

8. The tenure track system in Italy – objectives, expected and unanticipated effects

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INTRODUCTION

The tenure track model has been introduced in the Italian university system only recently, along with the overall reform made at the end of 2010.¹ The Italian tenure track system is meant specifically for an early career stage: the transition from untenured positions based on fixed-term employment contracts to the first stable position within the academic rank, that is associate professor. There is no tenure track system for the next career advancement to a full professor position.

The chapter is organised as follows. First, we briefly describe how the Italian academic recruitment and career system has evolved over time. Then, we focus on the reform that has instituted the tenure track, illustrating its formal provisions and intended goals using Pekkola et al.'s (2019) list, conceptualising the reasons for the basis of the tenure track system as a benchmark, while highlighting the peculiarities of the Italian context. Second, we dwell on the real impact of tenure track in two directions: overall scientific productivity and the recruitment and career system, underlining various unintended or even perverse effects it engendered. Particularly, using both survey and administrative data, we look at the changes in the scientific productivity of Italian academics and we analyse how the implementation of a tenure track position (replacing the previous permanent entry-level position named 'researcher') impacts young researchers' recruitment and career path in terms of age and gender.

¹ The 2010 reform (Gelmini Law) was very complex and modified many aspects of the university system: governance, funding, academics' recruitment, evaluation, autonomy, organisation of study programmes. For a description of the main aspects of the reform, see Capano (2022) and Capano et al. (2016).

BEFORE TENURE TRACK

The tenure track model has been introduced recently to the Italian university system, along with the overall reform issued at the end of 2010. Previously, the academic recruitment and career system had undergone three main reform waves, in 1980, 1998 and 2005. Before 1980, the only permanent position was full professor. The 1980 reform instituted two more permanent positions: researcher (entry-level permanent position) and associate professor (second career stage). In 2005, the researcher position was abolished, maintaining associate and full professor as permanent positions to be attained after having obtained the national scientific qualification (NSQ). Yet, this reform was not fully implemented because of the intervening 2010 reform. None of those reforms had the aim of introducing a tenure track system.

Before the introduction of tenure track, the recruitment and career system followed a rather traditional logic, depicted by Burton Clark's triangle (1983), based on negotiations and bargaining between the state (the ministry) and the academic oligarchy (full professors), in particular for obtaining the financial resources to institute a national competitive exam to select prospective academics to recruit. Besides, the crucial decisions about the recruitment of stable academic staff were almost totally in the hands of the academic oligarchy. Hence, the recruiting logic and procedures were largely based on 'academic patrimonialism'² and on a complex system of promises and loyalty between prospective academics and full professors (Clark, 1977; Giglioli, 1979). Such a relationship between full professors and non-tenured academics was heavily unbalanced since the latter completely depended on the former at every career stage: from the 'call' by one's mentor to enter the profession, to their socialisation to profession, their duties and tasks, and, above all, their career prospects. Under these conditions, the autonomy of non-tenured academics was extremely limited.

Albeit influenced by different normative and organisational conditions introduced by the various reforms from 1980 to 2005, this logic characterised the early recruitment process and further professional stages until the 2010 reform (Vaira, 2017). As we will discuss in the next section, one of the reform's goals was to weaken, if not overcome, this state of affairs.

² The concept of academic patrimonialism used by Giglioli (1979, p. 64) is drawn from Weber and is a combination of the traditional guild system and personalism. It describes the asymmetric relationship between full professors and prospective academics based on the formers' personal and discretionary power over the latter.

During the 30 years between the early 1980s and the first decade of 2000, the typical early career path of prospective academics was the following (summarised in Table 8.1):

- Between the 1980s and early 2000s, after obtaining their PhD, aspiring academics entered a course made of post-doc research grants and contracts, not infrequently paired with teaching contracts, for a time spanning from three to five or more years and while waiting for a researcher

Table 8.1 Italian career path 1980–2005 and 2005–2010

Period / job position	PhD	Post-docs	Researcher	Associate professor	Full professor
1980–2005	3 years	Temporary positions: post-doc fellow positions, research contracts, granted research contracts and teaching contracts (3–6 years, often even longer)	Permanent position	Permanent position	Permanent position
2005–2010	3 years	Temporary positions: post-doc fellow positions, research contracts, granted research contracts and teaching contracts (3–6 years, often even longer)	Temporary position: fixed-term position for 3 years, renewable only once for 2 more years	Permanent position (NSQ is required to compete for this position)	Permanent position (NSQ is required to compete for this position)

Source: Authors' own.

position. Those years are characterised by both an apprenticeship path to the profession and a temporary employment condition.

- Between 2005 and 2010, this path did not substantially change except for the fact that the researcher position was abolished. Prospective academics should obtain the national qualification to function as associate professors (issued for the first time by the reform itself) during their years of untenured roles. As mentioned, the 2005 reform was never fully implemented; in particular, the new recruitment scheme never saw the light, remaining only on paper. Nonetheless, this reform is important because, to some extent, it provided the basis for the 2010 reform.

THE ITALIAN WAY TO TENURE TRACK

On 31 December 2010, a new overall university reform was made in Italy. Among the many changes it introduced into the system, the reform affected the academic recruitment modality and the career advancement system. In this regard, three main changes took place. The first, following the 2005 reform, was the elimination of the researcher role as the first stable academic position; the second was the introduction of the national scientific qualification as a requirement to apply for associate and full professor positions; the third was the institution of two distinct figures of fixed-term researcher, respectively *fixed-term Type-A researcher*, or junior researcher (RTD-A, using the Italian acronym), and *fixed-term Type-B researcher* (RTD-B), or senior researcher.³ Only Type B is linked to the tenure track.

Before addressing the issue of tenure track, we deem it important to briefly describe the NSQ system and the RTD-A role because they are, to some extent, linked to tenure track, as we will argue in the following paragraphs.

A prospective academic must gain the NSQ to enable them to participate in university selections for associate and full professor positions opened by university institutions on a department's initiative. The qualification is awarded by disciplinary and sub-disciplinary national boards of selected full professors. The qualification process is different for STEM and HSS disciplines: for the former, it is based on bibliometric indicators (citations and H-index); for the latter, it relies upon qualitative peer review, complemented with bibliometric indicators wherever appropriate and/or possible. For STEM and HSS disciplines, in turn, the board's evaluation also takes into account the number of publications of each candidate, whose threshold values are defined for different disciplines and sub-disciplinary fields at national level. This quantitative

³ RTD-A and RTD-B are comparable with the assistant professor role.

indicator measures individual productivity in a given time span differently for associate and full professor positions.

The RTD-A role can be gained through a public local selection (held at department level in a given institution) by young scholars who have obtained their PhD or, more frequently, some years after the PhD, during which time they have served as post-doc fellows and/or grant holders. The role is based on a fixed-term contract of three years, renewable only once for two more years. During these three to five years, the young researcher must achieve either an RTD-B or associate professor role (if, meanwhile, they achieve the national qualification). If this is not the case, the researcher will no longer be able to stay in academia or pursue an academic career.

The Tenure Track System: Formal Aspects

As we have mentioned, the RTD-B position is linked to the tenure track and is regulated by a three-year, non-renewable, full-time contract. The requirements for competing for an RTD-B position are:

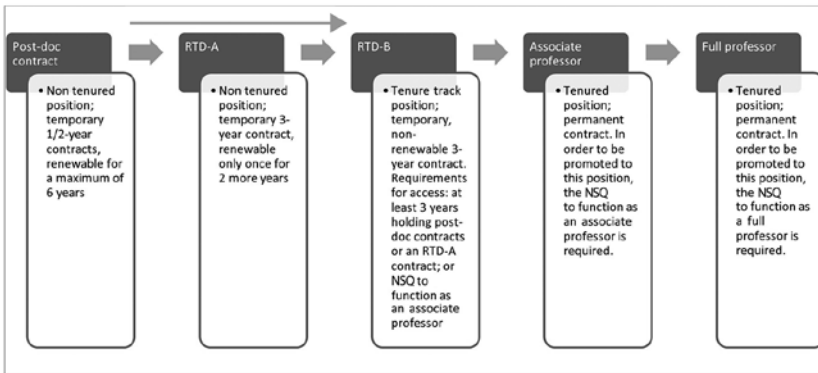
- Holding a PhD;
- Having held, for at least three years, an RTD-A position or a post-doc/granted researcher position, or having been awarded the national qualification to function as an associate or full professor;
- Not having held a post-doc/granted researcher and an RTD-A position for over nine years overall.

RTD-B positions are issued by departments based on their financial availability, which depends on the institutional budget. This is crucial because, when departments open an RTD-B position, they must plan and set aside the amount to pay after the three-year contract is over and tenure starts. In other words, departments must bind part of their financial resources for the next three years in order to have the economic resources to pay the prospective associate professor when the RTD-B contract expires.

Once an RTD-B position has been opened, candidates have to participate in a public selection held locally by a given department, which appoints a board made of three permanent academics (one coming from the department's own staff, the other two from different university institutions) belonging to the disciplinary or sub-disciplinary field for which the RTD-B position has been opened. The board evaluates the candidates' academic curriculum, productivity and quality of publications (by bibliometric indicators or peer review) and declares a winner. The department then either validates the selection and hires the winning candidate or rejects them (this hardly ever happens).

The duties of an RTD-B are largely similar to those of associate and full professors: between 90 and 120 teaching hours per year and student-service duties (i.e., exams, thesis supervision, office hours). Overall, teaching-related duties amount to a maximum of 350 hours per year. In addition to those duties, there are also administrative tasks such as participation on department collegiate bodies and boards.

During the three-year contract, the RTD-B must obtain the NSQ to function as an associate professor in order to be tenured at the end of the three-year time span. It must be noted that departments generally follow an established practice by which the RTD-B holder has already obtained the national qualification or is highly likely to get it within one or two years. This results from the financial constraints of the advance planning of funds by departments when they open an RTD-B position, which could be lost if the RTD-B fails to obtain the national qualification at the end of the contract. After three years, the department evaluates the qualified RTD-B's scientific productivity and teaching activities; if the evaluation is positive, the RTD-B is hired as an associate professor. See Figure 8.1.



Source: Author's own.

Figure 8.1 Academic career path after the 2010 reform in Italy

Intended Goals of Tenure Track

The introduction of the tenure track and the 2010 reform should be interpreted within the framework of the New Public Management policies that have been affecting the Italian university system since 2001. Those policies aimed to reduce public spending on the university system through funding

cuts, performance evaluations of institutions, departments and individual academics – on which institutions' funding increasingly depends – and financial rationalisation of (tenured) academic staff.

Particularly relevant in this scenario and to the introduction of the tenure track were the dramatic funding cuts to public universities and the restrictions on turnover and recruitment of tenured academics in 2008. Between 2008 and 2021, tenured positions continually decreased while different types of fixed-term academic contract flourished. To get an idea of such processes: in 2001, tenured academics as a whole (previous researcher, associate and full professor positions) amounted to 54,856 units, while the different types of untenured researcher amounted to 7,252 (11.7 per cent). In 2021, tenured positions amounted to 46,859, and untenured researchers were 26,634 (36.2 per cent), of which 10,933 were fixed-term researchers (5,590 RTD-A and 5,343 RTD-B) and 15,701 post-doc fellows (data from <https://ustat.mur.gov.it>).

The institution of tenure track in this scenario aimed to achieve several goals. Some coincide with Pekkola and colleagues' list of reasons for introducing a tenure track system (Pekkola et al., 2019), while others are more specific to the Italian case.

Regarding the former reasons, tenure track was intended to achieve the following goals:

- *Increasing fairness, predictability and transparency.* This was meant to be pursued by means of the NSQ and the evaluation of candidates on the basis of their scientific productivity and curriculum.
- *Increasing the efficiency and productivity of academic work.* In order to apply for an RTD-B position, candidates have to write a significant number of scientific publications for academically recognised and renowned journals and publishers. Moreover, during the three years in the role, their scientific and publishing activity needs to be consistent.
- *Setting new targets and quality standards for academic work.* This is pursued specifically by the pressure to publish intensively and constantly, but also, and more generally, by the demand to be part of international research networks, academic journals' editorial boards (both at national and international level) and research experiences at international level.
- *Decreasing the organisational risks of recruitment.* As discussed previously, the tenure track is designed to reduce the risks of hiring low-productivity researchers (responding to the neoliberal economic logic of 'value for money'). This is reinforced by the departments' practice of hiring in RTD-B positions those candidates who have already obtained, or are about to obtain, the national qualification.

- *Gender balance.* The national qualification and the evaluation of RTD-B candidates based on quantitative criteria (i.e., the number of academic publications, citation indexes) should allow a non-gender-biased selection because those measurable criteria are deemed 'objective' and gender-neutral.

Besides those goals, the tenure track system was meant to meet other objectives, more specific to the Italian situation:

- *Rationalising public expenditure for public universities.* The tenure track system configuration contributes to this goal by recruiting and hiring a limited number of academics, namely those who meet the stringent requirements for an RTD-B position. Furthermore, the formal requirement that institutions can open an RTD-B position only by setting aside the necessary financial resources in advance to hire the prospective associate professor works as a rationalising arrangement of the expenditure. Thus, tenure track works as a *numerus clausus* mechanism by which academic staff are selected and hired while making, at the same time, the academic staff expenditure cost-effective.
- *Overcoming the patrimonialistic logic.* Similarly to gender balance, the national qualification and the scientific evaluation of RTD-B candidates based on 'objective' criteria entails a decoupling of promise-loyalty ties between a mentor and a young researcher. Overall, this also implies a weakening of the power of full professors in the micropolitics of recruitment issues.
- *Increasing the institutional mobility of young researchers.* This goal is not explicitly intended by the tenure track but is a consequence of how it works under the financial constraints universities cope with. Universities and departments must plan and secure in advance the financial resources to hire the RTD-B as an associate professor in the next three years, but not all universities and departments can afford this. Thus, the positions for RTD-B figures are dispersed, fostering candidates to move around where positions are opened and, if they obtain the position, to move from their former employing institution.
- *Lowering the age of associate professors.* The tenure track system and the design it is based on aims to reduce the age of those who enter the first permanent academic position. Ideally, the tenure track system should allow for hiring people of around 40 years old in associate professor positions.

Tenure Track Revised: the New Reform of Recruitment

On 29 June 2022, a limited and very targeted university reform was issued as part of national policies based on the Recovery and Resilience Facility EU programme. Among the few provisions of the reform, the academic recruitment system established with the 2010 reform was modified. The new system was meant to be operationalised in early 2023.

The main changes concern three aspects of the untenured career of prospective academics: a) the abolition of previous forms of fixed-time (post-doc) research contracts as well as of RTD-A contracts, replaced by a new research contract lasting two years (or three, on the basis of specific research needs) and renewable only once; b) the abolition of RTD-B contracts; and c) the institution of a new, non-renewable tenure track path lasting six years, linked to a new position called tenure track researcher (RTT, following the Italian acronym) for access to the associate professor role.

In the new system, the path from an untenured position to associate professor is formally the following. After obtaining a PhD, the prospective academic spends from two to six years as a contracted researcher; then they could achieve the RTT position during which they must obtain the NSQ to function later as an associate or full professor. After four years spent in the RTT position and having obtained the national qualification, the researcher can apply for an associate professor role; a given department then starts an evaluative procedure carried out by an academic board composed of four members, one of them belonging to the issuing department.

The main feature of this reform is not a reduction of untenured time (for all practical purposes, this remains more or less the same as in the previous system), but, primarily, greater economic security for prospective academics, thanks to a more structured contract and a relatively higher salary compared with the contracted researcher position. Second, the new path would grant greater career predictability to prospective academics.

All in all, as stated by the former Ministry of University and Research that issued the reform, the main goal is to lower the age of newly recruited associate professors to 36 to 37 years old. Nevertheless, we must also highlight a potentially negative effect of this reform. Since institutions and departments must set aside the financial resources to fund RTTs and, in the long run, associate professors, and, given the higher and increasing salaries required, this may produce a reduction in the number of RTT positions available at the system level. Only the wealthiest institutions, departments and disciplinary groups will be able to afford RTT positions, producing both reduction and concentration effects on the new position.

TENURE TRACK AND PRODUCTIVITY GROWTH

As we have seen in the previous sections, the 2010 reform was intended to achieve some specific goals. In what follows, we will investigate the effects – expected or unintended – of tenure track on some levels, namely, the increase of academic productivity, the lowering of academics' age and the improvement of gender balance in academic careers. Before starting the analysis, it is necessary to point out that the available data do not allow us to isolate the effects of the tenure track from those potentially produced by other aspects of the 2010 reform. As we have mentioned, the innovations introduced by the reform – including the tenure track – have been accompanied by funding cuts and a hiring freeze; therefore, all these factors have contributed to the effects that we will shortly analyse. Although it is impossible to properly disentangle the effects of a single innovation from those of the reform, it is possible to identify those mechanisms related to the tenure track system that can be considered the most relevant for the changes.

One of the goals of the 2010 reform, as we have seen, was to increase scientific productivity and thus the competitiveness of Italian universities at an international level. This goal was pursued by introducing the performance evaluation system at the departmental level, linking funding to academic productivity, and, at the individual level, by introducing the NSQ for career advancement from RTD-B to associate professor and from associate professor to full professor.

As we have previously argued, while having the qualification is not *formally* required to apply for RTD-B positions, it is substantially so. The mechanism by which resources are lost if the researcher does not obtain the qualification for becoming an associate professor at the end of the three years means that the qualification is a substantial requirement for accessing the tenure track position, as departments prefer to opt for a 'safer candidate'.

To apply for and obtain the qualification to function as an associate professor, an individual must achieve or exceed certain quantitative thresholds of academic productivity, specific to each scientific disciplinary sector and defined on the basis of the median values of productivity set for associate professors in previous years. Only after passing this quantitative barrier does the researcher have access to the qualitative evaluation of their productivity by the national board.

The formal and informal features of the recruitment system and the criteria for obtaining the qualification to apply for a tenure track position have led to a growth in productivity, forcing post-docs who want to apply to have levels of productivity equal to or higher than those typically possessed by associate professors (two steps ahead in their career), in a 'publish or perish' logic.

The ANVUR biennial report on the state of the university and research system (2018) contains an in-depth analysis of the quality and impact of the scientific production of Italian researchers. The data show how Italy underwent progressive growth between 2010 and 2016 on all indicators of scientific production (world share, annual growth rate, citation impact, publication site impact).

In order to detect more specifically the possible ‘tenure effect’ on productivity, we can use data from a national survey.⁴ We compare the productivity levels of academics with a permanent contract (recruited before the introduction of tenure track) and researchers in a fixed-term position affected by tenure track because they have just obtained it or are in the immediately preceding phase.

The analysis of survey data⁵ shows how, in both STEM and AHSS disciplines, researchers in a fixed-term position (RTD-A and RTD-B) have, on average, higher levels of scientific productivity than tenured academics with equal gender, age, number of research collaborators, disciplinary area and institutional characteristics (university size and geographical location).⁶

Comparing the productivity of fixed-term researchers with associate professors, we can observe that the productivity gap is even smaller than the one between associate and full professors. Moreover, the productivity differences between fixed-term researchers involved in tenure track and associate professors are not statistically significant in the model for either STEM or AHSS disciplines.

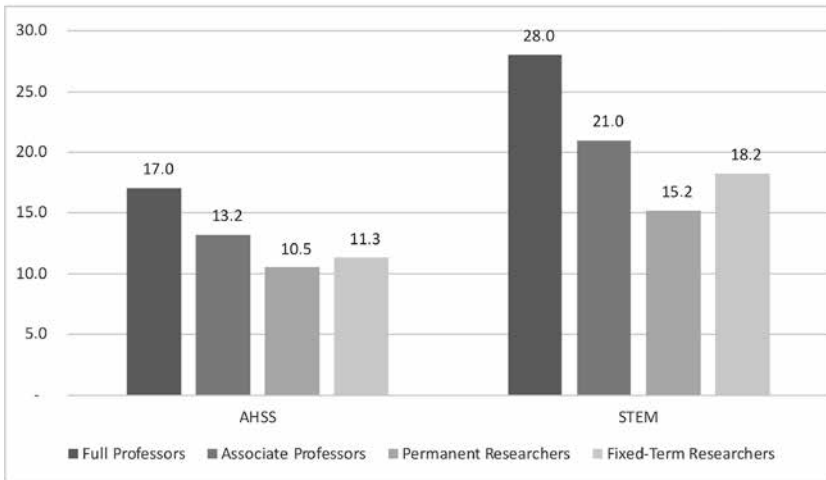
Precarisation in early career stages, combined with the new recruitment system that requires the NSQ for access to tenure track positions and the new funding system based on the performance evaluation of departments, seems to have incentivised the productivity of young researchers aiming at RTD-B positions.

⁴ The survey was carried out between late 2015 and early 2016 on a representative sample of academics randomly selected from the MIUR lists of academics working in public universities in Italy. The sample was stratified by disciplinary area and geographical macro-region of the university; the effective sample of 5,123 respondents (34.2 per cent) was distributed as the academic population by gender, academic position and the stratification variables.

⁵ The statistical model is not included for space constraints. Authors can provide it upon request.

⁶ It should be noted that the number of teaching tasks and the job profiles of permanent and fixed-term researchers are similar. The only differences are related to the age and seniority of researchers, which are higher for most permanent researchers recruited in earlier years (then the 2005 reform abolished that position), while the RTD-A and RTD-B recruitment arrangements started in 2012.

Since these data are not longitudinal, they do not allow us to assess the change through time or attribute this higher productivity to the introduction of tenure track. As we have already mentioned, many factors have incentivised scientific productivity, not just the recruitment system. However, these data are very useful as they make it possible to compare the productivity levels according to individual and institutional characteristics focusing on the two different academic positions – one preceding and the other following the introduction of the tenure track (see Figure 8.2). This brings empirical evidence to the hypothesis of a positive impact of tenure track on scientific productivity.



Note: Average number of articles published in scientific journals or volumes during the five years preceding the interview by academic position in AHSS and STEM disciplines (N=5,123, IC=95%). The average number of articles by academic position was obtained by a negative binomial regression model controlled by gender, age, discipline, number of research collaborators, university size and university geographical area.

Source: Authors' own.

Figure 8.2 Productivity levels of academics in Italy

TENURE TRACK AND ACADEMICS' SOCIO-DEMOGRAPHIC PROFILE

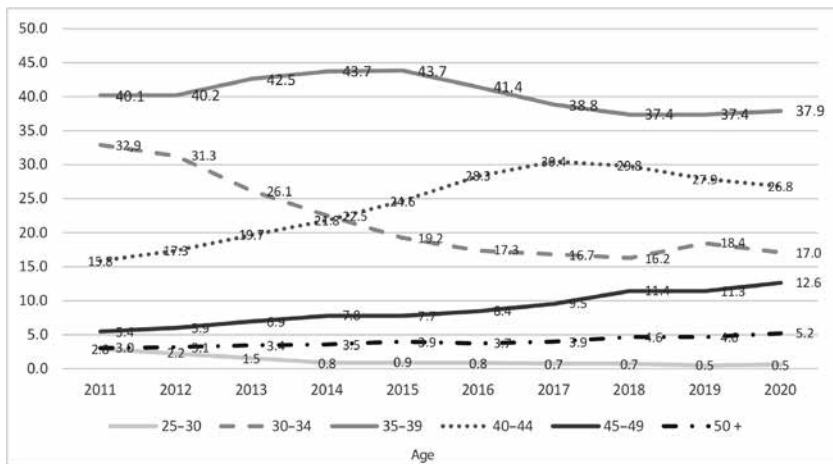
Tenure Track and Researcher Age

The precariousness of academic careers, of which the introduction of tenure track is a component, is not exclusive to Italy. However, in Italy it has had

opposite effects to those envisaged by the reform, at least in terms of the socio-demographic profile of academics.

The primary cause is likely the instability of various fixed-term researcher roles, which has been accompanied by funding cuts and hiring freezes, resulting in a lack of recruitment opportunities for some years (approximately from 2009 to 2015). Furthermore, the recruitment process has been too slow and inadequate in comparison with the number of precarious researchers who took service during the hiring freeze and who aspire to a tenured position. Additionally, in order to obtain a tenure track, as we have seen, it is necessary to hold a national scientific qualification. To obtain it, one must not only reach the productivity levels of associate professors but also have a certain number of academic experiences, such as organising or participating in conferences, being a member of scientific journal editorial committees, having scientific responsibilities in competitive projects, and other experiences that require a certain level of scientific maturity and a decent social capital within the academic community, which also, and above all, take time to accumulate.

This combination of factors has produced an ageing of the precarious academic population. Ministerial data show that the age of post-doctoral and fixed-term researchers (including RTD-A and RTD-B roles) has gradually increased. For fixed-term researchers (Figure 8.3), from 2011 to 2020, the age



Source: Authors' elaboration on data from the Ministry of University and Research (MUR).

Figure 8.3 Age evolution of fixed-term researchers in Italy (RTD-A and RTD-B), 2011–2020, by percentage

groups above 40 years grew by almost 21 per cent (11 per cent for the 40–44 age group, 7.2 per cent for 45–49, 1.6 per cent for 50–54, and 0.6 per cent for 55–59), while the younger groups decreased. Focusing on 2021, the only year for which the distribution of fixed-term researchers in tenure track by age group is available, we can paint the following picture: 8.4 per cent are under 35 years; 36.3 per cent are between 35 and 39; 31 per cent between 40 and 44; 17.1 per cent between 45 and 49; and the remaining 7.4 per cent are over 50. At the same time, the ageing of post-doctoral researchers can also be observed between the pre-reform and post-reform periods. In 2005, 8.2 per cent of post-doctoral researchers were over 40; in 2011, the percentage increased to 9.5 per cent; and in 2021, it reached 13.5 per cent.

Data related to the age of researchers in different untenured positions show that many of them became stuck in junior post-doctoral positions for a long time, unable to reach the tenure track. They often returned to a junior post-doc position from a fixed-term researcher role (RTD-A) while waiting for a tenure track position.⁷ Data also show that the recruitment and career system introduced by the 2010 reform, along with the hiring freeze and funding cuts, has led to long-term insecurity for researchers. This is reflected in the fact that many researchers are over 40 years old when they finally get a permanent position, and some are even over 50.

As far as the age issue is concerned, we can state that the 2010 reform failed in its goal to lower the age of those who enter the associate professor position.

Tenure Track and Gender Inequalities

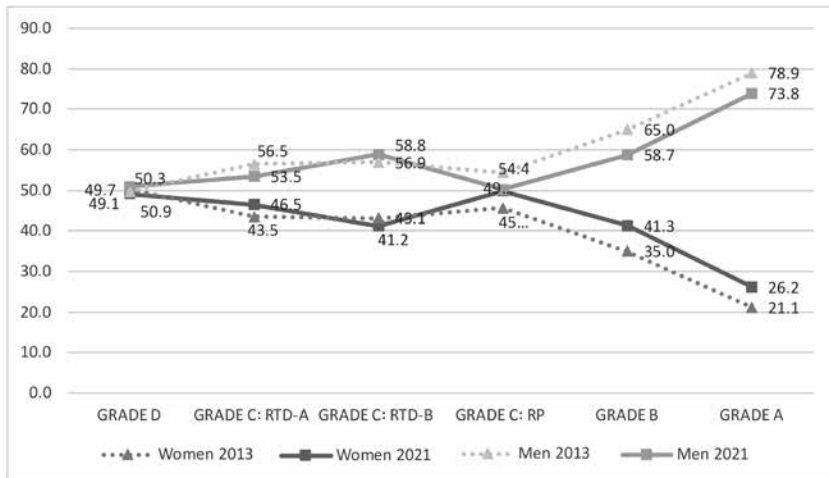
The unintended adverse effects of introducing the tenure track system in Italy, accompanied by a hiring freeze and funding cuts, are not limited to the ageing of academics. Data also show an unintended effect on the gender of academic researchers. Gender disparities in academia are well known. The *She Figures* report by the European Commission (2021), which captures the situation of women in research every three years, shows that, despite policies aimed at achieving greater equity, the gender gap in academic positions remains very wide, particularly in certain countries and disciplines.

⁷ If researchers have not completed the maximum number of years of post-doc contracts required by the reform (six years as post-doc fellows, or nine years as post-docs and RTD-As), they can go back to a post-doc position from an RTD-A one. Moreover, other positions are available for those who are waiting for tenure track, such as postgraduate research grants often used for researchers who have no other way to get paid. These grants are not recognised for one's academic career and do not provide any social security contributions.

In Europe, women constitute 47.1 per cent of doctoral graduates and their share tends to decrease as they advance along the academic career: they constitute 46.9 per cent of grade C, 41.8 per cent of grade B and 26.2 per cent of grade A. In Italy, despite a higher share of female PhD graduates (50.1 per cent), there is a greater loss of women along the academic path compared with the European average: women constitute 46.8 per cent of grade C, 38.4 per cent of grade B and only 23.7 per cent of grade A (European Commission, 2021, p. 184). Italy is characterised by a substantial gender equity in grade D, which begins to dissolve when advancing in an academic career (grade C).

The *She Figures* report, however, adopts a definition of grade C that includes both researchers and post-doc fellows, which is not useful if the goal is to examine whether the tenure track position in Italy is equally accessible for women and men. Therefore, we use the definition of the Italian Ministry of University and Research (MUR) that places post-docs in grade D and only includes fixed-term researchers in grade C (along with previous tenured researchers), and we analyse the two different types of position separately (Figure 8.4).

It is possible to observe that the gender gap mainly concerns access to tenure track and the positions of associate and full professor. In 2021, women



Note: The graph decodes grades of academic career by MUR and disaggregates grade C into three position types: RP (pre-2005 reform tenured researcher), RTD-A (fixed-term researcher without tenure track), RTD-B (fixed-term researcher with tenure track).

Source: Authors' elaboration on MUR data.

Figure 8.4 Scissor diagram of academic career in Italy

constituted 46.5 per cent of RTD-A positions and only 41.2 per cent of RTD-B ones, while immediately after the reform, in 2013, they were 45.6 per cent of all previously tenured researchers. In this last position, women were equally represented in 2021, but the reason is their lower career advancement, as this is a 'dying role' and no more similar positions were opened after 2005.

To describe and study the gender gap in access to tenured positions, Ilenia Picardi has come up with the Glass Door Index (GDI). It is defined as 'the ratio between the percentage of women performing research in academia in fixed-term positions and in an early position of academic stabilization in the year Y ($PW \leq D$) and the percentage of women in a position of access to stabilization in an academic role (PWD) in the year Y' (Picardi, 2019, p. 9):

$$\text{Glass Door Index} = PW_{\leq d,y} / PW_{dy}$$

The GDI measures the proportion of women in fixed-term research positions in relation to those in tenured positions. It assesses the challenges that female researchers in precarious academic positions face in advancing beyond the threshold of academic access. An index value higher than 1 indicates that women are under-represented among researchers in tenure track (RTD-Bs) with respect to non-tenure-track positions (post-docs and RTD-As). The higher the index, the stronger the disadvantage.

Following and updating Picardi (2019) with more recent data, the comparison between GDI before and after the introduction of the tenure track shows a growth of average values for the three years considered. GDI has gone up from 1.04 (the average value in 2008–2010) to 1.17 (the average value in 2019–2021), indicating a significant decrease in the number of women who access tenure track positions.

As for other obstacles to academic careers, the barrier to accessing a stable position is also of different magnitudes across different disciplines. According to data from the website of MUR from 2021, the gender disparity in access to tenure track positions is greater in STEM fields, particularly in medical and health sciences and natural sciences. In contrast, the disparity is lower within the arts, humanities and social sciences (on average, a 1.11 GDI, see Table 8.2). This could reflect, on the one hand, the more significant difficulties for women in male-dominated cultural contexts; on the other hand, it corresponds to the greater and better career opportunities for STEM disciplines outside the academic context, which could be more attractive for women who aim to combine family needs with the desire to achieve a stable position.

Regardless of the disciplinary area, the difficulty for women in accessing tenure track positions could be explained by different reasons. Some studies highlight that women are less involved in scientific networks, particularly in international ones (van den Brink & Benschop, 2014), and editorial boards

Table 8.2 Glass Door Index in different academic fields in Italy, 2021

Field of science	GDI
Natural sciences	1.26
Engineering and technology	1.18
Medical and health sciences	1.57
Agricultural and veterinary sciences	1.11
Social sciences	1.10
Humanities and the arts	1.12

Source: Author's elaboration on MUR data.

(Liu et al., 2023), while they are more involved in teaching and other administrative tasks (Guarino and Borden, 2017) that are less important for the career and take time away from scientific productivity. Moreover, at the beginning of their career, women are less likely to have a mentor (Fuchs et al., 2001) whose role is crucial for accessing and advancing in academic careers (Nielsen, 2016). However, recent studies on the NSQ requirement to function as full and associate professors have shown the absence of a gender gap in obtaining such a qualification (Filandri & Pasqua, 2021; Marini & Meschitti, 2018; Pautasso, 2015). Women possibly apply less often or later than men when they reach the required levels of productivity. When they apply, however, they obtain the qualification as frequently as men. This can suggest that women are penalised in local recruitment and promotion procedures, which are managed directly by the departments, leading the gender gap back to factors related to professional ties or substantial discrimination (De Paola et al., 2018).

In addition to these hypotheses, it is also important to remember that, at least as far as the gap in tenured positions is concerned, the long precariousness of an academic career may play a role. As we have seen, the age of researchers in Italy (post-doc fellows and fixed-term researchers, both RTD-A and RTD-B) has gradually increased. For many women, the long, precarious phase coincides with the phase in which reproductive choices are made. From this perspective, it is possible to hypothesise that the effects of the reform have penalised women to a greater extent, as they abandon their academic careers more often than men and look for jobs outside university that allow for a better work-life balance (Bozzon et al., 2017).

All those factors, together with the scarce financial resources available to departments to open enough permanent positions, negatively affect the career advancement of women.

CONCLUSIONS

The analysis presented in this chapter has investigated whether some of the goals of tenure track in Italy comply with the purposes of the reform itself. Ten years after its implementation, we can say that overall scientific productivity has certainly increased, as has the productivity of precarious researchers. While the increase in overall scientific productivity has been going on for some time (Abramo & D'Angelo, 2021), that of precarious researchers was driven by the combined effects of qualification requirements and the scarcity of tenured positions – linked to the rationalisation of public expenditure for universities and academic staff, which together raised the competition.

On the other hand, the same mechanisms have made the precarious phase longer, with two kinds of implication: the ageing of researchers and future professors, who largely reach the tenure track position at age 45 or beyond; and the difficulty for women to access tenure track, reproducing gender inequalities in academic careers.

Both are mainly due to funding cuts and the limited economic resources available to open an adequate number of tenure track positions. As far as age is concerned, the lack of opportunities results in an extension of career advancement times and, thus, in the ageing of prospective academics. Regarding the gender issue, women are far more penalised in their careers when financial resources are scarce; whereas, when resources are relatively abundant, they enjoy more opportunities because of a sort of trickle-down effect favouring them (Anzivino & Vaira, 2018).

The new reform issued in 2022, the effects of which cannot be estimated for some years, aims to provide greater stability, better social security and clearer career prospects to researchers after their PhD, while also lowering their age and improving the career opportunities for women. However, given the higher costs of new research contracts for universities, we expect that, in the absence of increased funding, there will be a reduction in junior research positions and RTTs. Furthermore, considering the long line of researchers who do not yet hold tenure track positions and who have or will soon obtain their national qualification, we expect the goals of reducing researchers' age and gender disparity in access will not be achieved, at least in the short term.

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