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## Who Benefits from Migrant and Female Labor? Connecting Wages to Demographic Changes in French Workplaces<sup>1</sup>

Matthew Soener,<sup>2</sup> Olivier Godechot,<sup>3</sup> and Mirna Safi<sup>4</sup>

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*We ask how an increasing share of women or migrants in the workplace affects wages for different groups depending on market-based or relational outcomes. Using data on nearly every French employee and workplace, we propose four theoretically informed outcomes. We do not find an increase in the share of women or migrants provokes a wage backlash but that these groups instead have some “power in numbers.” Yet, most importantly, our results show demographic changes are conditioned by class position through a surplus appropriation mechanism. The share of women and the share of migrants in the professional and managerial class raise wages within this class especially for men and migrants in this class, respectively. We also find the entry of migrant workers puts downward pressure on worker wages—both natives and migrants. We offer an interpretation of these results based on the redistribution of labor costs when hiring employees like women and migrants who earn less on average.*

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**KEYWORDS:** gender; inequality; markets; migration; wages; workplaces and organizations.

### INTRODUCTION

Social scientists have observed how the entry of women, migrants, and racialized workers in labor markets has had highly important socio-economic effects (Bonacich et al. 2008; Du Bois 1992; Frymer and Grumbach 2021; Noiriel 1988; Phillips and Taylor 1980). This especially includes wages for different groups. At times, this has yielded mixed results, however (Auguste 2018; Card 2001; Killingsworth 1983; Morris and Western 1999). In this paper, we ask how demographic compositional changes alter the wages of employees in France by nativity, gender, and class. We focus on workplaces which are the central site for wage determinants and wage inequality (Amis et al. 2020; Card et al. 2018; Castilla 2008; Tomaskovic-Devey et al. 2020; Wilmers and Aeppli 2021). In particular, we use a linked employer–employee dataset (LEED) called the *Base Tous Salariés* (BTS), which covers nearly every employee and workplace in France.

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<sup>2</sup> University of Illinois, 702 S Wright Street, 3120 Lincoln Hall, Urbana 61801 Illinois, USA; e-mail: [msoener@illinois.edu](mailto:msoener@illinois.edu)

<sup>3</sup> Sciences Po, CRIS-CNRS and AxPo, 1, Place Saint-Thomas, Paris 75007, France; e-mail: [olivier.godechot@sciencespo.fr](mailto:olivier.godechot@sciencespo.fr)

<sup>4</sup> Sciences Po, CRIS-CNRS, 1, Place Saint-Thomas, Paris 75007, France; e-mail: [mirna.safi@sciencespo.fr](mailto:mirna.safi@sciencespo.fr)

We leverage this data to estimate the wages of employees already employed in response to the share of either women or migrant entry in the same workplace. Of course, we recognize there are distinct inequality mechanisms relevant to either migrants or women (e.g., citizenship-based disadvantages for migrants and a “motherhood penalty” for women). Nonetheless, the labor force participation of both migrants and women has increased in recent decades. Both women and migrant/ethno-racial minorities face workplace disadvantages in terms of pay, advancement, segmentation as well as prejudice and harassment in the workplace (Castilla 2008; Roscigno 2019). Hence, we stand to make broader inferences about how demographic changes of disadvantaged groups affect wage earnings as well as potential comparisons between them. To this end, we propose four specific hypotheses which we label as: (1) competitive labor markets, (2) threat-based discrimination, (3) power in numbers, and (4) surplus appropriation. These expectations capture the extent to which these changes operate via market-based channels or relational dynamics (Avent-Holt and Tomaskovic-Devey 2014).

France is an interesting context for our analysis. Like other high-income countries, there has been an increase in the number of women and migrants within the labor force at all skill levels. There have also been structural changes in the labor market. France has strong labor market protections but low union density and, especially since the 1980s, labor market liberalization and flexible work regimes (Amable 2017). The result is comparatively low wage inequality but uneven wage growth. That unevenness may be partially explained by demographic changes (Edo 2019). Also, these changes are arguably comparable to other high-income states. Ethnic discrimination in hiring is high in France (Quillian et al. 2019) as it is elsewhere (Weichselbaumer 2017). Once employed, the native/migrant hourly wage gap is close to that of other EU and OECD countries (Athari et al. 2019). Precise estimates show that the migrant wage gap amounts to  $-4\%$  in the same occupation and workplace in 2018 (Hermansen et al. n.d.). Researchers also find forms of labor market disadvantages for women similar to other high-income countries such as occupational segregation, motherhood penalty, and involuntary part-time work (Briard 2020; Coudin et al. 2018). This explains the gender pay gap (around  $-7\%$  in the same occupation and workplace) in France, which is slightly lower than in other high-income countries (Penner et al. 2023).

Our findings show the entry of women and migrants does not lead to a wage backlash. The most salient findings are by class position. The share of female employees in positions of workplace power (namely management) raise wages for others in this class. Nonetheless, men in these positions capture most of the gains associated with this change. The same is true for migrant entry into positions of power with the difference that migrant managers benefit slightly more. For workers, the story is different. Female workers have “power in numbers”—their entry benefits other female workers. Migrant worker entry, by contrast, depresses wages for workers—both migrants and natives. These results broadly support relational inequality theory (RIT) and, to some extent, competitive labor market dynamics. We discuss these ideas and offer an empirically informed interpretation of our results. This is based on the redistribution of labor costs when hiring employees like women and migrants who earn less on average than similarly skilled men and natives.

## THEORIZING THE IMPACT OF WORKPLACE COMPOSITION

Researchers have found either positive or negative wage effects for migrant (Card 2009; Edo 2019; Edo and Toubal 2015; Kim and Sakamoto 2013; Ottaviano and Peri 2012) and female labor market entry (Finnoff and Jayadev 2006; Giovannoni 2014; Seguino and Braunstein 2019). The mixed findings can partly be explained by how researchers define the labor market (e.g., region, city, industry) and their sampling strategy (Kim and Sakamoto 2013; Morris and Western 1999). Workplace-level data addresses common methodological challenges in labor market inequality research such as sorting, unobserved heterogeneity, as well as a more precise accounting of compositional changes (Amis et al. 2020; Card et al. 2018; Castilla 2008; Tomaskovic-Devey et al. 2020; Wilmers and Aeppli 2021). With LEED, researchers can also account for relevant wage formation factors like occupations, training, and technical competencies. More theoretically, firms are where material and symbolic resources are distributed, employees are trained, sorted, and subjected to authority (Acker 2006; Stainback et al. 2011). These localized dynamics explain the relatively high levels of between-firm variation in wage inequality (Tomaskovic-Devey et al. 2020).

If firms are important for wage setting, there are still larger questions about how wage distribution works, especially in the context of changing demographics. From a more market-based approach, “firms take market wages as given” in discussion on firm-level wage dynamics (Card et al. 2018:S13). Yet, for others, wages are shaped by categorical relations and power (Massey 2007; Tilly 1998). To organize our thinking about these ideas, we propose two very general hypothesis categories—competitive labor market and RIT. While these are not mutually exclusive categories necessarily, they do speak to different theoretical underpinnings within inequality research (see Avent-Holt and Tomaskovic-Devey 2014). The difference between these two camps can be summarized in the following question: do disadvantaged groups change wages by altering the labor supply and competitive conditions or by altering the balance of power through relational processes?

### *Competitive Labor Markets*

We begin with what we call the “competitive labor market” theory. The entry of more employees into the labor pool will, all things being equal, drive down the price of labor through market competition. This is true even in spite of political or other institutional conditions (Borjas and Monras 2016). The lower average labor costs of women and migrants could increase downward wage pressure for those in incumbent positions commanding a wage premium.

Economists have most extensively debated whether an increased labor supply due to immigration affects wages and employment (e.g., Altonji and Card 1991; Card 2009). Findings are mixed (Card 2009; Morris and Western 1999; Peri and Sparber 2009), and there is a consensus that the wage effect is on average small in magnitude (Longhi et al. 2009). Nonetheless, some studies find that migration can depress wages overall (Borjas et al. 1996; Edo 2020; Kim and Sakamoto 2013). This

includes for natives (Borjas and Monras 2016; Kim and Sakamoto 2013; Monras 2020) or other migrants specifically (Ottaviano and Peri 2012).

There is similar research showing increasing female labor force participation lowers overall labor costs (Acemoglu et al. 2004; Finnoff and Jayadev 2006; Giovannoni 2014). Since women are often segmented into lower paying work, a higher number of female workers will put downward pressure on overall wages (Seguino and Braunstein 2019). In fact, the devaluation of women's work lowers women's pay but female entry in jobs previously held by men can depress men's wages too (England 2017; Hellerstein and Neumark 2002). We therefore expect the following:

*Hypothesis 1:* An increase in the share of women and migrants into the workplace will lead to a decrease in wages.

### *Relational Inequality Theory*

In contrast to the competitive labor market approach, economic sociologists see labor markets as institutionally embedded and shaped by power struggles (e.g., Fligstein and McAdam 2011). Wage and other distributional outcomes are the product of relational process, particularly around categorical distinctions like race, class, nativity, and gender (Massey 2007; Tilly 1998). RIT builds on these ideas, proposing that inequality is produced within workplace organizations through actors exerting claims making power (Tomaskovic-Devey and Avent-Holt 2019). In theory, market-based wage mechanisms should operate relatively evenly across workplaces. Yet evidence shows inequality varies considerably between organizations even when accounting for productivity and human capital factors suggesting differences in the balance of power (Tomaskovic-Devey et al. 2020). For RIT this works either through various forms of exploitation (A gains at the expense of B) or social closure (resources are hoarded within a group).

From an RIT perspective, demographic compositional changes will alter the balance of power and claims making capacities within workplaces. We present at least three possibilities which each correspond to unique hypotheses.

### *Threat-based Discrimination*

Workplaces reproduce racialized, xenophobic, and sexist forms of discrimination (Acker 2006; Ray 2019) through harassment, bullying, occupational segregation, and discriminatory wage setting procedures (Stainback et al. 2011; Tomaskovic-Devey and Skaggs 2002). For men and natives, a change in demographic composition may accentuate out-group prejudice. This idea builds off of Blalock's classic social psychological theory of "minority threat" (1967).

Studies show that in the short-term, people react negatively to the threat of in-group homogeneity (Ramos et al. 2019). Castilla finds that even in a firm committed to workplace equity, whites and men leverage workplace bureaucracy to their advantage resulting in wage growth for them and wage losses for minority employees (2008). Perhaps due to feeling threatened, Pfeffer and Davis-Blake find

the proportion of women in a workplace is inversely related to women's wages (1987). Some evidence shows that increasing migrants lead to wage losses for them but not natives (Hellerstein and Neumark 2002; Toussaint-Comeau 2016). On the contrary, migrant labor force entry is associated with wage gains for high-skilled natives in the US (Ottaviano and Peri 2012) and in France (Ortega and Verdugo 2014). It is also associated with higher wage gaps between first-generation migrants and natives in Germany (Melzer et al. 2018). We therefore expect the following:

*Hypothesis 2:* As the share of women and migrants increases, their wages decrease absolutely and relative to men and natives.

### *Power in Numbers*

There has been long-standing attention to how the numbers of demographic groups can alter the balance of power in an organization (Kanter 1977; O'Reilly et al. 1989; Stainback and Tomaskovic-Devey 2009). Feelings of in-group solidarity and confidence could strengthen with increasing numbers of other migrants and women. We call this "power in numbers." In this case, a demographic change could yield more claims over resources in order to counteract forms of discrimination including wage penalties. For higher status groups, increased exposure to minority groups reduces prejudice and leads to more acceptance as highlighted by "contact theory" (e.g., Frymer and Grumbach 2021). RIT research shows the proportion of migrants in Swedish firms increases the wages of other migrants, for example (Tomaskovic-Devey et al. 2015). In German public sector firms, the number of second-generation migrants reduces migrant-native wage gaps (Peters and Melzer 2022). We therefore expect the following:

*Hypothesis 3A:* As the share of women and migrants in the workplace increases, their wages increase absolutely and relative to men and natives.

Since RIT's claims making concept puts power front-and-center, the effect of power in numbers is likely amplified when affected groups are in positions of influence. Specifically, if migrants or women occupy workplace authority positions, they are better equipped to raise earnings for those like them. For example, an increasing share of women in management positions increases wages for German women (Hirsch 2013). In Cohen and Huffman's terminology (2007), such managers act as "agents of change" by empowering those of similar groupings. Demographic changes to the workforce mean there are more potential "agents" too. The professional and managerial class (PMC, discussed below) is becoming more diverse (Ikele and Limonic 2018). These findings are admittedly mixed with some researchers arguing minority and female managers are under pressure to reproduce the status quo (e.g., Penner et al. 2012). Nonetheless, there is still some empirical support for this position (Abendroth et al. 2017; Maume and Ruppanner 2015). We therefore expect the following:

*Hypothesis 3B:* As the share of women or migrant professionals and managers in the workplace increases, it will increase the wages of women or migrant employees.

### *Surplus Appropriation*

RIT builds on the idea that workplaces are key sites of redistribution (Acker 2006; Baron and Bielby 1980). Since the wage bill is one of the largest line items for firms, labor costs will have important distributional effects. For example, in a quasi-experimental design, Jäger and Heining found unexpected worker deaths in Germany lowered the wage bill for firms and resulted in higher earnings for stayers over time (2022)—a logic similar to “vacancy chains” (see White 1970). This simple dynamic explains why, for example, firms increasingly use flexible and temporary work contracts as they have been shown to lower the wage bill for firms (e.g., Kleinknecht et al. 2006). Lowering replacement costs of workers has also worked as an anti-union strategy historically (Kimeldorf 2013).

Since women and migrants earn less on average than their male and native counterparts, a changing demographic composition will yield a redistribution of those savings within the firm. In contrast to the competitive labor market effect, lowering the labor costs will result in wage gains for stayers in the firm. The crucial question is who has the claims making power to capture those gains. For RIT, managers as well as other professional and technical experts control production, have decisive influence on wage setting, and appropriate surpluses (Avent-Holt 2019). Indeed, the PMC is growing in size (Goldstein 2012) and occupies an important role within post-Fordist capitalism (Ehrenreich and Ehrenreich 1979; Ikeler and Limonic 2018; Táiwò 2022; Wright 1997).

Tomaskovic-Devey and Avent-Holt argue that by weakening worker’s claims making ability and wages, managers “redirect organizational surplus to themselves” (2019:124). This works in part through managers exploiting migrant vulnerabilities and racialized and gendered forms of segmentation and sorting (ten Berge and Tomaskovic-Devey 2022; Tomaskovic-Devey and Skaggs 2002). We therefore expect the following:

*Hypothesis 4A:* As the share of women or migrants in the workplace increases, it will increase the wages of managers more than that of workers.

The above theory can be taken one step further if we bring in other social status positions. In Tomaskovic-Devey and Avent-Holt’s discussion on exploitation, they note how “[m]en and whites possess cultural power over women and minorities, and this may give them, at least in some contexts, the capacity to extract value in the form of higher wages” (Tomaskovic-Devey and Avent-Holt 2019:112). In other words, RIT considers multiple forms of social hierarchy playing out in workplaces.

We suspect the advantages or disadvantages associated with dominant or subordinate group status would be magnified when linked with class position. This is in line with a critical inequality tradition. For example, whites and men within a

dominant class exploit female, migrant, or non-white workers for their benefit (Du Bois 1992; Hartmann 1979; Salzinger 2003). The material objective is to appropriate a higher share of surpluses to dominant social groups. This helps explain why the feminization of the labor force has increased the rate of capitalist profit in high-income countries (Elveren et al. 2017). More specifically this works through workplace authority. For example, in “split labor theory,” managers divide workers by categorical distinctions and put them in competition to lower the price of labor overall (Bonacich 1972; Bonacich et al. 2008; Phillips and Taylor 1980). Or, as another example, dominant group managers impose labor-saving technology that specifically displaces migrants with less education (ten Berge and Tomaskovic-Devey 2022). By lowering wages of the most socially disadvantaged, native and male managers can redistribute earnings upwards. We therefore expect the following:

*Hypothesis 4B:* As the share of women or migrants in the workplace increases, it will increase the wages of male or native managers more than that of female or migrant workers.

## DATA AND METHODS

Our data are based on a linked employer–employee dataset, the BTS.<sup>5</sup> BTS is an exhaustive dataset of all French private sector, civil service, and public hospital organizations. It is administered by France’s national statistics agency (INSEE). All organizations that employ human resources are legally mandated to file it. BTS contains detailed information on all employees including earnings, occupation, and demographic information. We also merged firm-level information like total assets and sales variables from firm revenue datasets available from INSEE.<sup>6</sup>

BTS data is an anonymized cross-sectional structure. Each yearly file,  $y$ , contains information on each subject at time,  $t$  and for the previous year,  $t - 1$ . By matching individual respondents at both points in time in a single file and then across other files, it is possible to panelize the data. By using characteristics about subjects and workplaces at two points in a time in a single file,  $y$ , we can match those subjects across year files,  $yn$ . To do this, we follow the methodology proposed by Babet et al. (2022), which uses a chaining script to match all subjects across the data files by key characteristics (establishment ID, gender, number of hours worked, start and end dates of the job, municipality of work, residence, wage, and age). This matching technique successfully chains 98% of the workforce. Importantly, while we create a panel artificially (a pseudo-panel) to track employees over time, all subjects remain completely anonymized. The integrity of the data is therefore preserved.

<sup>5</sup> Access to the confidential data, on which this work is based, has been made possible within a secure environment offered by CASD—*Centre d’accès sécurisé aux données* (Ref. 10.34724/CASD). The BTS was formerly known as *Déclarations Annuelles des Données Sociales—DADS*.

<sup>6</sup> We combine the FARE database (*Statistique structurelle annuelle d’entreprises issue du dispositif ESANE*) and prior to 2007, we used the *Fichier complet unifié de Suse* (FICUS).

Migrant and gender status are dummy variables derived from BTS. Migrant status is based on whether an employee was born outside of France.<sup>7</sup> Unfortunately, BTS does not contain country of origin data.<sup>8</sup> We interact gender and nativity by class status. Class should be operationalized according to theoretical considerations (Wright 2015). For a study on workplace inequalities, we are keenly interested in power in pay setting and the organizational authority between managers and workers (Avent-Holt 2019; Tomaskovic-Devey and Avent-Holt 2019). In the French context, this definition of upper-class category is called *les cadres* and they have significant workplace power, status, and subjective identity (e.g., Amable 2017; Boltanski 1982). This is based on two-digit occupational coding to include either entrepreneurs, managers, or professionals (French PCS occupation code: 21–38)<sup>9</sup> or those who are not (French PCS occupation code: 42–69). More specifically, it should be noted this category essentially consists of either managers or “engineers.”<sup>10</sup> Hence, it might be justifiable to say “managers” but *les cadres* most closely approximates “PMC” in English so we adopt this term.

This full panel gives us important leverage for our research question. It allows us to measure the entry and exit of employees in workplaces and observe how compositional changes affect wages. Second, panelizing the data allows us to use fixed-effects or an “ignorance term” constant for each subject (Firebaugh et al. 2013). This accounts for unobserved and time in varying features in our sample as well as selection bias of employee and workplace characteristics. For example, when workers with certain skills cluster in particular workplaces (Abowd et al. 1999; Card et al. 2013).

$$\ln(w_{ijt}) = b_{jk} \cdot \text{female\_share}_k + b_{mk} \cdot \text{migrant\_share}_k + X\beta + i \times j + t + u, \quad (1)$$

$$\begin{aligned} \ln(w_{ijt}) = & b_{fgk} \cdot (\text{female\_share}_k \times \text{group}_g) + b_{mgk} \cdot \\ & (\text{migrant\_share}_k \times \text{group}_g) + X\beta + i \times j + t + u. \end{aligned} \quad (2)$$

Our model and methodological strategy is shown in Equations (1) and (2). We estimate the impact of migrant and female shares of class  $k$  (either all employees, PMC, or workers) on the log hourly wage of individual,  $i$  in workplace  $j$ , at time  $t$ . In Equation (2), we interact these shares with group,  $g$  dummies such as male, female, native, migrant, and class to measure the wage impact of compositional change on specific subgroups.

The use of matched ( $i \times j$ ) individual-workplace fixed effects enables us to estimate the variation of log wages for “stayers” or those who remain in the workplace

<sup>7</sup> BTS data does not include nationality of birth information which prevents us from distinguishing between “international migrants” and these complex categories of “French national migrants” (Beauchemin and Safi 2020).

<sup>8</sup> For reference, 44% of immigrants were born in Africa in 2014. North African migrants represent 30% of all immigrants, a stable proportion since the 1980s. Immigration from former colonies in sub-Saharan Africa has begun to grow more recently. Finally, 15% of immigrants come from Asia, principally Cambodia, Laos, and Vietnam.

<sup>9</sup> This group consists mostly of either Administrative and commercial managers (code 37) (42%) and Engineers and firm’s technical managers (code 38) (49%).

<sup>10</sup> “Engineer” is used more broadly in French than English and largely includes technical managerial roles with control over production. See <https://www.insee.fr/fr/metadonnees/pcs2003/categorieSocioprofessionnelleDetaillee/38?champRecherche=true>.

for at least 2 years.<sup>11</sup> Hence, we specifically isolate how demographic changes (calculated on the whole workforce) affect the wage evolution of those already employed. Wage variations due to differences between subjects or workplaces are captured by the matched fixed effect ( $i \times j$ ). This strategy accounts for all time invariant unobserved features as well as local economic features in the municipality or region.<sup>12</sup> We account for common temporal variation with a fixed effect for year,  $t$ . Finally, our model includes a matrix,  $X$  of control variables.

For each workplace, we compute the proportion of migrants or women as a share of the whole workforce as well as by the two classes: PMC and workers. These shares are calculated for the whole workforce, weighted by the number of days and hours worked (and thus include short-term contracts). There are two possibilities for what shares could mean in estimating wages in workplaces. First, within workplace variation in shares of employees (by female/migrant status) reflect external inflows and outflows.<sup>13</sup> Conversely, within workplace variation in shares of PMC/workers combine this external flow dynamic with the internal dynamic of promotion (and demotion of others). For instance, everything remaining equal, if a workplace promotes a woman from worker to the managerial level, it will decrease its female share of workers and increase that of managers.

Since we focus on variations in the composition due to entries and exits, we calculate corrected female/migrant shares of PMC and workers to reflect only external compositional variation. Accordingly, we use the cumulative evolution in female/migrant proportion of managers, net of changes due to promotions. This procedure is shown in Equation (3) where  $c$  stands for the cumulative difference in corrected proportions,  $g$  for group (female or migrant),  $k$  for class group (PMC or workers),  $l$  and  $r$  for the rank order of an occurrence in a workplace,  $j$  within the panel,  $n$  for the number employed, and  $d$  for the number of departures and arrivals. We explain this procedure with an example in Appendix Table A8.<sup>14</sup> In Table A4, we also provide estimates with uncorrected female/migrant shares of PMC/workers to compare these differences. Within a fixed effect panel regression model with workplace fixed effects, this variable functions as a female/migrant share of PMC/workers net of variations due to internal promotions.

$$c_{gk,j,r} = \sum_{l=1}^{l=r} \left( \frac{n_{gk,j,l} - d_{gk,j,l} + a_{gk,j,l+1}}{n_{k,j,l} - d_{k,j,l} + a_{k,j,l+1}} - \frac{n_{gk,j,l}}{n_{k,j,l}} \right) \quad \text{for } r > 1 \quad (3)$$

and  $c_{gk,j,r} = 0$  for  $r = 1$ .

<sup>11</sup> To limit the size of the dataset, individuals present in the workplace only 1 year out of 4—“singletons”—and who would be entirely captured by fixed effects are dropped from the analysis.

<sup>12</sup> This specification is both simpler to estimate and more conservative than AKM models which estimate both workers and workplace fixed effects. It takes into account unobserved complementarity between workers and workplaces.

<sup>13</sup> To be more precise, this relation is not 100% true. Since we weight the number of employees by working time, the variation in female/migrant share of employees also reflects relative changes in working time. However, correcting for this change in working time does not change at all the estimates.

<sup>14</sup> The Appendix is available online through the following link: <https://static1.squarespace.com/static/5df6422feb2e2b10557be2/t/650a082232f6600f37282a09/1695156258670/Appendix.pdf> or by request.

We control for important individual and firm-level covariates. This includes worker characteristics such as dummies for class status, class interacted with female/migrant status, the share and corrected share of PMC employees, age, age squared, hours worked, and hours worked squared. Since younger employees are often hired at a lower cost and can therefore alter the wage structure, we control for the share of employees under the age of 40 years old. We also proxy for turnover with the share of stayers among the workforce, since large variation in migrant and female share could be caused by strong turnover. We control for workplace and firm size (including a squared term for non-linear effects). Related, we include a dummy variable for firms declaring less than 50 employees because French labor law stipulates a work council for firms exceeding this threshold. Finally, we control for performance and productivity by sales, sales squared, total assets, and total assets squared. All models include robust standard errors clustered at the firm level.

Our sample consists of all French employees (working in a firm for at least 2 years) in workplaces with at least 20 (equivalent full-time, full-year) employees for which sales and total assets are documented over the years 2006, 2009, 2012 and 2015. As we calculate female and migrant shares of workers or PMC and keep only workplaces with at least one worker and one manager. For consistency, we drop state civil servants (*fonction publique d'État*) because this group entered the BTS later (2009). However, hospital and local civil servants (*fonction publique hospitalière* and *fonction publique territoriale*) are included in the database across the sampled years. Our final sample consists of 20 million observations working in 110,105 establishments and 72,427 firms (see Table A1).

The identification of the causal effect of changing gender or migrant composition on wages is challenging. Some labor market studies measure the change in migrant or female workers at the regional or urban-level. However, selection effects can bias these estimates. This can be remedied through instrumentation strategies but it is often difficult to satisfy the exogeneity assumption. By contrast, our empirical strategy relies on leveraging high quality organizational-level data, and the use of fine-grained individual  $\times$  establishment fixed effects. By estimating wage evolutions within the same workplace, our results are subject to less bias arising from the correlation between demographic composition and firm productivity.

## RESULTS

Table I presents descriptive information about the relevant demographic characteristics in our sample. The share of employees who are either women or migrants rose slightly from 2006 to 2015 (+0.9% and +1.1% respectively). The share of PMC employees also rose (+4.2%); in particular, it rose among women in this class.

The main results are reported in Table II. In addition, we visually report these results in Fig. 1 which is scaled to reflect the impact of a 10% point increase in the designated share of employees. Every model estimates the log hourly wage of stayers in the workplace. In Model 1, we estimate the wage effect of female/migrant employee shares. We interact female/migrant shares by group status (male or female; native or migrant) in Model 2. In Model 3, we decompose the female and migrant

**Table I.** Share of Female and Migrant Employees Including by Class Position

	Years			
	2006	2009	2012	2015
Female (%)	34.5	34.4	35.1	35.4
Migrant (%)	12.5	12.8	13.2	13.6
Managers and professional class (PMC) (%)	17.1	18.6	20.0	21.3
Female share of PMC (%)	26.8	29.1	30.2	31.7
Female share of workers (%)	36.1	35.6	36.3	36.5
Migrant share of PMC (%)	10.7	10.8	11.1	11.3
Migrant share of workers (%)	12.7	13.0	13.4	13.9
Number of observations (%)	9,833,607	9,452,882	9,731,394	9,891,134
Number of equivalent full-time and full-year employees (%)	7,750,366	7,593,532	7,667,937	7,794,410

*Note:* Shares of employees are for those working full-time equivalent and full-year. Sample includes employees in all private, hospital and local civil service workplaces with at least 20 equivalent full-time, full-year employees. Employees are weighted by number of hours and days worked. PMC, professional and managerial class.

shares of employees among the PMC and workers and interact them with class position. In the last Model 4, we estimate the wage impact of female/migrant shares within class position by each group status and class position. All models also include control variables. We report these covariates in the Appendix but, in the interest of space, we report only complete estimates for Model 1 in (see Table A2). Parameters for control variables remain very stable throughout different models.

### *Competitive Labor Market Competition*

The market competition mechanism predicts that the increase in the share of women or migrants will lead to an overall decrease in wages (Hypothesis 1). In Model 1, an increase in the female share of employees does not decrease wages. On the contrary, it is tied to a significant increase. Moreover, in more detailed models, Models 2–4, we do not find female entry—including when interacted by class—is associated with wage decreases for any workplace subgroup (male, female, PMC, workers and their combination).

In contrast, the increase in the share of migrants has a slight negative effect. In Model 1, a 10% point increase in the migrant share of employees is tied to a  $-0.15\%$  decrease in wages. This effect is not significant at conventional levels, however ( $p = .17$ ). We do find some negative and significant effects for certain subgroups. Model 3 shows that a 10% point increase in the share of migrant workers leads to a log hourly wage decrease of  $0.21\%$  net of controls ( $p < .05$ ). Model 4 indicates this downward wage pressure affects both native and migrant workers by nearly the same magnitude ( $p < .05$ ). Supplementary analysis reported in the Appendix (see Table A5) that interacts with gender and native compositional effects shows this downward wage pressure affects migrant men but not migrant women.

Hence, while we do not find a general support for the competitive labor market perspective, we find some class specific effects of it. Migrant worker entry has some small downward pressure on worker wages.

**Table II.** Wage Impact of the Female and Migrant Share of Workers and PMC

Model 1	
Female share of employees	.544*** (0.089)
Migrant share of employees	-.150 (0.109)
Model 2	
Female share of employees × Male	.577*** (0.104)
Female share of employees × Female	.499*** (0.087)
Migrant share of employees × Native	-.122 (0.111)
Migrant share of employees × Migrant	-.182 (0.165)
Model 3	
Corrected female share of PMC × PMC	.714*** (0.057)
Corrected female share of PMC × Worker	-.012 (0.017)
Corrected female share of workers × PMC	-.034 (0.093)
Corrected female share of workers × Worker	.076 (0.074)
Corrected migrant share of PMC × PMC	.195** (0.091)
Corrected migrant share of PMC × Worker	-.036 (0.024)
Corrected migrant share of workers × PMC	-.186 (0.211)
Corrected migrant share of workers × Worker	-.208** (0.090)
Model 4	
Corrected female share of PMC × Male PMC	.864*** (0.066)
Corrected female share of PMC × Female PMC	.459*** (0.058)
Corrected female share of PMC × Male worker	-.014 (0.020)
Corrected female share of PMC × Female worker	-.009 (0.020)
Corrected female share of workers × Male PMC	-.019 (0.101)
Corrected female share of workers × Female PMC	-.074 (0.094)
Corrected female share of workers × Male worker	-.024 (0.086)
Corrected female share of workers × Female worker	.197*** (0.074)
Corrected migrant share of PMC × Native PMC	.169* (0.092)
Corrected migrant share of PMC × Migrant PMC	.324** (0.149)
Corrected migrant share of PMC × Native worker	-.056** (0.027)
Corrected migrant share of PMC × Migrant worker	.041 (0.031)
Corrected migrant share of workers × Native PMC	-.173 (0.201)
Corrected migrant share of workers × Migrant PMC	-.258 (0.297)
Corrected migrant share of workers × Native worker	-.205** (0.096)
Corrected migrant share of workers × Migrant worker	-.225** (0.110)
Common features to all models	
Num. obs.	20,054,749
R <sup>2</sup>	.95
Control variables	Yes
Employee × Workplace fixed effects	7,691,482

*Note:* All models are OLS (Ordinary Least Squares) with log hourly wage as the dependent variable. Controls include workplace size, workplace size<sup>2</sup>, firm size, firm size<sup>2</sup>, firm size <50 (dummy), manager, manager × female, and manager × dummies, share of stayers in the workplace, share and corrected share of managers, share of employees below 40, age, age<sup>2</sup>, number of hours worked, number of hours worked<sup>2</sup>, sales, sales<sup>2</sup>, total assets, total assets<sup>2</sup>, and year dummies. Coefficients are rescaled to express the wage impact in percentage point of 10% point variations in share. Employees are weighted by number of hours and days worked. Since we use employee × workplace fixed effects, singletons (e.g., employees which are present only 1 year out of the 4 observed) are dropped. \*\*\* $p < .01$ ; \*\* $p < .05$ ; \* $p < .10$ . Robust standard errors clustered at the firm level in parentheses. PMC, professional and managerial class.

### *Threat-based Discrimination*

Our second hypothesis expects that a higher share of women or migrants will provoke a discriminatory backlash against them. We expect a specific decline in wages for women or migrants in comparison to men and natives (absolutely and relatively) as their respective share increases (Hypothesis 2). In Model 2, we do not find

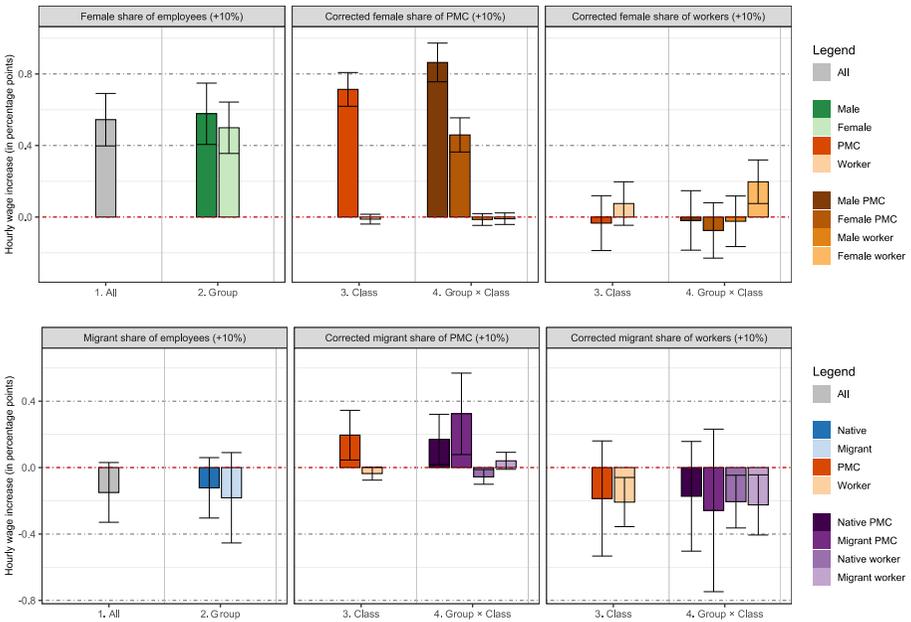


Fig. 1. Estimated OLS results with standard errors from Table II with 90% confidence intervals.

signs of wage decrease for either women or migrants when their shares increase in the workplace. As noted above, increase in female shares has positive effects on both men and women.

While the negative impact of an increase in migrant shares of employees, or of workers, is also visible on migrants ( $-0.18\%$  in Model 2,  $-0.22\%$  in Model 4), its magnitude is close to the one measured for natives and native workers. Therefore, the results also fail to support a threat-based discrimination effect.

*Power in Numbers*

In contrast to threat-based discrimination, power in numbers expects that an increase in female and migrant shares will result in a higher wages both absolutely and relatively to men and natives (Hypothesis 3A). This is due to greater in-group solidarity which will enhance bargaining power.

In Model 2, a 10% point increase in the share of women is tied to a 0.5% wage increase for female employees ( $p < .01$ ). However, the impact on male employees is very similar and the difference between the two estimates is far from significant (Table A3). Thus, the positive impact does not specifically target female employees. When decomposing gendered wage effects within the two different classes in Model 4, we find a statistical result compatible with the power in number hypothesis, albeit for workers specifically. A 10% increase in the share of female workers results in a

0.20% wage increase ( $p < .01$ ) for female workers, which is significantly different from its impact on male workers (cf. Table A3).<sup>15</sup>

We do not see similar effects for migrants. Model 2 shows a non-significant wage decline of similar magnitude for both native and migrant employees. Similarly, in Model 4, the wage effect of migrant worker entry is also negative and similar for migrant and native workers.

The power in numbers dynamic can also work when women or migrants in managerial positions can act as “agents of change” towards other in-group members (Hypothesis 3B). In Model 4, the share of women in the PMC yields a positive coefficient for other women in that class, but its magnitude lags far behind the coefficient for men in the PMC. Importantly, the effect of female manager entry is insignificant for female (as well as male) workers.

For migrants, a 10% point increase in their share in the PMC increases the log hourly wages of other PMC migrants by 0.2% ( $p < .05$ ). The effect of this flow is also positive for native managers (+0.17). The difference between the two estimates is not significant at conventional levels (see Table A3).

Migrant managers boost managerial wages but do not significantly alter wage differentials between migrant and native managers. Do they impact wage differentials among workers? A 10% point increase in the share of migrant managers leads to a non-significant 0.04% wage increase for migrant workers and a 0.06% wage decrease for native workers ( $p < .05$ ). As shown in Table A3, the difference between the two estimates is significant ( $p < .05$ ). Migrants in a managing position thus have some capacity to rebalance the migrant wage gap for the workers they supervise.<sup>16</sup>

Thus, these results give some support to the power in numbers hypothesis (Hypothesis 3A), and the agents of change version (Hypothesis 3B).

### *Surplus Appropriation*

Our final set of hypotheses are based on the expectation that the most powerful actors will be able to appropriate workplace surpluses, specifically when lower wage employees replace higher wage employees. We expect these differences to play out by class position with female and migrant shares to yield higher wages for the PMC relative to workers (Hypothesis 4A). We also expect that wages for dominant group members (men/natives) in the PMC will be higher relative to migrant and female workers (Hypothesis 4B).

We saw in Models 1 and 2, that an increase in female employees is tied to a significant wage for all employees, male or female. Model 3 shows this change is class biased. A 10% point increase in the share of women in the PMC leads to 0.71% wage increase for others in that class ( $p < .01$ ). This change does not significantly impact

<sup>15</sup> It is worth noting that this effect is only visible for external compositional change due to departures and arrivals. When the share also accounts for internal transformation due to workplace internal promotions, it disappears. See Table A4.

<sup>16</sup> It is worth noting that in models with uncorrected shares of migrant workers or managers (i.e., include internal promotions), there is still an effect of rebalancing of the migrant wage gap among workers but in a slightly different manner (see Table A4). Promoted migrant managers increase migrant worker wages, but they do not lower native worker's ones.

workers though the coefficients are negative. In contrast, surplus produced by a higher share of female workers does not increase worker or PMC wages.

We find similar results for migrant shares in Models 3, but of smaller magnitude. A 10% point increase in migrants in the PMC is associated with a 0.2% increase in PMC log wages ( $p < .05$ ). Like with female flows in this class, the coefficient for workers is negative but not significant. We also see unevenness in that an increase in migrant workers decreases log wages for other workers. We therefore find support for Hypothesis 4A insofar as women and migrants in the PMC increase wages for that class.

To test the second component of this hypothesis, we look at our full decompositions in Model 5. In line with this hypothesis, we find men in the PMC benefit more from female entry in this class than women do. A 10% point increase in the share of women in the PMC raises male PMC employee wages by 0.86% ( $p < .01$ ) and women in that class by 0.46% ( $p < .01$ ). Hence, the wage gains for men in this class is approximately twice that of women ( $p < .01$ ). By contrast, the effects for female workers shows more of a power in numbers story as we have discussed above. For migrants, a 10% point increase in the migrant share of PMC is associated with a 0.32% increase in migrant PMC wages ( $p < .05$ ) and a 0.17% increase in native PMC wages ( $p < .10$ ). These changes depress wages for native workers as well ( $p < .05$ ). Migrant workers, as we have seen, depress wages for all workers.

Taken together, we see salient appropriation effects. Regarding female shares, there is strong support for Hypotheses 4A and 4B at the top-end of the class hierarchy. That is, there are benefits accruing to the PMC and especially male PMC employees. For migrants, there is also support for Hypothesis 4A but less support for Hypothesis 4B.

## DISCUSSION

Our results show demographic compositional effects on wages. In general, the effect sizes of these estimates are relatively small (more so with migrant share effects). Nonetheless, these effects are informative about mechanisms of wage inequality in workplaces. We do not find evidence of threat-based discrimination. We also do not find migrant or female shares reduce overall wages through a competitive market dynamic. However, we find such a dynamic by class position as the share of migrants lowers wages for workers. There is some evidence of power in numbers because female workers raise wages for other female workers. Overall, we find clear results by class position and this includes our surplus appropriation effect. We find, for example, the share of women benefits those in the PMC without benefits to workers. Men in the PMC benefit the most from this change. We also find migrants in the PMC benefit this class without benefits to workers. On the contrary, there is some evidence of wage loss for native workers here.

Our results lend support to RIT. Indeed, some of our findings are in line with other research in this vein. For example, findings from Sweden show migrant managers raise wages for other migrant managers (Tomaskovic-Devey et al. 2015). Managers have also segmented women in workplaces in ways that materially benefit male

managers (Tomaskovic-Devey and Skaggs 2002). In other cases, our findings depart from similar research. For example, unlike results from Germany, we do not find female managers raise wages of female workers (Abendroth et al. 2017). Nonetheless, we do find support for competitive labor market theory though only with regard to migrant workers. This too is in line with other research (Edo and Toubal 2015; Kim and Sakamoto 2013; Lin and Weiss 2019) including in France where migrant entry depresses worker earnings (Ortega and Verdugo 2022). Considering competitive effects apply to migrant worker entry, we see overlap between RIT and competitive labor markets. As RIT would expect, for example, market pressure does not exist *in abstracto* in organizations. More powerful actors can shelter themselves from such pressure while exposing workers or discriminated groups like migrants to more external market pressures. Stated differently, competitive market forces matter but they do in the context of class relations and distributional struggles.

Since the class-specific effects, especially surplus appropriation, are our most salient findings, they warrant more attention. Our hypotheses rest on the basic sociological idea that those with workplace authority like managers can organize work at the point-of-production and appropriate surpluses. Since women and migrants earn less on average, managers lower the wage expenses from hiring them and those savings can be redistributed.<sup>17</sup> We can quantify those changes by estimating the wage gaps in Table III.

Following Penner et al. (2023) and Hermansen et al. (n.d.), we estimate female and migrant hourly wage gaps within jobs (four-digit occupation codes) in the same establishment by year. The overall female gap declined from  $-8.7\%$  to  $-7.0\%$  between 2006 and 2015. The migrant wage gap increased slightly from  $-1.9\%$  to  $-2.2\%$  during this time. Here we see that replacing men with women is associated with a larger wage expense savings relative to replacing natives with migrants. Averaging these coefficients across years shows a 10% point increase in female share of employees will, all things being equal, increase the unspent wage budget by 0.8%. For migrants that value is  $+0.2\%$  with the same magnitude increase. In Panel B, adding together the average of both group and group  $\times$  PMC shows a 10% point increase in women in the PMC could yield a 1.3% increase in log hourly wages at maximum. This maximal potential increase is worth comparing with the coefficient found in Model 3 in Table II:  $+0.7\%$ . It suggests that not all, but at least half of the surplus generated by hiring lower paid female managers is appropriated by managers. This overall compositional change leads to savings among stayers which helps explain why they are appropriated by more powerful actors within the workplace. This could arise, for example, from gendered supervisory roles. Female managers are more likely to manage female workers while male managers are more likely to manage other female managers (Abendroth et al. 2017). Male managers are therefore in a position to gain more from that relatively higher surplus.

By contrast, we do not see a wage gap between migrants and natives within the PMC in Table III. This helps explain why migrant entry within this class does not produce the kind of gains in the PMC like we saw with female entry. Comparing

<sup>17</sup> Interestingly a change in the age composition yields similar results. Increasing the share of younger workers through external hires who are relatively less expensive boost other employees' wages (see Table A2).

**Table III.** Wage Gap by Gender, Migrant, and Class Status in French Workplaces by Year

	Log wage 2006	Log wage 2009	Log wage 2012	Log wage 2015
Panel A				
Female	-.087*** (0.001)	-.086*** (0.001)	-.075*** (0.001)	-.070*** (0.001)
Migrant	-.019*** (0.001)	-.022*** (0.001)	-.022*** (0.001)	-.023*** (0.001)
Panel B				
Female	-.071*** (0.001)	-.070*** (0.001)	-.058*** (0.001)	-.054*** (0.001)
Migrant	-.026*** (0.001)	-.026*** (0.001)	-.026*** (0.001)	-.026*** (0.001)
Female × PMC	-.066*** (0.003)	-.071*** (0.003)	-.07*** (0.003)	-.062*** (0.003)
Migrant × PMC	.043*** (0.002)	.027*** (0.002)	.023*** (0.002)	.021*** (0.002)
Control variables	Yes	Yes	Yes	Yes
Num. observations	9,833,607	9,452,882	9,731,394	9,891,134
$R^2$	.851	.849	.859	.858
Workplace × 4-digit occupation FE	1,355,561	1,577,508	1,539,023	1,556,299

*Note:* All models are OLS with log hourly wage as the dependent variable. Control variables for Panel A and Panel B include, age and age<sup>2</sup>, number of hours and number of hours<sup>2</sup>. Estimates report log wage gap for those with same four-digit occupational code and in the same workplace, for example female employees are paid 8.7% less than male employees. Sample includes employees in all private, hospital and local civil service workplaces with at least 20 equivalent full-time, full-year employees. Employees are weighted by number of hours and days worked. \*\*\* $p < .01$ ; \*\* $p < .05$ ; \* $p < .10$ . Robust standard errors clustered at the firm level in parentheses. PMC = professional and managerial class.

Tables II and III helps to scale the magnitude of market competitive pressure. Let us assume that the effect of migrant worker entry is linear and let us consider a maximal theoretical variation in the migrant share of workers (moving from 0% to 99%). This would lead to a -2.1% wage effect on remaining native workers. However, it would not alter the migrant wage gap as migrant wages also decrease by 2.2%. A similar exercise shows how migrant managers, acting as agents of change, could mitigate the migrant wage gap among workers. A theoretical maximal variation in the migrant share of managers (moving for instance from 0% to 99%) would lead to a one percentage point decrease in the migrant wage gap (40% decrease).

Future work should consider these mechanisms more closely and we note several possibilities. The first is explaining why higher surpluses are appropriated by the PMC when hiring women in that class relative to hiring female or migrant workers. One possibility is that wages within the PMC are more career related and “stickier” or less vulnerable to cost-cutting logic or budget optimization (Goldstein 2012). This leaves more space for redistribution. Hence, the wage surplus from recruiting women could appear more as a windfall profit and used to relieve wage tensions within the PMC.

A second point to address is why migrant workers depress native worker wages and yet we do not see a similar effect for workers by gender. One possibility could be their respective degree of occupational segregation. Historically, in France, there is a long tradition of using of migrant labor to diminish labor costs and avoid wage

increases (e.g., Noiriél 1988). It is possible migrant workers are instrumentalized by employees in ways that differ from female workers. As noted above, there are some unique inequality pathways between migrate and female employees and such differences may be at work here.

Third, an important limitation is that we lack data on country of origin, language abilities, or some approximation for racialized status in the labor market. Migrants from former colonies experience significant levels of discrimination in French society. We strongly suspect, but cannot empirically confirm, that racialized status has larger wage effects. It seems plausible our effects for migration could be more nuanced if we were able to make these distinctions. Nonetheless, we have made new empirical inroads into the demographic effects of wage levels. Researchers with different linked employer-employee data could illuminate these processes including in tandem with other relevant factors like work contracts, technology, task specialization, and job mobility (Melzer et al. 2018; Sauer et al. 2021; ten Berge and Tomaskovic-Devey 2022).

Finally, we have taken additional steps to understand our results including potential sources of bias. While we focus on changes in the female or migrant composition effects, the combined “cross” effects are important too (Edo and Toubal 2017; Sauer et al. 2021). We report these results in the Appendix (see Table A5). Another consideration is that fixed effects account for within individual and establishment heterogeneity but hiring and wage setting practices could vary by productivity levels. This is partially accounted for in our size and performance controls. Nonetheless, we examine productivity effects in the Appendix. First, when excluding productivity control variables in the main analysis, this does not substantially change our results (see Table A6). Second, migrant and female shares are only weakly tied to labor and capital productivity measures (see Table A7). This exercise shows at least that this “observable” heterogeneity is not a serious issue and suggests further the “unobservable heterogeneity” bias is likely to be modest.

## CONCLUSION

In this paper, we show increasing shares of women and migrants in French workplaces have distributional effects but in specific and sometimes diverging ways. The share of women raises wages overall and the share of female workers raises wages for other female workers. By contrast, migrant workers decrease wages for other workers. Class differences are the most salient findings. Women entering the PMC generate gains for that class, especially men. Migrants in the PMC also benefit that class as well. We interpret these findings around the redistribution of surpluses generated from wage gaps between natives and migrants and, especially, men and women. Migrant and female entry into the workforce has uneven benefits by class position and this paper more broadly shows complex allocative processes along multiple social hierarchies (class, gender, and migrant status).

We build on previous studies estimating the wage effects of demographic changes. Our ability to net out internal promotions and control for matched employee and firm effects mitigates known selection issues. It also provides a more

precise accounting of localized wage setting practices. This can have important implications. Some researchers using national-level data find increasing migration and female labor force participation benefit top earnings percentiles and sometimes disadvantage lower earnings percentiles (Blau and Kahn 2017; Dustmann et al. 2013; Lin and Weiss 2019; Ortega and Verdugo 2022). We extend these insights but highlight these changes through class relationships in the workplace rather than just across the earnings spectrum. This is a key contribution of our paper. We hope future work builds on our results. Researchers should examine how surplus appropriation works in more detail within organizations especially in relation to gender, race, and migrant-based inequalities. This can have important political and policy implications. At a time of increasing economic inequality and precarity as well as political polarization surrounding issues of migration and gender equality, it is important to understand potential sources of conflict arising in workplace relations.

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## Supporting Information

Additional Supporting Information may be found in the online version of this article.

## Appendix

**Table A1. Descriptives**

Variable	Weighted mean	Weighted sd	Min	Max	Within sd <sup>#</sup>
Log hourly wage	2.87	0.45	1.890	9.108	0.138
Female (dummy)	0.34	0.47	0	1	.
Female share of employees	0.34	0.24	0	1	0.023
Female share of PMC	0.26	0.23	0	1	0.092
Female share of workers	0.37	0.27	0	1	0.038
Corrected <sup>###</sup> female share of PMC	1.58E-02	1.29E-01	-2	2	0.077
Corrected <sup>###</sup> female share of workers	-1.63E-03	5.66E-02	-1.20	1.11	0.031
Migrant (dummy)	0.11	0.31	0	1	.
Migrant share of employees	0.11	0.13	0	1	0.021
Migrant share of PMC	0.08	0.13	0	1	0.058
Migrant share of workers	0.11	0.14	0	1	0.027
Corrected <sup>###</sup> migrant share of PMC	1.35E-04	8.47E-02	-1.35	1.50	0.050
Corrected <sup>###</sup> migrant share of workers	7.81E-04	4.15E-02	-1	1	0.022
Workplace size	476	1,372	19	20,236	171
(Workplace size) <sup>2</sup>	2.11E+06	1.72E+07	3.61E+02	4.09E+08	3.81E+06
Firm size	8,687	30,065	0	250,825	3,163
(Firm size) <sup>2</sup>	9.79E+08	5.22E+09	0	6.29E+10	9.37E+08
Firm size <50 (dummy)	0.15	0.35	0	1	0.120
PMC (dummy)	0.20	0.40	0	1	0.130
PMC × female (dummy)	0.06	0.23	0	1	0.076
PMC × migrant (dummy)	0.02	0.14	0	1	0.038
Stayer share of employees	0.79	0.15	0	1	0.086
PMC share of employees	0.20	0.23	0	1	0.041
Corrected <sup>###</sup> PMC share of employees	-2.38E-03	4.39E-02	-0.88	0.88	0.024
Age<40 share of employees	0.45	0.17	0	1	0.057
Age	42	10	16	70	2.536
(Age) <sup>2</sup>	1,862	842	256	4,900	221.17
Number of hours	1,761.15	317.80	100.00	3,640.00	209.737
(Number of hours) <sup>2</sup>	3.20E+06	9.61E+05	1.00E+04	1.32E+07	6.01E+05
Sales	1.49E+06	4.18E+06	-3.56E+02	4.63E+07	4.86E+05
(Sales) <sup>2</sup>	1.97E+13	8.59E+13	0	2.14E+15	2.23E+13
Firm total assets	3.66E+06	1.62E+07	-6.03E+04	1.57E+08	9.91E+05
(Firm total assets) <sup>2</sup>	2.75E+14	2.12E+15	0	2.45E+16	1.28E+14
Year = 2006	0.21	0.40	0	1	0.359
Year = 2009	0.29	0.45	0	1	0.423
Year = 2012	0.29	0.45	0	1	0.425
Year = 2015	0.22	0.41	0	1	0.370

Note: We provide descriptive statistics for variables used in table 2 and A2. The field is restricted to stayers which have at least two observations in the same workplace during the four years observed (i.e. singletons are dropped).

<sup>#</sup> In the last column, we also calculate the within “stayer” weighted standard-deviation, that is the standard deviation of the variable demeaned by matched employee-workplace. It represents the standard deviation of a variable change for an employee in a given workplace.

<sup>###</sup> Corrected share stands for corrected cumulative difference in proportion, net of changes due to internal promotions.

N= 20,054,749 and sum of weights = 18,150,314, number of workplaces= 110,105 and number of firms=72,427.

**Table A2. Complete estimates for Table 2 model 1 and alternative model without fixed effects**

	Model 1		Alternative model 1	
Intercept			2.0480 ***	(0.0338)
Female (dummy)			-0.0989 ***	(0.0016)
Migrant (dummy)			-0.0667 ***	(0.0017)
Female share of employees	0.0544 ***	(0.0089)	-0.0672 ***	(0.0104)
Migrant share of employees	-0.0150	(0.0109)	0.0451 ***	(0.0148)
Workplace size ( $\times 10^{-3}$ )	0.0325 ***	(0.0086)	0.0419 ***	(0.0103)
(Workplace size) <sup>2</sup> ( $\times 10^{-6}$ )	-0.0010 ***	(0.0003)	-0.0022 ***	(0.0008)
Firm size ( $\times 10^{-3}$ )	-0.0002	(0.0006)	-0.0037 *	(0.0019)
(Firm size) <sup>2</sup> ( $\times 10^{-6}$ )	0.0000	(0.0000)	0.0000	(0.0000)
Firm size <50 (dummy)	-0.0110 ***	(0.0014)	-0.0408 ***	(0.0035)
PMC (dummy)	0.1009 ***	(0.0024)	0.5696 ***	(0.0085)
PMC $\times$ female (dummy)	0.0040 **	(0.0019)	0.0808 ***	(0.0057)
PMC $\times$ migrant (dummy)	0.0132 ***	(0.0017)	-0.0287 ***	(0.0051)
Stayer share of employees	-0.0096	(0.0060)	0.1607 ***	(0.0187)
PMC share of employees	0.1187 ***	(0.0149)	0.4129 ***	(0.0152)
Corrected <sup>#</sup> PMC share of employees	-0.1343 ***	(0.0198)	-0.3345 ***	(0.0325)
Age <40 share of employees	0.0826 ***	(0.0081)	-0.0100	(0.0141)
Age	0.0278 ***	(0.0049)	0.0229 ***	(0.0007)
Age <sup>2</sup>	-0.0004 ***	(0.0000)	-0.0002 ***	(0.0000)
Number of hours ( $\times 10^{-2}$ )	0.0060 ***	(0.0008)	-0.0252 ***	(0.0022)
(Number of hours) <sup>2</sup> ( $\times 10^{-4}$ )	-0.0006 ***	(0.0000)	0.0009 ***	(0.0001)
Sales ( $\times 10^{-7}$ )	0.1070 *	(0.0586)	0.0932	(0.0810)
(Sales) <sup>2</sup> ( $\times 10^{-14}$ )	-0.0182 *	(0.0097)	-0.0178	(0.0274)
Firm total assets ( $\times 10^{-7}$ )	0.0262	(0.0269)	0.0896 ***	(0.0227)
(Firm total assets) <sup>2</sup> ( $\times 10^{-14}$ )	-0.0022	(0.0023)	-0.0058 ***	(0.0013)
Year = 2009	0.1286 ***	(0.0148)	0.0472 ***	(0.0029)
Year = 2012	0.2448 ***	(0.0296)	0.0965 ***	(0.0036)
Year = 2015	0.3409 ***	(0.0443)	0.1505 ***	(0.0028)
Num. obs.	20,054,749		20,054,749	
R2 (full model)	0.95		0.57	
Employee $\times$ Workplace fixed effects	7,691,482		No	

Note: All models are OLS regressions with log hourly wages as the dependent variable. To ease estimation, singletons (e.g. employees which are present only one year out of the four observed) are dropped from the sample (their effect would be captured in the employee  $\times$  workplace fixed effects).

# Corrected share stands for corrected cumulative difference in proportion, net of changes due to internal promotions.

\*\*\*p < 0.01; \*\*p < 0.05; \*p < 0.10. Robust standard errors clustered at the firm level in parentheses.

**Table A3. Estimations of main differences between parameters in Table 2**

Model	Independent variable	Difference of impact between groups	Estimates	
2	Female share of employees	Male – Female	0.078	(0.136)
	Migrant share of employees	Native – Migrant	0.060	(0.199)
3	Corrected Female share of PMC		0.726***	(0.060)
	Corrected Female share of workers	PMC – Worker	-0.110	(0.119)
	Corrected Migrant share of PMC		0.231**	(0.094)
	Corrected Migrant share of workers		0.021	(0.229)
	Male PMC- Female PMC		0.405***	(0.087)
Corrected Female share of PMC		Male worker- Female worker	-0.004	(0.028)
		Male PMC- Male worker	0.878***	(0.069)
		Female PMC- Female worker	0.468***	(0.061)
		Male PMC- Female PMC	0.056	(0.138)
Corrected Female share of workers		Male worker- Female worker	-0.221*	(0.113)
		Male PMC- Male worker	0.005	(0.132)
		Female PMC- Female worker	-0.272**	(0.120)
4		Native PMC- Migrant PMC	-0.154	(0.175)
	Corrected Migrant share of PMC	Native worker- Migrant worker	-0.097**	(0.041)
		Native PMC- Native worker	0.225**	(0.096)
		Migrant PMC- Migrant worker	0.283*	(0.152)
Corrected Migrant share of workers		Native PMC- Migrant PMC	0.085	(0.357)
		Native worker- Migrant worker	0.020	(0.146)
		Native PMC- Native worker	0.033	(0.222)
		Migrant PMC- Migrant worker	-0.033	(0.317)

Note: We estimate the magnitude and significance of main differences between parameters presented in Table 3. In model 2, an increase in the share of female PMC is of 0.0015 on male and 0.0004 on male employees. The difference between male and female is 0.0011(non-significant).

\*\*\*p < 0.01; \*\*p < 0.05; \*p < 0.10. Robust standard errors clustered at the firm level in parentheses.

**Table A4. Alternative estimation of table 2 using the migrant and female share of total employees**

Alternative Model 3		
Uncorrected female share of PMC × PMC	0.438 ***	(0.054)
Uncorrected female share of PMC × Worker	-0.016	(0.017)
Uncorrected female share of workers × PMC	-0.010	(0.068)
Uncorrected female share of workers × Worker	-0.024	(0.061)
Uncorrected migrant share of PMC × PMC	-0.001	(0.088)
Uncorrected migrant share of PMC × Worker	-0.017	(0.022)
Uncorrected migrant share of workers × PMC	-0.053	(0.128)
Uncorrected migrant share of workers × Worker	-0.307 ***	(0.092)
Alternative Model 4		
Uncorrected female share of PMC × Male PMC	0.626 ***	(0.067)
Uncorrected female share of PMC × Female PMC	0.136 **	(0.060)
Uncorrected female share of PMC × Male worker	-0.024	(0.021)
Uncorrected female share of PMC × Female worker	-0.007	(0.018)
Uncorrected female share of workers × Male PMC	-0.040	(0.073)
Uncorrected female share of workers × Female PMC	0.048	(0.070)
Uncorrected female share of workers × Male worker	-0.061	(0.073)
Uncorrected female share of workers × Female worker	0.028	(0.064)
Uncorrected migrant share of PMC × Native PMC	-0.036	(0.092)
Uncorrected migrant share of PMC × Migrant PMC	0.032	(0.143)
Uncorrected migrant share of PMC × Native worker	-0.040 *	(0.023)
Uncorrected migrant share of PMC × Migrant worker	0.060 **	(0.030)
Uncorrected migrant share of workers × Native PMC	-0.067	(0.127)
Uncorrected migrant share of workers × Migrant PMC	-0.025	(0.180)
Uncorrected migrant share of workers × Native worker	-0.323 ***	(0.095)
Uncorrected migrant share of workers × Migrant worker	-0.332 **	(0.138)
Common features to all models		
Num. obs.	20,054,749	
R2	0.95	
Control variables	Yes	
Employee × Workplace fixed effects	7,691,482	

**Table A5. Migrant and gender flows combined**

Model 1		
Native female share of employees	0.498 ***	(0.091)
Migrant male share of employees	-0.290 **	(0.125)
Migrant female share of employees	0.611 ***	(0.191)
Model 2		
Native female share of employees × Native male	0.488 ***	(0.110)
Migrant male share of employees × Native male	-0.403 ***	(0.151)
Migrant female share of employees × Native male	1.287 ***	(0.237)
Native female share of employees × Native female	0.402 ***	(0.123)
Migrant male share of employees × Native female	-0.092	(0.137)
Migrant female share of employees × Native female	0.400	(0.344)
Native female share of employees × Migrant male	0.465 ***	(0.089)
Migrant male share of employees × Migrant male	-0.236 *	(0.141)
Migrant female share of employees × Migrant male	0.520 ***	(0.193)
Native female share of employees × Migrant female	0.523 ***	(0.126)
Migrant male share of employees × Migrant female	-0.369	(0.304)
Migrant female share of employees × Migrant female	0.187	(0.206)
Common features to all models		
Num. obs.	20,054,749	
R2	0.95	
Control variables	Yes	
Employee × Workplace fixed effects	7,691,482	

Note: All models are OLS regressions with log hourly wages as the dependent variable. Controls include workplace size, workplace size<sup>2</sup>, firm size, firm size<sup>2</sup>, firm size<50 (dummy), manager, manager × female, and manager × dummies, share of stayers in the workplace, share and corrected share of managers, share of employees below 40, age, age<sup>2</sup>, number of hours worked, number of hours worked<sup>2</sup>, sales, sales<sup>2</sup>, total assets, total assets<sup>2</sup>, and year dummies.

Field: employees in private, hospital and local civil service workplaces with at least 20 equivalent full-time, full-year employees. Employees are weighted according to the number of hours and days they stay in the workplace. To ease estimation, singletons (e.g. employees which are present only one year out of the four observed) are dropped from the sample (their effect would be captured in the employee × workplace fixed effects).

\*\*\*p < 0.01; \*\*p < 0.05; \*p < 0.10. Robust standard errors clustered at the firm level in parentheses.

**Table A6. Alternative estimation of table 2, without size, sales and asset controls**

Model 1		
Female share of employees	0.559 ***	(0.095)
Migrant share of employees	-0.101	(0.110)
Model 2		
Female share of employees × Male	0.625 ***	(0.113)
Female share of employees × Female	0.470 ***	(0.091)
Migrant share of employees × Native	-0.048	(0.113)
Migrant share of employees × Migrant	-0.162	(0.164)
Model 3		
Corrected female share of PMC × PMC	0.711 ***	(0.062)
Corrected female share of PMC × Worker	-0.012	(0.017)
Corrected female share of workers × PMC	-0.105	(0.094)
Corrected female share of workers × Worker	0.078	(0.074)
Corrected migrant share of PMC × PMC	0.215 **	(0.090)
Corrected migrant share of PMC × Worker	-0.035	(0.024)
Corrected migrant share of workers × PMC	-0.207	(0.230)
Corrected migrant share of workers × Worker	-0.146	(0.091)
Model 4		
Corrected female share of PMC × Male PMC	0.877 ***	(0.070)
Corrected female share of PMC × Female PMC	0.431 ***	(0.063)
Corrected female share of PMC × Male worker	-0.014	(0.020)
Corrected female share of PMC × Female worker	-0.010	(0.020)
Corrected female share of workers × Male PMC	-0.085	(0.102)
Corrected female share of workers × Female PMC	-0.156 *	(0.094)
Corrected female share of workers × Male worker	0.004	(0.085)
Corrected female share of workers × Female worker	0.168 **	(0.075)
Corrected migrant share of PMC × Native PMC	0.194 **	(0.090)
Corrected migrant share of PMC × Migrant PMC	0.324 **	(0.146)
Corrected migrant share of PMC × Native worker	-0.055 **	(0.027)
Corrected migrant share of PMC × Migrant worker	0.041	(0.031)
Corrected migrant share of workers × Native PMC	-0.184	(0.217)
Corrected migrant share of workers × Migrant PMC	-0.329	(0.331)
Corrected migrant share of workers × Native worker	-0.136	(0.099)
Corrected migrant share of workers × Migrant worker	-0.188 *	(0.108)
Common features to all models		
Num. obs.		20,054,749
R2		0.95
Control variables		Yes
Employee × Workplace fixed effects		7,691,482

Note: All models are OLS regressions with log hourly wages as the dependent variable. Controls include workplace size, workplace size<sup>2</sup>, firm size, firm size<sup>2</sup>, firm size<50 (dummy), manager, manager × female, and manager × dummies, share of stayers in the workplace, share and corrected share of managers, share of employees below 40, age, age<sup>2</sup>, number of hours worked, number of hours worked<sup>2</sup>, sales, sales<sup>2</sup>, total assets, total assets<sup>2</sup>, and year dummies. Coefficients are rescaled to express the wage impact in percentage point of 10 percent point variations in share. To ease estimation, singletons (e.g. employees which are present only one year out of the four observed) are dropped from the sample (their effect would be captured in the employee × workplace fixed effects).

\*\*\*p < 0.01; \*\*p < 0.05; \*p < 0.10. Robust standard errors clustered at the firm level in parentheses.

**Table A7. Link between labor and capital productivity and female and migrant share of employees**

	Model 1. Female share [std]	Model 2. Female share [within est. std]	Model 3. Migrant share [std]	Model 4. Migrant share [within est. std]
(Sales / number workers) [std]	0.0068 (0.0042)		-0.0277*** (0.0083)	
(Sales / assets) [std]	0.0022*** (0.0005)		-0.0005** (0.0002)	
(Sales / number workers) [within std]		-0.0007 (0.0027)		-0.0003 (0.0032)
(Sales / assets) [within std]		0.0013*** (0.0003)		0.0009 (0.0008)
Num. Obs. (establishments)	306,822	306,822	306,822	306,822
R2	0.0008	0.0033	0.0015	0.0026
Year fixed effects	4	4	4	4
Establishment fixed effects	No	109,594	No	109,594

Note: All models are OLS regressions with workplace female share (models 1 and 2) or workplace migrant share (models 3 and 4) as the dependent variables. In models 1 and 3, both dependent and independent variables are standardized. In models 2 and 4, dependent and independent variables are workplace demeaned and standardized.

Field: Workplaces with at least 20 equivalent full-time, full-year employees. Workplaces are weighted according to the size of the equivalent full-time, full year workforce.

\*\*\*p < 0.01; \*\*p < 0.05; \*p < 0.10. Robust standard errors clustered at the firm level in parentheses.

**Table A8. Fictitious example of calculation of a corrected female share of PMC**

Year	Symbol	2006	2009	2012	2015
Rank	<i>r or i</i>	1	2	3	4
Number in class k	$n_k$	50	55	53	58
Number of group g in class k	$n_{gk}$	20	23	22	27
External departures from class k	$d_k$	2	4	1	
External departures of group g from class k	$d_{gk}$	1	3	0	
External arrivals in class k	$a_k$		3	2	5
External arrivals of group g in class k	$a_{gk}$		2	1	3
Internal promotions in class k	$prom_k$		4	0	1
Internal promotions in class k and group g	$prom_{gk}$		2	1	2
Corrected number in class k net of promotions	$n_k'$		51	53	57
Corrected of group g in class k net of promotions	$n_{gk}'$		21	21	25
Proportion of group g in class k	$p_{gk}$	40.0%	41.8%	41.5%	46.6%
Corrected proportion of group g in class k	$p_{gk}'$		38.2%	39.6%	43.1%
Difference in proportions of group g in class k	$\Delta p_{gk}$		1.8%	-0.3%	5.0%
Corrected difference in proportions of group g in class k	$\Delta p_{gk}'$		-1.8%	-2.2%	1.6%
Cumulative difference in proportions of group g in class k	$\Sigma \Delta p_{gk}$	0.0%	1.8%	1.5%	6.6%
Corrected cumulative difference in proportions of group g in class k	$\Sigma \Delta p_{gk}'$	0.0%	-1.8%	-4.0%	-2.4%

This table illustrates the calculation of the corrected female (respectively migrant) share of PMC (respectively workers). In 2009, there are 55 managers including 23 women. 4 managers including 3 women present in 2009 left the workplace before 2012, and in 2012, 2 managers including 1 woman just arrived. Thus, the corrected number of managers in 2012 (net of 2 promotions) is  $55-4+2=53$  and of  $23-3+1=21$ . This enables to calculate a corrected female share of managers net of promotions:  $21/53=39.6\%$ , a corrected difference in female shares of managers  $39.6\%-41.8\%=-2.2\%$  and a corrected cumulative difference in proportion:  $0-1.8\%-2.2\%=-4\%$ . In our regressions, we thus replace  $p_{gk}$  with  $\Sigma \Delta p_{gk}'$ . Let us note that in a panel regression with individual  $\times$  workplace fixed effects, the proportion  $p_{gk}$  and the cumulative difference in proportion  $\Sigma \Delta p_{gk}$  are equivalent, because they present exactly the same evolutions. Thus, equivalently, our correction consists in replacing cumulative difference in proportions with its corrected version.