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Gender, Careers and Peers' Gender Mix*

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In copertina: uno storico "Punto cliente" a Tuscania
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I WORKINPS PAPER

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Tommaso Nannicini

Gender, Careers and Peers' Gender Mix*

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Gender, Careers and Peers' Gender Mix*

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December 11, 2023

Abstract

We use Italian Social Security data to examine the impact of gender mix among a worker's initial peers on their career path. By leveraging variation in gender composition within firms, occupations, and time of labor market entry, we find that young female workers who start their careers surrounded by more female peers have less successful labor market trajectories than those who start in a more balanced peer group. We detect no such effect on male labor market entrants. To inspect the mechanism behind this finding, we focus on adverse employment shocks. We show that having a higher proportion of women in one's initial professional network increases the probability of female workers securing employment post-displacement, but these jobs tend to be of lower quality. These findings are suggestive of 'old boys' network dynamics, whereby having connections to male peers facilitates job opportunities through job leads and higher connections' status than females.

Keywords: gender gap, peer effects, networks, labor market entrants, career progression

*The findings and conclusions expressed are solely those of the author and do not represent the views of INPS. La realizzazione del presente articolo é stata possibile grazie alle sponsorizzazioni e le erogazioni liberali a favore del programma "VisitINPS Scholars".

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Divario di Genere, Progressione di Carriera e il Ruolo dei Colleghi

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December 11, 2023

Abstract

Il presente articolo si propone di esaminare l'impatto della composizione di genere dei colleghi sulla progressione di carriera dei lavoratori appena entrati nel mercato del lavoro in Italia. Utilizziamo a tale scopo l'universo dei dati provenienti dall'Istituto Nazionale di Previdenza Sociale e riguardanti i lavoratori italiani impiegati nel settore privato. I risultati sono ottenuti sfruttando variazioni nella composizione di genere che occorrono in un orizzonte di tempo limitato, a livello di azienda e occupazione. Dall'analisi emerge che le donne all'inizio della loro carriera, quando circondate da un maggior numero di colleghe, sperimentano una progressione di carriera meno favorevole rispetto alle loro controparti che godono di una piú equilibrata composizione di genere tra i colleghi. Non si rileva invece alcun impatto sugli uomini al momento dell'ingresso nel mercato del lavoro. Approfondendo l'analisi sui lavoratori e sulle lavoratrici soggetti a una chiusura aziendale, si evidenzia che la presenza di una percentuale piú elevata di donne nella rete professionale aumenta la probabilitá di rioccupazione per le lavoratrici in cerca di un nuovo lavoro. Tuttavia, é importante notare che le opportunitá di impiego post-licenziamento tendono a essere caratterizzate da una qualitá inferiore. Dai risultati emersi, si evince di conseguenza che la presenza di un maggior numero

di uomini nella rete professionale contribuisce a migliorare le opportunitá lavorative, poiché gli uomini, in media, sono impiegati in settori e professioni caratterizzati da salari piú elevati e prospettive di carriera piú promettenti.

Keywords: divario di genere, colleghi, networks, neoassunti, progressione di carriera

1 Introduction

The personal connections that individuals establish with their peers in the workplace can be valuable assets in the labor market. These connections can facilitate various aspects of job seeking and employment. For example, individuals frequently learn about job openings through their peers (Granovetter, 1973; Ioannides & Loury, 2004; Topa, 2011). In this context, employed individuals often have privileged access to information regarding available employment opportunities. The extent to which job-seekers become aware of such opportunities depends on their connections to this group (Calvo-Armengol & Jackson, 2004, 2007). Additionally, matches between employers and employees often occur through referrals. Employees can refer members of their professional or social network to their employers, providing the latter with valuable information about potential candidates that the employer might not have encountered otherwise (Dustmann et al., 2016; Essen & Smith, 2023; Glitz, 2017; Pallais & Sands, 2016).

In this paper, we study the impact of the gender composition among a young worker's initial peers on their career development. Men and women often find themselves working in distinct industries, firms, and occupations, leading to gender-based differences in network structures (Ibarra, 1992; Moore, 1990). Recent research has highlighted the significance of these differences for labor market outcomes (Ductor et al., 2023; Lalanne & Seabright, 2022; Lindenlaub & Prummer, 2020). However, there is limited empirical evidence on how the gender composition of one's peer network influences labor market outcomes. Central to our study is the examination of young workers at the time of entry into the labor market, a crucial phase in an individual's career (Wachter, 2020). The initial characteristics of a first job can have lasting effects on a young adult's working life (Arellano-Bover, 2020, 2022). Therefore, our analysis focuses on the dynamic impact of the gender mix of initial peers during an individual's first full-time job on their subsequent career trajectory. We assess this impact through various measures, including employment, wages, earnings, job-to-job transitions, and promotions.

We consider gender mix to be the equilibrium of genders within a peer group, in practice, quantified by the proportion of women within a firm and occupation at a given point in time. The gender

mix of peers may affect the career of young female workers, as connections typically exhibit a degree of group-based homophily, i.e., the tendency of people to be friends with others with similar characteristics (McPherson et al., 2001). On the one hand, if the probability of connections increases as groups become more homogeneous, female workers exposed to same-gender peers may have better chances of forming effective labor market networks. On the other hand, social connections created with men may be more beneficial for female workers. If men have more links or their contacts lead to better referrals, exposure to a higher degree of male colleagues may result in more opportunities for women (Essen & Smith, 2023). Whether one or the other effect prevails is primarily an empirical matter.

To answer this question, we use data on the universe of employment records for all private non-agricultural firms provided by the Italian Social Security Institute (INPS) to study male and female labor market entrants. This data allows us to observe the career trajectories of young workers up to ten years after labor market entry. The first ten years of a worker's career is where most job changes and wage growth occur (Topel & Ward, 1992). These years have the potential to shape the worker's life-long prospects on the labor market. We focus on new labor market entrants as these are a blank slate regarding work experience. Selection concerns based on prior job or wage histories complicating most other empirical studies of the career impacts of workplace characteristics are not present in this context (Wachter, 2020).

Our identifying variation arises from changes in the gender mix of new hires in a firm and occupation that occur within three years. By focusing on firm-occupation variation, we account for the differential sorting of women and men across firms and occupations (Blau & Kahn, 2017). To limit the influence of time-varying confounders that could impact future labor market outcomes of new entrants, our analysis directly controls for firm-level employment, average wages, employment and wage growth. Furthermore, focusing on a narrow time frame limits the impact of changes in firm-specific hiring practices that may correlate with the outcomes of workers. As we only compare workers who joined the same firm and occupation at approximately the same time, we keep not only labor market conditions but also firm-specific dynamics fixed.

Our results show that the initial peer's gender mix significantly affects the labor market trajectories

of young female workers. The effect is particularly evident in the female employment trajectories, with women exposed to a higher share of female peers being more likely to enter non-employment. Conditional on being employed, having more female peers negatively impacts women's wages and promotion probabilities. These employment and wage effects translate into substantial earnings losses for women. Specifically, a one-standard-deviation increase in exposure to female peers at entry translates to a 4 percent drop in earnings 2 to 7 years post-entry. These effects result from higher non-employment rates and lower wages among female entrants who begin their careers alongside more women. We also find evidence of higher job-to-job mobility and lower promotion rates among women exposed to more female peers in their initial jobs. We do not find any of these effects for young male workers.

To understand the mechanism behind these findings, we adopt a method similar to Cingano and Rosolia (2012), where we focus on workers who experience job displacement due to firm closures. This approach allows us to investigate whether a worker's initial peers affect their reemployment and sheds light on the role that initial peers play in facilitating new job opportunities. Examining these exogenous unemployment spells, we overcome potential selection bias from endogenous job search. It also enables us to estimate network effects by comparing individuals previously employed at the same firm before displacement when they simultaneously begin searching. Using this approach, we show that for female workers only, the gender composition of their initial peers affects their ability to find a job after a firm closure. Having more female initial peers allows women to find employment after experiencing a displacement. However, the jobs they secure via their networks offer lower wages. We take this as suggestive evidence that the negative effect of gender mix on women's career progression is likely the result of 'old boys' networks dynamics, whereby having connections to male peers facilitates job opportunities through job leads and higher connections' status than female or minority networks (Lalanne & Seabright, 2022; McDonald, 2011). In line with this idea, connections created with female peers are less valuable for a workers' career and the more likely the individual is to have such connections the less likely will be to successfully progress in the labor market.

Our paper contributes to several areas within the literature in economics. First, we add to the

research on networks and peer effects in the labor market. Previous studies in this field have identified significant positive impacts of social networks on several aspects of employment, such as job-finding (Dustmann et al., 2016; Kramarz & Skans, 2014), re-employment following displacement (Glitz, 2017; Saygin et al., 2021), wages, and, to some extent, productivity (Amodio & Martinez-Carrasco, 2023; Jarosch et al., 2021), among other outcomes. Notably, recent studies have begun to highlight gender differences in network effects. Lindenlaub and Prummer (2020) suggests that network structures may vary by gender, leading to labor market implications. Ductor et al. (2023) show that gender differences in network structure can account for a considerable output gap between male and female economists. In this paper, we make a two-fold contribution to this literature. First and foremost, we focus on the gender composition of the network of initial peers and analyze their dynamic impact on men and women separately. This emphasis on gender composition of peers adds a unique dimension to our study. Secondly, in line with some prior research, we estimate the impact of initial networks on re-employment post-displacement while also considering the influence of the initial network and its gender composition in parallel.

The second strand of literature our paper speaks to is the literature on gender gaps in the labor market. Economic research has long sought to understand the underlying causes of large gender imbalances observed in the labor market (Andrew et al., 2021). Sorting across industries, occupations, and firms (Blau & Kahn, 2017; Card et al., 2016), motherhood (Kleven, Landais, & Søgaard, 2019), gender norms (Bertrand, 2019; Boelmann et al., 2021; Farre et al., 2023; Kleven, Landais, Posch, et al., 2019) are all relevant when explaining why women and men still face such very different labor market realities. We propose another potential mechanism that may feed into labor market gender dynamics, and that is firms' gender composition. In particular, the gender composition of peers. Some economics research has been conducted on the impact of gender composition in management or boards of directors on workers and firms. Exposure to same-gender role models is essential for individuals to see themselves succeeding in a profession (Canaan & Mouganie, 2021; Porter & Serra, 2020). Likewise, having a same-gender manager could improve worker outcomes through better mentoring and learning opportunities or simply because managers are better at assessing the productivity of workers of the same gender (Athey et al., 2000; Flabbi et al., 2019;

Kunze & Miller, 2017; Matsa & Miller, 2011). To the best of our knowledge, this is the first work to focus on the gender composition of initial peers. The impact of peers is expected to operate through a different set of mechanisms than the gender composition of managers, thus constituting an inherently distinct and novel question.

Finally, our paper contributes to recent literature on the characteristics of the first job on long-term labor market outcomes. Early studies in this area have focused on specialized workers such as PhD-level economists (Oyer, 2006), MBAs (Oyer, 2008), or CEOs (Schoar & Zuo, 2017). Few studies have focused on a broader category of workers (Wachter and Bender, 2006, Müller and Neubaeumer, 2018, Arellano-Bover, 2020). To our knowledge, this study is the first to establish a direct link between young female workers' peers and long-term outcomes, tracing how early-career peer heterogeneity can have implications for long-term labor market outcomes.

The paper is organized as follows. In Section 2, we describe data and sample. In Section 3 we introduce our empirical strategy. In Section 4 we present our main results. Section 5 discusses potential mechanisms, and Section 6 concludes.

2 Data and Descriptive Statistics

2.1 Italian Social Security Data

We use data provided by the Italian Social Security Institute (INPS, *Istituto Nazionale di Previdenza Sociale*), which comprises all men and women employed in the non-agricultural private sector and covered by the Italian social security system, with self-employed workers, military personnel, and civil servants excluded.[1]

This is a linked employer-employee dataset. On the worker side, we observe essential demographic characteristics and a complete employment biography. For each job spell, we know the employer's identity, wage, type of contract (including permanent or fixed term and part- or full-time), broad occupational category (blue-collar, white-collar, managers and apprentices), and start and end

[1]This data was provided as part of the 'VisitINPS scholars' program.

dates. On the employer side, we have information on industrial classification[2], location, firm date of birth, and, if applicable, death. We also aggregate the workers' data to create additional relevant firm-level characteristics, including firm size, average wages, and employment and wage growth within the firm.

We apply restrictions at the worker and firm level. First, we focus on Italian nationals who entered their first full-time employment between 2000 and 2011, aged 16 to 30. This is done to minimize the likelihood of prior labor market experience outside Italy, which we cannot observe, and sample attrition due to return migration. Second, we focus on firms with at least four workers and exclude firms that are fully segregated by gender.[3] We also examine only hiring cohorts where at least two workers are hired within the same broad occupation. These restrictions ensure that we have enough variation in the gender mix and that all relevant controls can be calculated for the year of observation.

2.2 Labor Market Entrants

Our sample includes 1,816,582 individuals entering the labor market between 2000 and 2011, of which 42 percent are female. Table 1 summarizes the characteristics of these workers in their first year of full-time employment. The female workers in our sample (columns 1 and 2) start working about one year later than their male counterparts (columns 3 and 4), at an average age of nearly 23 years. Approximately 37 percent of female workers enter their first full-time employment as blue-collar workers, 46 percent start as white-collar workers, and the remainder as apprentices. For male entrants, the distribution is 53 percent for blue-collar jobs, 27 percent for white-collar jobs, and 20 percent for apprentice positions. Despite the higher representation of male entrants in lower-skilled jobs, they appear to be more likely to hold indefinite contracts, and their average wages are 6 percent higher than those of female entrants. This is partly due to female entrants working in smaller firms and firms that pay lower wages, as shown in Figure 1.

[2]This a 7-digit industry classification.

[3]Note that this does not necessarily mean that each hiring cohort cannot consist of individuals of a single gender. Our focus is on firms that, in the year before the focal worker joined, had at least one female and one male employee.

Differences between female and male labor market entrants persist and grow over time. From the second year after entering the labor market, earnings for male and female workers start to diverge, as depicted in panel (c) of Figure 2. This earning gap can primarily be attributed to gender-based employment disparities, as women become increasingly more likely to become non-employed over time, as indicated in panel (a) of Figure 2. Wage differences, on the other hand, remain relatively stable, increasing from 6 to 10 percent in the first ten years since labor market entry (see panel (b) of Figure 2 for details). Firm characteristics seem to account for a significant portion of the earnings gap observed in the raw data. In Figure 3, we compare the differences in female and male earnings in every year post-entry in the labor market. Conditional on initial firm and initial occupation, women appear to have higher earnings than men at least six years after entry when this reverses.

2.3 Peers Gender Mix

For every worker in our sample, we calculate the gender mix of her initial peers. We use the term *peers* to refer to workers hired by the same firm, in the same occupation and calendar year, who entered the labor market within two years of each other. These are co-workers with similar labor market experience, hired together in a firm. The term *initial* is used to identify the peers in the first full-time job of a given worker in our sample. The gender composition of these initial peers, termed as Gender Mix (GMX), is determined as follows:

$$\text{GMX}_{ijo\tau} = \frac{\sum_{n \in \mathcal{N}_{ijo\tau}}^{|\mathcal{N}_{ijo\tau}|} \mathbb{1}[Female_n]}{|\mathcal{N}_{ijo\tau}|} \tag{1}$$

$\mathcal{N}_{ijo\tau}$ denotes the set of focal worker i's initial peers and $|\mathcal{N}_{ijo\tau}|$ denotes the number of elements in this set. Notice that $\mathcal{N}_{ijo\tau}$ will be different for different focal workers, because focal workers themselves are excluded from the set, but that $|\mathcal{N}_{ijo\tau}|$ will be the same for all i's in initial firm j, occupation o, and year of entry τ. $\text{GMX}_{ijo\tau}$ can range from 0 to 1 and captures the share of women among the initial peers of an individual i.

In Figure 4 we plot the distribution of the gender mix among peers for male and female labor market entrants. There is significant heterogeneity in the gender mix across and within genders. As illustrated in Table 1, compared to men, women tend to be employed in firms with a more balanced gender mix. For female entrants, the average share of women among their peers is 56 percent, while for male entrants, this is approximately 30 percent. This pattern remains consistent when considering the overall gender mix within the firm (i.e., the share of women among all employees) and the share of women among more senior peers within the same occupation (i.e., 2 to 5 years of tenure within the firm). The share of women among managers also tends to be marginally higher in firms where female workers start their careers, although this difference is not statistically significant.

In Figure 5, we show the correlation between workers' employment probability and initial peers' gender mix. There appears to be a negative correlation between gender mix and the employment status of female labor market entrants 2, 5, 7, and 10 years after entering the labor market. The situation is notably different for male entrants. For them, there appears to be no discernible relationship between the gender composition of their peers and their future employment status, except in cases where the share of women among peers exceeds 80 percent, as depicted in panel b of Figure 5. The relationship depicted in Figure 5 captures variations in the gender composition of peers, both within and between firms. Hence, while it provides a valuable representation of the core relationship we are interested in, it does not fully represent the causal impact of the gender mix of peers on the employment of labor market entrants.

3 Empirical Approach

We start the analysis by providing evidence that the gender mix of initial peers matters for the career progression of young workers. Our empirical model is the following:

$$y_{ijo\tau}^{\tau+t} = \beta \text{GMX}_{ijo\tau} + X_{ij\tau}\gamma + \eta_{jo\tilde{\tau}} + u_{ijo\tau}^{\tau+t} \tag{2}$$

$$u_{ijo\tau}^{\tau+t} = \epsilon_{ijo\tau}^{\tau+t} + e_{jo\tau}^{\tau+t} \tag{3}$$

The dependent variable $y_{ijo\tau}^{\tau+t}$ represents the labor market outcome of individual i joining firm j and occupation o in year τ. Outcomes are measured t years after the entry year τ, where $t \in \{2, 5, 7, 10\}$. We are mostly interested in employment outcomes, which are a key contributor to gender inequality, but conditional on employment, we also look at full-time employment, wages, and promotions. The focus of our analysis is on $\text{GMX}_{ijo\tau}$ representing the gender mix of initial peers of worker i who joined firm j and occupation o in year τ, as defined in Equation 1. $X_{ij\tau}$ comprises a set of individual and firm characteristics. For individual factors, we control for age at entry, initial wage and cohort fixed effect. On the firm side, we account for lagged firm size, average wages, and wage and employment growth over the previous year. The term $\eta_{jo\tilde{\tau}}$ represents firm-occupation-cohort fixed effects. We define four broad labor market entry cohorts, $\tilde{\tau}$, 2000-2002, 2003-2005, 2006-2008, and 2009-2011, which group individuals joining the labor market at similar times. Lastly, $u_{ijo\tau}^{\tau+t}$ is the residual component which can be decomposed into $\epsilon_{ijo\tau}^{\tau+t}$ and $e_{jo\tau}^{\tau+t}$, respectively all individual i and firm j specific factors that contribute to the outcome of the individual i, which are not observed and captured by the model.

3.1 Identification

The coefficient of interest in Equation 2 is denoted by β, which, if identified, captures the impact of the initial peers' gender mix on the career trajectory of labor market entrants. Identifying β in Equation 2 is challenging, as gender mix may correlate to individual and firm unobservable characteristics. We exploit variation in gender mix within narrow groups of workers to address this identification problem. Central to our strategy is the term $\eta_{jo\tilde{\tau}}$, i.e., the firm-occupation-cohort fixed effect. We assume that conditional on $\eta_{jo\tilde{\tau}}$ and $X_{ij\tau}$, there is no correlation between the gender mix an individual is exposed to in her first full-time job and any unobserved worker and firm characteristics likely to impact her labor market outcomes in the future. We discuss below why this assumption is satisfied in our context and the threats to identification it addresses. We present our argument separately for the worker's and the firm's unobserved characteristics, which may bias our results.

3.1.1 Worker Side

Worker sorting across industries, firms, and occupations is well known to explain an essential part of the gender pay gap (Card et al., 2016; Sloane et al., 2021). For example, if women tend to gravitate towards more flexible but lower-paying jobs, this would naturally lead to a negative correlation between their earnings and the gender mix of their initial peers. On account of this, our identification strategy relies exclusively on within-firm and occupation variation in initial peers' gender mix. Effectively, we necessitate two things to estimate a causal effect in this scenario. First, we need variation over time in the gender mix of young workers joining a given firm and occupation. If firms hired women and men in the same proportion yearly, we could not estimate any effect, as this would dry out our source of identifying variation. Second, we require the decision of a worker to join a firm and occupation at a given time not to depend on the gender mix of her initial peers. In practice, this means that conditional on the occupation and firm, there is no strategic choice around the time of entry in the labor market based on peers' gender mix. As workers have no visibility on the other individuals who are hired at the same time as them, we find it unlikely that such strategic behavior is actually in place here.

It is not realistic, however, to assume any absence of correlation between unobserved worker's characteristics, $\epsilon_{ijo\tau}^{\tau+t}$, and the gender mix of entrants in a profession over a long period. Our data includes young workers entering the Italian labor market from 2000 to 2011. Over these ten years, men's and women's educational attainment has changed substantially. In particular, the share of women in Italy with tertiary education grew from 12 percent in the early 2000s to 25 percent in 2011. Simultaneously, the share of women working increased from 39 to 46 percent.[4] As we have no information on workers' education in our sample, we cannot directly control for these differences. To make sure, however, to compare only the outcomes of workers with similar characteristics (including educational attainment), we categorize the individuals in our sample into four broad labor market entry cohorts and only rely on within-firm, occupation, and cohort variation in the gender mix of initial peers to estimate our effect of interest. Further, we directly control for age at the time of entry and initial wage. On the worker side, therefore, one identifying assumption is required for

[4]Source: EUROSTAT Education and Employment Statistics. Respectively, 'Tertiary educational attainment by sex' and 'Employment rates by sex, age, and citizenship'

estimating a causal effect:

$$Corr(\epsilon_{ijo\tau}^{\tau+t}, GMX_{ijo\tau}|X_{ij\tau}, \eta_{jo\tilde{\tau}}) = 0 \tag{4}$$

In Equation 4, $\epsilon_{ijo\tau}^{\tau+t}$ represents all individual specific factors that we do not observe but that can influence the career progression of worker i which entered the labor market in year τ, firm j, occupation o. $GMX_{ijo\tau}$ is the gender mix of i's initial peers in firm j and occupation o. The assumption states then that conditional on $\eta_{jo\tilde{\tau}}$, i.e., the firm, occupation, and broad cohort, and $X_{ij\tau}$ the set of individual and time-varying firm characteristics we observe there is no correlation between unobserved individual factor affecting the career of i and the gender mix of her initial peers.

3.1.2 Firm Side

The longitudinal character of our data allows us to control, through fixed effects, for firm unobserved attributes that may correlate with their propensity to hire female workers and the outcomes of their employees. In fact, our results may be biased if, for example, firms that hire more women (e.g., female-friendly firms) are also more likely to promote them. If these factors are fixed for our sample period, we should be free of such biases. The hiring of women, however, may also correlate to the state of the business cycle (Stephens, 2002), which can have persistent impacts on the careers of young workers (Wachter, 2020). Firm and cohort of entry fixed effects can effectively capture this correlation. By restricting the identifying variation to changes in gender mix that occur within three years, we focus our comparison on workers who entered the labor market under similar economic conditions. The same reasoning applies to any other time-varying firm-level factor that can be realistically assumed to change at a pace that can be ignored for this short time interval (Mundlak, 1978). To further strengthen the validity of our approach, we include in $X_{ij\tau}$ lagged firm size, average wages, and wage and employment growth in the firm. On the firm side, therefore, one identifying assumption is required for estimating a causal effect:

$$Corr(e_{jo\tau}^{\tau+t}, GMX_{ijo\tau}|X_{ij\tau}, \eta_{jo\tilde{\tau}}) = 0 \tag{5}$$

In Equation 5, $e_{jo\tau}^{\tau+t}$ represents all firm-specific factors that we do not observe, but that can influence the career progression of worker i which entered the labor market in year τ, firm j, occupation o. $GMX_{ijo\tau}$ is the gender mix of i's initial peers in firm j and occupation o. The assumption states then that conditional on $\eta_{jo\tilde{\tau}}^{\tau+t}$, i.e., the firm, occupation, and broad cohort, and $X_{ij\tau}$ the set of individual and time-varying firm characteristics we observe, there is no correlation between unobserved factors affecting the career of i and the gender mix of her initial peers in the firm. Assumption 5 may be violated if some unobserved firm characteristic, not fixed within a cohort and not included in $X_{ij\tau}$, jointly affects the outcome of workers and the gender mix of new hires in a given year, for example, the firm's management style. To test whether this is likely the case, we look at the correlation between peers' gender mix over time. In Figure 6 Panel (a), we plot the share of women among new hires in a firm in year t versus $t-1$. This closely follows a 45-degree line, indicating persistence in the gender mix. This suggests that firms hiring more women in one year tend to do the same in the next, signifying persistence in firms' gender composition. In Panel (b), we show the residual variation in this variable after accounting for firm-specific effects. Here, the data points align horizontally around zero, indicating no systematic correlation between the proportion of women among new hires in year t and $t-1$. Once we control for the fact that some firms have a higher propensity to hire women, year-to-year changes in gender composition of new hires appear to be as good as random. We take this as evidence that once we control for the firm the worker is employed by, there are no time-varying characteristics that make firms more likely to hire female workers in a given year.

4 Gender Mix and Career Outcomes

4.1 Employment

We begin our analysis by examining the impact of an individual initial peers' gender mix on her future employment status. The results are presented in Table 2, where Panel A and B display the estimates for women and men, respectively. In columns 1 through 4, the dependent variable is employment 2, 5, 7, and 10 years after an individual's first full-time job. The dependent variable in

columns 5 to 8 is full-time employment 2, 5, 7, and 10 years after entry, conditional on employment. In all specifications, we control for worker age, initial wage, year of entry, lagged firm size and average wage, as well as wage and employment growth between $\tau - 1$ and τ within the firm.

The initial peers' gender mix has a negative and statistically significant effect on future female employment. Increasing the proportion of women among a female entrant's initial peers by 22 percentage points (1 standard deviation among female entrants, see Table 1) reduces her probability of remaining in employment two years later by nearly 0.29 percentage points. In the 5th year since labor market entry, this effect is 0.40 percentage points; by seven years after, it is estimated to be 0.31 percentage points. We find no effect on the probability of employment ten years in the future. The magnitude of the estimated effects relative to the labor market attrition rate of women two years after entry is 4 percent, it is 4.6 percent at the 5-year mark, and 3.3 percent at the 7-year point.[5] These findings sharply contrast with those for male entrants, whose estimates are close to zero and are not statistically significant throughout. While women commencing their careers in the same workplace as other women experience a significant reduction in their employment prospects later on, the same pattern does not hold for men. These results are robust to alternative model specifications, which we present and discuss in detail in the Appendix.

We also find that the probability of having a full-time job decreases as the share of female initial peers increases. However, the estimates are only statistically significant two years after entry into the labor market.

4.2 Wages and Earnings

Our second labor market outcome of interest is individual wage growth with respect to the initial wage. That is, conditional on remaining employed, we analyse how the initial peers' gender mix affects an individual's wage growth 2, 5, 7 and 10 years after the entry. The estimated effects are presented in columns 1 to 4 of Table 3. The initial peers' gender mix has a consistently negative and persistent effect on wage growth for young female workers. One-standard-deviation increase in

[5] These magnitudes are calculated as follows $\frac{\hat{\beta}}{(1-\bar{y}^t)} \times 100$, where $\hat{\beta}$ is the estimated effect of GMX on employment, and $\bar{y}^t$ is the share of women employed t years post entry.

the share of women among initial peers reduces wage growth by 0.5 percent two years after entry and by approximately 0.2-0.3 percent at 5, 7, and 10 years after entry among female workers. The coefficient is, however, not statistically significant at the 7-year mark. We find no effect for male workers. The estimated impact consistently hovers around zero and is not statistically significant.

In columns 5 to 8 of Table 3, the wage and employment effects are combined and summarized as earnings effects. The outcome variable is log annual labor earnings, which are set to zero for non-employed individuals. An increase in the share of women among entrants' peers by one standard deviation (22 percentage points) results in a 3.4 percent reduction in earnings two years after entry for female entrants. The most significant impact is seen at the 5-year mark, with a 4.1 percent reduction in earnings for women. This effect decreases to 3.3 percent after 7 years and becomes essentially zero after 10 years, although it is not statistically significant. To put these estimates in perspective, the gender-based earnings gap after two years in the labor market is 4 percent, 41 percent 5 years in, and 68 percent after 7 years. This means that the effects of a one-standard-deviation increase in GMX relative to the gender earnings gap are 100 percent, 10 percent, and 5 percent at the 2-year, 5-year, and 7-year marks, respectively. For men, the effects are never statistically different from zero.

4.3 Job Transitions and Promotions

Lastly, we analyze how, conditional on employment, having more women among initial peers affects individual job-to-job transitions, the quality of such transitions, and promotions.

In Table 4, columns 1 to 4 report our estimates for job-to-job transitions, while columns 5 to 8 look at whether these transitions deliver a higher wage. We find that female labor market entrants exposed to a higher share of female initial peers are more likely to change jobs, conditional on employment, but there are no discernible effects on wages in the new firm.

Table 5 shows the estimated effects on promotions. Results for female entrants are reported in Panel A, and male entrants are in panel B. In columns 1 to 4, we present the findings regarding promotions to managerial positions. For female entrants, there is a significant adverse effect on

promotions five years after entry. This effect is approximately 40 percent of the baseline probability of promotion into a managerial role. We find no such effect on male entrants. In columns 5 to 8, we present the findings concerning occupational upgrading, such as transitions from apprenticeship to blue- or white-collar roles, blue-collar to white-collar positions, or any of the aforementioned to managerial occupations. We find a significant negative impact of gender mix on women seven years after entry. The estimated effect size relative to the proportion of women promoted at the seven-year mark is substantial, at 4 percent. Once again, we find no such effect on male entrants.

5 Gender Mix and Job Opportunities

Why does having a higher share of female initial peers negatively affect the careers of young female workers? One plausible explanation is that male networks provide more social capital resources than female networks. This is related to the concept of 'old boys' networks, where connections to male peers facilitate job opportunities through referrals and access to higher-status connections (Lalanne & Seabright, 2022; McDonald, 2011).

We test whether the gender mix of workers' initial peers contributes to their ability to secure employment. This will help us determine if the observed effects are due to male networks being more effective in connecting individuals to job opportunities. We focus on firm closures affecting the workers in our sample between the second and ninth year after entry into the labor market and analyze the employment probabilities of displaced workers after these exogenous shocks. This approach, borrowed from Cingano and Rosolia (2012), allows us to focus on exogenous employment shocks and, therefore, mitigates potential selection bias that arises if individuals with better networks are more likely to initiate a job search or have higher labor market mobility rates. Further, this approach enables us to estimate network effects by comparing individuals displaced from the same firm when they simultaneously commence their job search. If workers are sorted with the same rule over time, then former and current fellow workers share the same unobserved traits, and within-closing-firm comparisons absorb differences across networks correlated with employment.

Approximately 14 percent of our initial sample is affected by a firm closure between the 2nd and

9th year post-entry. The share of workers affected by firm closures did not vary significantly by gender. Overall, we have 59,093 women and 83,872 men affected by a firm closure who have at least one co-worker from a different initial firm for which we can estimate an effect. Table 6 presents the descriptive statistics of this subsample of workers. On average, male and female entrants are affected by the closing event around their 5th year in the labor market. Some of their initial peers tend to be affected by the same event –nearly 30 percent of the initial peers–, but 70 percent of the initial peer network is employed in the year of the closure. In the year post-closure, 75 percent of women and 80 percent of men are re-employed. The workers affected by a closure appear to differ from our primary sample on several dimensions. Both men and women in the closure sample are older at the time of labor market entry. This sample also includes fewer blue-collar workers and more white-collar entrants for both genders. Wages and the share of open-ended contracts are also higher in this sample. Furthermore, the share of female peers for female entrants is smaller but higher for male entrants.

For our sample of workers displaced by a firm closure, we estimate the following empirical model separately for men and women:

$$y_{ig} = \delta EMP_{i(jo\tau)} + \lambda GMX_{i(jo\tau)} + \theta \log(|\mathcal{N}_{i(jo\tau)}|) + Z'_{ig}\zeta + \phi_g + \psi_t + \upsilon_{o'} + \epsilon_{ig} \tag{6}$$

The primary outcome variable y_{ig} of interest is an indicator that takes on the value one if individual i has found a job in the year after firm g has shut down but we also analyse wages conditional on employment. Our two main regressors are $EMP_{i(jo\tau)}$, which measures the share of individual i's initial peers who are employed in the year of closure, and $GMX_{i(jo\tau)}$, which represents the gender mix of the initial network or peers as defined in Section 3. Variation in peer's gender mix within closing firms stems from across-firm mobility of workers, leading entrants from different initial firms to end up in the same closing firm. In line with our main specification, there will also be across-cohort variation in peer composition within the closing firm, even without inter-firm mobility. δ from Equation 6 reflects the impact of active contacts on employment finding probability (or wages), while λ is the impact of the initial gender mix on the same outcomes post-closure.

In our baseline specification, we control for the size of the initial network,$\log(|\mathcal{N}_{i(jo\tau)}|)$, i.e., the logarithm of the number of peers in the entry cohort, and for occupation, year of closure, and closing firm fixed effects, $\upsilon_{o'}$, ψ_t, and ϕ_g, respectively. In addition, Z_{ig} includes wage level at closure, age, labor market experience, average wages among peers, and initial wage.

5.1 Job-finding Probabilities and Wages

Table 7 presents the effects we estimate of employment rate and gender mix of initial peers on post-closure re-employment (in columns 1 and 2) and wages (in columns 3 and 4). The coefficient estimates of the peers' employment rate in the year of closure, i.e., δ, measure the impact of an individual's initial network employment rate on both re-employment and the quality of that re-employment, reflected through wage levels. Having a higher share of employed initial peers at the time of an adverse employment shock has a positive effect on the re-employment of both men and women in the year following the closure. The estimated effect in column 1 suggests an increase of about 1.2 percentage points in re-employment probability among women and 0.9 percentage points among men per one standard deviation increase in the share of employment among initial peers in the year of closure. This effect remains relatively robust even when we account for individuals' differences in productivity as proxied by entry wages in column 2. We find no impact of initial networks on wages conditional on re-employment.

For female workers, we find a distinctive effect associated with the gender mix of initial peers (GMX). A one-standard-deviation increase in the share of women among peers (22 percentage points) raises the probability of re-employment by approximately 0.7 percentage points. However, employment secured through these connections tends to be of lower quality, as evidenced by the consistently negative impact on female wages in columns 3 and 4 of Table 7. This appears to suggest that although female peers assist their female colleagues in looking for a job, the quality of this employment is lower.

The gender composition of initial peers has no discernible impact on re-employment probability or wages for men. This aligns with the findings of our primary analysis, which indicated that the gender mix of peers does not affect the career trajectories of male labor market entrants. Our

results show that, following a closure event, it is exclusively female workers for whom the gender of their initial peers holds significance, in contrast to men.

6 Conclusion

The paper delves into the impact of initial peers' gender mix on their employment, wages, earnings, labor market mobility, and promotion trends of young workers in Italy. We show that a higher share of females among a worker's initial peers has a persistent and adverse effect on female earnings. This result is largely driven by young female workers entering non-employment at a higher rate when exposed to more female peers in their first full-time job. We find no discernible impact of gender mix on men. Women exposed to more female peers at entry in the labor market also appear to have heightened job-to-job mobility but experience lower promotion rates.

We propose that a plausible mechanism behind these effects is that connections to male peers are more valuable in the labor market. This is related to the idea of 'old boys' networks, whereby having connections to male peers facilitates job opportunities through job leads and higher connections' status than female or minority networks. Our analysis reveals that individuals affected by firm closures are more likely to be re-employed next year when they have a higher number of initial peers employed at the time of the firm closure, thus underlying the importance of initial networks. Particularly noteworthy is that, for women, a higher share of women among initial peers also increased the probability of re-employment. The share of women among initial peers did not matter for men.

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Tables and Figures

Table 1: DESCRIPTIVE STATISTICS OF ITALIAN LABOR MARKET ENTRANTS

Sample	Female Entrants		Male entrants	
Summary statistic	Mean	SD	Mean	SD
	(1)	(2)	(3)	(4)
Age	22.79	[3.67]	21.87	[3.72]
Blue-collar (%)	36.76	[48.21]	53.26	[49.89]
White-collar (%)	45.72	[49.82]	26.86	[44.32]
Apprentices (%)	17.73	[38.19]	20.06	[40.05]
Log weekly wage	5.62	[0.58]	5.68	[0.52]
Indefinite contract (%)	38.23	[48.60]	39.47	[48.88]
Gender mix peers (GMX)	56.18	[21.65]	30.52	[23.97]
Gender mix 2-3 tenure	58.09	[30.48]	33.00	[28.97]
Gender mix 4-5 tenure	44.18	[37.83]	26.09	[31.42]
Overall GMX	53.93	[20.55]	31.64	[18.81]
Managers GMX	9.94	[15.58]	8.83	[13.88]
Log size of the initial peer group	3.77	[2.44]	3.83	[2.68]
Log firm size in τ-1	5.44	[2.56]	5.61	[2.69]
Log average wage in a firm in τ-1	5.89	[0.44]	5.95	[0.40]
Number of observations	785,394		1,031,188	

Notes: Standard deviations in brackets. Source INPS data. The sample includes Italian nationals who entered their first full-time employment between 2000 and 2011, aged 16 to 30, employed in non-agricultural private sector firms. We exclude those employed in firms with less than five workers and employing workers of only one gender. Gender mix among peers is a share of women among workers within the same firm, occupation, and with the same firm tenure. Gender mix among other levels of firm hierarchy refers to the share of women among workers at that specific level.

Table 2: DYNAMIC IMPACT OF INITIAL PEERS' GENDER MIX ON EMPLOYMENT

Dep. var.	Employment indicator				Full-time employment indicator			
Time since entry	$\tau+2$	$\tau+5$	$\tau+7$	$\tau+10$	$\tau+2$	$\tau+5$	$\tau+7$	$\tau+10$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Females								
GMX	-0.0127**	-0.0180***	-0.0140**	0.0006	-0.0122**	-0.0054	-0.0059	-0.0030
	(0.0060)	(0.0061)	(0.0062)	(0.0063)	(0.0055)	(0.0069)	(0.0076)	(0.0086)
Observations	785,394	785,394	785,394	785,394	508,091	451,217	423,075	383,088
Mean Dep. Var.	0.68	0.61	0.58	0.53	0.57	0.47	0.42	0.36
Panel B: Males								
GMX	0.0064	0.0054	0.0026	0.0045	0.0013	0.0001	-0.0074	-0.0104**
	(0.0058)	(0.0058)	(0.0058)	(0.0059)	(0.0040)	(0.0048)	(0.0050)	(0.0052)
Observations	1,031,188	1,031,188	1,031,188	1,031,188	666,867	628,643	620,148	604,225
Mean Dep. Var.	0.68	0.65	0.64	0.63	0.63	0.58	0.57	0.55
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: GMX is a share of women among the entrant's peers. Controls include individual and time-varying firm controls. Individual controls are worker age at entry and initial full-time wage. Firm controls include lagged firm size, average wage, and wage and employment growth between $\tau-1$ and τ. Fixed effects include firm-occupation-(broad) entry cohort fixed effects and yea ofentry fixed effects. Standard errors clustered on firm-level in parentheses. * $p<0.1$, ** $p<0.05$, *** $p<0.01$

Table 3: DYNAMIC IMPACT OF INITIAL PEERS' GENDER MIX ON WAGES AND EARNINGS

Dep. var.	Log weekly wage growth (WRT initial)				Log annual labor earnings			
Time since entry	$\tau+2$	$\tau+5$	$\tau+7$	$\tau+10$	$\tau+2$	$\tau+5$	$\tau+7$	$\tau+10$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Females								
GMX	-0.0211***	-0.0112*	-0.0098	-0.0131*	-0.1530***	-0.1860***	-0.1490**	-0.0072
	(0.0057)	(0.0062)	(0.0067)	(0.0069)	(0.0551)	(0.0577)	(0.0593)	(0.0603)
Observations	508,091	451,217	423,075	383,088	785,390	785,394	785,394	785,394
Mean Dep. Var.	0.14	0.27	0.33	0.39	6.22	5.76	5.50	5.10
Panel B: Males								
GMX	-0.0038	0.0010	-0.0003	0.0082	0.0553	0.0504	0.0291	0.0512
	(0.0052)	(0.0056)	(0.0058)	(0.0063)	(0.0521)	(0.0552)	(0.0556)	(0.0572)
Observations	666,867	628,643	620,148	604,225	1,031,187	1,031,188	1,031,188	1,031,188
Mean Dep. Var.	0.14	0.30	0.37	0.46	6.26	6.17	6.18	6.13
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: GMX is a share of women among the entrant's peers. Controls include individual and time-varying firm controls. Individual controls are worker age at entry and initial full-time wage. Firm controls include lagged firm size, average wage, and wage and employment growth between $\tau-1$ and τ. Fixed effects include firm-occupation-(broad) entry cohort fixed effects and year of entry fixed effects. Labor earnings are unconditional on employment and set to zero for non-employed individuals. Standard errors clustered on firm-level in parentheses. * $p<0.1$, ** $p<0.05$, *** $p<0.01$

Table 4: DYNAMIC IMPACT OF INITIAL PEERS' GENDER MIX ON JOB MOBILITY

Dep. var.	Moved into different firm				Wage change in the new firm			
Time since entry	$\tau+2$	$\tau+5$	$\tau+7$	$\tau+10$	$\tau+2$	$\tau+5$	$\tau+7$	$\tau+10$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Females								
GMX	0.0205**	0.0181**	0.0216***	0.0135*	-0.0076*	0.0007	-0.0010	-0.0051
	(0.0086)	(0.0077)	(0.0073)	(0.0069)	(0.0044)	(0.0053)	(0.0057)	(0.0061)
Observations	508,091	451,217	423,075	383,088	508,091	451,217	423,075	383,088
Mean Dep.Var.	0.53	0.75	0.81	0.85	0.05	0.12	0.16	0.19
Panel B: Males								
GMX	0.0041	-0.0014	0.0000	-0.0021	0.0007	0.0030	0.0000	0.0046
	(0.0085)	(0.0071)	(0.0071)	(0.0058)	(0.0040)	(0.0047)	(0.0049)	(0.0052)
Observations	666,867	628,643	620,148	604,225	666,867	628,643	620,148	604,225
Mean Dep.Var.	0.53	0.73	0.78	0.83	0.06	0.13	0.17	0.21
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: GMX is a share of women among the entrant's peers. Controls include individual and time-varying firm controls. Individual controls are worker age at entry and initial full-time wage. Firm controls include lagged firm size, average wage, and wage and employment growth between $\tau-1$ and τ. Fixed effects include firm-occupation-(broad) entry cohort fixed effects and year of entry fixed effects. In columns 1 to 4, the outcome variable is an indicator that an individual changed firm from the initial one. In columns 5 to 8, the outcome variable is the average wage differential in the new firm versus the initial one. Both outcomes in this table are conditional on employment. Standard errors are clustered on firm level in parentheses. * $p<0.1$, ** $p<0.05$, *** $p<0.01$

Table 5: DYNAMIC IMPACT OF INITIAL PEERS' GENDER MIX ON PROMOTIONS

Dep. Var.	Promotion to Manager				Promotion (WRT initial)			
Time since entry	$\tau+2$	$\tau+5$	$\tau+7$	$\tau+10$	$\tau+2$	$\tau+5$	$\tau+7$	$\tau+10$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Females								
GMX	-0.0005	-0.0039**	-0.0040	0.0003	-0.0043	-0.0059	-0.0124**	0.0009
	(0.0006)	(0.0017)	(0.0025)	(0.0036)	(0.0048)	(0.0060)	(0.0062)	(0.0066)
Observations	508,091	451,217	423,075	383,088	508,091	451,217	423,075	383,088
Mean Dep.Var.	0.00	0.01	0.02	0.04	0.11	0.25	0.31	0.35
Panel B: Males								
GMX	-0.0005	0.0000	-0.0018	0.0026	0.0028	0.0026	0.0031	0.0049
	(0.0008)	(0.0024)	(0.0031)	(0.0040)	(0.0046)	(0.0056)	(0.0059)	(0.0063)
Observations	666,867	628,643	620,148	604,225	666,867	628,643	620,148	604,225
Mean Dep.Var.	0.00	0.02	0.04	0.06	0.11	0.26	0.32	0.38
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: GMX is a share of women among the entrant's peers. Controls include individual and time-varying firm controls. Individual controls are worker age at entry and initial full-time wage. Firm controls include lagged firm size, average wage, and wage and employment growth between $\tau-1$ and τ. Fixed effects include firm-occupation-(broad) entry cohort fixed effects and year of entry fixed effects. In columns 1 to 4, the dependent variable is an indicator that takes on value one if an individual changed from his or her initial occupation into a managerial one. In columns 5 to 8, the dependent variable is an indicator that takes on value one if an individual changed from his or her initial occupation into a higher occupational category than the one they started in. Standard errors are clustered on firm-level in parentheses. * $p<0.1$, ** $p<0.05$, *** $p<0.01$

Table 6: DESCRIPTIVE STATISTICS OF LABOR MARKET ENTRANTS AFFECTED BY FIRM CLOSURES IN THE FIRST 9 YEARS POST-ENTRY

Sample	Female Entrants		Male entrants	
Summary statistic	Mean	SD	Mean	SD
	(1)	(2)	(3)	(4)
Age at entry	23.03	[3.65]	22.33	[3.76]
Blue-collar (%)	32.24	[46.74]	50.12	[50.00]
White-collar (%)	49.70	[50.00]	32.09	[46.68]
Apprentices (%)	18.28	[38.65]	18.04	[38.45]
Log weekly wage	5.70	[0.52]	5.74	[0.48]
Indefinite contract (%)	41.71	[49.31]	41.61	[49.29]
Gender mix peers (GMX)	54.49	[21.85]	31.74	[23.73]
Overall GMX	51.65	[20.38]	31.82	[18.31]
Managers GMX	10.74	[15.58]	9.18	[14.07]
Log size of the initial peer group	3.88	[2.52]	3.87	[2.69]
Log firm size in $\tau - 1$	5.60	[2.66]	5.65	[2.68]
Log average wage in a firm in $\tau - 1$	5.95	[0.46]	5.97	[0.42]
Time of firm's closure	4.77	[2.29]	4.87	[2.30]
Share of initial peers affected by closure	29.53	[24.21]	29.39	[24.30]
Employed in the year post closure	75.69	[42.90]	80.97	[39.25]
Peers' employment rate in the year of closure (EMP)	68.96	[25.17]	69.66	[25.55]
Number of observations	59,093		83,872	

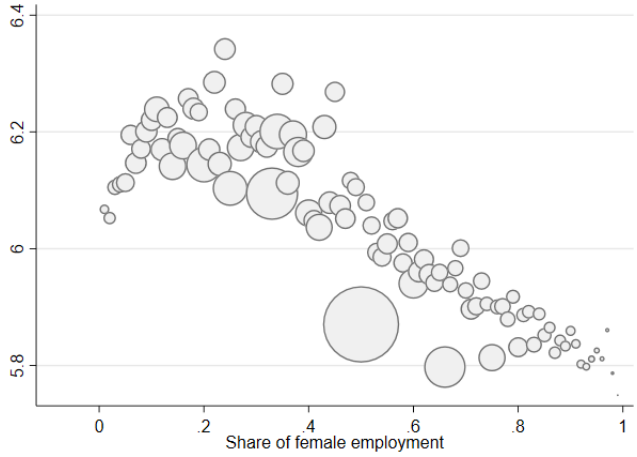
Notes: Sample includes a subsample of the main sample of 2000 to 2011 Italian labor market entrants affected by firm closures between 2 and 9 years after labor market entry. Gender mix among peers is a share of women among workers within the same firm, occupation, and with the same firm tenure. EMP is the peers' employment rate, i.e. a share of initial peers who were employed in the year of firm closure. Standard deviations in brackets.

Table 7: EFFECT OF INITIAL NETWORKS ON RE-EMPLOYMENT AND WAGES AFTER FIRM CLOSURE

Dep. var.	Re-employment indicator		Log Weekly Wage	
	(1)	(2)	(3)	(4)
Panel A: Females				
EMP	0.0460***	0.0443***	0.0218	0.0099
	(0.0156)	(0.0154)	(0.0191)	(0.0178)
GMX	0.0290***	0.0302***	-0.0286***	-0.0201**
	(0.0097)	(0.0098)	(0.0098)	(0.0100)
Observations	59,093	59,093	42,284	42,284
Panel B: Males				
EMP	0.0376***	0.0359***	0.0034	-0.0017
	(0.0132)	(0.0131)	(0.0112)	(0.0111)
GMX	0.0058	0.0084	-0.0012	0.0055
	(0.0068)	(0.0068)	(0.0068)	(0.0071)
Observations	83,872	83,872	64,933	64,933
Controls	Yes	Yes	Yes	Yes
Closure fixed effects	Yes	Yes	Yes	Yes
Entry wage		Yes		Yes

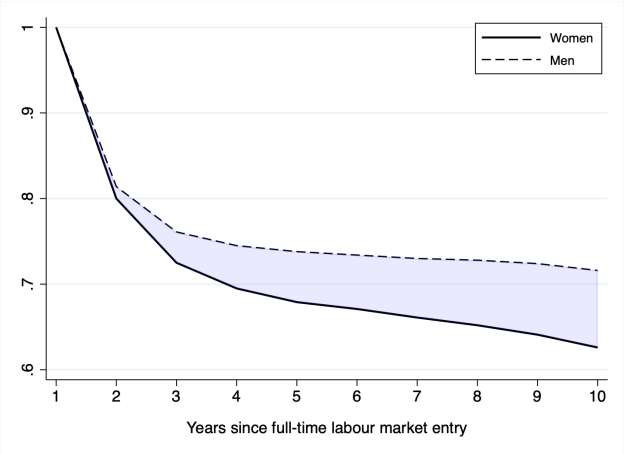
Notes: Sample includes a subsample of the main sample of 2000 to 2011 Italian labor market entrants affected by firm closures between 2 and 9 years after labor market entry. EMP is the initial peers' employment rate in the year of the firm's closure. GMX is a share of women among the entrant's peers. Controls include log peer group size, age, labor market experience at the moment of closure, wage level in the year of closure, and average wages of initial peers in the year of closure. Closure fixed effects include year of closure fixed effects, and closing firm fixed effects, occupation fixed effects. In columns 1 and 2, the dependent variable is the employment indicator in the year after firm closure. In columns 3 and 4, the dependent variable is the log weekly wage in the year after firm closure conditional on employment. Standard errors are clustered on firm-level in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Figure 1: AVERAGE WAGE VS SHARE OF FEMALE EMPLOYMENT IN A FIRM

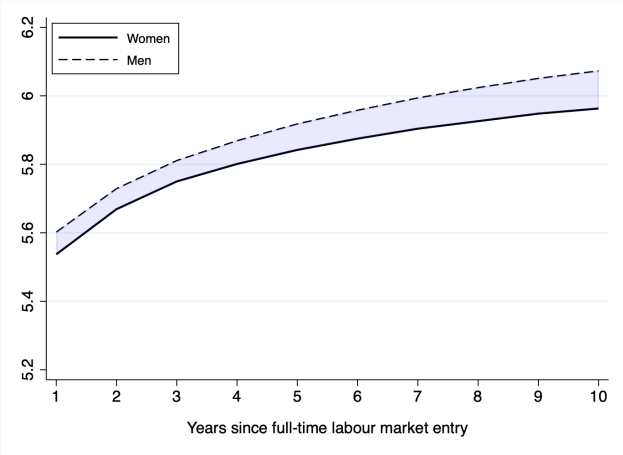


Notes: Sample of Italian workers in 2010. The figure is a binned scatter plot depicting the relationship between average wages and the share of female employment in firms in the year 2010 within the Italian labor market. The size of each circle is proportional to the number of workers in each bin. The vertical axis represents average log weekly wages.

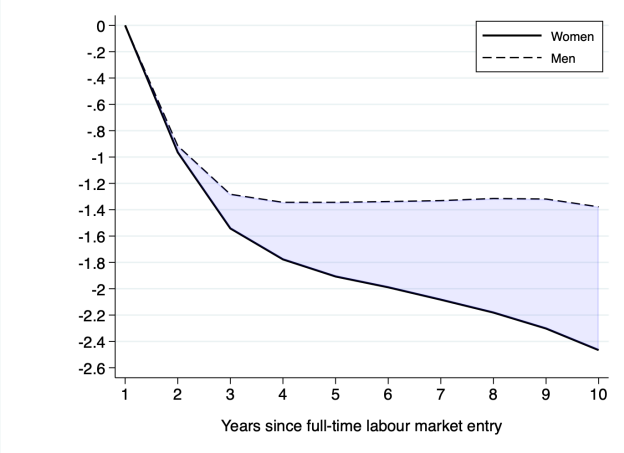
Figure 2: PROFILES OF ITALIAN LABOR MARKET ENTRANTS, 2000-2011



(a) Employment by gender



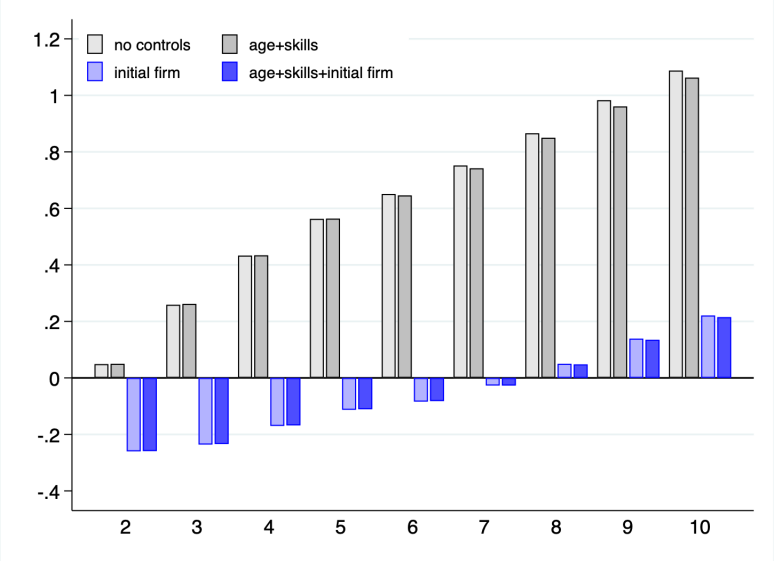
(b) Log wages by gender



(c) Earnings by gender

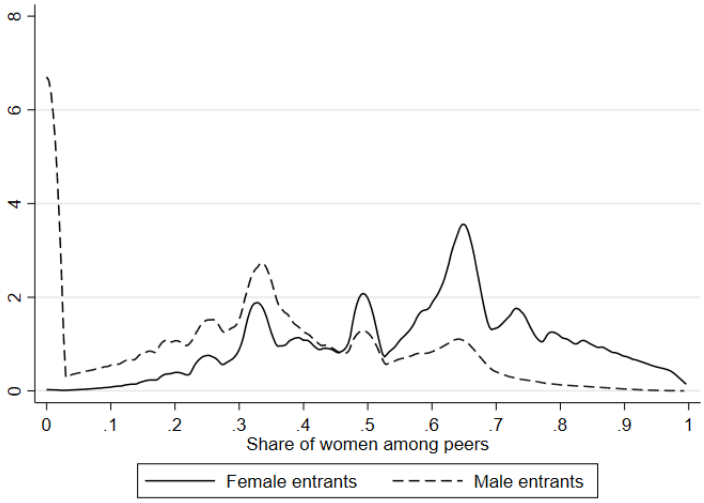
Notes: In this Panel a, we present employment profiles of men and women who entered their first full-time employment between the years 2000 and 2011, up to 10 years after their initial entry. These raw profiles reflect the overall share of women and men who remained employed every year post-entry, without any additional controls. In Panel b, we display wage profiles (log weekly wages) of men and women who started their first full-time employment between 2000 and 2011, up to 10 years post-entry. This includes the estimated constant, thus showing the initial gender wage gap as well as its evolution over time. In Panel c, we showcase the labor earnings, unconditional on employment, for men and women who entered full-time employment between 2000 and 2011 for the first time. These profiles are displayed with respect to the initial year of employment, up until year ten post-entry. When estimating earnings profiles in panel c, no controls were included, and earnings were set to zero for non-employed individuals.

Figure 3: GENDER EARNINGS GAP OF ITALIAN LABOR MARKET ENTRANTS



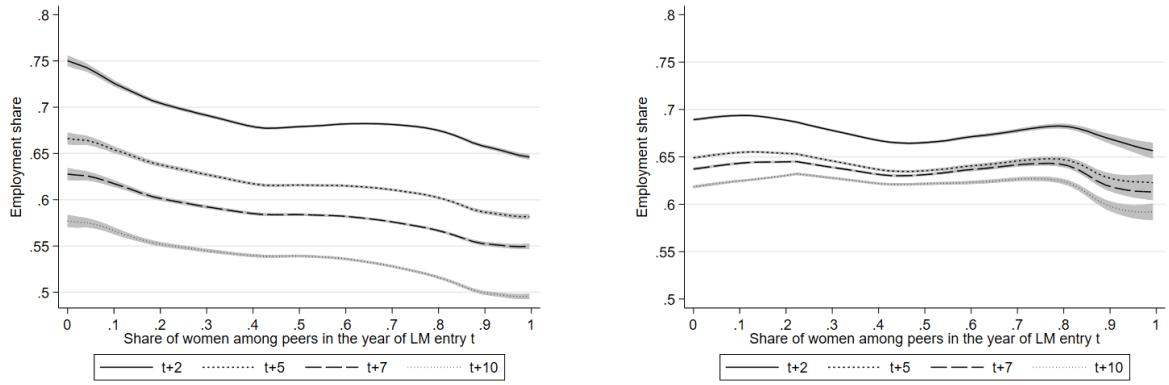
Notes: Sample of men and women who entered their first full-time employment between the years 2000 and 2011. This figure presents the earnings differentials between men and women, as shown in panel c of Figure 2, in a "no control" specification. Subsequently, it depicts similar differentials using alternative specifications. These alternatives include controls for age and skills (proxied by broad occupational category), referred to as "age+skill", or controlling for initial firm fixed effects, referred to as "initial firm", and in the final case, both "age+skill+initial firm" are controlled for.

Figure 4: GENDER MIX AMONG PEERS (GMX) DISTRIBUTION



Notes: Sample of men and women who entered their first full-time employment between the years 2000 and 2011 observed in the year of entry. The figure plots the distribution of gender mix among peers of female and male labor market entrants. Peers' gender mix is a share of women among workers within the same firm, occupation and entry cohort.

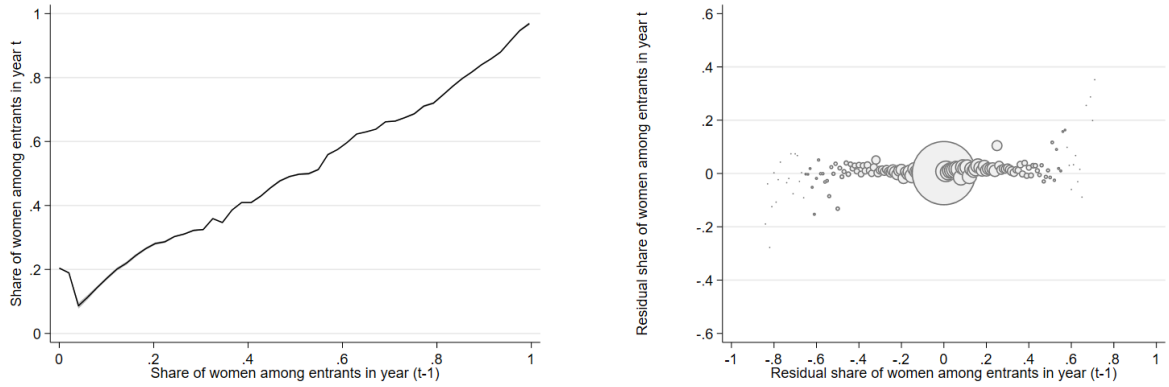
Figure 5: FUTURE EMPLOYMENT VS SHARE OF WOMEN AMONG INITIAL PEERS



(a) Female entrants (b) Male entrants

Notes: Sample of men and women who entered their first full-time employment between the years 2000 and 2011. Panels a and b plot the relationship between the employment shares of female and male labor market entrants 2, 5, 7 and 10 years post-entry and the share of women among their initial peers. This relationship is unconditional to any controls. The shaded area represents 95 percent confidence bands. The non-parametric regression uses the bandwidth of 0.10

Figure 6: FIRM GMX BETWEEN t AND t-1



(a) Raw relationship (b) Residual relationship

Notes: Sample of men and women who entered their first full-time employment between the years 2000 and 2011. In panel a and panel b we plot respectively the raw and residual relationships between the share of women among new workers in years t and year t-1. The residual is obtained after controlling for the firm and year fixed effects. In panel b, the residuals are then binned by the value in t-1.The size of the circle is proportional of the number of labor market entrants in each bin.

Appendices

A.1 Robustness analysis of employment effects

We assess the robustness of our main results across various dimensions. In panel A of Figure A.1, we investigate the robustness of our findings by considering the gender composition of firms at different levels of hierarchy. Entrant's choice of a particular firm could potentially be influenced by the dynamic gender composition of the firm's workforce at a given moment. To account for this, subpanels i and ii of Figure A.1 include the gender mix of coworkers with 2 to 3 and 4 to 5 years of firm tenure, respectively. In essence, we aim to isolate the primary impact of peers' gender composition while also considering those within the same firm and occupation but with slightly higher seniority.

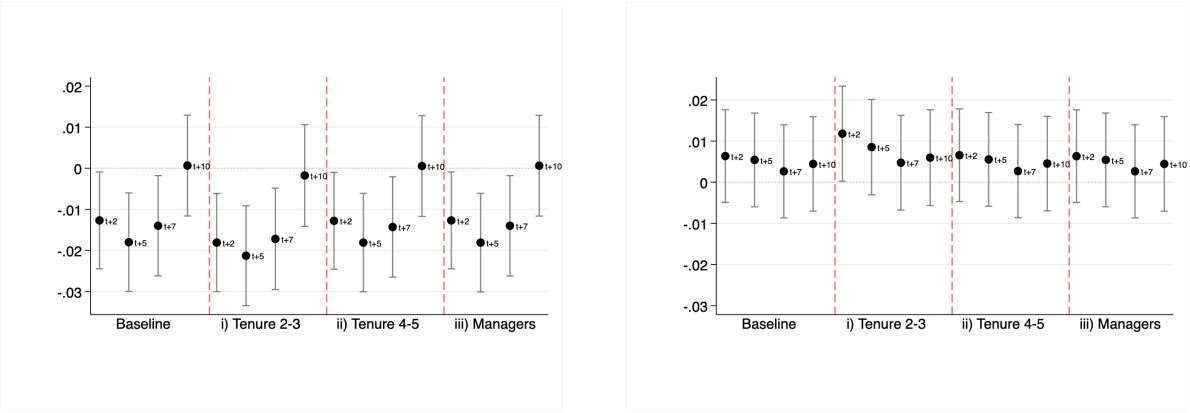
Another potential identification concern is that female labor market entrants might prefer firms with female managers, or conversely, from the firm's perspective, female managers might select a specific type of female labor market entrants. In model iii, we address this concern by incorporating the proportion of women among the firm's management at the time the entrant joined. Including the gender composition of more senior co-workers or managers does not alter the estimated impact of peers' gender composition. This reinforces our assertion that the baseline effects reflect a causal impact of peers' gender mix on employment. Overall, given firm, occupation, and broad entry cohort conditions, it appears that labor market entrants are not actively sorting across firms and occupations based on the evolving gender composition of a firm's workforce.

In panel B of Figure A.1, we test the sensitivity of our results to alternative sets of cohorts. Our main sample includes labor market entrants who joined full-time employment between year 2000 and 2011. This of course includes the period of important economic turmoil in Italy and worldwide. Starting one's labor market career during periods of recession may have long lasting consequences which could potentially differ by gender. In subpanel iv, we re-estimate the baseline model excluding cohorts 2008 and 2009, the recession years in Italy, while in panel v we only focus on pre-financial crisis cohorts, i.e. 2000 to 2007. The results remain largely unchanged.

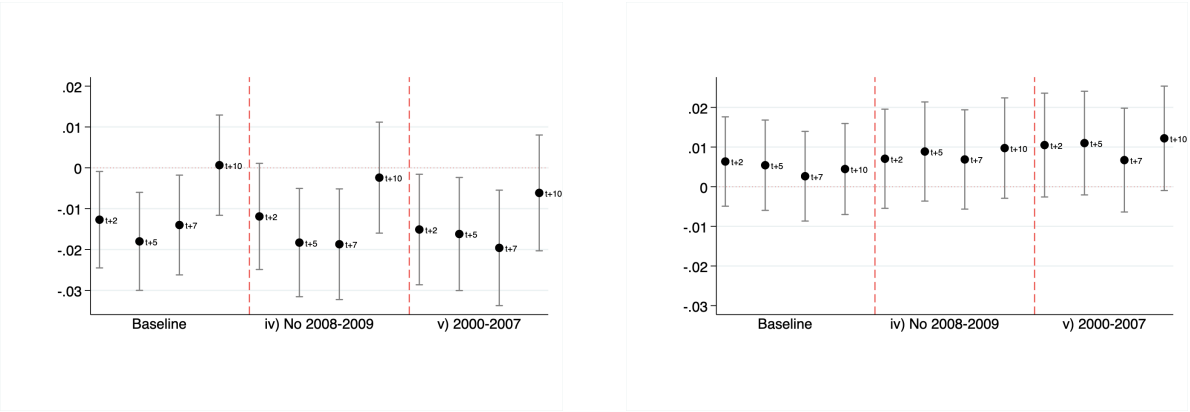
Overall, the baseline results exhibit robustness across various dimensions and sample variations. This robustness provides substantial supporting evidence for the validity of the baseline estimates.

Figure A.1: ROBUSTNESS CHECKS

(a) Gender composition at other levels of firm hierarchy



(b) Alternative entry cohorts



Female Entrants **Male entrants**

Notes: The figure displays the coefficient estimates from columns 1 to 4 in Table 2 which are compared to five alternative models in subpanels i-v. The coefficient estimates are plotted with the corresponding 95% confidence bands. The coefficient estimates displayed are those for GMX among peers, i.e. $\hat{\beta}$ from Eq. 2. In panel (a), Models i to iii in addition to peers' GMX, we include gender mix at other levels of firm hierarchy. Model i controls for the share of women within the same firm and occupation with 2 to 3 years of tenure. Model ii controls for the share of women within the same firm and occupation with 4 to 5 years of tenure. Model iii controls for the share of women among the firm's managers. In panel (b), we exclude the Great-Recession cohorts, i.e., the 2008-2009 cohorts, in model iv, and in model v we only focus on the pre-recession cohorts, 2000-2007. Panels on the left show the results for female entrants, and panels on the right show the results for male entrants.

A.2 Heterogeneity of Employment Effects

We assess heterogeneity in the main estimates across various dimensions. First, we explore heterogeneity by occupation and, subsequently, age at the first full-time job. The estimates from panel a of Figure A.2 reveal two critical insights. Primarily, the effect primarily manifests among white-collar workers, being statistically insignificant and essentially zero among blue-collar workers and apprentices.[6] Second, we observe marginally significant negative effects among male white-collar entrants.

In Panel b of Figure A.2, we delve into the heterogeneity of the main results concerning the age at which individuals entered the labor market. For women, the heterogeneity by age seems to align with the heterogeneity by occupation. This alignment is not surprising, as the later entry often stems from attending school and is therefore directly related to the occupation in which the entrant begins their labor market career. Conversely, for male entrants, there appears to be no discernible heterogeneity by age at entry.

Next, we examine potential heterogeneity in employment effects based on the proportion of women in the sector of initial employment. We categorize 2-digit sectors as male or female-dominated, depending on whether the overall share of female employment in the sector is above or below 50 percent. We then estimate the employment effects separately for men and women in both male- and female-dominated sectors. The results are presented in panel a of Figure A.3. Our findings indicate that male entrants are not influenced by the gender composition of their peers, regardless of the total share of women in their initial firm. In contrast, female entrants experience a negative impact when there is a higher share of women among their peers, regardless of whether the firm is male- or female-dominated. Interestingly, the effect appears to be somewhat stronger and more precisely estimated in female-dominated sectors.

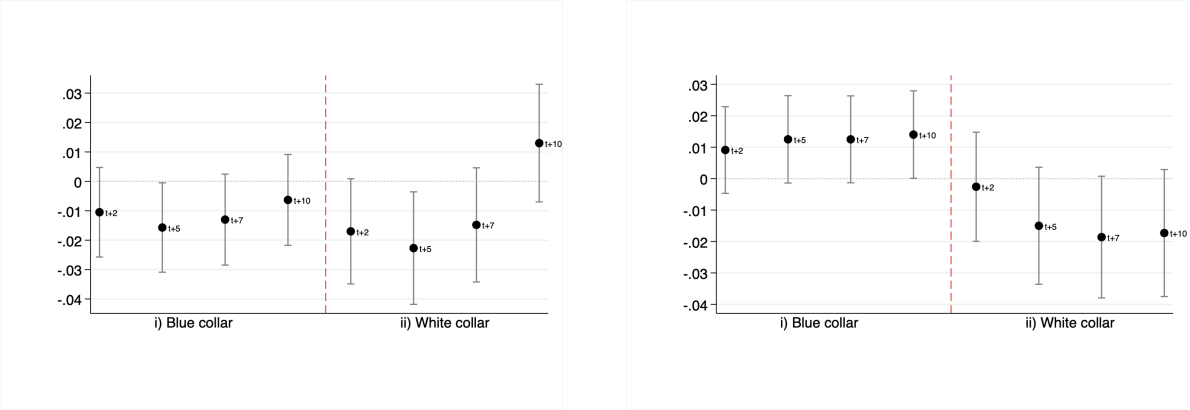
Regarding heterogeneity by firm size, the results in panel b of Figure A.3 indicate that the observed baseline employment effects for female entrants are primarily driven by dynamics in firms with fewer than 50 employees. In these smaller firms, the impact is negative, with a magnitude of 2percentage

[6] It's important to note that, for the purposes of this analysis, blue-collar workers and apprentices are grouped together.

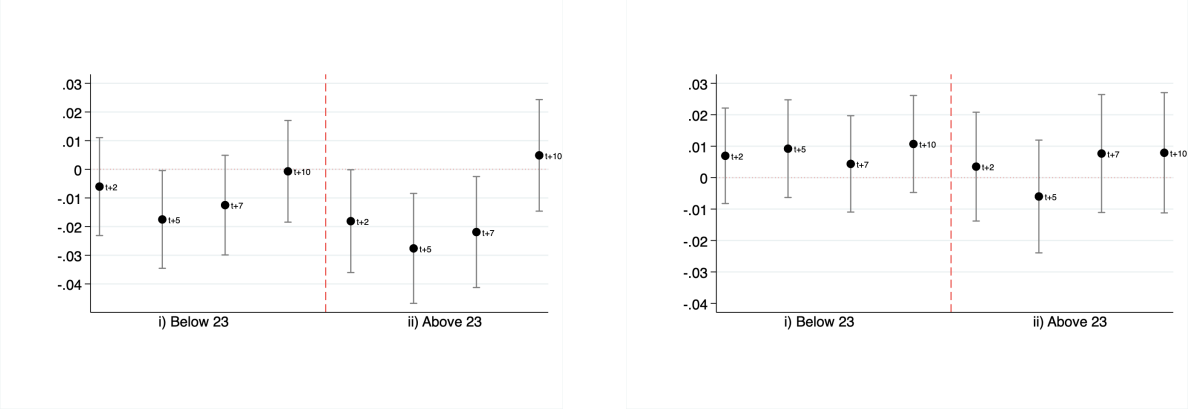
points at 2 years, 2.8percentage points after 5 years, and 1.7percentage points at 7 years, ultimately reducing to zero after 10 years. These effects are notably larger than the baseline estimates that average across all firm sizes. Interestingly, these effects are absent in larger firms and for male entrants.

Figure A.2: HETEROGENEITY OF THE EMPLOYMENT EFFECT BY BROAD OCCUPATION AND BY AGE AT ENTRY

(a) By broad occupation



(b) By age at first full-time job entry

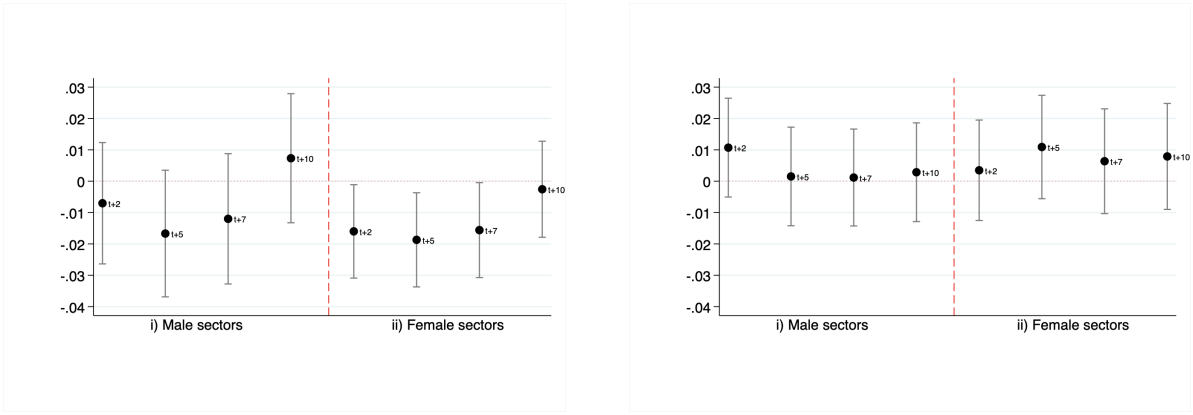


Female Entrants **Male entrants**

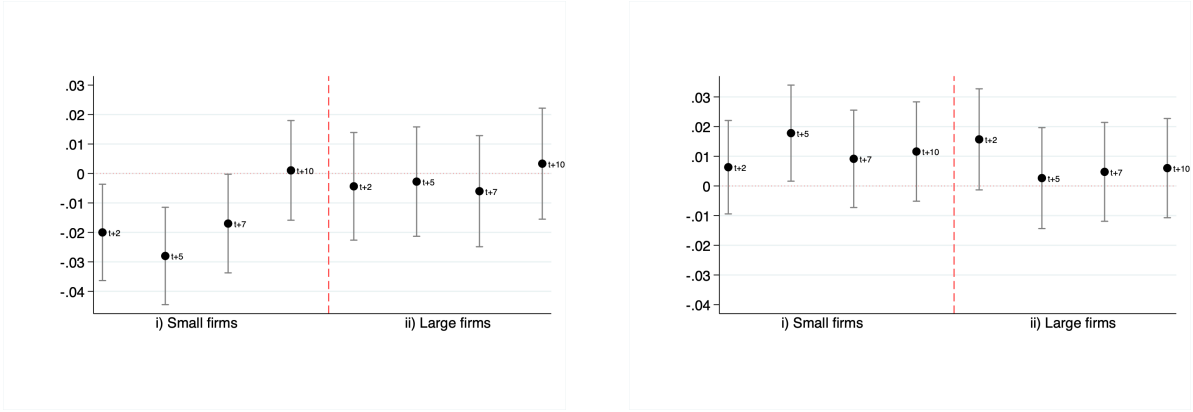
Notes: The coefficient estimates displayed are those for GMX among peers, i.e. $\hat{\beta}$ from Eq. 2 and the corresponding 95% confidence bands. Panels on the left show the results for female entrants, and panels on the right show the results for male entrants. In panel (a), the results are the estimates for blue- and white-collar workers separately. Blue collar category also includes apprenticeships in this case. In panel (b), the effects are estimated separately for individuals who started their first employment before and after turning 23.

Figure A.3: EMPLOYMENT EFFECT IN THE MALE VERSUS FEMALE-DOMINATED SECTORS AND BY FIRM SIZE

(a) Male versus female-dominated sectors



(b) By firm size



Female entrants **Male entrants**

Notes: The coefficient estimates displayed are those for GMX among peers, i.e. $\hat{\beta}$ from Eq. 2 and the corresponding 95% confidence bands. Panels on the left show the results for female entrants, and panels on the right show the results for male entrants. Industries at the 2-digit level are categorized as either male or female-dominated based on the proportion of female employment. If the female employment share is above 50 percent, the industry is labeled as female-dominated or *female*; otherwise, it is categorized as male-dominated or *male*. Firms with fewer than 50 employees are categorized as *small*, the rest are classified as *large*. In panel (a), the effects are estimated separately in male- and female-dominated sectors. In panel (b), the effects are estimated separately across firms with fewer and more than 50 employees.