# The balance between status quo and change when minorities try to access top ranks. A tale about women achieving professorship 


#### Abstract

Women are still underrepresented at top ranks in organisations, including academia. This happens even in academic disciplines that have been for a long-time female-dominated at lower ranks. Literature in feminist organisation studies has looked at the problem mainly from two perspectives: focussing on individuals, pointing at differentials in preferences and performances; or on structural issues affecting organisations (and society more widely). However, our understanding of why such underrepresentation persists is still limited. Starting from the assumption that organisations are gendered and reproduce inequalities, this article combines social identity and competition theories to study intergroup dynamics - a novel approach to look at possible inception of inequality. Social identity and competition theory help to explain how a majority (i.e., men) can enable or hinder the advancement of a minority (i.e., women). As a case, this article investigates whether gender composition of both associate and full professor ranks predicts the availability of promotions, while considering individuallevel variables as well. Findings show a strong and significant effect of gender composition: promotions more likely happen when full professor ranks are male-dominated and associate professor ranks are female-dominated. Concurrently, the analysis of individual-level variables shows that women are discriminated. The paper argues that the majority releases more promotions when they are under the pressure of change. However, this does not contrast discrimination at the individual level. Thus, prominent dynamics between majority and minority are part and parcel of inequality regimes, and might even contribute to make individual-level discrimination less visible.


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## Keywords

gender equality;
intergroup dynamics;
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ADD inequality regimes

## Introduction

Vertical segregation in academia is a global phenomenon: the proportion of women in academia tends to decrease progressively along the career levels, across all the disciplines. The step between associate and full professor is considered especially sensible (Le Feuvre et al., 2019; Winslow \& Davis, 2016). More importantly, it has been noted that this problem is particularly persistent, and it is not going to solve by itself (EC, 2019). Joan Acker's influential concepts of gendered organisations (1990) and inequality regimes (2006) well point at the possible roots of this persisting problem: organisations tend to reproduce the same kind of gender order and power structures characterizing societies. Thus, women's jobs and careers are undermined. Following Acker, it has been argued that an image of ideal academic exists. This is: highly gendered (even in the disciplines where women are well-represented); and corresponding to the stereotypical image of the white man fully devoting himself to the job (Benschop \& van den Brink, 2019; Bleijenbergh et al., 2013; Fotaki, 2013; Lund, 2012). Interestingly, while Acker's theory of gendered organisations would call for focusing the analysis on structural issues rather than on individual-level ones, literature privileging the individual level is still dominant when studying gender discrimination along academic careers. In particular, the progression from associate to full professor has been investigated by analysing
two individual factors: scientific productivity, and family commitments (the latter culturally assumed as women's work). A wide array of studies, across different countries and disciplines, found that women are less likely to obtain tenure and promotion, even when controlling for productivity (D'Amico et al., 2011; Danell \& Hjerm, 2013; De Paola et al., 2015; Heijstra et al., 2015; Marini \& Meschitti, 2018; Mayer \& Rathmann, 2018; Perna, 2001, 2005; Takahashi \& Takahashi, 2015; Treviño et al., 2018; Weisshaar, 2017). The study by Lutter and Schröder (2016) on the discipline of sociology in Germany was an exception, since it found that women were positively discriminated. Regarding family commitments, literature has reported mixed results. One's family condition was a significant factor impacting promotion in the studies by Takahashi and Takahashi (2015) and Fox and Xiao (2013), but not in those by Hesli, Lee, and McLaughlin Mitchell (2012), and by Heijstra, Bjarnason, and Rafnsdóttir (2015). Different institutional characteristics may have possibly influenced these inconsistent findings. Literature privileging a structural focus instead has pointed at how practices of networking and recruitment are biased (Deem, 2003; van den Brink \& Benschop, 2014; van den Brink et al., 2010), with the concept of excellence itself being highly gendered (Fassa \& Kradolfer, 2013; van den Brink \& Benschop, 2012a; Wieners \& Weber, 2020). It is thus possible to assert that there is a global problem of gender discrimination when it comes to promotion to the highest levels of academia, which goes beyond individual-level issues.

This article answers the call of scholars arguing that the predominance of literature focused at the individual level, and the paucity of studies considering structural factors (i.e., institutional characteristics and resources), both bring to a limited understanding of why gender vertical segregation, and the underrepresentation of women professors particularly, persist (de Vries \& van den Brink, 2016; Hüther \& Kirchner, 2018). More specifically, this article assumes that the persistent underrepresentation of women at full professor level can be understood as a manifestation of the inequality regimes characterising academia, i.e. the "loosely interrelated
practices, processes, actions, and meanings that result in and maintain class, gender and racial inequalities within particular organisations" (Acker, 2006, p. 443). Furthermore, to understand such inequality regimes it is worth looking at both the individual and structural factors affecting promotion. In order to do that, we propose to resort to social identity (Tajfel, 1974) and competition theories (Blalock, 1967), which both focus on intergroup dynamics in processes of social ascension. This means that we adopt two perspectives that intrinsically look at how power, prestige and economic resources are managed. Both theories look at dynamics between majority and minority, defined in terms of status differentials. The majority side might also be called "established" and the minority one "parvenu", especially in those cases where expectations of social ascension are attributed to the minority, and a respective defending and resistant stance to the majority side. These two theories do not come from feminist organisation studies literature. Social identity and competition theories have been applied mainly to the analysis of dynamics amongst ethnic groups. Nevertheless, this paper argues that they can enlighten the analysis of gender discrimination through their attention towards the dynamic between majority and minority. More specificallys, intergroup dynamics are part and parcel of the inequality regimes theorised by Acker (2006), shedding novel combination of approaches and data on feminist literature.

In fact, the intergroup perspective has rarely been used in gender studies. Nevertheless, recent research by Hüther and Kirchner (2018) stresses on its importance to better understand gender discriminations in academic promotions. Adopting these middle-range theories is suitable for this topic, and innovative per se. Academic women's career aspirations represent a quest for change, which is ultimately affecting the interplay between the majority (men full professors) and minority (women associate professor), and consequent distribution of power. It is worth emphasizing that achieving full professorship means accessing a position of prestige and
power, which allows to access strategic decision-making processes at institutional and disciplinary levels (Clark, 1986).

Drawing on social identity and competition theories, this article aims at understanding if intergroup dynamics are more important than individual factors when looking at promotions to professorship. This allows to uncover undiscussed factors engendering inequalities, paving the way to discuss ethical implications. Interestingly, organisational ethics literature has not been prone to consider career progression as one of its main foci (Dietz \& Kleinlogel, 2015). However the persistence of discrimination along career progression undoubtedly constitutes an ethical issue. This article studies the entire population of associate and full professors in Italy, considering institution, discipline and gender composition. The article is based on a solid empirical ground to look at gender from an intergroup perspective, since the Italian academic system has a relatively homogenous population (when considering ethnicity and nationality in particular).

The contribution of this article is manifold. From a theoretical perspective, the article proposes to extend the theory of inequality regimes by including an intergroup perspective: this happens thought the combination of social identity and competition theories to investigate gender and promotion patterns. Furthermore, by understanding gender and promotion processes as a dynamic between majority and minority this article offers a new perspective to the study of gender and careers, which combines the investigation of individual and structural-level issues. As said, this approach is also innovative when looking at feminist literature. A wider contribution of this study is that it can offer possible explanations for slow career movement in any top-rank profession when looking at aggregated terms, applying our approach based on gender only into other social standing (e.g., ethnicity, nationality, social class) and the respective intersectional interplay.

## Gender differences in promotions: Theoretical perspectives

Acker's $(1990,2006)$ theory of gendered organisations, and in particular her concepts of ideal worker and inequality regimes, underlie a significant amount of the most recent literature trying to investigate gender discrimination in academia (Benschop \& van den Brink, 2019). In particular, it is stressed that many practices characterising academia and more broadly the world of scientific knowledge reproduce a gendered order - this meaning that gender is so pervasive to even become invisible (Gupta, 2020; van den Brink \& Benschop, 2012b; van den Brink et al., 2010). This helps to explain the denial or minimisation of specific instances of discrimination (Britton, 2017), and the slow progress of women even in presence of gender equality initiatives (Ecklund et al., 2012; Roos et al., 2020). Gendered organizations tend to resist any attempt to structural changes. This is even more the case in the current neoliberal context (Gill, 2010; O’ Hagan et al., 2016; van den Brink \& Benschop, 2012b; Vijay \& Nair, 2021; Wieners \& Weber, 2020). When looking specifically to academic promotions, a considerable amount of literature has been influenced by the "critical mass approach" inspired by Kanter (Kanter, 1977, 1987). Kanter also stresses the existence of problems in organisational structures - a point that will be further developed by Acker, who relied on Kanter when proposing her theory of gendered organisations. However, Kanter devotes special attention to the proportion of women across different organisational levels. Her work is especially remarkable in its ability to inspire research drawing from different methodologies. Since the critical mass approach is assumed in most of the literature looking at academic promotions, the next section aims at critically assessing it, making the point of the suitability of alternative approaches.

## Critical mass: Change the numbers to change cultures

Kanter (1977), following her study on the issues faced by women professionals along their careers, argued that when women find themselves in a highly skewed group ( $>15 \%$ ), they
experience a difficult work climate and are under extra pressure to perform. Women promoted to top positions often find themselves in the role of "token", representing the highly visible (and highly scrutinised) minority. Kanter argued that this situation can be tackled with an increase in the proportion of women, particularly when this proportion reaches at least the $35 \%$ threshold. Kanter's arguments are recognized as "critical mass" approach: this has influenced a considerable amount of literature stressing that, in absence of a critical mass of women across the different levels of an organisation, women are in front of a hostile environment (Cassell \& Walsh, 1997; Probert, 2005; Simpson, 2000). Nielsen and Madsen (2019), in their study of the Danish public sector, showed that today women still find themselves in token positions, which has detrimental effects on women's career aspirations.

Critical mass has influenced also the wider debate on gender quotas and women on boards (Kirsch, 2018; Terjesen \& Sealy, 2016). It is often accompanied by the assumption that people tend to help those who are similar to them (e.g., women supporting other women) and that increased exchanges among members of different groups will cause people to be more open to others. Some research shows that women are more likely to access senior positions when they are well-represented in their organization (Dreher, 2003; Goodman et al., 2003; Skaggs et al., 2012), including academia (Chevreul et al., 2018). It is argued that the presence of women in professorial or board roles makes universities less gendered (Carrell et al., 2010; Mazzotta et al., 2020; Sonnert et al., 2007), and that such presence helps to widen the scope of the criteria for promotion (Crawford et al., 2012).

Following critical mass theory, a gender balance in promotion committees is recommended. The existing literature has looked at how such a gender balance affects the advancement of women in academia. However, the results are mixed. While some literature has found that the presence of women in appointment committees is beneficial (De Paola \& Scoppa, 2015; van den Brink et al., 2006), other has revealed that having more women in the selection committee
might even decrease the likelihood for women to be promoted (Bagues et al., 2017). Also, the presence of a work environment characterised by a balanced representation of genders might even increase stereotyping (Bobbitt-Zeher, 2011). Critical mass theory is also questioned by studies which stress that underrepresentation of women at top levels persists even when women are massively represented at lower levels. This has been widely documented in academic medicine (Carr et al., 2018; Cervia \& Biancheri, 2018; López et al., 2018), for instance. Thus, Hillard et al. (2014) and Helitzer et al. (2017) argued against the application of the critical mass approach to understand the leaky pipeline in academia.

## The intergroup perspective

Yoder (1991) explained well the risk of a sole focus on numbers and highlighted that the critical mass approach in fact has ignored broader structural and intergroup issues when it comes to workplace discrimination. Also, the focus on numbers has led to a conflation of gender representativeness and gender status, which are different phenomena. Yoder cited Blalock's (1967) competition theory to argue that the increase in the representation of women might even increase discrimination against them. Blalock (1967) developed the competition theory when studying relationships between Whites and Blacks in the US, claiming that a high-status group (majority), when feeling threatened by the increasing number of the lower-status group (minority) with the expectation to improve one's status, tends to become more supportive of the ingroup and more discriminatory towards the outgroup. These dynamics between minority and majority are affected by the kind of resources at stake (political or economic ones). In the case of political resources especially, an increase in the status of the minority (e.g., minorities attaining higher education or filling higher, but not yet top, ranks outnumbering the majority group) might bring about increased discrimination by the majority.

Competition theory helps explaining apparently contradictory findings, for instance that of an increase in both number and status of the minority might not necessarily benefit the minority
in the short term (Allmendinger \& Hackman, 1995; South et al., 1987; Tsui et al., 1992). For example, Tolbert et al. (1995) found that an increase in the number of women faculty was associated with an increased turnover of women (but not men). Following the competition theory, the authors explained that a hostile environment, emerging from the different balance between high (men) and low (women) status groups, might contribute to the high turnover of women. Hüther and Kirchner (2018) studied the effect of the proportion of women full professors on the advancements of women in Germany. They found elements in support for the competition theory as well. Namely, they found that the number of women being appointed as full professors progressed more slowely than expected after reaching the $25 \%$ threshold (while critical mass would argue for a quicker progression).

Social identity theory also helps us understand why an increased proportion of women might enhance solidarity in the ingroup (i.e., the male majority) and why this intensifies problems in the outgroup (i.e., the female minority). Tajfel $(1974,1978)$ and Tajfel and Turner (1979) argued that individuals want to develop a positive social identity, and that social identity becomes salient in conditions of instability or illegitimacy. The motivation to attain a positive social identity varies by group and depends on status: social identity might become more salient for minorities since they are in a less privileged position. Individuals from a low-status group might use two different strategies to increase their status: distancing themselves from their original ingroup or using social creativity by redefining the factors of comparison between the groups. Thus, the social identity theory helps to explain conditions under which individuals act in favour of the ingroup (or the outgroup). The degree of perceived legitimacy and stability of a group also affects group dynamics (Turner \& Brown, 1978). A majority group, when is perceived low in both legitimacy and stability, might face greater pressures for change. Consequently, the majority may become more discriminatory towards the outgroup.

Some studies in the private sector provide support for social identity theory (Markoczy et al., 2020). Particularly, it is shown how the male majority, worried about preserving their status, might coalesce to marginalize the minority (Chow \& Crawford, 2004; Huang et al., 2020), and how women are usually conferred with less status (Markóczy et al., 2021). Moreover, social identity theory clarifies the phenomenon of the "queen bee": individuals in low-status groups might wish to distance themselves from their original ingroup to increase their status (Duguid et al., 2012; Tolbert et al., 1999; Williams \& Howard, 1978).

This paper proposes to combine social identity and competition theory to look at how intergroup dynamics affect gender discrimination in career progression. Thus, it goes beyond literature drawing on social identity theory mainly to understand the impact of social similarity on career progression (Huang et al., 2020). Social identity and competition theory have some limitations when applied to the study of gender differences in promotions. Social identity has been mainly developed through experiments, sometimes involving students (Turner \& Brown, 1978). Experimental conditions and student samples might not be able to reflect the complexity of everyday organizational life, particularly when power and politics are at stake. Competition theory has been developed in the framework of interracial relations, which might present different patterns compared to gender.

## Weaving together different perspectives

Table 1 below compares the theoretical approaches here outlined, along with their main claim, background assumptions, evidence, and limits. It is worth stressing that, in comparison to critical mass, social identity and competition theory provide a more nuanced understanding of the processes that characterize changes in number and status of a group: they shift the focus from the individual to collective side, namely highlighting the institutional structures and cultures.

This paper argues that intergroup dynamics are part and parcel of the inequality regimes characterising academia, helping from a novel angle to explain why gender vertical segregation persists. In order to study the role played by intergroup dynamics, it becomes necessary to look at both individual and structural factors together. In the analysis that follows, individual-level factors mainly pertain to scientific productivity, whose relevance is stressed in extant literature. Structural level factors are related to the gender representation at the levels of associate and full professor, since this is reputed important in both critical mass and intergroup perspectives. It is relevant from an intergroup dynamic perspective to account for availability of resources that enact a zero-sum game at institutional level. The next section gives an overview of the context; methodology, hypothesis and results will follow.

## [TABLE 1 AROUND HERE]

## The academic career system in Italy

The current regulations about academic careers in Italy was introduced in 2012 and it is based on two steps. First, academics should apply to the 'abilitazione scientifica nazionale' (ASN), a national evaluation process awarding a fit-for-the-role qualification. ASN is conducted by committees from specific disciplines (settore concorsuale, referred to as "D" for "discipline" in the variables listed in Table 3). In total, there are 184 committee disciplines grouped in 14 areas (see Table 2). Second, academics who successfully complete ASN can apply for recruitment or promotion, when these are advertised by universities. ASN is only a qualification process, ensuring that some minimal essential criteria, especially in terms of publications, are satisfied. It does not guarantee a position (Marzolla, 2016). The proportion of academics achieving the ASN usually outnumbers the proportion of those getting a position, mainly because of a shortage of funding. It is worth noting that institutional mobility is low in

Italy, and typically academics apply to full professorship in the university where they already hold a position (thus we could better speak of promotion rather than appointment).

Each university has full autonomy to appoint or promote anyone who qualified through ASN for the rank of full professor. Provided that financial resources are available at institutional level, there is no specific national procedure to follow when appointing or promoting academics. The process allowing candidates to become full professors is not necessarily as transparent as ASN outcomes (those requirements, official decisions and rankings are publicly available online). The academic career system in Italy presents some features of careers in bureaucratic organizations (i.e., transparent and performance-based eligibility checks); the financial resources to sustain promotions follow specific performance-based formulae measured at institutional level. Academic staff (full professors in this case) have civil servant status with a large degree of autonomy, and peers have the final voice in promotions and recruitment following a criterion of academic judgement. It is also worth mentioning that each university in Italy is expected to have three-year-long gender equality plan. This mandatory regulation entails to monitor gender representation at different hierarchical levels (Directive $2 / 2019$ on equal opportunities in the public sector). However, there have never been quotas defining the minimal number of women to be shortlisted or appointed as full professor. Recent research shows that the Italian academic system is still highly masculine (Roberto et al., 2020). All these factors, taken together, mean that gender bias or processes of gatekeeping that hinder women, might be in place, as observed in other countries as well (van den Brink \& Benschop, 2014; Wroblewski, 2014).

The existing literature has focused especially on investigating gender discrimination in ASN committees (Abramo et al., 2015a, 2015b; Bagues et al., 2017; De Paola \& Scoppa, 2015), yielding mixed results. De Paola, Ponzo, and Scoppa (2018) and Marini and Meschitti (2018) instead considered actual promotions to full professor, and both papers showed that women are
less likely to be promoted at parity of scientific productivity. Table 2 shows the percentage of women per disciplinary area in 2000 and 2017, by professorial rank. These figures clearly show that women were still underrepresented in full professor roles in 2017, even in the only discipline (i.e. Antiquities, philology, literary studies and art history) in which women outnumbered men in 2000 (when considering all the academic ranks). The situation is similar when looking at the largest Italian universities: despite some progression, women full professors do not reach the $35 \%$ threshold advocated by Kanter (Table A1 in the Supplementary Files). This confirms Gaiaschi and Musumeci (2020) observation that there is a stagnation in the representation of women full professor.

## [TABLE 2 AROUND HERE]

## Data and methodology

The dataset provides census data combining several public repositories. Individual performances were derived from applications to ASN. Values in this dataset included applications of the candidates at the ASN, full professor level, in the first two waves (2012 and 2013). By incorporating such information, it is also possible to normalize bibliometric and nonbibliometric indicators to compare hard sciences, social sciences, and humanities on the ground that minimal thresholds identify their least common denominator. Information related to ASN are publicly available. As a result, it is possible to compare it with information from national repositories comprising name, surname, rank, gender, institutional and Department affiliation of all Italian academics. From this latter source, it is possible to derive promotions awarded between 2013 and 2016. This period represents the four years during which those who passed the ASN in the first years might have obtained a promotion to full professorship. Along with such information, it is possible to compute for each staff member the number of years elapsed
from last promotion since public repositories allow to date back to 2000 year. This calculation represents seniority variable - an measure found to be consistent with the novelty introduced by ASN (Marini, 2017). Table 3 lists the variables, briefly described below. A correlation matrix for all the variables is available as a Supplementary File, Table 2A.

## Promotion

This is a dichotomous variable, representing promotions between 2013 and 2016. A few promotions occurred under previous legislation (thus following a different process). Some other applicants to ASN are extra-academic researchers who are employed typically in publicly funded research institutes (e.g., CNR). After excluding these cases, we obtained around 6000 valid observations. As shown in Table 3, only $23 \%$ of those who obtained the ASN were promoted.

## Indicators of scientific productivity

There are three indicators of scientific productivity, as used in the ASN. For hard sciences they are: articles in journals (ind1), gross number of citations (ind2), and H index (ind3). For social sciences and humanities they are: articles in journals (ind1), chapters or books (ind2), and articles in specifically listed journals for social sciences and humanities ("top-journals") (ind3). We normalize such values by the thresholds indicated at national level for each of the disciplinary community in order to have a fair comparison across disciplines.

## Age

Age is extracted from the CVs uploaded together with the ASN application.

## Seniority within rank

Seniority within a rank is the number of years spent in a rank. For instance, a person who has been associate professor for 5 years, and in the $6^{\text {th }}$ year in reverse had a different rank, equals 5 in seniority; a person who spent just one year since previous promotion scores 1 in this variable. This is an interesting variable since it might be related to status.

## Institutional endowment (IE)

This variable represents availability of resources to fund academic salaries (punti organico), which are centrally distributed depending on formulaic institutional performance indicators. This is a necessary variable to take into account, also considering competition theory arguments about material resources.

## Masculinity by rank and pool

We compute four different variables to account for the extent to which pools are more or less male-dominated, empirically translating social identity and competition theories arguments about majorities and minorities. The four variables are:

- (masc_AP_HEI): Masculinity at associate professor level in the whole institution (pool of applicants).
- (masc_AP_D): Masculinity at associate professor level in each discipline (pool of applicants).
- (masc_FP_HEI): Masculinity at full professor level in the whole institution (actual decision-makers and destination pool).
- (masc_FP_D): Masculinity at full professor level in each discipline (actual decisionmakers and destination pool).

These variables were computed at the end of 2012 to account for the situation when these promotions started. A degree of masculinity was coded as 1 if all persons were males and 0 if all persons were females. These four variables considered the two main factors influencing a promotion: associate rank vs. professorial rank, and epistemic communities vs. institutions. The first factor defines those who make the decision (full professors) and those who are affected by them (associate professors). The second factor concerns whether the pool competing for resources is at institutional level as a whole, or at disciplinary communities (disciplines, D). For decades, single disciplinary communities were the ones to decide
collegially who was to be promoted/recruited. The institutional dimension became more relevant after the last general reform of the Italian higher education system that afforded more institutional autonomy to universities. This autonomy applies to recruitment and promotion, which are decided according to financial resources available at institutional level.

## [TABLE 3 AROUND HERE]

## Hypothesis and results

Our hypothesis is that while considering some constraints exposed in the previous section such as individual performances, seniority, and institutional resources, gender composition of decision-makers (full professors) and candidates (associate professors) helps predicting the likelihood of promotion. We assume that: 1) promotions in general happen when pressure for change (change in the majority and minority groups) is higher (higher percentage of women at associate professor level and/or higher percentage of men at professorial level); and 2) within this dynamic dominated by the interplay between minority and majority, women are more likely to be discriminated at parity of individual performances.

Table 4 lists the results. Results show fewer observations in comparison to Table 3 due to listwise missing values for some small, recently established institutions where there is a paucity of staff at professorial level. Logit regressions, with a VIF test for multicollinearity (see Table 3A provided as a Supplementary File), test the hypothesis of the factors that predict promotions while considering the previous set of independent variables. Three models are fostered. One using only disciplinary masculinity variables; a second using institutional masculinity variables; a third one using all four masculinity variables.

During the period under examination (2013-2016 included), the number of women full professors increased from $20.95 \%$ to $22.95 \%$. However, gender discrimination in the promotion to full professor is a consistent reality at parity of scientific performance. When looking at variables testing individual factors (sex, indicators of scientific productivity, age and seniority), it is worth noting that only sex is significant, confirming a discrimination against women who apply to full professorship. Scientific productivity does not have a decisive impact: this might look surprising since productivity is typically highly valued for promotions, following the common understanding that scientifically productive individuals shall be rewarded. Seniority does not have a role, this showing that the number of years spent in a rank do not represent an advantage nor an impediment in terms of likelihood of being promoted. Age also is not significant, this indicating that it is not a factor in predicting promotions. When looking at variables testing institutional factors, an interesting picture emerges. First, the variable testing for institutional resources is not significant. Notwithstanding, this is an essential confounding factor to be taken into account. Instead, gender composition at both associate and full professor levels (masculinities) has an impact, when computed at disciplinary level: the coefficients indicate that the impact of the two variables (masc_ap_D and masc_fp_D) is more prominent than that of individual variables, such as sex. Both males and females are more likely to obtain full professorship if the pool of full professors is predominantly populated by males in a given discipline (a higher share of majority in the pool of full professors). Similarly, the gender composition at the associate professor level, within disciplines, is a significant predictor: males and females are more likely to get a promotion if the associate professors pool is more likely to be feminine (a higher quantitative presence of the minority). It is worth remembering that together with these collective predictors, findings also show gender discrimination at individual level.

Model2 tests the same set of individual variables but considering masculinity within institutions instead of disciplinary field (masc_ap_HEI and masc_fp_HEI). The impact of the gender composition at associate and full professor ranks is strong, but not statistically significant, albeit all other predictors remain similar to Model1. Specifically, the coefficients indicate that more promotions are obtained in those cases where, in a given university, the pool of associate professors is more female-dominated, and that at full professor is more maledominated.

Model3 contemplates all four masculinity variables on the assumption that the interplay of disciplinary level (where single communities decide about their own members' careers), and the institutional one (where some resource constraints are present), is the most realistic. Model3 confirms what already discussed for Model1 and Model2, showing a prominent role of the combination of masculinity at both full and associate levels, expressing a dynamic of admitting more promotions in those disciplinary communities that are more misbalanced (more males at full professor rank, and more women at associate rank). Notably, these dynamics exist together with some unfair misbalance against women, as shown by individual indicators.

To briefly summarise, the analysis shows that institutional factors such as the gender composition at both associate professor and full professor ranks, when considering the discipline, has the strongest impact on predicting the number of promotions available. Individual factors do not have a role, except for the variable sex, which indicates a discrimination negatively affecting women. This list of findings paves the way to further discussion.

## Discussion and conclusion

Following an in-depth analysis of the literature on vertical segregation in academia, it was argued to focus on both individual and structural factors affecting career progression to mould
a novel interpretation of gender discrimination. In order to do that, we built an original framework, where social identity and competition theory were combined: the two theories allow looking at structural factors, and in particular at intergroup dynamics, proposing that intergroup dynamics are the site where inequality regimes are reproduced.

Findings support that intergroup dynamics have a prominent role. Three remarkable observations come from the findings. First, gender representation at both associate and full professors are relevant. Second, the importance of gender composition in influencing promotions to top levels are more important at disciplinary level, rather than at the level of resource negotiation (the institutional level). Finally, there is a persistent discrimination at individual level that is not justified by individuals' performances.

In relation to the first point, it is shown that, in aggregate terms, members from a minority group are subject to intergroup dynamics more predominantly in comparison to individual achievements (i.e., publications, that in principle ought to be the main factor in granting a promotion) or individual aspects (e.g., gender). It is worth stressing that this finding reflects a case where the position of the majority (the dominance of men at full professor level) is not considered legitimate anymore. There is a clear quest for change coming from the minority (considerable number of women at associate professor level), strengthened by the broader discourse about the need for more women at top levels in academia. Since the majority (men full professor) has some power to decide when to bestow promotions, we can advance that the majority is more prone to make promotions available in those circumstances where there is a higher pressure coming from the minority (more female-dominated associate professors pools). This does not necessarily mean that women will be the ones receiving a promotion, as results in Table 4 confirm some discrimination against women. Intriguingly, the fact that more promotions are made available shows some willingness to concede some form of change, but at the same time activity in bestowing promotions does not favour the minority - it may
disguise actual discrimination instead. Apparently, it is the pressure from a minority group that creates some more opportunities for accessing top positions. Nevertheless, some discriminations at the individual level occur, this meaning that advancements for the minority happen at a slower pace than expected by a mere individuals' meritocratic (e.g., productivity) assumption. More promotions occur to appease the minority side, conceding some ineluctability for "opening the gates". Notwithstanding, this increasing and unavoidable quest for change that is the minority trying to become majority is managed in a way that cleverly disguise persistent discriminations. When such gates get opened, the flux of new entrants will not be necessarily perfectly fair.

The fact that gender composition at disciplinary level is more important than gender composition at institutional level might be surprising at first, since resources (i.e., institutional endowments) are administered at the institutional level. However, it should be stressed that full professorship confers status, prestige, and power. For this, possibly factors other than material ones are at stake. The importance of gender composition at disciplinary level is probably attributable to interactions within single epistemic communities ("D", disciplines), characterised by their own specific culture and practices in relation to conferring prestige and status. In fact, from the point of view of full professors, it is the interaction they have with their peers at disciplinary level to express their actual academic authority, and only at a lesser extent the interactions at institutional level. Also, each discipline is quite typical in its gender composition. This common aspect is a critical advantage in stressing the point of the relevance of gender composition at different ranks.

The discrimination against women, happening at the individual level, might be explained with the help of competition theory: the majority becomes more discriminatory when the minority wants to access its resources. Promotions to full professors can be considered a zero-sum game, when considering the individual level. There are different forces at play: the necessity to "open
the gates" (explained following social identity theory, and which could in principle help the minority), together with some discrimination given by the competition over the same resources (explained by competition theory, in this case harming the minority).

These findings are unique: previous literature has mainly looked at individual variables, even when trying to consider disciplinary differences, such as in the case of Weisshaar (2017). Only few studies have looked at an intergroup dynamics (Crawford, Burns, and McNamara 2012; Hüther and Kirchner 2018). The findings presented parallel Hüther and Kirchner (2018) since they do not support the critical mass approach. However, they differ from Crawford, Burns, and McNamara's (2012) study, which found that higher representation of women among the full professors was associated with more recommendations for promotion. This disparity might be due to differences in disciplinary and national cultures.

Overall, this paper suggests that a majority might "open the gates" under the quest expressed by a "minority", but that action of opening opportunities is only apparently an accommodating and levelling one. Via granting more promotions, majorities assure to perpetrate some enduring discrimination towards minority. Thus, it is possible to state that intergroup dynamics are part and parcel of the inequality regimes characterising academia (and possibly other sectors as well) and are key to explain the slow advancement of women. These dynamics might also underlie the defensive institutional work against gender equality, which has been found by Roos and colleagues (2020).

As mentioned in the introduction, the issue of vertical segregation is also an ethical one. Given the complex role of intergroup dynamics in reproducing inequality regimes, one might ask how this can be approached ethically. Interestingly, the context we studied is not only highly regulated in relation to the scientific requirements for specific academic positions, but it is also characterised by accountability and transparency (more than, for example, the private sector). In theory, this should help gender equality (van den Brink et al., 2010), but apparently it is not
enough. This could be a good argument for the need to integrate an embodied vision of ethics in any plan or consideration about gender equality in universities. An embodied vision of ethics recognises the relevance of interactions among subjects in specific spatial-temporal contexts (Knights, 2015; Pullen \& Rhodes, 2015). However, how can this be translated into practice is more problematic. The "bifocal approach" theorised by de Vries and van den Brink (2016) might be helpful if it succeeded in being inclusive of different groups.

## Limits and future directions

This study has some limitations that must be noted. First, it is reasonable to believe that social capital among scholars plays a strong role in academic promotions. Unfortunately, it was not possible to get any proxy for this. Second, the invisibility of the institutional processes and informal practices involved in promotions is unsatisfactory. Possibly, different universities might develop different degrees of sensibility to gender equality now that they benefit some more autonomy. Third, this study was conducted in one country only. The features of a national context are important, and the article accounts for those when describing the academic career system in Italy. It is possible nevertheless to add that the dynamic observed in this article (i.e., the majority "opening the gates" whenever audiences are highly composed by minorities) might apply to other professions as well. Realistic examples are the public sector and bureaucratic organisations where there is a transparent system of eligibility checks, coupled with a clear hierarchical structure. Fourth, this paper focused on gender only, while inequality regimes and intergroup dynamics encompass class, ethnicity, and sexuality. Whilst it is reasonable to suggest that similar dynamics for each dimension might apply, it should not be excluded that the intersections of different categories might bring to interesting results. Further lines of research should inquire other sectors and countries, other potential discrimination features, the intersectionality of multiple features, and the role of sudden rising public opinion awareness. All these factors may alter the relatively simple dynamic found in
this article. There is a need for studies encompassing a longitudinal perspective. Another useful research question could assess the impact of gender interventions on inequality regimes and their associated intergroup dynamics. Research comparing different organisations active in the same sector might also enlighten the practice perspective, since different practices could help to better devise the effective ethical pathways.

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