors for each discipline, in charge of granting the national qualification to each candidate. 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.

For economics, the first threshold criterion, the number of books, was practically void, because the median number of research monographs authored by tenured economists in Italy was estimated to be zero. Moreover, since usually younger scholars are more productive than older ones, the second criterion, the number of book chapters and journal articles, was satisfied by a vast majority of candidates (with obvious self-section of those potential candidates who did not meet this criterion, and thus did not apply). Thus, among the candidates for qualification in economics, the third criterion proved decisive in most cases. Thus, the case of Italy confirms the trend highlighted by Lee (2006), that it is a general tendency of supposed research quality assessments to boil down to the sheer definition of rankings of supposedly top journals, as the Italian A-list.

In the Italian case, drafting of the A-list for each discipline was outsourced from the Anvur, the national agency for the evaluation of the university system, to a "working group" of scholars appointed by its board. The method and criteria underlying the A-list for economics were criticized for the lack of pluralism and bias towards certain subfields of economics (Corsi et al., 2016). Possibly in response to these criticisms, subsequent updates of the journal rankings led to the introduction of one Italian economic journal in the A-list in 2015, and the subdivision of rankings by macro-fields. However, these developments are still regarded by many as insufficient, and, in the context of the evaluation of universities, 11 Italian economic societies coordinated to sign a letter to Anvur criticizing the criteria of journal rankings.[7] These developments may to some extent impact on the future rounds of the ASN, but are not relevant for our analysis, which is limited to the 2012 and 2013 rounds (the only completed rounds to-day).

---

[6] For the bibliometric areas, these thresholds were defined in terms of normalized citation counts for both articles and journals, as recorded by the databases Web of Science™ of Thomson Reuters and Scopus™ of Elsevier.
[7] Available at http://www.siecon.org/online/wp-content/uploads/2016/03/Lettera-allANVUR-da-SIE-e-altre-societ%C3%A0-scientifiche.pdf

3.2 Data and methodology

We collect the CVs of all candidates to the 2012 and 2013 rounds of the ASN, as they were published on the ASN website, and match this information with all the publications indexed in EconLit and Google Books by the candidates as well as by all tenured economics professors in Italy in the same years.[8] These databases allow us to consider relevant metadata for each publication from EconLit (abstract, keywords, and JEL codes) and Google Books (abstract, and keywords).

As explained above, we consider diversity both in the demographic composition of economists and in their methods and research interests. In order to capture the latter, we consider the cases of gender studies,[9] heterodox economics, and analyses of specific national conditions (most notably with reference to Italy, which arguably should be a relevant field of inquiry for Italian economists).

We use JEL codes to identify three concentric circles of "gender studies" within economics. The first, narrowest definition, only considers feminist economics, which is a school of heterodox economics whose main aim is (quoting from the mission statement of the International Association for Feminist Economics) "to further gender-aware and inclusive economic inquiry and policy analysis with the goal of enhancing the well-being of children, women, and men in local, national, and transnational communities." In EconLit, feminist economics is denoted by a specific JEL code: B54 – "Feminist Economics".

Our intermediate definition, which we label gender economics, encompasses "those areas of research that investigate the economic importance of behavior or outcomes specific to women and men" (Bettio, 2001, p. 148). In other words, in this group we only consider topics and do not consider differences in the methodological approach: as Robeyns (2001) highlights, gender economics may refer to both neoclassical or mainstream economics and feminist approaches. Under this definition we consider JEL codes B54, and J16 – "Economics of Gender".

Finally, we consider an even larger aggregate, which arguably includes most topics of relevance for economists who work on gender issues,[10] in which we consider all JEL codes that imply a multidisciplinary approach and/or the concepts of "household", "time allocation", and "discrimination" (for a complete description of the JEL codes included see table A1 in appendix 1).

Next, following Corsi et al. (2016) we use a mix of JEL codes, keywords and journal rankings to identify works in heterodox economics. We start from the identification of a set of JEL codes that manifest the heterodox orientation of a publication (listed in table A1 in

---

[8] EconLit is the database maintained by the American Economic Association, indexing a large number of journals, working paper series, Ph.D. theses and 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". The full list of JEL codes is reported in table A1 in appendix.

[9] The introduction of the 'gender studies' in Italian universities can be dated back at least to 1987, with the conference on the status of women's studies and research in the humanities, held at the University of Modena. However, only in 1999 the possibility to offer courses on women's studies within postgraduate and undergraduate programs was introduced. As reported in Antonelli et al. (2013), academic courses on gender issues are still limited.

[10] This is not to imply that research on other topics does not concern or encompass gender issues, but only that research on these specific JEL codes more frequently adopts a gender perspective or at least separately considers men and women's situation.

appendix).[11] Next, we define as mainstream, even if they use a potentially heterodox JEL code, all journal articles published in a set of core mainstream journals, and we add as heterodox, again independently of the JEL codes used, all journal articles published in a core list of heterodox journals.[12] Finally, we classify an economist as heterodox if s/he ever authored or co-authored at least two publications that are defined as heterodox according to the above criteria. On the whole, this conservative methodological stance is justified by our aim of identifying those publications that were most likely to be seen as deviating from the mainstream by the commission in charge of granting the qualification.

Finally, we use titles, abstracts, JEL codes and keywords to identify works that deal with the Italian, the European and/or the US economies. Specifically, we identify publications that include in any of the mentioned metadata fields respectively the words "Italy" or "Italian"; "Europe", "European Union", "EU", "Euro" or "Eurozone"; and "American", "US", "USA" or "United States of America".[13]

3.3 Descriptive statistics

As shown in table 1, of the 345 candidates for a qualification to full professorship and 525 candidates for associate professorship, women constitute 22% and 35% respectively. Therefore, women are underrepresented among candidates even with respect to their presence in the immediately lower rank (as mentioned in section 2, 32% of associate professors and 46% of researchers are women).[14]

Less than 10% of candidates decided to withdraw their application once the names of the commission members were revealed. This may indicate that most potential candidates had already internalized the selection criteria and did not apply on the first place, if they thought they would not meet those standards; or, that their uncertainty concerning these criteria was not reduced after the selection of the commission members. In any case, women are a majority of the candidates who decided to step down, even more frequently if they already had tenure at a lower rank.

TABLES 1 AND 2 AROUND HERE

Table 2 highlights that the differences between men's and women's scores in the three threshold criteria recommended by the reform law are not substantial. By definition, all candidates met the first criterion, on the number of books standardized by academic age, because the threshold was set at zero. A vast majority of candidates met the other two criteria as well, thus suggesting that these were widely regarded as necessary conditions for obtaining

---

[11] We consider two major exceptions: we define as not necessarily or not manifestly heterodox those publications that use "New Keynesian" as keyword alongside JEL code E12 (Keynes, Keynesian, Post-Keynesian), or the keyword "Schumpeterian" in conjunction with JEL code B52 (Institutional, Evolutionary).

[12] Both lists are taken from Corsi et al. (2016), to which we refer for more details.

[13] All data was preliminary processed with the aim of eliminating all variations due to capital letters, conjugations of the terms in Italian language, punctuation and spacing.

[14] Scoppa and De Paola (2016) analyze the determinants of applying at the ASN by considering as potential candidates all academics employed at Italian universities in the immediately lower rank. This procedure probably captures a vast majority of potential and actual candidates, but it is arbitrary to the extent that no such restriction was laid down (e.g. there were candidates from non-university research centers, foreign countries, untenured academics, and tenured academics of lower ranks, such as researchers candidates for full professorship).

a qualification. However, table 3 shows that this pattern corresponds to a more mixed picture in terms of candidates' publications.

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. Specifically, for both men and women the successful candidates to associate professorship wrote more journal articles than their unsuccessful counterparts; however, the former wrote significantly fewer books than the latter. 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 the they had written fewer book chapters only.

In conclusion, it appears that a strong self-selection of candidates took place, on the basis of the three government-mandated bibliometric criteria. A non-negligible number of candidates decided to step down after having initially applied at the ASN, but they do not seem to be less productive than the others. For those who stayed in the competition, productivity does not appear to having been a prime determinant of the outcome, and it actually seems to have impaired the chances of qualification for candidates to full professorship. Two main hypotheses may explain this finding: candidates who had written more publications at the time of the ASN could have been the older, presumably less competitive ones; and/or the perceived quality of publications, or other characteristics such their field or methodological orientation, may have outweigh the relevance of their sheer number. In order to assess these hypotheses, in the next section we carried out a multivariate analysis of the determinants of qualifying to the ASN.

4. Does breaking the glass ceiling imply homologation?

In order to investigate the relevance of perceived quality, we consider the classifications detailed in section 3.3 and two additional indicators. We first consider candidates' visibility in EconLit, by computing the share of a candidate's publications, as listed in their CVs, that are indexed in EconLit. As shown in table 4, the candidates who did not qualify at the ASN have a significantly lower visibility on EconLit, whereas those who withdrew have roughly average values. Then, we consider candidates' mean number of coauthors; the differences between candidates who qualified and who did not qualify are smaller than those in visibility, but again they are almost always statistically significant.

Concerning research fields, we find virtually no candidates with publications in feminist or even gender economics, except for those who decide to withdraw before the end of the procedure. Rather, a focus on broadly defined gender-sensitive topics proves very fashionable among the candidates (as in academia in general, see D'Ippoliti, 2011) and it is often associated with better chances of success at the ASN. The degree of feminization of a candidate's main JEL code (that in which he or she wrote most, determined by 1-letter JEL code) appears uncorrelated with the outcome of the ASN. In contrast, the share of a candidate's main JEL code within the top ten economics journals (in the previous 5-year period) significantly affected a candidate's chances at the full professorship rank. Heterodox economists are disproportionately overrepresented among candidates who did not qualify at the ASN, though the difference is often not statistically significant. Similarly, having written about Europe or the USA does not appear to systematically correlate with a certain outcome.

However, especially noteworthy is the evidence that having written publications with metadata that include the word "Italy" appears to be associated with lower chances of qualifying, with the only exception of women candidates for associate professorship.

TABLES 3 AND 4 AROUND HERE

In order to test the robustness of these findings, we run probit regressions on the probability of qualifying at the ASN. We consider as explanatory variables candidates' demographic characteristics, their production, their scores in three bibliometric criteria, the topics of their research, and – for candidates who had already tenure in an Italian university – a number of characteristics of their institution. In order to allow for the possibility that the candidates who withdrew from the competition exhibit some systematic characteristic, which may be correlated with the other cnadidates' outcome at the ASN, we run a probit regression with sample selection (Van de Ven and Van Pragg, 1981). Results are reported in table 5 for the whole sample, and in table 6 for the sample of tenured candidates (including characteristics of their institution).

As shown in table 5, the correlation between the error term in the probit for the selection equation and in the main probit (ρ) is statistically significant in the full sample, and in all model specifications the likelihood-ratio tests do not reject at the 10% significant level that data on the candidates are censored. This implies that information on the candidates who withdrew from the competition must be considered, and the simple probit estimates may be biased. In contrast, in the Italian sample (table 6), we do not find evidence of correlation between the selection equation and the main probit error terms. However, in both samples the two models return similar results, with the exception of very few variables that had to be dropped in some specifications due to problems in the estimation procedure (in the form of perfect prediction for some individuals).

TABLES 5 AND 6 AROUND HERE

Concerning demographic characteristics, as already noticed by Scoppa and De Paola (2016) we find that age and sex exerted an impact on candidates' decision to withdraw from the competition. Younger candidates were more likely to withdraw, as were women (though in the Italian sample only). Similarly, the region of the candidate's institution in Italy was relevant in the choice to withdraw the application, as was the public nature of the university (again, in the Italian sample only). In contrast, the institution's size, measured by the number of tenured faculty, and its feminization, measured by the share of women faculty, do not appear to having played a role, except for the feminization of the institution for women candidates.

Considering the candidates who did not withdraw from the competition, age does not appear to have significantly affected a candidate's chances of qualifying, with the exception of one specification only on the full sample. Significantly, being a woman proved a hurdle in the competition for qualification to full professorship, as highlighted by the interaction term between the two dummy variables.[15]

---

[15] This result is confirmed by separate estimates for candidates to full professorship only. More results are available from the authors upon request.

As is well known, the interpretation of interaction terms in probit regressions is complicated by their non-linearity. Thus, we estimate the impact of being woman for candidates for associate and full professorship along the whole empirical distribution of the predicted probability of qualifying at the ASN. Such impact was obtained by computing the difference between a candidate's predicted probability of qualifying, if he or she was a woman and if he or she was a man, given all other observed characteristics. As shown in figure 1, for candidates for associate professorship the change in the predicted probability of qualifying is negligible. However, for candidates for full professorship we find a double U-shaped relation: one for men, under the theoretical assumption that they were women, and the other for women, under the assumption that they were men. Such U-shapes denote that for candidates with very high or very low predicted probabilities of qualifying, their sex did not provide a significant boost (to men) or hindrance (for women). However, for all "intermediate" candidates, for whom we estimate similar probabilities of qualifying and of not qualifying, being a woman implied a significant reduction in the predicted probability to qualify as full professor.

Measures of perceived quality of the publications always exert a significantly positive impact on the probability to qualify: this applies to a candidate's visibility on EconLit, his or her mean number of coauthors, and the third bibliometric criterion postulated by the reform law (that is, on the normalized of articles in A-list journals).

In contrast, the first and second bibliometric criteria, denoting measures of productivity such as respectively the normalized number of books and the normalized number of book chapters and journal articles, are often not statistically significant. Moreover, when they are, they exhibit a negative sign. This surprising result implies that writing books or book chapters and articles on lower ranked journals is not just irrelevant, with the aim of a career at an Italian university: it actively damaged a candidate's chances.

Finally, concerning research topics, we compute the number of different JEL codes used by a candidate, over the total number of JEL codes he or she used. We find that having wide research interests, measured by the share of different JEL codes used, negatively affected a candidate's predicted probability of qualifying at the ASN.

While writing on broadly speaking gender-sensitive topics exerted a strong, positive impact, the feminization of a candidates' main JEL code does not appear to having significantly affected candidates' chances (it was impossible to include feminist or gender economics in the estimates, due to the small number of candidates who wrote on any of these topics). Similarly, we find that the trendiness of candidates' research interests, measured by the share of their main JEL code in the top 10 economics journals, positively affected their probability of qualifying as full professors, whereas being a heterodox economist exerted a negative impact. Indeed, as shown in figure 2, in terms of changes in the predicted probabilities we find for heterodox economics a similar pattern to that of being woman, denoting a sort of glass ceiling.

Finally, a candidate's use of the terms Europe or USA does not seem to having exerted a significant impact on their probability to qualify at the ASN, whereas in the full sample writing on Italy has a significantly negative impact (it looses statistical significance, though, once we include the heterodox economist dummy variable). Again, the interpretation of these findings requires some caution due to the non-linearity of the probit model. As shown in figure 4, the "USA" dummy variable is found to exert a negligible impact in the sense that it is not estimated to having significantly changed candidates' predicted probability to qualify along the whole distribution. In contrast, as shown in figure 3, writing about Italy is found to have opposite effects for candidates at the associate and full professorship levels: for the former, it is estimated to increase a candidate's probability by more than 4%; for the latter,

writing about Italy proved a significant obstacle, reducing a candidate's predicted probability to qualify to full professorship by as much as 15%.

5. Conclusions

Italy has followed several other countries (such as the UK, France, and Australia), adopting methods of research evaluation strongly shaped by bibliometric indicators. In the case of the selection and promotion of individual researchers, through the ASN, these methods were formalized by law, through three indexes: two roughly measuring productivity, and one for research "quality". Our analysis shows that gross measures of research quality played a significant role in determining the procedure's outcome, whereas productivity may even have proved a hindrance to candidates for promotion.

These processes are not gender neutral, and reinforce – possibly providing a technical coverage to – the gender glass ceiling in academia. However, we document that not all women are treated the same way, and not all men stand to gain from the system as new forms of glass ceilings emerge from the bibliometric quantification of "research excellence".

Specifically, our analysis shows that the Italian system ended up favoring some research approaches and methods over others, at the detriment of diversity both of the academic workforce and of research programs in economics. Candidates who authored books, or who wrote with few coauthors and/or on topics that are not fashionable on the top economics journals, stood lower chances to qualify as associate or full professors even controlling for the "quality" of their research, their productivity and a large number of observable characteristics. These findings are relevant in so far as diversity of researchers and of research methods and topics is fundamental to the scientific advancement of economics. However, they are even more relevant for "peripheral countries" such as Italy, which stand to loose from the reorientation of economic research away from the analysis of their own economy and towards the study of internationally fashionable topics.

REFERENCES

Abramo, G., D'Angelo, C. A., Rosati F. (2016), "Gender bias in academic recruitment", *Scientometrics*, 106(1): 119-141.

Acker, J. (1990), "Hierarchies, jobs, bodies: a theory of gendered organizations", *Gender & Society*, 4(2): 139–58.

Albelda, R. (1997), Economics and Feminism: Disturbances in the Field. New York: Twayne Publishers.

Bagues, M., Sylos-Labini M., Zinovyeva N. (forthcoming), "Does the Gender Composition of Scientific Committees Matter?", *American Economic Review*, doi: 10.1257/aer.20151211

Cicarelli J., J. Cicarelli (2003), *Distinguished Women Economists*. Westport, CT: Greenwood Press.

Checchi, D., Cicognani, S., Kulic N. (2015), "Gender quotas or girls' networks? Towards an understanding of recruitment in the research profession in Italy", *Alma Mater Studiorum-Università di Bologna* WP DSE 1047.

Davis, W. L. (1997) "Economists' Perceptions of Their Own Research: A Survey of the Profession", *The American Journal of Economics and Sociology*, 56(2): 159-72.

Davis, W. L., Figgins B., Hedengren D., D. B. Klein (2011), "Economics Professors' Favorite Economic Thinkers, Journals, and Blogs (along with Party and Policy Views)", *Econ Journal Watch*, 8(2): 126-46.

De Paola, M., Scoppa V. (2015), "Gender Discrimination and Evaluators' Gender: Evidence from Italian Academia", *Economica*, 82(325): 162-188.

De Paola, M., Ponzo, M., Scoppa V. (2016), "Are Men Given Priority for Top Jobs? Investigating the Glass Ceiling in the Italian Academia", *IZA Discussion Paper*, 9658.

Dimand, R. W., Black, G., E. L. Forget (2011), "Women's participation in the ASSA meetings", *Œconomia*, 1(1): 33-49.

Dimand, R. W., Dimand, M. A., Forget, E. L. (2000), *A Biographical Dictionary of Women Economists*, Aldershot, UK and Brookfield, USA: Edward Elgar.

Dolado J.J., Felgueroso F., M. Almunia (2008), "Do men and women-economists choose the same research fields?: Evidence from top-50 departments". *Working Papers FEDEA* 2008-15.

Forget E. (1995), America women economists, 1900-1940: doctoral dissertation and research specialization, in M.A. Dimand, R Dimand e E. Forget (eds) *Women of value*, Aldershot, UK and Brookfield, USA: 25-38.

Groenewegen P., S. King (1994), "Women as producers of economic articles: a statistical assessment of the nature and the extent of female participation in five British and North American journals 1900-39", *University of Sydney, School of Economics WP*, 201.

Hedengren, D., Klein D.B., C. Milton (2010), "Economist Petitions: Ideology Revealed", *Econ Journal Watch*, 7(3): 288-319.

Johansson M., Śliwa M. (2014), "Gender, Foreignness and Academia: An Intersectional Analysis of the Experiences of Foreign Women Academics in UK Business Schools", *Gender, Work & Organization*, 21(1): 18-36.

Madden, K., Seiz, J. A., Pujol, M. A. (2004) A bibliography of female economic thought to 1940. New York: Routledge.

Madden, K. (2002), "Quantitative Analysis of Female Economic Thought, 1900-1940," *History of Political Economy*, 34(1): 1-30.

May, A., McGarvey, M. G., Whaples, R. (2014) "Are Disagreements Among Male And Female Economists Marginal At Best?: A Survey Of AEA Members And Their Views On Economics And Economic Policy", *Contemporary Economic Policy*, 32(1): 111-132.

Stastny, D. (2010), "Czech Economists on Economic Policy: A Survey", *Econ Journal Watch*, 7(3): 275-87.

Zacchia G. (forthcoming), "Diversity in economics: a gender analysis of Italian academic production, Economia Politica.

Table 1 – Descriptive statistics

	Candidates for full professorship		Candidates for associate professorship		Withdrawn candidates	
		Qualified		*Qualified*		*Tenured prof.*
Total	345	48.3%	525	47.7%	72	62.5%
% women	22%	31.6%	34.5%	39.8%	58.3%	63.3%

Notes: "qualified" denotes the percentage of candidates of qualified for the National Scientific Qualification (ASN); "% women" always refers to column share, i.e. the percentage of women among candidates and among qualified candidates, respectively; "tenured prof." reports the row share, i.e. the percentage of tenured professors among withdrawn candidates and women withdrawn candidates, respectively.

Table 2 – Bibliometric indicators

	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
s.d.	1.8	8.4	3.6
		Men	
Met the threshold	100%	82%	82%
Mean value	0.8	18.5	4.4
s.d.	1.5	13	4.3

Notes: the commission in charge of granting the ASN had no legal obligation to grant a qualification to every candidate who met the threshold criteria, but in general it was expected to. Thresholds in all three indicators were defined as the respective median values among tenured economics professors in Italian universities: in both rounds considered here these values were estimated by the National Agency for the Evaluation of Research 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 0, 11 and 2 for associate professorship.

Table 3 – Productivity of candidates and withdrawn candidates

		Candidates for full professorship		Candidates for associate professorship		Withdrawn candidates
		Qualified	*Not qualified*	*Qualified*	*Not qualified*	
		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

Notes: 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 test statistics report comparisons with all non-withdrawn candidates.

Table 4 – Scientific production of candidates and withdrawn candidates (mean values)

	Women					Men				
	Candidates for full professorship		Candidates for associate professorship		Withdrawn candidates	Candidates for full professorship		Candidates for associate professorship		Withdrawn candidates
	Qualified	Not qualified	Qualified	Not qualified		Qualified	Not qualified	Qualified	Not qualified	
Visibility (% works in EconLit)	66.6%	46.3%	65.2%	36.8%	55.3%	72.1%	49.4%	67.6%	41%	64.4%
	$t(74)=-3.18$**		$t(179)=-6.87$***		$t(361)=1.00$	$t(267)=-7.97$***		$t(342)=-9.52$***		$t(885)=1.16$
Mean number of co-authors	1.2	1.1	1.4	1.1	1.4	1.3	0.9	1.3	1.0	1.2
	$t(74)=-0.98$		$t(179)=-3.21$**		$t(361)=-2.13$	$t(267)=-5.61$***		$t(342)=-4.83$***		$t(885)=-1.15$
Research fields										
Feminist and gender economics	0%	0%	0%	0%	8%	0%	0%	0%	0%	4.7%
Gender-sensitive topics	16.7%	9.6%	13.9%	3.7%	3.3%	13.9%	6.5%	11.0%	2.8%	7.1%
	$\chi^2(1)=0.78$		$\chi^2(1)=6.34$**		$\chi^2(1)=0.64$	$\chi^2(1)=4.04$**		$\chi^2(1)=9.24$***		$\chi^2(1)=0.0$
Wrote about Italy	4.2%	25%	9.7%	12.8%	n.a	4.6%	16.6%	4.9%	12.8%	n.a.
	$\chi^2(1)=4.74$**		$\chi^2(1)=0.41$			$\chi^2(1)=9.94$***		$\chi^2(1)=6.53$**		
Wrote about Europe	79.2%	92.3%	81.9%	80.7%	n.a	87.8%	81.5%	71.3%	82.8%	n.a.
	$\chi^2(1)=2.71$		$\chi^2(1)=2.43$			$\chi^2(1)=2.02$		$\chi^2(1)=1.35$		
Wrote about US	33.3%	17.3%	12.5%	6.4%	n.a	28.5%	22.3%	20.1%	13.9%	n.a.
	$\chi^2(1)=2.43$		$\chi^2(1)=1.99$			$\chi^2(1)=1.35$		$\chi^2(1)=2.38$		
Heterodox economics	4.2%	13.5%	5.6%	5.5%	13.3%	8.5%	30.2%	14%	10%	6.6%
	$\chi^2(1)=1.51$		$\chi^2(1)=0.0$		$\chi^2(1)=1.11$	$\chi^2(1)=20.09$***		$\chi^2(1)=1.32$		$\chi^2(1)=1.26$
JEL codes diversification	28.8%	37.9%	37.2%	55.4%	57.8%	25.5%	30.4%	30.9%	55.6%	48.7%
	$t(72)=1.84$*		$t(161)=5.07$***		$t(330)=-1.7$*	$t(257)=2.87$**		$t(315)=10.3$***		$t(826)=-0.97$
JEL code feminization	8.15%	7.17%	7.43%	6.92%	8.29%	7.83%	7.37%	7.15%	7.44%	6.72%
	$t(72)=-1.27$		$t(161)=-0.98$		$t(330)=-1.48$	$t(257)=-1.27$		$t(315)=-0.82$		$t(826)=2.0$*
Share of main JEL code in the 10 top journals	11.45	8.05	8.46	7.52	n.a.	10.65	8.05	9.25	8.78	n.a.
	$t(72)=-2.73$**		$t(164)=-1.15$			$t(257)=-3.85$***		$t(318)=-0.79$		

Table 5 – Probability of qualifying: full sample

	(1) Probit	(2) Censored Probit	(3) Selection equation	(4) Probit	(5) Censored Probit	(6) Selection equation	(7) Probit	(8) Censored Probit	(9) Selection equation
Year of birth	-0.0112	-0.0143	-0.0351***	-0.00993	-0.0133	-0.0323**	-0.0156	-0.0185*	-0.0331***
	(0.00954)	(0.00921)	(0.0124)	(0.0101)	(0.00969)	(0.0129)	(0.0103)	(0.00990)	(0.0128)
Woman	-0.119	-0.144	-0.194	0.0888	0.0433	-0.185	0.0735	0.0279	-0.178
	(0.116)	(0.113)	(0.134)	(0.144)	(0.139)	(0.136)	(0.146)	(0.141)	(0.137)
Candidate to full professorship	-0.226	-0.196	0.166	-0.465*	-0.426*	0.182	-0.487**	-0.447*	0.178
	(0.139)	(0.138)	(0.166)	(0.247)	(0.238)	(0.168)	(0.247)	(0.238)	(0.167)
Full professorship * Woman				-0.649**	-0.611**		-0.660**	-0.621**	
				(0.256)	(0.242)		(0.257)	(0.244)	
First criterion (B)	-0.0224	-0.0194		-0.0124	-0.0109		-1.89e-05	0.00151	
	(0.0411)	(0.0403)		(0.0505)	(0.0490)		(0.0509)	(0.0494)	
Second criterion (JA+BC)	-0.0150**	-0.0144**		-0.0210***	-0.0201***		-0.0177**	-0.0173**	
	(0.00596)	(0.00576)		(0.00708)	(0.00675)		(0.00743)	(0.00713)	
Third criterion (A-list)	0.158***	0.148***		0.161***	0.148***		0.169***	0.156***	
	(0.0283)	(0.0289)		(0.0292)	(0.0289)		(0.0311)	(0.0305)	
Central Italy	0.130	0.0727	-0.504***	0.142	0.0708	-0.506***	0.176	0.103	-0.501***
	(0.132)	(0.131)	(0.180)	(0.138)	(0.135)	(0.180)	(0.139)	(0.136)	(0.181)
Southern Italy	0.134	0.0746	-0.486***	0.149	0.0710	-0.520***	0.0987	0.0266	-0.522***
	(0.146)	(0.143)	(0.185)	(0.151)	(0.146)	(0.187)	(0.150)	(0.145)	(0.187)
Public university	0.0973	0.0909	0.182	0.0419	0.0359	0.204	0.0842	0.0735	0.215
	(0.177)	(0.172)	(0.220)	(0.192)	(0.183)	(0.222)	(0.185)	(0.178)	(0.223)
Foreign institution	0.0216	0.0504	0.142	-0.0482	-0.0170	0.177	-0.0392	-0.0117	0.183
	(0.217)	(0.211)	(0.304)	(0.232)	(0.223)	(0.313)	(0.231)	(0.222)	(0.317)
Research centre	2.54e-05	-0.0207	-0.313	-1.94e-05	-0.0223	-0.280	0.0331	0.0150	-0.305
	(0.351)	(0.345)	(0.445)	(0.355)	(0.347)	(0.447)	(0.341)	(0.332)	(0.435)
Average number of coauthors	0.271***	0.274***		0.285***	0.284***		0.233**	0.238**	
	(0.103)	(0.0985)		(0.110)	(0.104)		(0.113)	(0.107)	
Visibility on EconLit	1.487***	1.400***		1.208***	1.096***		1.275***	1.157***	
	(0.226)	(0.222)		(0.292)	(0.284)		(0.297)	(0.291)	
Wrote about the USA	0.0148	-0.000428		-0.00407	-0.0244		0.0226	0.000128	
	(0.144)	(0.139)		(0.150)	(0.142)		(0.156)	(0.147)	
Wrote about Europe	-0.132	-0.125		-0.0819	-0.0760		-0.0985	-0.0922	
	(0.136)	(0.129)		(0.150)	(0.141)		(0.151)	(0.142)	
Wrote about Italy	-0.223	-0.208		0.138	0.146		0.201	0.205	
	(0.204)	(0.197)		(0.253)	(0.240)		(0.261)	(0.246)	
Full professorship * Wrote on Italy				-0.710*	-0.697*		-0.628	-0.615	
				(0.431)	(0.408)		(0.422)	(0.399)	
Feminization of main JEL code				2.287	2.075		1.361	1.187	
				(1.784)	(1.698)		(1.812)	(1.725)	
Wide interests				-1.174***	-1.138***		-1.165***	-1.133***	
				(0.325)	(0.310)		(0.332)	(0.318)	
Share of main JEL code in top 10 journals				0.00339	0.00262		0.00406	0.00344	
				(0.0132)	(0.0125)		(0.0134)	(0.0128)	
Full professorship * Top 10 journals				0.0310	0.0308		0.0297	0.0293	
				(0.0200)	(0.0191)		(0.0203)	(0.0195)	
Heterodox economist							-0.640***	-0.602***	
							(0.194)	(0.187)	
Wrote on gender-relevant topics							8.329***		
							(0.356)		
Not tenured			0.667***			0.637***			0.651***
			(0.155)			(0.149)			(0.152)
Journal articles (JA)			-0.0201***			-0.0186***			-0.0190***
			(0.00701)			(0.00704)			(0.00700)
Books (B)			0.0539			0.0459			0.0466
			(0.0506)			(0.0521)			(0.0523)
Book chapters (BC)			0.0779***			0.0788***			0.0780***
			(0.0241)			(0.0243)			(0.0244)
Constant	20.47	26.63	70.34***	18.43	25.03	64.82**	29.67	35.48*	66.38***
	(18.76)	(18.13)	(24.64)	(19.85)	(19.05)	(25.58)	(20.24)	(19.48)	(25.40)
Observations	789	861	861	737	809	809	728	809	809
Withdrawn candidates		72			72			72	
Rho		0.598			0.680			0.668	
		(0.211)			(0.192)			(0.193)	
Wald test of indep. eqns. (rho = 0): chi²(1)		4.416**			5.431**			5.386**	

*** p < 0.01, ** p < 0.05, * p < 0.1

Notes: heteroscedasticity-robust standard errors in parentheses. Equations (1), (4) and (7) report simple probit estimates; eqs. (2), (5) and (5) report censored probit estimates, and eqs. (3), (6) and (9) report the respective robust selection equation probit estimates.
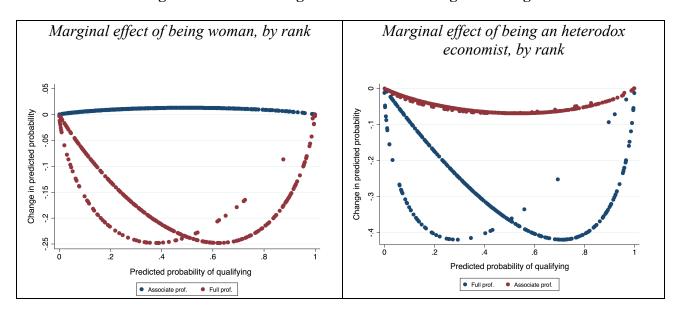
Table 6 – Probability of qualifying: Italian candidates

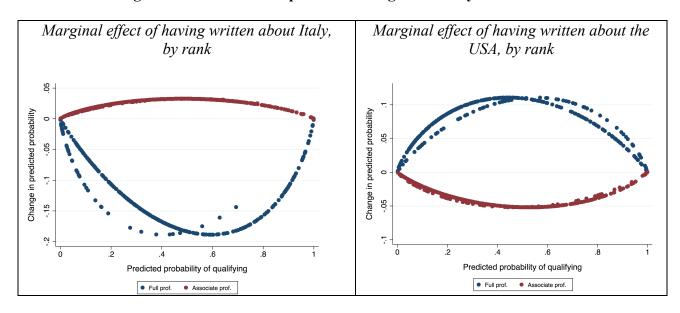|	(10) Probit	(11) Censored Probit	(12) Selection equation	(13) Probit	(14) Censored Probit	(15) Selection equation	(16) Probit	(17) Censored Probit	(18) Selection equation	(19) Probit	(20) Censored Probit	(21) Selection equation
Year of birth	-0.0128 (0.0116)	-0.00783 (0.0136)	-0.0248* (0.0134)	-0.0105 (0.0124)	-0.0101 (0.0151)	-0.0222* (0.0134)	-0.0105 (0.0124)	-0.0113 (0.0149)	-0.0213 (0.0144)	-0.0159 (0.0127)	-0.0150 (0.0136)	-0.0219* (0.0133)
Woman	-0.123 (0.131)	-0.0951 (0.135)	-0.715** (0.286)	0.117 (0.162)	-0.0908 (0.146)	-0.692* (0.370)	0.117 (0.162)	0.113 (0.167)	-0.631 (0.487)	0.102 (0.163)	0.105 (0.163)	-0.684* (0.357)
Candidate to full professorship	-0.471*** (0.162)	-0.463*** (0.158)	-0.00519 (0.162)	-0.762*** (0.288)	-0.632*** (0.168)	0.0498 (0.172)	-0.762*** (0.288)	-0.757** (0.296)	0.0676 (0.189)	-0.805*** (0.283)	-0.807*** (0.282)	0.0540 (0.172)
Full professorship * Woman				-0.718** (0.296)			-0.718** (0.296)	-0.721** (0.296)		-0.768** (0.300)	-0.761** (0.304)	
First criterion (B)	-0.0633 (0.0504)	-0.0709 (0.0494)		-0.0747 (0.0589)	-0.0848 (0.0607)		-0.0747 (0.0589)	-0.0729 (0.0606)		-0.0570 (0.0598)	-0.0586 (0.0594)	
Second criterion (JA+BC)	-0.0168** (0.00692)	-0.0167* (0.00689)		-0.0231*** (0.00871)	-0.0229*** (0.00816)		-0.0231*** (0.00871)	-0.0230*** (0.00878)		-0.0192** (0.00910)	-0.0193** (0.00909)	
Third criterion (A-list)	0.208*** (0.0358)	0.205*** (0.0356)		0.213*** (0.0341)	0.207*** (0.0367)		0.213*** (0.0341)	0.212*** (0.0394)		0.225*** (0.0366)	0.225*** (0.0365)	
Central Italy	0.212 (0.141)	0.276* (0.153)	-0.370** (0.181)	0.245* (0.149)	0.226 (0.211)	-0.378** (0.186)	0.245* (0.149)	0.228 (0.245)	-0.384** (0.194)	0.262* (0.149)	0.278 (0.172)	-0.380** (0.186)
Southern Italy	0.177 (0.153)	0.235 (0.160)	-0.336* (0.188)	0.181 (0.157)	0.211 (0.195)	-0.361* (0.191)	0.181 (0.157)	0.167 (0.214)	-0.364* (0.197)	0.121 (0.157)	0.134 (0.169)	-0.361* (0.192)
Public university	0.0475 (0.191)	0.0853 (0.194)	-0.533* (0.300)	-0.0449 (0.205)	-0.0478 (0.220)	-0.545* (0.307)	-0.0449 (0.205)	-0.0525 (0.221)	-0.565* (0.301)	0.0375 (0.197)	0.0460 (0.202)	-0.553* (0.294)
Average number of coauthors	0.356*** (0.122)	0.324** (0.139)		0.398*** (0.129)	0.369*** (0.128)		0.398*** (0.129)	0.399*** (0.129)		0.319** (0.135)	0.316** (0.133)	
Visibility on EconLit	1.447*** (0.267)	1.409*** (0.310)		1.139*** (0.358)	0.997*** (0.354)		1.139*** (0.358)	1.123*** (0.418)		1.256*** (0.364)	1.268*** (0.368)	
Wrote about the USA	-0.0660 (0.172)	-0.0546 (0.163)		-0.127 (0.180)	-0.123 (0.178)		-0.127 (0.180)	-0.129 (0.180)		-0.0493 (0.180)	-0.0459 (0.179)	
Wrote about Europe	-0.161 (0.158)	-0.159 (0.150)		-0.0974 (0.173)	-0.143 (0.165)		-0.0974 (0.173)	-0.0957 (0.175)		-0.0931 (0.174)	-0.0943 (0.174)	
Wrote about Italy	-0.181 (0.238)	-0.172 (0.229)		0.217 (0.277)	-0.108 (0.240)		0.217 (0.277)	0.220 (0.274)		0.284 (0.288)	0.279 (0.286)	
Full professorship * Wrote on Italy				-0.744 (0.490)			-0.744 (0.490)	-0.747 (0.487)		-0.686 (0.482)	-0.679 (0.479)	
Feminization of main JEL code				0.627 (2.067)	0.429 (2.037)		0.627 (2.067)	0.644 (2.060)		0.274 (2.093)	0.265 (2.086)	
Wide interests				-1.007*** (0.391)	-1.053** (0.415)		-1.007*** (0.391)	-1.011*** (0.390)		-1.008*** (0.400)	-0.998** (0.403)	
Share of main JEL code in top 10 journals				-0.00632 (0.0153)	0.0124 (0.0115)		-0.00632 (0.0153)	-0.00629 (0.0152)		-0.00902 (0.0155)	-0.00906 (0.0155)	
Full professorship * Top 10 journals				0.0457** (0.0229)			0.0457** (0.0229)	0.0457** (0.0229)		0.0478** (0.0232)	0.0477** (0.0232)	
Heterodox economist										-0.678*** (0.237)	-0.680*** (0.237)	
Wrote on gender-relevant topics					6.394*** (0.363)			5.780*** (0.317)			5.634*** (0.255)	
Journal articles (JA)			-0.0205** (0.00897)			-0.0213*** (0.00734)			-0.0211*** (0.00758)			-0.0212*** (0.00727)
Books (B)			0.0753 (0.0539)			0.0574 (0.0596)			0.0520 (0.0589)			0.0563 (0.0568)
Book chapters (BC)			0.0687*** (0.0233)			0.0697*** (0.0231)			0.0711*** (0.0246)			0.0699*** (0.0229)
Feminization of university			0.449 (1.014)			0.633 (1.162)			0.801 (1.041)			0.684 (0.922)
Woman * Feminization of university			1.904* (0.995)			1.772 (1.354)			1.548 (1.630)			1.729 (1.229)
Size of university			7.68e-05 (9.34e-05)			6.78e-05 (0.000106)			5.67e-05 (0.000104)			6.45e-05 (9.60e-05)
Constant	23.49 (22.83)	13.87 (26.63)	50.67* (26.45)	19.55 (24.35)	19.06 (29.79)	45.53* (26.56)	19.55 (24.35)	21.14 (29.32)	43.73 (28.46)	30.19 (24.89)	28.52 (26.68)	45.05* (26.25)
Observations	623	684	684	578	645	645	578	645	645	578	645	645
Withdrawn candidates			61			61			61			61
Rho			-0.636 (0.790)			-0.248 (1.356)			0.143 (1.548)			-0.141 (0.738)
Wald test of indep. eqns. ($\rho = 0$): $\chi^2(1)$			0.321			0.031			0.008			0.035

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Notes: heteroscedasticity-robust standard errors in parentheses. Equations (10), (13), (16) and (19) report probit estimates; eqs. (11), (14), (17) and (20) report censored probit estimates, and eqs. (12), (15), (18) and (21) report the respective selection equation probit estimates.

Figures 1 and 2 – The gender and heterodox glass ceilings

Marginal effect of being woman, by rank

Marginal effect of being an heterodox economist, by rank

Notes: the figures show the difference in the predicted probability of qualifying for the ASN as a function of certain observable correlates. Predicted probabilities are estimated by selection probit model, specification eq. (20) shown in table 6.

Figures 3 and 4 – The impacts of writing about Italy and the USA

Marginal effect of having written about Italy, by rank

Marginal effect of having written about the USA, by rank

Notes: the figures show the difference in the predicted probability of qualifying for the ASN as a function of certain observable correlates. Predicted probabilities are estimated by selection probit model, specification eq. (20) shown in table 6.

Appendix 1 – Aggregations of JEL codes

Heterodox Economics	Gender-sensitive topics	Feminist and gender Economics	
			A11 - Role of Economics; Role of Economists
	X		A12 - Relation of Economics to Other Disciplines
	X		A13 - Relation of Economics to Social Values
			A14 - Sociology of Economics
			B0 -History of Economic Thought, Methodology, and Heterodox Approaches
			B1 - History of Economic Thought through 1925
			B2 - History of Economic Thought since 1925
			B3 - History of Economic Thought: Individuals
X			B50 - Current Heterodox Approaches
X	X	X	B54 - Feminist Economics
			D10 - Household Behavior: General
			D13 - Household Production and Intrahousehold Allocation
	X		D19 - Household Behavior and Family Economics: Other
			H31 - Fiscal Policies and Behavior of Economic Agents: Households
			H51 - National Government Expenditures and Health
			H52 - National Government Expenditures and Education
			H53 - National Government Expenditures and Welfare Programs
			H54 - National Government Expenditures and Related Policies
			H55 - Social Security and Public Pensions
			H75 - State and Local Government: Health; Education; Welfare; Public Pensions
			I00 - Health, Education, and Welfare: General
			I11 - Analysis of Health Care Markets
			I14 - Health and Inequality
			I15 - Health and Economic Development
			I18 - Health: Government Policy; Regulation; Public Health
			I19 - Health: Other
			I2 - Education and Research Institutions
			I3 - Welfare and Poverty
			J0 - Labor and Demographic Economics
			J01 - Labor Economics
			J08 - Labor Economics Policies
			J10 - Demographic Economics
			J11 - Demographic Trends, Macroeconomic Effects, and Forecasts
	X		J12 - Marriage; Marital Dissolution; Family Structure; Domestic Abuse
	X		J13 - Fertility; Family Planning; Child Care; Children; Youth
	X		J14 - Economics of the Elderly; Economics of the Handicapped; Non-labor Market Discrimination
	X		J15 - Economics of Minorities, Races, and Immigrants; Non-labor Discrimination
	X	X	J160 - Economics of Gender; Non-labor Discrimination
			J170 - Value of Life; Forgone Income
			J180 - Demographic Economics: Public Policy
			J190 - Demographic Economics: Other
			J200 - Demand and Supply of Labor
			J210 - Labor Force and Employment, Size, and Structure

Heterodox Economics	Gender-sensitive topics	Feminist and gender Economics	
	X		J220 - Time Allocation and Labor Supply
			J230 - Labor Demand
			J240 - Human Capital; Skills; Occupational Choice; Labor Productivity
			J260 - Retirement; Retirement Policies
			J280 - Safety; Job Satisfaction; Related Public Policy
	X		J290 - Time Allocation, Work Behavior, and Employment Determination: Other
			J300 - Wages, Compensation, and Labor Costs
	X		J310 - Wage Level and Structure; Wage Differentials
			J320 - Nonwage Labor Costs and Benefits; Private Pensions
			J380 - Wages, Compensation, and Labor Costs: Public Policy
			J390 - Wages, Compensation, and Labor Costs: Other
			J400 - Particular Labor Markets
			J5 - Labor-Management Relations, Trade Unions, and Collective Bargaining:
			J6 - Mobility, Unemployment, and Vacancies
	X		J7 - Labor Discrimination
			J8 - Labor Standards
			L30 - Nonprofit Organizations and Public Enterprise
			L31 - Nonprofit Institutions; NGOs
			L39 - Nonprofit Organizations and Public Enterprise: Other
			O0 - Economic Development, Technological Change, and Growth
			O1 - Economic Development
			O2 - Development Planning and Policy
			O22 - Project Analysis
			O29 - Development Planning and Policy: Other
			O30 - Technological Change; Research and Development; Intellectual Property Rights
			O31 - Innovation and Invention: Processes and Incentives
			O38 - Technological Change: Government Policy
			O39 - Technological Change: Other
			O40 - Economic Growth and Aggregate Productivity
			O43 - Institutions and Growth
			O44 - Environment and Growth
			O47 - Measurement of Economic Growth; Aggregate Productivity; Cross-Country Output Convergence
			O49 - Economic Growth and Aggregate Productivity: Other
			P46 - Other Economic Systems: Consumer Economics; Health; Education and Training; Welfare, Income, Wealth, and Poverty
			Q01 - Sustainable Development
	X		R20 - Urban, Rural, Regional, Real Estate, and Transportation Economics; Household Analysis
			R23 - Urban, Rural, Regional, Real Estate, and Transportation Economics; Regional Migration; Regional Labor Markets; Population
	X		R29 - Urban, Rural, Regional, Real Estate, and Transportation Economics; Household Analysis: Other
			Z10 - Cultural Economics; Economic Sociology; Economic Anthropology
			Z13 - Economic Sociology; Economic Anthropology; Social and Economic Stratification