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GENDER DIVERSITY IN THE LABOR MARKET: EMPLOYER DISCRIMINATION, EDUCATIONAL CHOICES AND PROFESSIONAL PREFERENCES

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Abstract

EN

Three main mechanisms explain women's labor force placement: employer discrimination, gendered educational choices and professional preferences. The labor market evolves in a cultural context which is infused with stereotypes about men's and women's "natural" capacities, interests, and behaviors. These cultural beliefs shape employers' decisions and their propensity to consciously or unconsciously discriminate against women. A widespread argument in gender studies contends that gender beliefs translate into sex segregation which furthers inequality between men and women. According to this perspective, employers directly contribute to gender diversity in the labor market.

In addition to the "demand side" (employers' beliefs), the "supply side" (workers' decisions) of the labor market is also affected by cultural beliefs. Cultural beliefs influence individuals' educational choices and professional preferences. At school, men and women differ in their fields of study, and these educational choices influence their career paths. Employers that recruit employees from masculinized fields of study like STEM fields (Science, Technology, Engineering, and Mathematics) might employ fewer women because the pool of potential female candidates is limited. Gender stereotypes also shape professional trajectories when employees enter the labor market. Women and men differ in terms of the employers and industries that they prefer. According to a "supply side" perspective, employees reproduce social constructs that exist in society within the labor market.

Keywords

Gender diversity, discrimination, gendered education choice, gendered professional preference.

Résumé

FR

Trois mécanismes majeurs expliquent la présence des femmes sur le marché du travail : la discrimination des employeurs, les choix éducatifs et les préférences professionnelles différents entre les femmes et les hommes. Le marché du travail est encadré dans un contexte culturel qui est empreint de stéréotypes concernant les capacités, les intérêts et les comportements « naturels » des hommes et des femmes. Ces croyances culturelles influencent les décisions des employeurs et leur tendance à consciemment ou inconsciemment discriminer les femmes. Un argument largement répandu dans les études sur le genre est que les croyances relatives au genre se traduisent en une ségrégation entre les sexes et entraînent des inégalités entre les femmes et les hommes. Dans cette perspective, l'employeur contribue directement à la diversité des genres sur le marché du travail. Au-delà de la demande de travail influencée par les croyances des employeurs, l'offre de travail liée aux décisions des travailleurs est également affectée par les croyances culturelles. Les croyances culturelles influencent les choix éducatifs des individus ainsi que leurs préférences professionnelles. Dans le système éducatif, la présence des hommes et des femmes diffèrent dans les champs disciplinaires et ces choix éducatifs influencent leurs potentielles carrières professionnelles. Les employeurs qui recrutent leurs salariés dans des champs académiques caractérisés par une forte présence masculine comme les disciplines STIM (Science, Technologie, Ingénierie et Mathématique) tendent à employer moins de femmes car le vivier de potentielles candidates est plus limité. Les stéréotypes liés aux genres influencent également les trajectoires professionnelles des femmes qui entrent sur le marché du travail. Les femmes et les hommes diffèrent dans leurs préférences concernant les employeurs et les industries. Ces mécanismes liés à l'offre de travail conduisent les travailleurs à reproduire sur le marché du travail les constructions sociales qui existent dans la société.

Mots-clés

Diversité des genres, discrimination, choix éducatifs, préférences professionnelles.

INTRODUCTION

In developed countries, women represent about half of the working population (OECD, 2016). However, occupational sex segregation remains a striking and persistent feature of modern labor markets (Charles, 2005; Ridgeway, 2011). The gender composition of employees varies between hierarchical levels within firms (vertical gender diversity) and between firms (horizontal gender diversity). This raises questions regarding the forces that shape women and men's placement on the labor market.

Three main mechanisms explain women's labor force placement: employer discrimination, gendered educational choices and professional preferences. The labor market evolves in a cultural context which is infused with stereotypes about men's and women's "natural" capacities, interests, and behaviors (Charles and Grusky, 2004; Gorman, 2005). These cultural beliefs shape employers' decisions and their propensity to consciously or unconsciously discriminate against women. A widespread argument in gender studies contends that gender beliefs translate into sex segregation which furthers inequality between men and women (Acker, 2006 ; Gorman and Kmec, 2009 ; Van den Brink, 2010). According to this perspective, employers directly contribute to gender diversity in the labor market.

In addition to the "demand side" (employers' beliefs), the "supply side" (workers' decisions) of the labor market is also affected by cultural beliefs (Correll, 2004; Bobbitt-Zeher, 2011; Ridgeway, 2011). Cultural beliefs influence individuals' educational choices and professional preferences (Ridgeway and Correll, 2004; Pedulla and Thébaud, 2015). At school, men and women differ in their fields of study, and these educational choices influence their career paths (Correll, 2001; Xie and Shauman, 2003; Cech, 2016). Employers that recruit employees from masculinized fields of study like STEM fields (Science, Technology, Engineering, and Mathematics) might employ fewer women because the pool of potential female candidates is limited. Gender stereotypes also shape professional trajectories when employees enter the labor market. Women and men differ in terms of the employers and industries that they prefer (Lewis, 2014). According to a "supply side" perspective, employees reproduce social constructs that exist in society within the labor market.

It remains unclear how these three mechanisms interact and to what extent employer discrimination directly affects gender diversity. Can we isolate the effects of employer discrimination from individual preferences which are shaped outside the labor market? Do these three mechanisms reinforce or undermine each other as they shape gender diversity within firms?

To address these research questions, I analyze a unique dataset containing information on the gender composition at three hierarchical levels (executive committee, middle management and staff) within the 60 largest French private companies. These 60 employers form the primary segment of the French labor market (Cahuc, 2014) and offer the best working conditions, including higher salaries, job security and greater career opportunities. These data are combined with unique data from a survey fielded by UniversumGlobal in 2015. To understand students' preferences for employers, 36,762 students from 125 French higher education institutions were surveyed. Another source of data are statistics from the French Department of Statistics (INSEE¹) on men

[1] Institut National de la Statistique et des Etudes Economiques.

and women's participation in educational programs in both vocational schools and universities. Complementary data on the extent to which managers at the 60 largest firms were educated at Polytechnique or HEC Paris, the two elite French universities ("Grandes Ecoles") from which companies recruit top managers, were collected from LinkedIn.

This empirical analysis suggests that discrimination by employers contributes to horizontal gender diversity. Compared to the complete labor market, women are underrepresented in the primary segment of the labor market. I identify an "invisible fence" as an informal social barrier that prevents women from entering the privileged primary segment of the labor market. Employer discrimination also reduces the number of women in more senior positions within firms. Women face two glass ceilings: an upper ceiling between middle management positions and top management positions; a lower ceiling between staff positions and middle management positions. However, a more detailed analysis at the firm level reveals that gender composition within firms varies greatly. Based on an innovative measure of discrimination, three categories of employers are defined: those discriminating against women, egalitarian ones and those discriminating against men.

Educational choices also contribute to gender diversity within firms. Women are overrepresented in some fields of study, such as accounting, business, life science, fashion and sales and, therefore, are overrepresented in industries in which these skills from these fields of study are highly valued, such as financial services, luxury goods, health and retail. Conversely, women are underrepresented in STEM fields and, therefore are underrepresented in high-tech, automotive, energy, construction, and defense companies in which skills from STEM fields are needed. Professional preferences also play a role. The firms that women prefer have higher proportions of female employees. Similarly, the firms that men identify as their employers of choice have higher proportions of male employees.

These three mechanisms reinforce each other. In their professional careers, women pursue opportunities in feminized companies. They make educational choices consistent with getting a job with one of these employers. Conversely, they do not tend to study subjects that are relevant for masculinized employers and shy away from jobs at these companies. Women therefore end up getting fewer positions in masculinized firms. A similar process shapes men's placement in the labor market. The convergence of these three mechanisms leads to gender polarization within the labor market. Through these interrelated processes, the labor market comes to consist of one group of companies in which female employees are overrepresented and a separate group of companies in which men are overrepresented.

The first part of this paper is dedicated to reviewing the literature on the three mechanisms that shape gender diversity in the labor market. In the second part, I present an

overview of the gender composition of staff, middle management and top management employees in the 60 largest French private companies. I then provide empirical evidence that isolates the contribution of these three mechanisms and highlight how these mechanisms complement each other to facilitate gender polarization within the labor market. The last part is devoted to the discussion.

THREE PERSPECTIVES ON GENDER DIVERSITY

› Gender diversity and employer discrimination

The workplace is not only a place which reproduces gender inequality that originates in other social institutions, *i.e.* family and education, but also a place where inequality is produced (Acker, 2006). Gender discrimination is also rooted in corporate organizational structures, policies, and practices (Ridgeway and England, 2007). Employers create gender inequality by assigning unequal amounts of power, control over resources, and outcomes; opportunities for promotion and interesting work; security in employment and benefits; pay and other monetary rewards to male and female employees (Castilla, 2012).

Four reasons for discrimination are usually identified:

Protecting privileges. The labor market might be understood as a place where men and women compete for access to privileged occupations (Reid and Rubin, 2003). This competition leads men to dominate corporations in order to preserve their own status and privileges by keeping women away from positions that are lucrative and powerful (Chamberlain *et al.*, 2008; Bobbitt-Zeher, 2011).

Gender competition takes two forms. One is access to top management positions (vertical competition). In a male-dominated society, women tend to be excluded from the highest positions in businesses (Gorman and Kmec, 2009). The second form is to access to privileged employers and industries providing job security and higher salary (Horizontal competition). Women tend to be excluded from the most favorable segment of the labor market and directed towards more precarious employment (Charles and Grusky, 2004).

Homophily. Unconsciously, individuals prefer to work with similar people. Communication and trust are generally easier among in-group members, so individuals feel more comfortable recruiting candidates who are similar to themselves. Homophily therefore leads male decision makers to recruit men (Ibarra, 1992).

The propensity to work with similar people increases in uncertain environments. Top management positions are characterized by high levels of uncertainty. The predominance of men in leadership positions combines with heightened in-group preferences in uncertain environments to intensify gender inequality in top management (Gorman, 2005; Gorman and Kmec, 2009).

Work organizations. Gender inequality might stem from employers' policies and practices that affect men and women differently, such as job descriptions, eligibility requirements, and recruitment practices (Snizek and Neil, 1992). In general, work is organized around the ideal of a white man who is totally dedicated to his work and whose only responsibility to his family is to earn a living (Acker, 2006). Employees who work long hours are considered more productive and committed. These employees are rewarded with promotions, financial security, and recognition from colleagues (Kelly *et al.*, 2010). This expectation of working long hours shapes labor organization as employers incorporate gendered assumptions into the policies they craft (Ridgeway and England, 2007). In workplaces that value overwork, women are more likely to be evaluated poorly and less likely to receive opportunities for promotion (Roth, 2006). Women, especially mothers, are structurally less able to meet the expectation of the ideal worker because their time is also subject to family demands. These expectations therefore hinder women's advancement in jobs requiring complete devotion to work (Ridgeway and Correll, 2004). Moreover, as employees with children struggle to attend to family activities, the lack of human resource policies related to parenting (paid family leave, flexible scheduling or subsidized childcare) prevent these parents from investing in the workplace. This lack of family support impacts women's work to a greater extent than men's work (Pedulla and Thébaud, 2015).

Employers' expectation that their employees will always be available for work increases for middle and top management positions (Kuhn and Lozano, 2008). This might lead employers rationally to discriminate against women when they select candidates for management positions. Employers may wish to avoid the costs associated with employee decisions to take time or even leave their jobs to attend to family obligations (Blossfeld *et al.*, 2015).

Cultural beliefs. Firms are embedded in an ideological context of cultural beliefs about men's and women's natural capacities, interests, and behaviors (Charles, 2005). These gender stereotypes are cultural constructs that influence employers' beliefs about men and women. If men (or women) are believed to be better at some task, gender will be a salient status characteristic in recruitment or promotion decisions (Correll, 2004).

A widespread cultural belief associates managerial characteristics like ambition, assertiveness, independence, self-confidence, decisiveness, aggressiveness and leadership with men (Gorman and Kmec, 2009; Berrey, 2014). Conversely, women are perceived as less able to lead (Mandel, 2013) and therefore better suited for lower occupational positions that required employees to accept orders (Reid and Rubin, 2003). Stereotypically feminine characteristics such as warmth, nurturance, friendliness and cooperation also characterize lower level positions (Gorman 2005; Ridgeway, 2011). Gender beliefs, collectively shared and internalized by men and women, legitimize male overrepresentation in managerial positions (Dodge *et al.*, 1995; Acker, 2006).

These beliefs bias employers' assessments of job candidates and lead them to prefer men over equally-qualified women because employers rely on gender as an indicator of general competence (Bobbitt-Zeher, 2011). When selection criteria include more stereotypically masculine characteristics, women constitute a smaller proportion of new hires. Conversely, when selection criteria include more stereotypically feminine traits, women are more likely to be chosen (Gorman, 2005; Cech, 2016).

The cumulative effect of the four discrimination mechanisms results in two forms of segregation: horizontal segregation, *i.e.* women tend to be excluded from privileged firms and, vertical segregation, *i.e.* women tend to be excluded from top management positions (Charles and Bradley, 2002).

Horizontal segregation: The labor market is frequently described as segmented, and the differences between employers create inequality among workers (Cahuc, 2014; Wilkinson, 2013). The primary segment of the labor market contains the largest and most prestigious firms. These employers provide superior work conditions such as higher average earnings, fringe benefits, job security, good working conditions and opportunities for internal promotion. Conversely, the secondary segment consists of employment that is characterized by poor working conditions, lower pay and less job security (Borjas, 2015).

Horizontal gender discrimination within the labor market means that women tend to be excluded from the privileged occupations in the primary labor. Women are left with jobs in the more precarious segment (Kriesi, 2010; Blossfeld *et al.*, 2015). Like the "glass ceiling" preventing women to access to top managerial positions, an "invisible fence" prevents women from entering the privileged primary labor market.

Hypothesis 1: *Women are expected to be underrepresented among large employers that constitute the primary labor market.*

Vertical segregation: The human resource management literature underscores that employers favor promoting people from inside the organization to staff higher positions over recruiting from outside (Mathis *et al.*, 2013; Mondy and Martocchio, 2015). Workers tend to be promoted to middle management positions from staff positions and to top management positions from middle management.

Vertical gender discrimination means that women are deprived of access to middle management and top management positions (Acker, 2006; Gorman and Kmec, 2009). This kind of discrimination was popularized through the "glass ceiling" metaphor that describes artificial discriminatory barriers that prevent women's advancement to the highest level within the organization (Berrey, 2014; Lee and James, 2007; Bobbitt-Zeher, 2011).

Two potential glass ceilings may exist inside organizations. First, an "upper glass ceiling" may prevent women from being promoted from middle management positions to the top management team, *i.e.* executive committee (Acker, 2006; Stainback *et al.*,

2016). Second, a “lower glass ceiling” may block promotions to the middle management level from the staff level. Consequently, women may tend to occupy lower positions which reinforces gender stratification (Gherardi and Poggio, 2001).

Since leadership competences are stereotypically masculine and top management positions are more privileged, the upper glass ceiling may be thicker than the lower one.

Hypothesis 2a: *Women are expected to be underrepresented at the top management level relative to the middle management level (upper glass ceiling).*

Hypothesis 2b: *Women are expected to be underrepresented at the middle management level relative to the staff level (lower glass ceiling).*

› Gender diversity and educational choices

In industrial countries, women and men have equal access to the education system (DiPrete and Buchmann, 2013). However, they differ in their educational choices regarding fields of study and types of education (Xie and Shauman, 2003; Blossfeld *et al.*, 2015). As early as high school, young men and women take different courses and choose different specializations in vocational schools and colleges. This produces gendered differences in the kind of jobs that are available to them when they graduate (Correll, 2004; Kelan, 2010). The degree to which women select certain educational specializations determines the diversity of the pool from which employers can recruit (Charles and Bradley, 2002; Smyth and Steinmetz, 2008). This is the “supply side” of gender placement in the labor market.

Gender diversity in the education system results from stereotypes entrenched in family and society, *i.e.* outside the labor market (Solnick, 1995). Two cultural beliefs regarding gender, internalized by children and shared by their parents and teachers, result in gendered educational choices (Charles, 2005).

First, cultural beliefs lead male and female students to develop different personal conceptions of themselves as competent at specific tasks (Cech, 2013). When gender beliefs are salient to the task, these beliefs can bias individuals’ expectations of their own competence regardless of their underlying abilities (Ridgeway and Correll, 2004). For instance, men are more likely than women to believe they are competent in math (Correll, 2001). Higher self-assessments of mathematical ability increase the odds that a person will pursue a career in a quantitative profession. Self-assessments are reinforced by parents and teachers who perceive mathematic skills to be masculine (Hyde *et al.*, 1990). This cultural belief about gender and mathematics reduces women’s commitment to educational paths that lead to careers in science, math, and engineering and therefore limits the number of women in quantitative professions (Correll, 2001; Morgan *et al.*, 2013). Recent reports on women in science highlight how the underrepresentation of female students in STEM fields lowers the number of female employees in the high-tech, automotive and energy industries (OECD, 2016).

Second, cultural beliefs about the proper industries and occupations for men and women lead men and women to make different educational choices in pursuit of different types of jobs (Ridgeway, 2011; Cech, 2016). Traditionally, engineering, architecture and veterinary medicine are classified as typical “male” professions while nursing, humanities and teaching are typical “female” fields (Smyth and Steinmetz, 2008). These beliefs and educational choices lead to female underrepresentation in engineering and computer science (and to a lesser degree, natural science) and female overrepresentation in education, humanities, and health care fields (Charles and Grusky, 2004). Cultural beliefs regarding gendered occupations thus become a self-fulfilling prophecy.

Moreover, a society that associates managerial activities and competences with male characteristics leads male students to choose educational paths that lead to managerial positions (Gemici and Wiswall, 2014). Conversely, gendered stereotypes expect women to take responsibility for housework, so women anticipate future family obligations and career interruptions. This expectation leads female students to choose educational paths towards less demanding jobs (Charles and Bradley, 2002). Cultural beliefs regarding gender and managerial positions shape men and women’s educational paths and thus contribute to differences in the gender composition of employees at different levels within firms’ hierarchies from the “supply side”.

Hypothesis 3a: *Due to gendered differences in educational choices, women are expected to be underrepresented among firms that recruit students studying STEM fields in vocational schools for staff positions.*

Hypothesis 3b: *Due to gendered differences in educational choices, women are expected to be underrepresented among firms that recruit students studying STEM fields in universities and elite schools for management positions.*

› Gender diversity and professional preferences

Differences in professional preferences between genders also contribute to gender placement within the labor market (Hakim, 2006). Cultural beliefs attribute different professional aspirations to men and women, and these beliefs consciously or unconsciously push men and women toward different industries and positions at different levels of the firms (Correll, 2004; Cech, 2013). Messages instilled through family, school, and media present gender roles as “natural”, and these communications reinforce differences between men and women’s professional preferences (Ely and Padavic, 2007). Shared cultural beliefs about gender include the assumptions that men are better at some tasks while women are better at others (Berrey, 2014). Mechanical work is an example of a stereotypically masculine task, while sewing or nursing is stereotypically feminine work (Nosek *et al.*, 2002). These stereotypes channel women and men toward different industries and contribute to differences between firm’s gender composition. Men are overrepresented in the manual and production sector, whereas women

predominately work in service and care-giving sectors (Blossfeld *et al.*, 2015). Service activities often involve tasks that are functionally and symbolically similar to women's traditional domestic activities (e.g., personal service industries) since these tasks demand emotional labor or interpersonal skills that are considered to be feminine (e.g. retail sales, banking, communication industries) (Charles, 2005).

Cultural beliefs and gender stereotypes also shape the professional preferences of men and women since gender inappropriate choices might lead to social sanctions and ostracism (England, 2010; Pedulla, 2016). For instance, men are drawn and pushed to mechanical jobs rather than nurturing jobs. Even when men and women make similar educational choices, they may still differ in terms of their professional preferences (Smyth and Steinmetz, 2008).

Gendered professional preferences also contribute to vertical gender diversity. Cultural beliefs assign responsibility for the home and family to women. Therefore, women tend to voluntarily retreat from managerial career paths in order to handle the double burden of work and family (Sayer, 2010; Cech, 2016). By anticipating their future parenting responsibilities and the lack of support from their employers, women develop less ambitious preferences (Blossfeld *et al.*, 2015). Therefore, some women opt out of high status positions because these positions are too demanding to allow them to fulfill the domestic duties that they expect to assume. The conflicting demands of work and family increase attrition rates of mothers in managerial positions, thereby reinforcing occupational segregation (Cha, 2013; Stone, 2007).

Another individual-level factor might block women from professional promotions. Women are more risk-averse than men and avoid competition more than men (Crozon and Gneezy, 2009). Climbing organizational ladders is a risky and competitive journey that women may prefer to forgo. Therefore, to avoid risk and competition fewer women tend to select managerial positions. Conversely, men are overconfident about their relative task performance, and beliefs on relative performance predict decisions to engage in competition (Niederle and Vesterlund, 2007). Due to cultural beliefs, men tend to be ambitious and take more risks. Furthermore, men are less likely to request work accommodations so that they can assume family responsibilities (Rudman and Mescher, 2013; Pedulla and Thébaud, 2015).

Hypothesis 4: *Due to differences in professional preferences, women are expected to be overrepresented among feminized employers.*

METHODS

› Data

I combine three sources of data. First, I built a unique set of data on gender diversity at three hierarchical levels (staff, middle management and top management) for the

60 largest French companies. By the law, French companies must publish information on the gender diversity of their employees at these three levels in their annual reports. These data come from the 2016 fiscal year annual reports.

I assume that these 60 companies represent the primary segment of the French labor market which offers more privileged work conditions. These large firms are prestigious employers that offer higher salaries, job security and better career opportunities. They represent multiple industries (banking, automotive, retail, energy, luxury, chemistry, high technology, etc.) and make up the CAC60 index, the market index of the 60 largest publicly traded French companies.

Second, I use public data from INSEE, the French National Institute for Statistics and Economic Studies, to explore in which ways gendered educational choices in vocational schools and universities affect gender composition in the labor market. Focusing on the top management level, I also collected data on graduates from the two top French universities. Many corporate leadership positions are filled by students from these elite schools ("Grandes Ecoles") (Bourdieu, 1996; McLean, 2014). Polytechnique, an engineering school, is the most prestigious French "Grande Ecole". In recent decades, HEC Paris, a business school, has emerged as the main alternative for students who wish to reach top management positions (Dudouet and Joly, 2010). For each of the 60 firms, I obtained the number of graduates from Polytechnique and HEC Paris working in top management of the company from LinkedIn. Roughly the same number of students graduate from each school (around 500 every year). Polytechnique is characterized by less gender diversity (16.7 percent of students are female) than HEC Paris (45.92 percent of students are female).

Third, I use exclusive data provided by UniversumGlobal to examine gendered professional preferences. UniversumGlobal, a consulting group, surveys students in higher education all around the world regarding their preferred employers. For each country, specific rankings are reported for students from each educational field (business, engineering, natural science, IT) and split by gender. In 2015, in France, UniversumGlobal surveyed 36,762 students (46% female and 54% male) from 125 different educational institutions. The sample includes 18,561 students in business programs in universities and business schools and 14,632 students in engineering, natural science and IT at universities and engineering schools. Out of the 60 companies, 35 are ranked by business students and 39 by engineering students.

› Descriptive statistics (Table 1)

Staff level. Women compose 35.77% of employees at the 60 largest French companies. There is a large variance in the proportion of female workers in these firms (stan. dev.: 16.25). LVMH, a luxury company, has the greatest proportion of female workers (74%), and ArcelorMittal and Vallourec, two steel companies, have the lowest (11%).

Middle management level. Women represent 30.26% of middle managers working for the 60 largest French companies. Similarly, there is a great deal of variance in proportion of middle managers that are women (stan. dev.: 11.43). LVMH has the greatest percentage of female middle managers (63%), and ArcelorMittal, a steel company, has the lowest percentage of female middle managers (10%).

There is a strong correlation ($r = 0.8725$, $p\text{-value} = .05$) between the proportion of women employed at the staff level and the proportion of female middle managers (Table 2). This correlation suggests that the staff level is used as an internal pool to recruit middle managers. Alternatively, companies that attract female workers could be the same as those that attract female middle managers.

Top management level. The executive committee constitutes the top management team of a firm. This group of corporate leaders runs the firm with the CEO. Women represent 11.43% of top management teams (Stan. dev.: 10.00). Out of the 60 companies, 15 (25%) do not have any women in their executive committee and 19 companies have only one woman (31.6%). One firm, Sodexo, employs 6 women among its 14 top executives (42.85%).

The standard for evaluating employer discrimination remains a controversial issue. The proportion of female corporate leaders is well below the proportion of women in the labor force, so it is commonly assumed that a glass ceiling exists. I build on this intuition to create a proxy for employer gender discrimination. I calculate the difference between the proportion of women at the lower organizational level, which constitutes a pool of potential female candidates, and the observed proportion of women in the upper organizational level. This difference represents the thickness of invisible barriers. It is assumed that in firms with large differences, the employer discriminates to a greater degree because the employer does not take advantage of the potential pool of female candidates as it fills upper-level positions. The upper glass ceiling is thus the difference in the percentages of women in middle management positions and top management positions. Similarly, the lower glass ceiling is the difference in the percentages of women in staff positions and middle management positions.

Independent of gender preferences, some employers are simply more attractive than others. To isolate gendered professional preferences, for each company, I calculate the difference between how men and women rank the company as a potential employer. For instance, if firm X is ranked 10th by female students and 15 by male students, female students are more attracted to this firm by a difference of 5. I use this indicator to evaluate whether gendered professional preferences influence gender diversity among employers. I calculate these gender preference differentials for students in each field (Table 8).

Gender preference differential for business students is the difference between the ranks that female and male business students assign to a firm.

Table 1. Descriptive Statistics

Variables	Obs	Mean	Std. Dev.	Min	Max
Executive Committee (EC) members	60	12.13333	5.143588	1	28
Female EC members	60	1.433333	1.293618	0	6
% female EC members	60	11.43832	10.0072	0	42.85714
% female middle-managers	60	30.26183	12.5575	10	63
% female employees	60	35.77117	16.25281	11	74
Upper Glass Ceiling	60	18.82351	14.49371	-8.181818	55.30769
Lower Glass Ceiling	60	5.509333	8.104629	-16	22
Gender Pref Diff Business students	35	-1.142857	16.78084	-34	36
Gender Pref Diff Engineering students	39	3	18.46476	-26	61
Number of Polytechnique graduates	60	39.31667	51.08766	0	198
Number of HEC Paris graduates	60	72.1	83.46515	3	421
% HEC Paris among the 2 elite schools graduates	60	0.6859035	0.1705081	0.2727273	1
% of employees from Polytechnique	60	0.000562	0.0006546	0	0.0033259
% of employees from HEC Paris	60	0.0012578	0.0014919	0.0000363	0.0073529
Workforce	60	97122.87	87657.57	1496	422844
Revenue	60	27600000000	32300000000	1070000000	165000000000
Average Gross Salary	60	69677.07	54607.82	13664	415187

Table 2. Correlations

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Executive Committee (EC) members	1														
2 Female EC members	0.4471*	1													
3 % female EC members	0.0899	0.8679*	1												
4 % female middle-managers	0.1127	0.2352	0.1901	1											
5 % female employees	0.1131	0.2501	0.213	0.8725*	1										
6 Upper Glass Ceiling	0.0356	-0.3955*	-0.5258*	0.7352*	0.6089*	1									
7 Lower Glass Ceiling	0.0522	0.1371	0.1327	0.2003	0.6534*	0.082	1								
8 Gender Pref Diff Business students	-0.1520	0.2456	0.3067	0.5309*	0.4418*	0.569	0.0862	1							
9 Gender Pref Diff Engineering students	0.0283	0.2252	0.2543	0.6473*	0.3964*	0.3895*	-0.1856	0.8004*	1						
10 % HEC Paris among the 2 elite schools graduates	0.2366	0.2011	0.0958	0.5638*	0.6538*	0.4223*	0.4376*	0.4732*	0.3521*	1					
11 % of employees from Polytechnique	-0.1365	-0.1822	-0.1574	-0.1078	-0.0933	0.0153	-0.202	-0.4039*	-0.2629	-0.4039*	1				
12 % of employees from HEC Paris	0.0388	0.0111	-0.0341	0.2747*	0.3420*	0.2615*	0.2603*	-0.3408*	0.0934	0.2156	0.5466*	1			
13 Workforce	0.1362	0.3227*	0.3892*	0.0539	0.065	-0.2221	0.0468	0.1072	0.1467	-0.0034	-0.2705*	-0.3892*	1		
14 Revenue	-0.0266	-0.0484	-0.0049	-0.1080	-0.1059	-0.0901	-0.0451	-0.3066	0.0077	-0.2954*	0.1887	-0.1189	0.3885*	1	
15 Average Gross Salary	-0.0793	-0.1922	-0.1973	0.0380	-0.0620	0.1691	-0.1831	-0.158	0.0429	-0.1231	0.3501*	0.3233*	-0.153	-0.0247	1

Gender preference differential for engineering students is the difference between the ranks that female and male engineering students assign to a firm.

Percentage of HEC Paris from the 2 elite schools is the proportion of HEC Paris graduates employed by the firm in its population coming from the two highest elite schools (HEC Paris and Polytechnique).

Visualization helps to explore a social phenomenon (Larkin and Simon, 1987). A scatter plot shows the relationship between the percentage of female workers and the percentage of female middle managers across firms. This visualization highlights the gender polarization in the primary segment of the French labor market since one group of employers appears feminized while another group appears masculinized (Figure 1). There are only few employers in the middle of the graph with balanced gender composition.

Figure 1. Gender Diversity in Staff and Middle Management Positions



I may use the conventional cutoff of less than 30 percent female to characterize a male-dominated company (Kmec, 2005; Cha, 2013). A more restrictive definition sets a 40 percent threshold (Ali *et al.*, 2011). However, these cutoffs do not consider contingencies related to the gender composition of the pool of potential candidates. In 2015, in France, women account for 48.31% of the entire workforce, 52.42% of the staff

population (employees and workers), 40.03% of middle management population and 29.29% of corporate leaders². Given the lower proportion of women in middle management positions, the pool of potential female employees for top management positions is therefore smaller than for staff positions. To account for contingencies related to the size of the pool of candidates, I set a 40 percent threshold to define an egalitarian employer at the staff level, a 35 percent threshold at the middle management level and, a 25 percent threshold at the top management level.

The group of feminized employers is composed of 21 firms whose employees are more than 40 percent female at the staff level and more than 35 percent at the middle management level. These employers are mainly in financial services (Axa, BNP Paribas, Credit Agricole, Natixis, Scor and Société Générale), the luxury industry (Hermès, LVMH, L'Oréal, and Kering), the communication and media industry (Havas, Lagardère, Publicis, and Vivendi), services industries (Carrefour, Casino, Edenred, Klepierre, Sodexo, and Accor) and the health care industry (Essilor and Sanofi).

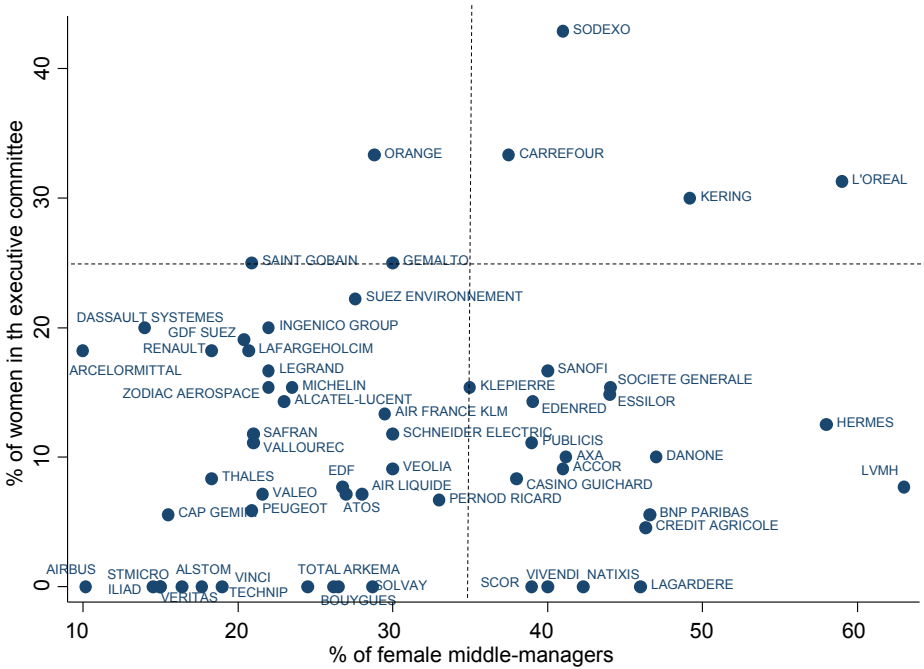
The group of masculinized employers is composed of 37 firms whose employees are less than 40 percent female at the staff level and less than 35 percent at the middle management level. These employers are mainly industrial companies in the automotive (ArcelorMittal, Renault, Peugeot, Michelin, and Valeo), energy (Alstom, Areva, EDF, GDF Suez, Technip, Total, and Vallourec), chemistry (Air Liquide, Arkema, Rhodia and Solvay), construction and utilities (Bouygues, Eiffage, Lafarge, Saint Gobain, Suez Environnement, Veolia Environnement, and Vinci), high-tech (Airbus, Alcatel, Cap Gemini, Gemalto, Illiad, Ingenico, Orange, Safran, STMicroelectronics, Thalés and Zodiac Aerospace) and manufacturing industries (Schneider Electric, and Legrand).

Firms belonging to the same industry all fall in the same gendered group. This illustrates the power that external factors exert on gender segregation across industries. This is consistent with prior research showing that women are disproportionately represented in non-manual (as opposed to manual) sectors of the economy (Charles and Grusky, 2004; Blossfeld *et al.*, 2015).

The figure illustrating the percentage of women in the executive committee (top management positions) in relation to middle management positions provides another perspective on gender diversity (Figure 2). Out of 60, women compose over 25% of only 7 employers' top management teams. Employers having a relatively large pool of potential female candidates at the middle management level do not necessarily employ more women in their executive committee. This figure highlights the glass ceiling phenomena which has been widely analyzed in the academic literature. It also suggests that employers have a direct impact on gender diversity by discriminating against promoting women to top management positions.

[2] INSEE.

Figure 2. Gender Diversity in Middle Management and Top Management Positions



RESULTS

› Gender diversity and employer discrimination

Horizontal discrimination: The “invisible fence” to access to the primary segment of the labor market

The primary segment of the labor market is defined by the largest French employers. These large firms offer their employees higher salaries, fringe benefits, job security, and opportunities for internal promotion. In 2015, the average gross salary among these 60 employers was 59,341 euros. The average salary was 46,250 euros in the overall French private sector, 28.3% lower³. This difference in wages demonstrates that employers in the primary segment of the labor market pay more than other employers. The question remains whether women have equal access to the primary labor market. In France, women represent 52.42% of staff population (“Workers and Employees”

[3] INSEE

category) in the French labor market and only 35.77% of staff at the 60 largest firms. This underrepresentation is interpreted as an “invisible fence” that prevents women from entering the primary labor market (16.65 thick). The gender disequilibrium is even more significant for the middle management level. In the French labor market, women represent 40.03% of the professional category “middle managers and intellectual professions”. Since women represent only 30.26% of the middle management of the 60 largest firms, it could be that female middle managers also face an invisible fence (9.77 thick) that prevents them from getting managerial positions in the primary segment of the labor market. At the top management level, women represent 29.29% of the professional category “corporate leaders” but they represent only 11.43% of top management at the 60 largest firms. At this level, the invisible fence is the thickest: 17.86 (Table 3).

Table 3. Gender Composition between and within French Firms

2015	French Labor Market	60 largest French firms	Invisible fence thickness
Corporate Leaders	29.29%	11.43%	17.86
Middle-Managers	40.03%	30.26%	9.77
Workers & Employees	52.42%	35.77%	16.65

Source: INSEE/original dataset.

The French example supports hypothesis 1 which posits that horizontal discrimination prevents women from entering the primary segment of the labor market: Underrepresentation of women in the primary segment relative to the entire labor market points to an informal barrier, *i.e.* invisible fence, preventing women from entering this market segment. There is a dual labor market in which men tend to occupy privileged jobs in the primary segment of the labor market and women are confined to more precarious jobs in the secondary segment. This trend is amplified in more privileged occupations within the organizational hierarchy, *i.e.* top management positions, from which women are excluded to a greater extent.

Vertical discrimination: the double glass ceiling

The upper glass ceiling between middle management and top management

For the 60 largest French firms, the difference between the percentage of women that occupy middle management positions (30.36%) and top management positions (11.43%) represents an upper glass ceiling of that is 18.83 thick on average (Table 3). The thickness of the upper glass ceiling is positively correlated with the proportion of female middle managers ($r = 0.7352$, p -value = .05) and negatively correlated with the proportion of female top managers ($r = -.5258$; p -value = .05) (Table 2).

The proportion of female top managers does not mirror the proportion of female middle managers—there is no correlation between the proportion of female middle managers

and the proportion of female top managers (Table 2). The size of the pool of potential female candidates does not necessarily translate into promoting women to top management positions. The discrepancy partly results from employers' decisions. Female middle managers might be discriminated against when it comes to promotion to top management. A large population of female middle managers does not guarantee a large female presence at the top management level, and a thick upper glass ceiling can clearly be attributed to gender discrimination by employers. Conversely, a small proportion of women in top management does not necessarily mean that the employer discriminates against women. Instead, this may reflect a shortage in its pool of female candidates at the middle management level.

The high standard deviation of the thickness of glass ceilings within firms (14.49) suggests heterogeneity between employers (Table 1). To be consistent with the 35% threshold for the promotion of female employees at the middle management level and the 25% one at the top management level that qualifies a firm as balanced in terms of gender, I consider an employer as discriminatory if it has an upper glass ceiling that is thicker than 10. Based on this criterion, three categories of employers are identified (Table 4).

Employers that discriminate against female middle managers. In this category, women at the top management level are proportionally underrepresented relatively to their presence at the middle management level by more than 10 percentage points. Out of 60 firms, 41 (68.3%) belong to this category. LVMH is the most discriminating employer with 63% of female middle managers and only 7.7% of female top managers. This represents the thickest upper glass ceiling: 55.3 (Table 4). This employer benefits from a large pool of female middle managers but does not appear to use this pool to staff its top management positions.

Even among employers with similar pools of female middle managers, gender diversity in their executive committees differs. For instance, Kering employs women in 30% of top management positions and 49.2% of middle management positions. Its upper glass ceiling is 19.2 thick. Lagardère, with a similar proportion of female middle managers (46%), has an upper glass ceiling that is 46 thick because there are no women in its top management team. Similarly, Air France-KLM and Arkema have similar proportions of female middle managers (29.5% and 26.5%). However, the first firm has women in 13.33% of top management positions (16.16 thick upper glass ceiling) and the second does not have any women in its executive committee (thickness = 26.5).

Egalitarian employers are defined as firms in which gender diversity at the top management level mirrors that at the middle management level. Out of 60, 15 firms or 25% belong to this group. The proportion of female middle managers does not determine whether a firm is an egalitarian employer. For instance, Carrefour employs women in 37.5% of middle management roles, and 33.33% of its executive committee consists of

women (thickness = 4.2). LafargeHolcim employs only 18.18% women at the top management level, but women represent 20.7% of middle management employees. Thus, the upper glass ceiling is 2.5 thick in the latter firm (Table 4) and the low proportion of female top managers may reflect a limited pool of female candidates.

Employers that discriminate against male middle managers. In a few cases, women are overrepresented in the executive committee relative to their presence in middle management. There are four companies in this category (Saint Gobain, Orange, Dassault Systemes and ArcelorMittal), 6.7% of the 60 employers. For instance, in ArcelorMittal women account for 18.18% of top managers and only 10% of middle managers (thickness = -8.2). A negative thickness suggests that men are promoted proportionally less than women.

Table 4. Upper Glass Ceiling Thicknesses

Company	Thickness	Company	Thickness
LVMH	55.3	SCHNEIDER ELECTRIC	18.2
LAGARDERE	46.0	VINCI	17.7
HERMES	45.5	ALSTOM	16.4
NATIXIS	42.3	AIR FRANCE KLM	16.2
CREDIT AGRICOLE	41.8	PEUGEOT	15.0
BNP PARIBAS	41.0	BUREAU VERITAS	15.0
VIVENDI	40.0	ILIAD	15.0
SCOR	39.0	STMICROELECTRONICS	14.5
DANONE	37.0	VALEO	14.5
ACCOR	31.9	AIRBUS	10.2
AXA	31.2	THALES	10.0
CASINO	29.7	CAP GEMINI	9.9
ESSILOR	29.2	VALLOUREC	9.9
SOLVAY	28.7	SAFRAN	9.2
SOCIETE GENERALE	28.7	ALCATEL-LUCENT	8.7
PUBLICIS	27.9	MICHELIN	8.1
L'OREAL	27.8	ZODIAC AEROSPACE	6.6
ARKEMA	26.5	SUEZ ENVIRONNEMENT	5.4
PERNOD RICARD	26.3	LEGRAND	5.3
BOUYGUES	26.2	GEMALTO	5.0
EDENRED	24.8	CARREFOUR	4.2
TOTAL	24.5	LAFARGEHOLCIM	2.5
SANOFI	23.3	INGENICO	2.0
VEOLIA ENVIRONNEMENT	20.9	GDF SUEZ	1.4
AIR LIQUIDE	20.9	RENAULT	0.1
ATOS	19.9	SODEXO	-1.9
KLEPIERRE	19.6	SAINT GOBAIN	-4.1
KERING	19.2	ORANGE	-4.5
EDF	19.1	DASSAULT SYSTEMES	-6.0
TECHNIP	19.0	ARCELORMITTAL	-8.2

Data supports hypothesis 2a which posits that employer discrimination prevents women from reaching top management positions and contributes to vertical gender diversity. This is consistent with previous research that points to gender as a source of

employer discrimination when stereotypes regarding competency become salient and in conditions of uncertainty. A more detailed analysis sheds light on different categories of employers. Some employers may discriminate against women when staffing their executive committee, but others might face a limited pool of female candidates. Finally, in few cases, it might be argued that men are discriminated against when it comes to promotion to top management positions.

The lower glass ceiling between staff and middle management

The difference between the average percentages of women at the staff level (35.77%) and at the middle management level (30.26%) represents the average thickness of the lower glass ceiling (5.51) among the 60 companies. This glass ceiling is thinner than the upper glass ceiling. The thickness of lower glass ceiling is not correlated with the thickness of the upper glass ceiling (Table 2). This suggests that employers discriminating women in promotion to top management positions are not the same as the employers that block women from promotion to middle management positions.

Employers differ in terms of the thickness of the lower glass ceiling. Consistent with the 40% threshold for women at the staff level and the 35% threshold for women at the middle management level that qualifies a firm as balanced, I consider that a lower glass ceiling of thickness 5 and greater results from employer discrimination. Based on this criterion, three categories of employers emerge (Table 5).

Employers that discriminate against women. 36 employers out of 60 (60%) belong to this category. Women at the middle management level are proportionally underrepresented relative to their presence at the staff level. Such employers can be considered discriminatory because they do not promote female employees to middle management in the same proportion as men.

Klepierre, a real estate company, is the most discriminating employer. Women fill 57% of staff positions but only 35% of middle management positions. This represents the thickest lower glass ceiling: 22 (Table 5). The size of the pool of potential female candidates for middle management in a firm does not fully explain the proportion of female middle managers in a firm. Employers' decisions to promote women also matter. For instance, Société Générale (bank) and Bureau Veritas (certification agency) have lower glass ceilings that are similarly thick (16.18 and 16) but have different proportions of female employees at the staff level. 60.22% of staff workers are women at Société Générale (44.04% at the middle management level) and only 31% of staff workers are women at Bureau Veritas (15% at the middle management level).

Egalitarian employers: These employers are characterized by gender diversity at the middle management level that mirrors gender diversity at the staff level. 17 employers out of 60 (28.3%) belong to this category. Similarly, gender diversity at the staff level does not strictly explain the proportion of women in middle management positions. Some egalitarian employers have a large pool of female candidates at the staff level

which translates in a large proportion of female middle managers. For instance, Vivendi, a communication company, employs 43% of women at the staff level and 40% at the middle management level; representing a lower glass ceiling that is 3 thick. Other egalitarian employers are characterized by a limited proportion of female middle managers that mirrors a small pool of female workers at the staff level. For instance, Alstom, a rail transport company, employs women in 16.9% of staff positions and 16.4% of middle management positions, representing a lower glass ceiling that is 0.5 thick.

Employers that discriminate against men. There are seven employers (11.7%) in which women are overrepresented at the middle management level relative to their presence at the staff level. Similarly, there is not deterministic relationship between the size of the pool of candidates at the staff level and the lower ceiling thickness. For instance, Danone employs women in 31% of staff positions and 47% of middle management positions. Bouygues employs women in 15.1% of staff positions and 26.2% of middle management positions. Men face a thick lower glass ceiling in these firms (-16 thickness at Danone and -11.1 thickness at Bouygues) and are relatively underrepresented in middle management positions compared to their presence at the staff level.

Table 5. Lower Glass Ceiling Thicknesses

Company	Thickness	Company	Thickness
KLEPIERRE	22.0	TOTAL	6.6
CARREFOUR	20.0	TECHNIP	6.0
STMICROELECTRONICS	19.4	SANOFI	5.2
SOCIETE GENERALE	16.2	INGENICO	5.2
BUREAU VERITAS	16.0	ACCOR	5.0
CASINO	14.0	SAFRAN	5.0
LEGRAND	14.0	LAFARGEHOLCIM	4.3
AIR FRANCE KLM	13.7	THALES	3.7
CAP GEMINI	13.3	PERNOD RICARD	3.0
PUBLICIS	13.3	VIVENDI	3.0
LAGARDERE	13.0	PEUGEOT	1.9
SODEXO	13.0	ALCATEL-LUCENT	1.0
ILIAD	12.6	ARCELORMITTAL	1.0
EDENRED	11.9	ATOS	0.9
AXA	11.4	ALSTOM	0.5
VALEO	11.4	RENAULT	0.1
LVMH	11.0	SCHNEIDER ELECTRIC	0.0
CREDIT AGRICOLE	10.2	SAINT GOBAIN	-0.3
NATIXIS	9.3	EDF	-0.5
DASSAULT SYSTEMES	9.0	AIR LIQUIDE	-1.0
GEMALTO	9.0	ARKEMA	-2.8
HERMES	9.0	GDF SUEZ	-3.3
L'OREAL	9.0	VINCI	-3.5
ZODIAC AEROSPACE	9.0	SOLVAY	-6.7
ESSILOR	8.8	MICHELIN	-7.2
SCOR	8.6	SUEZ ENVIRONNEMENT	-7.5
KERING	8.3	VEOLIA ENVIRONNEMENT	-9.7
BNP PARIBAS	7.4	VALLOUREC	-10.0
ORANGE	7.2	BOUYGUES	-11.1
AIRBUS	6.9	DANONE	-16.0

Data do not support hypothesis 2b related to lower glass ceiling. There is no significant correlation between the thickness of the lower glass ceiling and the proportion of female middle managers. However, a more in-depth analysis highlights heterogeneity among employers. Some employers discriminate against women when it comes to promotion, and, for others, low gender diversity at the middle management level mirrors low gender diversity at the staff level. For another group, female middle managers are overrepresented relative to women at the staff level. Given the diversity among employers, employer discrimination may not be the only mechanism that contributes to gender diversity. This creates space for complementary explanations, including mechanisms related to the “supply side”.

› Gender diversity and educational choices

Gender diversity in French vocational schools

Data from the French Ministry of Education show that, in 2010, women accounted for 44% of students studying for a vocational baccalaureate. There was a great deal of variation in terms of gender diversity among the 38 subject specializations. Such heterogeneity in subject specialization translates into differences in the availability of female job candidates. The distribution of the percentage of female students across vocational baccalaureates subjects is not centered around the mean (44%) but, instead, is characterized by a bimodal distribution of highly feminized training programs and weakly feminized training programs. Gender parity in enrollment characterizes very few vocational specializations—women make up between 40% and 60% of students in only 4 out of 38 programs (Table 6). Polarization within vocational specialization contributes to the gender polarization of the labor market

Female students are underrepresented in STEM fields. There were no women (0%) in the “*Energy and Climate Engineering*” specialization from which less-feminized companies in the energy sector, such as Vallourec, Total, or Alstom, mainly recruit. Women also accounted for only 3% of students in the specialization, “*Motors and Automotive Mechanics*,” from which less-feminized companies in the car industry, such as Michelin, Renault, or Peugeot, recruit. Similarly, the very small proportions of female students in the “*Construction Industry: Building and Covering*” specialization (4%) and “*Metallic Infrastructures*” specialization (3%) constrain the hiring choices of less-feminized companies in the construction industry, such as Vinci or Bouygues. Vocational specializations, such as “*Specialized Multi-technologies in Electricity and Mechanics*” and “*Electricity and Electronics*”, which prepare students to work in less-feminized companies like GDF Suez, Alstom or Airbus, also have low proportions of female students (2% each).

Conversely, training programs channeling students toward highly feminized companies were also highly feminized. For example, “*Textiles*” (71% female), “*Clothing Industry*” (95% female) and “*Specialized Multi-technologies in Supple Materials*” (95% female)

specializations provide the natural labor pool for luxury-goods companies like Hermès, LVMH or Kering. These employers are highly feminized. The vocational specialization, “*Coiffure, Esthetic, Other Specializations in Care Services*”, which provides skilled employees for cosmetic companies like L’Oréal, is entirely composed of female students (100%). Vocational specializations in “*Accounting and Administration*” (59% female) and “*Secretarial Work, Office Activities*” (93% female) are major recruitment pools for banks and insurance companies (Société Générale, BNPParibas or Credit Agricole), which are also highly feminized employers.

Table 6. Feminization of Vocational Baccalaureate Programs

Field of specialization	Percentage of girls
Energy and Climate Engineering	0
Specialized Multi-technologies in Electricity and Mechanics	2
Electricity and Electronics	2
Metallic Infrastructures	3
Motors and Automotive Mechanics	3
Precision and General Mechanics, Machining	4
Construction industry: building and covering	4
Aeronautic and Space Mechanics	5
Controlling technologies for industrial transformations	5
Carpentry and Furniture	5
Mines and Quarry, Civil engineering and Topography	6
Fundamental Industrial Technologies	6
Plastics Manufacturing and Composite Material	10
Metalworking Industry	10
Animal Production and Specialized Farming	12
Construction Industry: finishing stage	14
Specialized Multi-technologies in Civil Engineering, Building and Wood	24
Specialized Multi-technologies in Transformation	26
Landscaping	26
Transport, Handling, Stocking	29
Cardboard	30
Individual and Good Security, Police, Surveillance	30
Building Materials	32
Printing and Editing Technologies	36
Reception, Hospitality, Tourism	40
Agrifood, Nutrition, Cooking	45
Vegetable Products, Specialized Growing and Crops Protection	48
Journalism and Communication	49
Accounting, Administration	59
Trading, Selling	60
Imagery and Audio Technologies	67
Textile	71
Cleaning, Sanitation, Environment	72
Secretarial Work, Office Activities	93
Multivalent in Care and Social Specialities	94
Clothing Industry	95
Specialized Multi-technologies in Supple Materials	95
Coiffure. Esthetic, other specializations in Care Services	100

Source: French Ministry of Education/INSEE.

Data therefore supports hypothesis 3a which posits that firms that will be less feminized at the staff level if they recruit from vocational schools in STEM fields. STEM fields have fewer female students and therefore offer a smaller pool of potential female candidates. Conversely, employers recruiting in non-STEM fields have a larger pool of potential female candidates and have a more diversified workforce as a result.

Feminization of the French higher education system

In France, higher education is made up of the university system and the “Grandes Ecoles” system. The latter is a group of elite schools in STEM fields and business that provide the vast majority of managers and top managers to large French companies.

STEM and business schools differ in terms of gender diversity. These differences in education, which shapes the supply side of the labor market, influence gender diversity among employers. In 2014, women represented 24% of students in elite French engineering schools and 50% of students in elite French business schools⁴. The student body of Polytechnique, the most prestigious French engineering school, was 16.7% female, and the student body of HEC Paris, the most prestigious French business school, was student body 45.92% female. From the LinkedIn data we see that there is a positive correlation between the proportion of middle managers coming from HEC Paris at a firm and the firm’s gender diversity at the middle management level ($r = 0.5638$, $p\text{-value} = .05$). Conversely, employers that recruit more graduates from Polytechnique have a lower proportion of women in middle management positions.

The low degree of feminization of STEM schools is also related to lower levels of feminization in some companies’ middle and top management. The pool of potential female candidates is larger in business schools than in STEM schools. Due to the technical nature of their operations, some companies mainly recruit STEM graduates as managers and potential top managers. Companies in the construction (Vinci, Bouygues), automotive (Renault, Peugeot, Michelin), high-tech (Atos, CapGemini, Alcatel-Lucent, Dassault Systemes, Orange) and energy (Total, Vallourec, EDF, GDF Suez) industries have technical operations that require mainly graduates from STEM fields. This requirement contributes to low proportions of female middle managers in these companies.

Conversely, employers that recruit mainly from business schools have a higher proportion of female managers. Companies in the luxury goods (LVMH, Hermès, Kering or L’Oréal), financial (BNPParibas, Société Générale or Crédit Agricole) or communication (Publicis, Lagardère or Vivendi) industries, predominantly recruit their middle managers and potential top managers from business fields. The proportion of female middle managers among the 60 employers corresponds to the gender diversity in the educational institutions from which the firms recruit.

[4] Conférence des Grandes Ecoles.

The same phenomenon is present in the university system. Women represent more than half of the students in French universities (Duru-Bellat *et al.*, 2003). In 2010, women represented 58% of undergraduate students (license/bachelor) and 58% of master students. Gender polarization also characterizes master programs. Female students are underrepresented in master degrees that prepare students to work in energy, automotive, high-tech and defense companies. Women compose 28.3% of “*Fundamental Sciences and Applications*” enrollments and 30.9% of “*Multi-sciences*” enrollments (Table 7). These two specializations are related to STEM fields.

There is gender parity in “*Economics and Business*” (52.6% female), “*Life Sciences*” (52.7% female) and “*Medical Studies and Odontology*” (50.6% female) masters programs. Women are overrepresented in “*Law and Political Sciences*” (66.1% female) and “*Pharmacy*” (57.8% female) master degrees (Table 7). The specializations in which women are overrepresented prepare students to work in companies that are highly feminized at the middle management level (banks, insurance company, communication, health or luxury goods).

Data thus supports the hypothesis 3b which posits that gendered educational choices in universities and elite schools contribute to gender diversity at the middle management level within firms.

Table 7. Feminization of Higher Education in the University System

2009-2010	Licence		Master		Doctorate		Total headcount	Female students (%)
	Headcount	Female students (%)	Headcount	Female students (%)	Headcount	Female students (%)		
Disciplines								
Law and Politic Sciences	115'701	64.4	69'548	66.1	8'238	48.7	193'487	64.3
Economics and Business	80'450	51.6	60'914	52.6	4'079	45.3	145'443	51.9
Economic and social administration	33'773	59.8	6'780	60.5	18	33.3	40'571	59.9
Pluri-Law, Economics and AES	///	///	33	45.5	///	///	33	45.5
Arts subjects, Linguistics	63'697	70.8	23'219	75.5	6'060	65.6	92'976	71.7
Foreign Languages	80'989	73.3	19'464	77.1	2'725	66.9	103'178	73.8
Social Sciences	123'486	68.4	66'442	68.3	14'323	53.6	204'251	67.3
Multi-arts subjects, Languages and Social Sciences	2'031	66.5	4'678	75.6	26	57.7	6'735	72.8
Fundamental Sciences and Applications	76'393	28.0	59'645	26.9	16'888	28.3	152'926	27.6
Life Sciences	41'209	62.3	20'063	57.2	10'437	52.7	71'709	59.5
Sports and Physical activities	25'436	31.4	6'266	33.8	492	36.8	32'194	32.0
Multi-Sciences	21'323	44.5	1'899	47.3	123	30.9	23'345	44.6
Medical Studies and Odontology	59'456	65.7	109'589	59.0	1'183	50.6	170'228	61.3
Pharmacy	9'563	67.2	20'889	67.0	398	57.8	30'850	66.9
Total	733'507	58.0	469'429	58.0	64'990	48.3	1'267'926	57.1

Source: French Minister of Higher Education.

› Gender diversity and professional preferences

Different professional preferences between women and men might also shape gender placement in the labor market. The UniversumGlobal survey shows significant differences between men and women in terms of employers that they prefer (Table 8).

Table 8. Preferred Employers by Student Gender and Specialization in Higher Education

Employer	Female Business	Male Business	Diff.	Employer	Female Engineering	Male Engineering	Diff.
	Rank	Rank			Rank	Rank	
LVMH	1	3	-2	L'Oréal	1	42	-41
L'Oréal	2	22	-20	Airbus	2	1	1
Danone	3	24	-21	Veolia Environnement	3	15	-12
Air France-KLM	8	20	-12	EDF	4	6	-2
Accor	17	45	-28	Suez Environnement	5	16	-11
Publicis Groupe	19	48	-29	LVMH	6	28	-22
Kering	20	56	-36	Thales	7	4	3
Airbus	23	10	13	Vinci	8	8	0
BNP Paribas	26	15	11	Total	11	7	4
Total	30	16	14	Air France - KLM	12	18	-6
Veolia Environnement	37	41	-4	Danone	13	74	-61
Lagardère	38	63	-25	Safran	14	5	9
Pernod Ricard	39	31	8	Bouygues	18	20	-2
Société Générale	41	28	13	Sanofi	22	72	-50
Suez Environnement	48	49	-1	Orange	25	32	-7
Capgemini	53	58	-5	Dassault Systèmes	27	13	14
EDF	55	50	5	Alstom	28	12	16
Carrefour	61	78	-17	Renault	31	23	8
Orange	66	61	5	Peugeot Citroën	37	21	16
Vinci	70	68	2	Capgemini	40	39	1
Michelin	71	63	8	BNP Paribas	41	38	3
Crédit Agricole	72	70	2	Michelin	42	37	5
Thales	74	53	21	Air Liquide	46	51	-5
AXA	79	71	8	Schneider Electric	57	40	17
Saint-Gobain	80	92	-12	Saint-Gobain	57	63	-6
Air Liquide	83	80	3	Société Générale	66	54	12
Safran	84	73	11	Valeo	71	67	4
Schneider Electric	86	76	10	Technip	73	58	15
Bouygues	86	82	4	STMicroelectronics	76	50	26
Natixis	88	71	17	Groupe Crédit Agricole	77	101	-24
Peugeot Citroën	89	55	34	Arkema	81	102	-21
Dassault Systèmes	91	59	32	Alcatel-Lucent	87	76	11
Renault	93	77	16	Carrefour	87	110	-23
Technip	124	107	17	AXA	91	90	1
Solvay	124	126	-2	Solvay	97	107	-10
				Lafarge	105	87	18
				Sodexo	120	128	-8
				Vallourec	123	122	1

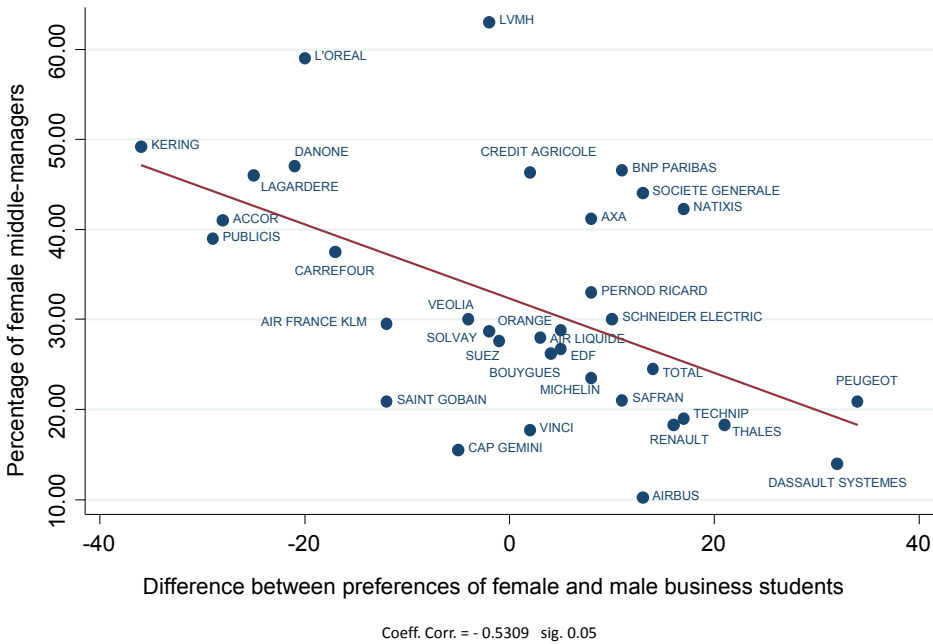
Source: *UniversumGlobal 2015*.

L'Oréal, the cosmetic company, and Peugeot, the carmaker, illustrate this pattern. For female business students, L'Oréal was the second most preferred employer, but it was ranked 22nd by male business students (Difference: -20). The gender preference differential was even larger for engineering students. Female engineering students viewed

L'Oréal as their preferred employer, but the firm was ranked as the 42nd best employer by male engineering students (Difference: -41). L'Oréal's high level of attractiveness among female students and the relatively low level of attractiveness among male students contributes to L'Oréal's highly feminized middle management (59% female). In contrast, Peugeot ranked 21st for male engineering students and 37th for female engineering students (Difference: 16). Among business students, the carmaker ranked 55th for male students and 89th for female students (Difference: 34). The relative popularity of Peugeot among male students contributes to the highly masculinized middle management at Peugeot Citroën (79.1% male).

Outside of these two examples, there is a strong correlation between the percentage of female middle managers and the gender preference differential among business students (0.5309 p-value=.05) (Figure 3), which suggests that gender preferences greatly contribute to the feminization of middle management.

Figure 3. Middle Management Feminization and Gendered Preferences Differentials among Business Students



The correlation between gender preference differentials among engineering students and the feminization of middle management is even higher (-0.6489, p-value=.05) (Figure 4).

prevents women from entering the primary segment of the labor market and an “upper glass ceiling” within this segment leads to a disproportionately low representation of women at the top level of the privileged segment of the labor market (women make up 48.31% of the entire French workforce but only 11.43% of top management in the 60 largest companies).

This paper contributes to scholarship on gendered processes within organizations by proposing a measure to evaluate the direct contribution of employer discrimination to gender diversity. This measure compares the proportion of women in the pool of potential candidates from which firms could recruit internally with the observed gender composition in the higher-level positions. This measure seeks to isolate the effects of employer discrimination within the firm from “supply side” forces, which should affect the proportion of women at each level similarly. In some cases, a low proportion of female middle managers reflects employer discrimination, but in other cases, education choices or professional preferences channel women away from employers and explain low feminization at all levels in those firms.

However, employer discrimination is not the only mechanism that explains gender diversity. Employers also face factors related to individuals’ educational choices and professional preferences when these seek to hire employees. Highly feminized employers mainly recruit in highly feminized educational programs, and female students tend to prefer these employees.

These three mechanisms converge to create gender polarization among large companies. In this labor market, women are overrepresented in some firms like luxury-goods firms (LVMH, Hermès, Kering and L’Oréal) and, to a lesser extent, banks (BNPParibas, Société Générale and Crédit Agricole). The most feminized companies are also those preferred by women. Female students make educational choices that increase the chances that they will be recruited by these employers, and, to some extent, men avoid these firms when considering their professional career. The same self-selection process applies to men. The men prefer the most masculinized companies, and, to some extent, women shy away from these firms when considering their professional career. Male students also make educational choices that are consistent with their preferences. Gender discrimination by employers that blocks women from top management positions might reinforce this vicious circle by sending a signal that reinforces these gendered dynamics—the outside perception that weakly feminized employers discriminate against women may discourage potential female candidates.

The French example challenges whether there are direct relationships between gender diversity, gender discrimination and gender inequality that disadvantage women in the labor market. A more detailed analysis at the firm level offers a nuanced view of the labor market. Exploring differences in the gender compositions of firms’ employees through the lens of discrimination sheds light on different configurations and supports

several counterintuitive arguments. The most feminized companies, in terms of the proportion of female employees, are not necessarily the employers that are least likely to discriminate against women, especially in terms of promotion to top management positions. Conversely, the least feminized companies, in terms of the proportion of female employees, are not necessarily the employers that are most likely to discriminate against women at high levels of the firm. Understanding the feminization of large companies may only be partially explained by employer discrimination. Factors related to the “supply side” also constrain employers’ decisions. These external factors do not necessarily contribute to gender discrimination toward women and can, in some cases, lead to discrimination against men. “Pink collar” ghettos (Charles, 2005) are not necessarily disadvantaged in terms of salary, career opportunities and employment stability. Jarman *et al.* (2012) pointed out that overall segregation level is not a direct measure of inequality. This insight challenges the strict causal relation between segregation and inequality and suggests that some forms of occupational segregation might even be detrimental to men. For instance, in the past decades, manual work has declined while non-manual work expanded, and it is predominantly women who have moved into non-manual jobs. Consequently, it is now men who are more likely than women to be manual workers. There is substantial literature associating manual work with higher levels of exposure to toxic substances, higher levels of injury and even death, and less pleasant working conditions, all of which reduces one’s quality of life and social status (Case and Deaton, 2005). Conversely, female-typed occupations are healthier, permit greater access to high-status networks, and involve working with better-educated people than male-typed occupations (Jarman *et al.*, 2012).

CONCLUSION

Several scholars have pointed out that unidimensional accounts of women’s status do not provide a framework for understanding the complex patterns of gender stratification on the labor market. Segregation results from interactions between rational individual choices, essentialist gender ideologies, and institutional arrangements that are highly variable (Charles, 2005; Cech, 2013). Different individual and institutional factors shape the unequal distribution of women and men across occupations (Smyth and Steinmetz, 2008). The gender diversity in the labor market can be attributed to interactions between three mechanisms that are ingrained in cultural beliefs: gender discrimination by employers, gendered educational choices and employees’ professional preferences. Employers partly contribute directly to gender diversity through discrimination, and employment partly reflects external forces.

Out of the three mechanisms, gender discrimination explains a great deal of the low level of gender diversity in the top management. Employers, constituting the demand side of the labor market, might prefer male workers over female workers regardless of

individual productivity. Women are excluded from the top management positions and from the primary labor market. However, this gender discrimination is not consistent across employers nor is this explanation able to explain diversity at the middle management level fully. Other mechanisms, such as educational choices and gendered professional preferences, also contribute to gender diversity. These two mechanisms shape the supply side of the labor market and are exogenous factors that employers face. Individual preferences are shaped by society through family, education and other institutions, often before people enter the labor market. By influencing educational choices, gender roles and identities influence the nature of the skills that men and women acquire, which then create different professional opportunities for men and women. In that sense, gender is a persistent social force that produces, essentializes, and highlights differences between women and men through societal institutions that shape diversity in the labor market (Ridgeway, 2011; Stainback *et al.*, 2016).

The social dynamics of gender polarization poses two issues to employers. First, for masculinized employers, how can they change women's preferences and encourage women to consider working for their companies? Second, for feminized employers, how can they maintain the male workforce to ensure continuing gender diversity?

In the past decade, all large companies have been deeply involved in diversity management and report that they do their best to recruit female graduates for managerial positions and promote women. For instance, all large French firms have signed the "French Diversity charter" promoted by the French Minister of Professional Equality through which employers commit to increase gender diversity and foster internal female promotion. However, employers are only partially responsible for the gender diversity within their firm. Gender allocation among firms also depends on institutions and actors outside of the labor market. The gendered beliefs that shape individual preferences and influence gender diversity in the labor market are institutionalized in the media, government policy, normative images of the family, and so on (Ridgeway and Correll, 2004). Employers thus face factors that are outside of their control when attempting to hire female candidates. In some countries, like France, policy makers penalize employers that do not reach gender balance. Such initiatives focus on the "demand side" of the labor market and ignores constraints imposed by the "supply side".

However, this prevalence of the "supply side" does not prevent employers to support gender diversity. Some industrial companies promote stereotypical male professions and industries through campaigns in schools and universities. They try to open new professional opportunities for female students and to attract them toward traditional male paths of education. Some employers redesign their labor organization and their use of technology to make their working environment more adapted to women.

A limitation of this research is to focus on gender diversity on the French labor market. It naturally induces questions about the situation in foreign countries to explore whether

gender diversity differs among industrialized countries and whether public policies to promote gender diversity differ among countries. Such research questions raise too many interesting issues to be explored in this article and it is worth a research project by itself.

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