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Italian academic system disregards scientific merit in faculty hiring processes

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Abstract

Professorships in Italy are assigned following public competitions. However, favouritism affects faculty hiring. Researchers lacking clientelistic support remain excluded from academia and are obliged to seek employment abroad or at non-university institutions, or to abandon their career. Do non-recruited researchers have better or worse scientific capacity than those who have attained professorships in Italy?

Files regarding the competitions in bibliometric disciplines won by 186 professors in Florence were analysed. An equal number of professors recruited at other Italian universities and scientists who never attained professorship in Italy were randomly drawn from the pool of individuals having national scientific qualification (the prerequisite for professorship) in the same disciplines as each Florentine professor. H-indexes of the year of qualification (T1), of the Florence call (T2), and in July 2021 (T3) were obtained from Scopus.

Non-recruited individuals were more likely (Chi-square test) to show a higher H-index than both Florentine (T1 $p=0.0005$, T2 $p=0.0015$, T3 $p=0.0095$) and non-Florentine professors (T1 $p=0.0078$, T2 $p=0.0245$, T3 $p=0.0500$). Fifty-four non-recruited scientists serve in foreign universities, 100 at national/international research centres. The remaining scientists (25 who continue producing despite precarious employment, and seven who have stopped publishing) were as likely as Florentine (T3 $p=0.69$) and non-Florentine (T3 $p=0.14$) professors to show a higher H-index.

Italian faculty hiring disregards merit. A more challenging qualification would limit the access of researchers with lower scientific capacity, and favour those with greater proficiency. As it stands, competition is useless. Once professors obtain permanent employment, they seem less motivated to publish.

Keywords: Academic corruption, H-index, Italian university, Nepotism, Favoritism, Recruitment system

Introduction

Law 240/2010 (Presidente della Repubblica 2011) reformed the Italian university system to improve it for recognition of academic merit (article 1). To overcome criticalities of the previous law (Presidente della Repubblica 2006) in terms of recruitment (Abramo et al. 2014), the reform redesigned competition modalities for full and associate professorships (article 18) to respect the principles of the European charter for researchers (EU



Commission 2005). To improve transparency, respect merit, and national/international mobility, the key points of the reform included: *i.* communication of the call in the Official Gazette, on the university website, and those of the University Ministry and the European Union; *ii.* indications in the call regarding the requested curricular profile limited to the relative scientific disciplinary sector¹ and the broad ministerial description of the discipline's contents as a way to avoid refinement of the professorship profile; *iii.* the possibility of individuals active outside Italy involved in research or university level teaching to participate in the competition; and *iv.* definition of objective criteria to evaluate candidates' scientific publications curriculum, and didactic experience. Based on these competition regulations, university departments promote recruitment by drawing professors from among scientists who achieve national scientific qualification, a pre-requisite for professorship (article 16). Article 24, paragraphs 5 and 6, reserves professorship for individuals already attached to the department; article 18, paragraph 1, regulates enrolment of national and international scientists by open competition.

More than ten years after the law went into force, the aims of the reform remained unmet. Favouritism, i.e. the tendency to favour members of one's own group over those in other groups (Everett et al. 2015), mainly drives competitions (Assad 2016; Rigante et al., 2016; Grilli & Allesina 2017; Petri 2017; Gallina & Gallo 2020) and control over a competition's outcome is achieved by resorting to what has been called in the media (Brogioni 2019) "tailoring", i.e. refining (in the call) the professorship profile to the point of mirroring the curricular peculiarities of the prearranged winner (Trasparenza e Merito 2019). The efficacy of this mechanism in selecting researchers close to the political/academic establishment emerged from an analysis of recruitment at medical schools in Tuscany (Italy) (Gallina & Gallo 2020). Indeed, the number of participants for competitions was extremely low in contrast to the wide pool of possible candidates. Moreover, nearly all the considered competitions had internal winners, i.e. individuals who were already attached to the university department which proposed the call.

Malpractice in the selection of faculty is a multifaceted phenomenon not limited to our country (Wenneras & Wold 1997; Cora-Bramble 2006; Sandström & Hällsten 2008; Schenkenberg et al. 2011; Zinovyeva & Bagues 2015; Prospero et al. 2016; Grilli & Allesina 2017; Shore 2018; Putnan et al. 2018; Boustani & Taylor 2020; Laland, 2020; Henningsson & Geschwind 2021; Sandström & Hällsten 2021; Mattar 2022; Murphy et al. 2022). In Italy, which has been regarded as one of the most corrupt countries in the Eurozone (Transparency International 2021), recruitment malpractice (Gallina & Gallo 2020) has a greater magnitude (Grilli & Allesina 2017). Despite the gravity of the phenomenon, Italian public opinion has not developed the consciousness needed to set into motion contrasting grassroots movements. Italian media outlets rarely delve into the sociological aspects that keep the system afloat, instead turning their attention primarily to the legal aspects (The Local 2017; Candido et al. 2023; Valenti, 2023). Public debate is largely limited to forums for people engaged in higher education policy (Return

¹ The indicators to evaluate quality of scientific production in bibliometric competition sectors are the number of articles published in journals listed in the principal international data banks, the total number of citations received relative to overall scientific production, and the H-index. These indication as well as the list of bibliometric competition sectors are available in ministerial acts (Ministro dell'Istruzione, dell'Università e della Ricerca 2012).

on Academic Research and School 2011) or for victims of academic corruption (Trasparenza e Merito 2017).

Definitively, researchers lacking ties to influential figures remain marginalized from Italian academia and are obliged to look for work at other non-university institutions or abroad (Nascia et al. 2021; Turone 2021), the so-called human capital flight (Ahmad 2004), or “brain drain” as the phenomenon is popularly known (Di Giorgio 2023). Some individuals even decide to abandon the field all together. However, it has not been assessed if those who flee abroad have better scientific capacity than those who have become academics in Italy, as favouritism dynamics would lead us to believe. The issue is relevant because if this is true, on the one hand, Italian intellectual resources continue to be lost, while on the other, Italian faculty continues to be impoverished (Abramo, et al. 2014) despite reform.

We aimed to investigate the question by performing comparative analysis of scientific performances, as measured by publication proficiency, between academics and researchers who remained excluded from Italian universities.

Methods

From the archives of the University of Florence (<https://www.unifi.it/vp-2456-docenti-e-ricercatori-di-ruolo.html>), we retrieved files regarding recruitment of 186 professors according to law 240/2010 (Presidente della Repubblica 2011) since its inception until June 30, 2021 in selected bibliometric disciplines (i.e. disciplines in which mathematical and statistical analyses are applied to measure the quality and quantity of scientific production as well as its diffusion¹).

Search strategy

1) With reference to Ministerial Decree 29 July 2011 n. 3361 (Ministro dell’Istruzione, dell’Università e della Ricerca 2011) until 2015, and to Ministerial Decree 30 October 2015 n. 8552 (Ministro dell’Istruzione, dell’Università della Ricerca 2015) thereafter, we identified the competition sectors composed of a single academic discipline² in the fields of Social Sciences and Humanities, Physical Sciences and Engineering, and Life Sciences according to the European Research Council (ERC—<https://erc.europa.eu>). Because competition sectors can involve a single academic discipline or be split into multiple disciplines, this initial step was undertaken to identify in the subsequent matching phase (see below) researchers belonging, with certainty, to the same academic disciplines. 2) Following a previously described method (Gallina & Gallo 2020), we identified the recruitment procedures in the above selected academic disciplines in the time-window April–June 2021, according to article 18, commas 1, 4 and article 24, commas 5, 6 of law 240/2010 (Presidente della Repubblica 2011), held in Florence between January 2014 and 30 June 2021. 3) For each competition, the winner was identified. 4) The year (the quarter for the 2016–2018 sessions) when each of the recruited professors in Florence achieved national scientific qualification was then identified by searching their

² Competition macro areas (*macro settori*) correspond to ERC search domains. These are subdivided into competition sectors (*settori concorsuali*), which correspond to ERC panels. The latter can involve a single academic discipline (*settore scientifico disciplinare*), corresponding to ERC panel descriptors, or be split into multiple disciplines.

competition sectors in the *Abilitazione Scientifica Nazionale* website (<https://abilitazione.miur.it/public/index.php>). 5) Among individuals who achieved national scientific qualification and each of the recruited Florentine professors, we extracted electronically the numbers assigned to two scientists' names: one employed at another Italian university and another one who never achieved an academic position in Italy (<https://cercauniversita.cineca.it/php5/docenti/cerca.php>). For the 2016–2018 session of national scientific qualification, when the quarter in which the Florentine professor achieved qualification did not contain non-recruited researchers, the search was extended to the nearest quarters. When duplicates emerged, the procedure was repeated. In three instances, a suitable non-recruited researcher was not found, thus the entire data string was omitted. 6) Information about the current workplace of non-recruited researchers was obtained from the affiliation stated in their last published article as reported on Scopus (<https://www.scopus.com/search/form.uri?display=authorLookup#author>) and reasonably confirmed by an internet search. The most recent year of publication for the non-recruited researchers was obtained from the same source. 7) For all scientists, H-indexes for the year of their national scientific qualification (T1) and for the year of the Florence call (T2) were retrieved from Scopus (<https://www.scopus.com/search/form.uri?display=authorLookup#author>). The current H-index (T3) was obtained from the same source in the time-window 1–31 July 2021. 8) Before combining records, disambiguation among authors was obtained through verification of researcher identifier numbers and/or curriculum vitae.

Statistics

We posited that, among the population of those who achieved national scientific qualification, the probability that random extraction within a certain competition sector (i.e. within a single academic discipline) would result in a person with an H-index higher (or lower) than that of the Florentine winner is 50%. We determined this probability assuming that the national scientific qualification is fair, i.e. “heads or tails” are equally likely once ties are removed. The null hypothesis, i.e. that for a researcher who obtained national scientific qualification having an H-index higher (or lower) than that of another person drawn from the same pool is equal, was tested using the Chi-squared distribution with 1 degree of freedom according to the formula $(H-L)^2/(H+L)$, where H and L are the number of higher and, respectively, lower outcomes. *P*-values < 0.05 were considered evidence of biased deviation from the expected $H=L$.

Robustness check

Contrary to the criteria used in the primary analysis where individuals employed at other Italian universities as assistant, associate or full professors were matched with Florentine professors, we performed a second series of random draws to check the robustness of the results in which only associate and full professors were considered. This assumes that those who were appointed as associate or full professors would perform better (on average) than assistant professors, thus providing a more stringent scenario when comparing their H-indexes with those of both the Florentine professors and the non-recruited individuals.

Mean H-indexes vary widely among different academic disciplines. Therefore, non-parametric testing best suited the structure of our data, which were analysed accordingly under the assumptions of the Chi-squared distribution. Alternative models were explored in the sensitivity analysis. In particular, we also performed paired t test as the members of one sample are coupled with particular members of the other sample.

We decided to use Scopus because it offers a more extensive list of modern sources, which seemed best suited to our investigation. However, we retrieved the H-indexes for each of the 186 triplets at each of the three measurement times also from Web of Science (<https://www.webofscience.com/wos/author/search>) to ascertain whether different sources and the way information is collected in highly heterogeneous fields may affect results. All calculations and tests were carried out using the datasheet formulas (Microsoft Excel v16.76).

Results

Of the 186 Florentine competitions examined, 13 (7%) involved the academic disciplines of agriculture, 40 (21.5%) biology, 27 (14.5%) chemistry, 8 (4%) physics, 18 (4%) architecture, 6 (3%) computer science, 24 (13%) engineering, 5 (2.6%) psychology, 11 (6%) mathematics, and 34 (18%) medicine. One hundred forty-two (76%) were competitions for associate professors and the remaining 44 (24%) for full professors. One hundred thirty-two of these (93%) competitions for associate professors were won by personnel already working at the university. Forty-two of the 44 (95%) competitions for full professors were won by personnel who had developed their entire career at the university. The $186 \times 2 = 372$ randomly selected assistant, associate, and full professors were employed in 61 of the 99 Italian athenaeums. Chi-square test showed that the probability for a Florentine professor to have an H-index higher than that of a non-Florentine counterpart was not different from 50% (T1: 87 vs 86, 13 ties, $p = 0.94$; T2: 78 vs 93, 15 ties, $p = 0.25$; T3: 81 vs 90, 15 ties, $p = 0.49$). On the other hand, non-recruited researchers were more likely to show a higher H-index than both Florentine (T1: 109 vs 63, 14 ties, $p = 0.0005$; T2: 108 vs 66, 12 ties, $p = 0.0015$; T3: 103 vs 69, 14 ties, $p = 0.0095$) and non-Florentine professors (T1: 104 vs 69, 13 ties, $p = 0.0078$; T2: 104 vs 74, 8 ties, $p = 0.0245$; T3: 101 vs 75, 10 ties, $p = 0.0500$). Most non-recruited researchers serve in foreign universities ($n = 54$) or national/international research centres ($n = 100$). Some others ($n = 25$) continue producing despite precarious employment, whereas seven scientists have stopped publishing, as suggested by at least three years of inactivity. Notwithstanding, this subset of 32 non-recruited researchers were, at any rate, as likely as Florentine (T3: 12 vs 14, 6 ties, $p = 0.69$) and non-Florentine professors (T3: 11 vs 19, 2 ties, $p = 0.14$) to show a higher H-index. Robustness analyses confirmed the above results.

Discussion

The design of the study called for drawing lots from the same pool of certified scholars belonging or not to the rolls of Italian academia. This allows the results—obtained by comparing the winners of the competitions held in Florence with researchers who never achieved positions at Italian universities—to be extended to the whole academic recruitment system. Note that the comparisons involved academics affiliated to a wide range of Italian universities throughout the entire country, suggesting that the results obtained

are independent from the specific starting point of the analysis (i.e. the University of Florence).

Even though H-index is not exhaustively indicative of the capacity of a researcher and it is undisputed that teaching and managerial abilities are also required to hold academic positions, it represents the most straightforward tool in the field of bibliometric disciplines because of its combination of productivity and impact indicators (Gasparyan et al. 2018; Braithwaite et al. 2019). Ultimately, we resorted to H-index because it is the parameter used for metric comparison (Law 240/2010, article 18) between candidates for professorship in Italy.

This said, the present study demonstrates that the Italian academic system disregards scientific merit in faculty composition. Three main elements of reasoning can be drawn from the comparison of bibliometric performances between the whole group of recruited researchers (Florentines and non-Florentines) and the non-recruited ones, these latter having on average better bibliometric performances at all three measurement points.

First, national scientific qualification involves a non-comparative evaluation aimed to certify the scientific capacity that makes a subject suitable for an academic career. The setting of quantitative bibliometric thresholds is the tool to discriminate between eligible and not eligible candidates, according to the positioning of their scores above or below the thresholds, respectively. According to data of the Italian National Agency for the Evaluation of Universities and Research Institutes, at the end of 2020, there were 77,464 certified individuals, a number that exceeds the actual needs by approximately half of the applications presented (Stazio 2022). These numbers raised questions about inadequacy of the H-index thresholds (low and easily exceeded for a majority of disciplines) in the first crucial step of building a faculty (Banfi 2015; Petri 2017). Of the 77,464 certified individuals, only 21,111 (27%) were recruited by Italian universities (Stazio 2022). The present study highlights that the individuals who had higher bibliometric performances at qualification (and throughout their career) remained excluded from the university, pointing to the ineffectiveness, not to say perversity, of such certification modality. In our opinion, the national scientific qualification has created a pool of certified individuals from which the hand of favouritism has drawn protected recruits. The present study would suggest that more stringent thresholds are necessary (if national scientific qualification is to be maintained) in order to abolish the paradox that individuals with lower scientific capacity gain access to the university and develop an academic career, while those with higher scientific capacity do not. If it were more difficult to reach the bibliometric thresholds, the most capable scientists would now be members of the faculty. Indeed, apart from possible malpractice in undue authorship attribution of papers (Wennereas & Wold 1997), the achievement of national scientific qualification by a young scientist is not susceptible to favouritism. Thus, those with less scientific commitment would not have access to academia, leaving room for the more valuable researchers.

Second, differences in scientific capacity are not taken into account by competitions whereas it would be logical to expect the contrary, given the relevance attributed by Law 240/2010 to H-index in the ranking among candidates. "Tailoring" is the ultimate weapon used to steer a competition, in a semblance of legality and transparency. This

unfair, elusive mechanism of the law (EU Commission 2005) discourages those scientists whose experience does not strictly match with that required for participation, while those who engage the competition do not have a chance of success (Trasparenza e Merito 2019). For more than a century, various modalities of university competition have been applied but without success (Banfi 2015 and references within). Furthermore, the current law has failed to enhance merit and transparency in professor selection. Is this due to a failure in the competition modality of the reform? The reality is perhaps more serious and the situation cannot be resolved through legal technicalities if it is part of the general corruptive setting in which our country operates (Transparency International 2021). Some individuals benefit, at the time of competition, from having a particular surname rather than another (Grilli & Allesina 2017), a protector, or a combination of these factors. Nepotism is the form of favouritism which grants advantage, privilege, or entitlement to relatives in an occupation or field (Dyrbye et al. 2010; Roy 2022). In academia, nepotism imposes its own force in conferring professorship (Grilli & Allesina 2017), in the constitution of distinctive collaborative kinship (Prosperi et al. 2016), or also in the peer review process (Wennereas & Wold 1997). Definitively, it is a most relevant form of social injustice and is unacceptable in liberal democracies which should at the outset guarantee equality between individuals. Favouritism also influences the outcome of competitions acting under the form of patronage, intended as "the encouragement given to an individual by a patron who favours, protects, and gives influential support" (Currie 1993; Chiesa & Pacifico 2001). In Italian academia, patrons, referred to as 'barons' (Martinotti & Giasanti 1977), operate on a systemic, national scale-based dimension. The term refers to oligarchies that manage academic power, including the partition of professorships for faithful researchers under their influence, independently from capacity and irrespective of a true competition (Banfi 2011). Law 240/2010 allows for the funding of academic positions with resources other than those of the University Ministry. Thus, politics, with its great financial resources, has entered forcefully into the academic arena, particularly in the biomedical area, triggering political clientelism, understood as the granting of professorship and promotion to individuals close to governing parties (Gallina & Gallo 2020).

Third, non-recruited researchers continue to show greater scientific productivity as revealed by our final observation point, while it would be expected that those who have held academic positions for some years would produce more compared to those who have not. This finding may suggest that professors' tenure in Italy (Presidente della Repubblica 1958) tends not to stimulate their scientific production. Notably, the relative paucity of production did not hinder promotion as demonstrated by the finding that 94% of Florentine competitions were won by people who developed their entire career in the same university. It can be argued that the group of non-recruited researchers, for the most part (almost 83%) constituted by individuals serving at foreign universities or national/international research centres, are in extremely performance-oriented scientific work environments. This would seem to exhaustively explain the data. Upon closer examination, bibliometric performances of 27% of non-recruited researchers who abandoned remained as high as those who were recruited. This observation would support the idea of professional repose of tenured professors in Italy.

A further element of discussion descends from the comparison of bibliometric performances among Italian academics. The present study did not reveal differences among recruited researchers in Florence or elsewhere in Italy. Paradoxically, if national recruitment were approached randomly, rather than according to bylaw procedures, a corpus of professors with higher H-indexes on average would be selected. In fact, about 30% of the individuals who achieved qualification in the first session held in 2012 were not on university payrolls in Italy (Gallo 2014). It is clear that competition, if it is ruled by the logics of favouritism as describe above, is absolutely useless and wasteful: in terms of money for the Ministry, time for candidates who have to wait from the call to the official reporting of the results before recruitment and for members of the examination board who commit vast amounts of time to the process. As discussed above, the question of respect of merit in academic recruitment does not lie in selection tools. One tool or another does not make a difference (Dore et al. 2019) if academic malpractice is not eradicated.

Limitations

Our study cannot be considered representative of the totality of scientific areas in Italian universities because it does not involve analysis of the non-bibliometric disciplines for which qualitative analysis would be necessary (Hamann 2019; Bologna et al. 2022). In terms of the considered bibliometric disciplines, the analysis was limited to competition sectors composed of a single academic discipline in order to make homogeneous comparisons between researchers of the same discipline (see [Methods](#)). Moreover, it cannot be excluded that some non-recruited researchers made a personal choice to undertake their academic career abroad or to terminate it. However, if these individuals pursued national scientific qualification they most likely intended to remain in or return to the Italian academy.

Conclusion

Considering these limitations, the popular assumption that individuals excluded from Italian university careers have greater scientific capacity than those who remain in our country finds solid basis in this paper. A detriment for the nationwide system follows (Abramo & D'Angelo 2018), if only because non-recruited researchers were educated with public resources. Further studies should quantify the amount of knowledge generated by Italian education and lost by our academic system in terms of gross domestic product reduction. Moreover, it would be interesting to assess psychological/psychiatric injury suffered by those valuable researchers who see their ambitions of an academic career precluded (World Health Organization 2022; Gallina et al. 2023). This individual factor is no less important in terms of detriments provoked by academic injustice on the nation's system (Abramo & D'Angelo 2018) because it involves mostly the youth component of our human capital, while valuable young scientists should be supported in their dealings with the worldwide scientific arena.

Over the last few years, public prosecutor offices throughout the entire Italian peninsula have been investigating possible crimes related to fraudulent academic competitions (The Local 2017; Lentz 2019; Valenti 2023). It would be an act of duty on the part of ministerial authorities to autonomously shed light on the phenomenon by sending

inspectors to those locations where crimes have supposedly been committed. Moreover, they should endorse the manifesto recently released by several university stakeholders across Europe on ways to recruit and retain early-career researchers in academia (Singh Chawla 2022).

To enact real change the Italian academic establishment must carry out a profound self-criticism of its behaviour, while in reality there has not been concrete or effective action in this sense on the part of universities (Scirè 2021). It is worth noting that often universities don't even take a position as civil plaintiff against professors accused in cases relative to fraudulent competitions, when in fact it is the university institutions that are damaged first and foremost, as observed by the media (Brogioni 2022). Italian public opinion needs to be increasingly made aware that academic malpractice promotes inequality and that by not awarding faculty status based on merit devalues not only Italian researchers and leads to the loss of promising talent, but harms the education system itself. The international scientific community should undertake moral suasion on Italian universities and support the efforts of people who fight against this malpractice (Trasparenza e Merito 2019). Finally, early-career Italian researchers should embrace the call to create a more equitable, collaborative and healthy academia (Aguilar 2021). Avoiding complicity is the only way to a truly free academic environment.

Abbreviations

T1 Time of national scientific qualification
T2 Time of the Florence call
T3 Current H-index

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Authors' contributions

PG and BP conceived the study, collected and interpreted the data, drafted the paper; B.P. performed statistical analysis, F.L. substantially revised the study; All authors approved the final version of the article.

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Availability of data and materials

The dataset supporting the conclusions of this article is included within the additional file.

Declarations

Competing interests

The authors declare no competing interests.

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References

- Abramo G, D'Angelo CA (2018) Who benefits from a country's scientific research? *J Informet* 12:249–258
- Abramo G, D'Angelo CA, Rosati F (2014) Career advancement and scientific performance in universities. *Scientometrics* 98:891–907
- Aguilar LK (2021) Early-career researchers: choose change, not complicity. *Nature* 597:31
- Ahmad OB (2004) Brain drain: the flight of human capital. *Bull World Health Organ* 82:797–798
- Assad J (2016) Instituting recruiting meritocracy in Italy. *Science* 352:422
- Banfi A. Università, come frenare le baronie. Return on academic Research and School (ROARS). 2011 <https://www.roars.it/online/universita-come-frenare-le-baronie/>
- Banfi A. Academic recruitment in Italy: an overview for foreigners. *Ius Publicum Network Review*. 2015 http://www.ius-publicum.com/repository/uploads/25_06_2015_16_13-recruitment.pdf

- Bologna F, Di Iorio A, Peroni S et al. Do open citations give insights on the qualitative peer-review evaluation in research assessments? An analysis of the Italian National Scientific Qualification. *Scientometrics*. 2022 <https://doi.org/10.1007/s11192-022-04581-6>
- Braithwaite J, Herkes J, Churrua K et al (2019) Comprehensive Researcher Achievement Model (CRAM): a framework for measuring researcher achievement, impact and influence derived from a systematic literature review of metrics and models. *BMJ Open* 9:e025320
- Boustani K, Taylor KA (2020) Navigating LGBTQ+ discrimination in academia: where do we go from here? *Biochem (lond)* 42:16–20
- Brogioni S. Concorsi universitari come abiti fatti su misura. *La Nazione*, September 28, 2019. <https://www.lanazione.it/firenze/cronaca/concorsi-universitari-come-abiti-su-misura-2d5d180a>
- Brogioni S (2022) Pilotarono il concorso per Stefano" I big di Careggi vanno a processo. *La Nazione*, October, 4, 2021. <https://www.lanazione.it/firenze/cronaca/pilotarono-il-concorso-per-stefano-i-big-di-careggi-vanno-a-processo-6f78f609>
- Candido A, De Riccardis S, De Vito L et al (2023) Processo all'università: la ragnatela dei concorsi pilotati. Sotto inchiesta 191 docenti da Milano a Palermo. *la Repubblica*, May 28, 2022. https://www.repubblica.it/cronaca/2022/05/28/news/processo_alluniversita_la_ragnatela_dei_concorsi_pilotati_sotto_inchiesta_191_docenti_in_nove_citta-351586005/
- Cora-Bramble D (2006) Minority faculty recruitment, retention and advancement: applications of a resilience-based theoretical framework. *J Health Care Poor Underserved* 17:251–255
- Currie C (1993) Role models and patronage. *BMJ* 306:735–736
- Chiesa C, Pacifico L (2001). Patronage lies at the heart of Italy's academic problems. Funds are distributed through a system that runs on favours: nobody gets on without friends in high places. *Nature* 414:581
- Dore MP, Pes GM, Faustinella F (2019) Italian Adagio: every law has its loophole. *Sci Eng Ethics* 25:651–653
- Dyrbye LN, Shanafelt TD, Balch CM et al (2010) Physicians married or partnered to physicians: a comparative study in the American College of Surgeons. *J Am Coll Surg* 211:663–671
- Di Giorgio C. Una generazione perduta? La fuga dei cervelli dall'Italia. *Una generazione perduta?* 2023 <https://matem.atica.unibocconi.eu/articoli/una-generazione-perduta-la-fuga-dei-cervelli-dall%E2%80%99italia>
- Everett JAC, Faber NS, Crockett M (2015) Preferences and beliefs in ingroup favoritism. *Front Behav Neurosci* 9:15
- EU Commission recommendation of 11 March 2005 on the European charter for researchers and on a code of conduct for the recruitment of researchers. March 22, 2005. <http://data.europa.eu/eli/reco/2005/251/oj>
- Gallina P, Gallo O (2020) Asphyxia of Italian academia in medicine and political deference. *Lancet* 396:307
- Gallina P, Hetherington L, Bartolozzi F (2023) The Orchid. *Lancet. Psychiatry* 10:83–84
- Gallo D (2014) ASN 2012: ecco le statistiche finali, diverse da quelle ANVUR. Return on academic Research and School (ROARS). <https://www.roars.it/online/?p=39140>
- Gasparyan AY, Yessirkepov M, Duisenova A et al (2018) Researcher and author impact metrics: variety, value, and context. *J Korean Med Sci* 33:e139
- Grilli J, Allesina S (2017) Last name analysis of mobility, gender imbalance, and nepotism across academic systems. *PNAS* 114:7600–7605
- Hamann J (2019) The making of professors: assessment and recognition in academic recruitment. *Soc Stud Sci* 49:919–941
- Henningsson M, Geschwind L (2021) Recruitment of academic staff: An institutional logics perspective. *Higher Educ Q* 76:48–62
- Laland KN (2022) Racism in academia, and why the 'little things' matter. *Nature* 584:653–654
- Lentz K (2019) Corruption at Careggi & Florence University. *Magenta Florence* <https://www.magentaflorence.com/corruption-at-careggi-florence-university/>
- Martinotti G, Giasanti A (1977) The robed baron: the academic profession in the Italian University. *High Educ* 6:189–207
- Mattar MY (2022) Combating academic corruption and enhancing academic integrity through international accreditation standards: the model of Qatar University. *J Academic Ethics* 20:119–146
- Ministro dell'Istruzione dell'Università e della Ricerca (2012) Allegato A. Indicatori bibliometrici e settori concorsuali cui si applicano. http://attiministeriali.miur.it/media/192904/dm_07_06_2012_allegatoa.pdf
- Ministro dell'Istruzione dell'Università e della Ricerca (2015) Decreto Ministeriale 30 ottobre 2015 n. 855. Rideterminazione dei macrosettori e dei settori concorsuali, di cui all'articolo 15. Legge 30 dicembre 2010, n. 240. <http://attiministeriali.miur.it/anno-2015/ottobre/dm-30102015.aspx>
- Ministro dell'Istruzione della Università e della Ricerca (2011) Decreto Ministeriale 29 luglio 2011 n. 336. Determinazione dei settori concorsuali, raggruppati in macrosettori concorsuali, di cui all'articolo 15. Legge 30 dicembre 2010, n. 240. <http://attiministeriali.miur.it/anno-2011/luglio/dm-29072011.aspx>
- Murphy M, Callander JK, Dohan D et al (2022) Networking practices and gender inequities in academic medicine: Women's and men's perspectives. *eClinicalMedicine* 45:101338
- Nascia L, Pianta M, Zacharewicz T (2021) Staying or leaving? Patterns and determinants of Italian researchers' migration. *Science and Public Policy* 48:200–211
- Petri A (2017) Italian Abilitazione Scientifica Nazionale. *Lancet* 10071:803–804
- Presidente della Repubblica (1958). Legge 18 marzo 1958, n. 311. Norme sullo stato giuridico ed economico dei professori universitari. *Gazzetta Ufficiale della Repubblica Italiana* n. 91 del 15–04–1958. <https://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:legge:1958-03-18;3111vig>
- Presidente della Repubblica (2011) Legge 30 dicembre 2010, n. 240 Norme in materia di organizzazione delle università, di personale accademico e reclutamento, nonché delega al Governo per incentivare la qualità e l'efficienza del sistema universitario. *Gazzetta Ufficiale della Repubblica Italiana Serie Generale* n.10 del 14–01–2011 - Suppl. Ordinario n. 11. <https://www.gazzettaufficiale.it/gunewsletter/dettaglio.jsp?service=1&datagu=2011-01-14&task=dettaglio&numgu=10&redaz=011G0009&tmstp=1295259517551>
- Presidente della Repubblica (2006). Decreto legislativo aprile 2006, n. 164. Riordino della disciplina del reclutamento dei professori universitari, a norma dell'articolo 1, comma 5 della legge 4 novembre 2005, n. 230. *Gazzetta Ufficiale della*

- Repubblica Italiana Serie Generale n. 101 del 03–05–2006 [https://www.normattiva.it/atto/caricaDettaglioAtto?atto.dataPubblicazioneGazzetta=2006-0503&atto.codiceRedazionale=006G0182&tipoDettaglio=originario&qId=&tabID=0.3976429297853259&title=Atto%20originario&bloccoAggiornamentoBreadCrumb=true#:~:text=\(GU%20n.101%20del%2003%2D05%2D2006\)](https://www.normattiva.it/atto/caricaDettaglioAtto?atto.dataPubblicazioneGazzetta=2006-0503&atto.codiceRedazionale=006G0182&tipoDettaglio=originario&qId=&tabID=0.3976429297853259&title=Atto%20originario&bloccoAggiornamentoBreadCrumb=true#:~:text=(GU%20n.101%20del%2003%2D05%2D2006))
- Prosperi M, Buchanc I, Fantid et al (2016) Kin of coauthorship in five decades of health science literature. *PNAS* 32:8957–8962
- Putnam CW, Di Marco J, Cairns CB (2018) Recruitment of dual-career academic medicine couples. *Acad Med* 11:1604–1606
- Return on Academic Research and School (2011) <https://www.roars.it/who-we-are/>
- Rigante D (2016) Academic apartheid in Italy. *Lancet* 388:563
- Roy G (2022) Nepotism: history, politics, culture, and ethnicity. In: Leal Filho W, Azul AM, Brandli L, Lange Salvia A, Özuyar PG, Wall T (eds) *Peace, justice and strong institutions*. Encyclopedia of the UN sustainable development goals. Springer, Cham. https://doi.org/10.1007/978-3-319-71066-2_82-1
- Sandström U, Hällsten M (2008) Persistent nepotism in peer-review. *Scientometrics* 2:175–189
- Sandström U, Hällsten M (2021) Correction to: Persistent nepotism in peer-review. *Scientometrics* 126:1863–1865
- Schenkenberg T, Foster NL, Bromberg MB et al (2011) Neurology academic advisory committee: a strategy for faculty retention and advancement. *Neurology* 77:684–690
- Scirè GB (2021). *Mala università. Privilegi baronali, cattiva gestione, concorsi truccati. I casi e le storie*. Chiarelettere Editor. Milan, Italy.
- Shore C. How corrupt are universities? Audit culture, fraud prevention, and the big four accountancy firms. *Current Anthropology Supplement* 18, April 2018. <https://doi.org/10.1086/695833>
- Singh Chawla D (2022) A road map aims to improve the lives of junior scientists in Europe. *Nature*. <https://doi.org/10.1038/d41586-022-03321-3>.
- Stazio ML (2022) Abilitazione Scientifica Nazionale: divari territoriali e di genere. Abilitazioni, abilitati e reclutati. ROARS. <https://www.roars.it/abilitazione-scientifica-nazionale-divari-territoriali-e-di-genere/>
- The Local (2017). Dozens of Italian university professors investigated over corruption claims. <https://www.thelocal.it/20170926/university-teachers-under-house-arrest-over-corruption-after-being-unmasked-by-an-english-academic/>
- Transparency International (2021) Corruption perceptions index. <https://www.transparency.org/en/cpi/2021>
- Trasparenza e Merito (2019) L'Università che Vogliamo. Appello TRA-ME a Presidente della Repubblica: emergenza costituzionale sui concorsi all'Università. <https://www.trasparenzaemerito.org/post/appello-tra-me-a-presidente-della-repubblica-emergenza-costituzionale-sui-concorsi-alluniversita>
- Trasparenza e Merito. L'Università che Vogliamo (2017) Atto costitutivo e Statuto dell'Associazione. https://www.trasparenzaemerito.org/_files/ugd/fa08b6_0f2785b3c89b4a168364019ad318b131.pdf
- Trasparenza e Merito. L'Università che Vogliamo. Osservatorio indipendente: Lettera sull'Università bandita ed i concorsi ad personam. July 12, 2019.
- Turone F (2021) Forced abroad: why Italian researchers migrate. *Nature Italy*. <https://doi.org/10.1038/d43978-021-00021-w>
- Valenti R (2023) Concorsi pilotati all'Università. Il pm vuole il processo per 33. *Il Quotidiano del Sud*, September 5, 2023. <https://www.quotidianodelsud.it/calabria/cronache/giudiziaria/2023/09/05/concorsi-pilotati-alluniversita-di-frenze-il-pm-vuole-il-processo-per-33-persone>
- Wennereas C, Wold A (1997) Nepotism and sexism in peer-review. *Nature* 387:341–343
- World Health Organization (2022) Mental health at work. <https://www.who.int/news-room/fact-sheets/detail/mental-health-at-work>
- Zinovyeva N, Bagues M. The Role of connections in academic promotions. *A EJ: Applied Economics* 2015;2:264–292

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