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### ► To cite this version:

Anne-Sophie Bruno, Nathalie Greenan, Jeremy Tanguy. Does the gender mix influence collective bargaining on gender equality? Evidence from France. 2021. halshs-03325842

**HAL Id: halshs-03325842**

**<https://shs.hal.science/halshs-03325842v1>**

Preprint submitted on 25 Aug 2021

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**WORKING PAPER**

**N° 2021-7**

**DOES THE GENDER MIX INFLUENCE  
COLLECTIVE BARGAINING  
ON GENDER EQUALITY ?  
EVIDENCE FROM FRANCE**

**ANNE-SOPHIE BRUNO, NATHALIE GREENAN, JEREMY TANGUY**

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**TEPP – Theory and Evaluation of Public Policies - FR CNRS 2042**

# Does the gender mix influence collective bargaining on gender equality? Evidence from France

Anne-Sophie Bruno\*      Nathalie Greenan†      Jeremy Tanguy‡§

## Abstract

Gender equality at work has become in recent years a priority for governments. In France, collective bargaining is a main lever to achieve progress on gender equality issues. In a two-tier bargaining framework, industries and firms are required by law to negotiate on the reduction of gender inequalities. Using firm-level survey data on labor relations issues combined with administrative data, this paper seeks to better understand the dynamics of collective bargaining on gender equality at the firm level by questioning the role played by the gender mix. We find that gender diversity favors gender equality bargaining at the firm level. Under-representation and over-representation of women reduce the probability of firms negotiating an agreement on gender equality. The introduction of sanctions in the recent period has prompted low-feminized firms to negotiate more on gender equality but had little impact on highly feminized firms.

**Keywords:** gender equality, collective bargaining, gender diversity

**JEL Classification:** J16, J52, C26

This paper has been accepted for publication in *Industrial Relations: A Journal of Economy and Society*

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§We thank conference and seminar participants at TEPP 2018 conference, JMA 2019 conference (*Journées de Microéconomie Appliquée*) and University Savoie Mont Blanc for their helpful comments. We also thank Kadija Charni and Julien Cardoso for their research assistance. We acknowledge financial support from Agence nationale de la recherche (ANR) under the grant number ANR-16-CE26-0019-03. This work is also supported by a public grant overseen by ANR as part of the « Investissements d'avenir » program (reference : ANR-10-EQPX-17 – Centre d'accès sécurisé aux données – CASD). Any remaining errors are our own.

# 1 Introduction

Despite a great convergence between women and men in terms of education, labor market participation, occupations and working hours (Goldin 2014), women continue to earn lower wages in most developed countries (Blau and Kahn 2017). In 2019 in France, women’s wages were 25% lower than men’s all positions combined. For work of equal value, there remains a gap of 9% (French Ministry of Labor). Policy options to narrow both the gender gap in wages and in employment include more and more firm-level actions, such as adopting “equal pay for equal work” policies and the need to report firm-level pay gaps, or adopting regulations to increase the share of women in management and on boards (Magda and Cukrowska-Torzewska 2018). In several countries, collective bargaining is an important part of the “regulatory toolkit” to fight against gender inequalities in wages and working conditions (Milner et al. 2019). In France, firms are required to commit to the reduction of gender inequalities by negotiating collective agreements on these issues. While this obligation has existed since 2001, non-compliance is sanctioned only since 2012. Not all firms had complied with the law before the introduction of sanctions but also, to a lesser extent, after (Milner et al. 2019). There is therefore a stack in understanding what leads firms to negotiate a collective agreement on gender equality (GE thereafter).

In this paper we aim at evaluating the extent to which the presence of women inside the establishment contributes to the negotiation of collective agreements on GE. We investigate in particular the influence that the share of women in the workforce and among employee representatives have on the likelihood that negotiations on GE take place, and then result in a collective agreement or instead an action plan defined unilaterally by the employer. We first provide a descriptive analysis of differences in GE bargaining outcomes across French establishments depending on the share of women. We then assess the marginal effects on GE bargaining outcomes associated with different changes in the share of women throughout its distribution among French establishments.

Our empirical approach is based on the combination of establishment-, firm- and industry-level data. We mainly use the exhaustive data provided by the French Ministry of Labor on the collective bargaining texts (collective agreements and unilateral employer action plans), filed by establishments from a representative sample provided by a large-scale survey on labor relations issues for two recent periods (2008-2010, 2014-2016). To control for the endogenous nature of the share of women, we use an instrumental variable strategy based either on past variations or industry-level variations in the share of women, computed using administrative data. We take into account the role played by industry-level bargaining by comparing the bargaining behavior of establishments covered and not covered by an industry-level agreement on GE.

We find that contexts of gender diversity in the workforce and at the bargaining table are those that are the most favorable to collective bargaining on GE. The enforcement of sanctions for non-complying establishments has sharply increased the propensity to negotiate in establishments with a more masculine workforce and employee representation, but has had little impact on the propensity to negotiate in establishments with a more feminized workforce and employee representation. When

negotiations are undertaken, their outcome has clearly improved between the two periods. Over the most recent period, the probability that negotiations on GE lead to an agreement is close to 50%, whatever the gender composition of the workforce and of the negotiators. However, the chances that negotiations on GE result in an agreement are significantly lower in highly feminized bargaining environments.

We combine and contribute to three streams of literature.

We first contribute to the literature about collective bargaining on gender equality, which has already identified the presence of women in leadership and negotiating positions as one of the main factors providing the conditions for effective GE bargaining (Milner and Gregory 2014).<sup>1</sup> The main argument underlying this positive relationship between the presence of female negotiators and GE bargaining outcomes is that women give more importance to GE related issues. For instance, Heery and Kelly (1988) show that female British union officers are more likely to prioritize non-pay related issues – *e.g.* child care, maternity leave and sexual harassment – in collective bargaining than their male colleagues. Similarly, Harbridge and Thickett (2003) show in New Zealand that settlements covering predominately female populations of workers produced more advantageous family leave agreements than settlements covering predominately male populations, suggesting that female workers may be willing to trade off pay for other types of benefits. Although this role of women in helping effective GE bargaining has been shown by several authors (Dickens 1998, 2000; Gerstel and Clawson 2001; Williamson 2009, 2012), some others tend to downplay it (*e.g.* Heery 2006). Female representation and participation in union organizing would not be sufficient to make a difference, due to the domination of unions by men and masculine conceptions of work (Creese 1995; Danieli 2006; Jones 2002; Wajcman 2000). Male-dominated unions are seen as particularly uninterested in GE issues within the literature. They often associate the gender pay gap and work-life balance problems as “women’s issues”, which fit poorly with the masculine culture that characterizes male-dominated unions and workplaces (Gregory and Milner 2009; Kirton and Greene 2005). In addition, some authors qualify women’s greater interest in these women’s issues, such as Brochard and Letablier (2017) and Guillaume (2017) in France, who stress that equal pay and work-life balance receive little attention irrespective of the gender composition at the firm level. The diversity of findings in the literature can be explained by the scope analyzed in most existing studies on these issues, which are for the most part applied to a particular industry or a particular firm. In the present paper, we investigate the influence of the gender mix on GE bargaining outcomes for a representative sample of establishments in the French economy while controlling for a large set of establishment characteristics. This allows us to identify the marginal effect of increasing the share of women and to assess how this marginal effect varies depending on the initial balance of the gender mix.

The second stream of literature, that we relate to, focuses on gender differences around negotiation outcomes and propensity to negotiate. These gender differences in individual behavior are

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1. The other main factors identified in this literature include centralized bargaining systems, high bargaining coverage/union density, and supportive legislation.

related to collective bargaining with employer through the gender composition of the workforce and of representatives at the bargaining table. A well-known finding in this literature is that women are less likely to initiate negotiations (“women don’t ask” in the words of [Babcock and Laschever 2003](#)), *i.e.* in the professional context to ask for promotions and pay raises. This finding is especially defended by laboratory experiments (*e.g.* [Bowles et al. 2007, 2005](#); [Dittrich et al. 2014](#)) and field experiments ([Leibbrandt and List 2015](#)).<sup>2</sup> Some authors explain this finding by gender differences in the perception of bargaining. According to [Babcock and Laschever \(2003\)](#), the female gender role is incongruent with negotiating. In the same way, [Leibbrandt and List \(2015\)](#) show that women are less likely to negotiate because they perceive negotiating as a less acceptable behavior (than men). Gender differences in propensity to negotiate may also be explained by gender differences in implicit or explicit preferences, such as risk aversion or fairness concerns (see, *e.g.*, [Bertrand 2011](#); [Croson and Gneezy 2009](#); [Niederle 2016](#); [Pfeifer and Stephan 2019](#)).<sup>3</sup> The extension of these findings outside the laboratory setting is nevertheless questioned by recent survey data studies ([Artz et al. 2018](#); [Säve-Söderbergh 2019](#); [Stevens and Whelan 2019](#)), which instead show that women are as likely as men to initiate negotiations.<sup>4</sup> Once negotiations are initiated, most empirical evidence shows that women get lower outcomes than men (*e.g.* [Artz et al. 2018](#); [Castillo et al. 2013](#); [Säve-Söderbergh 2019](#)).<sup>5</sup> This gender difference is partly explained by the experimental literature, which shows that women are less competitive, more cooperative and less assertive than men in bargaining situations (see [Croson and Gneezy 2009](#)). Beyond this average difference, women’s bargaining performance depends on the context and the participants in the negotiation. Several authors indeed show that women negotiate better when negotiating with women ([Bowles et al. 2007](#); [Eckel and Grossman 2001](#); [Hernandez-Arenaz and Iriberry 2018](#); [Solnick 2007](#); [Sutter et al. 2009](#)). In addition, women negotiate better when they have a higher relative position power in the negotiation, *i.e.* when they act as employers and in matrilineal firms ([Andersen et al. 2018](#); [Dittrich et al. 2014](#)).

Such heterogeneities in individual behaviors depending on the context of the negotiation suggest heterogeneous effects of women presence on collective bargaining outcomes. We take into account this heterogeneity by controlling for a large set of establishment characteristics and considering different levels of women presence among employee representatives.

Last, our work relates to the recent literature analyzing the contribution of firms to the gender wage gap, as the result of different pay policies either within or between firms. Within-firm inequalities arise when women are less paid than comparably productive male coworkers while doing the same job in the same firm. This is called the bargaining effect because, beyond cases of discrimina-

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2. See also [Azmat and Petrongolo \(2014\)](#); [Babcock and Laschever \(2003\)](#), and surveys of [Bertrand \(2011\)](#); [Croson and Gneezy \(2009\)](#); [Exley et al. \(2020\)](#).

3. [Pfeifer and Stephan \(2019\)](#) show that women perceive their wages more often as fair than men, while controlling for wages and working time, that may explain that they are less likely to negotiate than men.

4. [Stevens and Whelan \(2019\)](#) show that women are not less likely to negotiate than men when they have the same opportunities to negotiate.

5. In contrast, [Stevens and Whelan \(2019\)](#) find no significant gender difference in negotiation outcomes. [Säve-Söderbergh \(2019\)](#) provides evidence that women tend to ask for a lower wage than men. [Artz et al. \(2018\)](#) show that women are less likely than men to receive a wage increase, while they are equally likely to ask for a wage increase.

tion (Blau and Kahn 2017), such gender inequalities would result mainly from the fact that women do not bargain their wages as well as men do (see Bertrand 2011). Firms also contribute to the gender wage gap due to gender segregation and/or sorting across firms, *i.e.* women are less likely to work at high-paying firms than men (see, *e.g.*, Barth et al. 2016; Bayard et al. 2003; Cardoso et al. 2016; Groshen 1991; Ludsteck 2014; Sorkin 2017). In their seminal paper, Card et al. (2016) show that firm-level productivity premiums explain 21% of the gender wage gap in Portugal, with 15-20 pp due to the sorting effect, and 1-6 pp due to the bargaining effect. Using the same methodology, Coudin et al. (2018) show that firms account only for 8% of the gender wage gap in France, with a dominant role of the sorting effect and a very small (and even negative) bargaining effect. Bruns (2019) and Gallen et al. (2019) find similar results in Germany and Denmark, respectively. Labor market institutions may explain this lower contribution of firms to the gender wage gap, in particular the higher minimum wage in France (Coudin et al. 2018) and collective bargaining (Bruns 2019).<sup>6</sup> The small (or negative) bargaining effect in France implies that gender inequalities in wages and employment are relatively low with French firms. This is something to keep in mind when analyzing the incentive of French firms to negotiate goals and measures to reduce gender inequalities, even if they may concern other aspects than wages and employment.

The remainder of the paper is organized as follows. Section 2 provides some institutional background on GE collective bargaining in France. Section 3 describes the different data used in the paper. Section 4 provides some descriptive evidence on differences in GE collective bargaining across establishments depending on the share of women. We explain the econometric approach in Section 5 and present the main results in Section 6. Section 7 concludes. Additional results are relegated to an extended appendix.

## 2 Institutional background

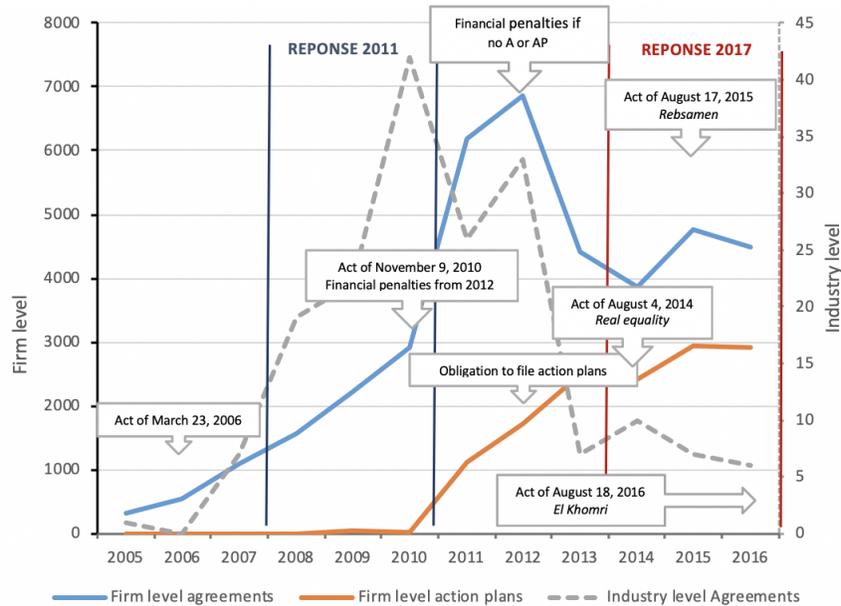
In France, it is through the negotiation of firm-level agreements that the legislator seeks to engage firms to act for equal employment and equal pay. Collective bargaining on GE in firms has gradually developed since the implementation of the *Roudy Act* in 1983, which introduced the obligation for the employer to submit a written report to the works council on the comparative situation of general employment and training conditions of women and men, called *Rapport de situation compare* (RSC). This act also gave, for the first time, the opportunity for employers to bargain with union delegates measures to reduce gender inequalities within the firm. In 2001, the *Génisson Act* turned this opportunity to bargain into an obligation, specifically on the firm’s objectives in the area on GE at work and on the actions to achieve them. In addition to this mandatory negotiation on GE, the Act of March 23, 2006 initiated the definition and implementation of measures to remove gender wage inequality in the mandatory annual negotiations on the wage policy.

The period from 2010 onwards has been marked by an acceleration of firm level collective bar-

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6. Bruns (2019) finds that collective agreements compress the gender wage gap within firms.

**Figure 1** – Number of texts on GE bargained at the firm and industry level



gaining (see Figure 1). This has been strongly promoted by the public authorities through a set of laws imposing sanctions but also setting the various procedures and parameters of the negotiations. It then became common practice to refer to *bargained public policy* (Groux 2005) or *state managed bargaining* (Mias et al. 2016). The Act of November 9, 2010 introduced for the first time financial penalties (up to 1% of payroll) for firms with 50 employees and more not complying with the obligation to be covered by a collective agreement or, failing that, by a unilateral employer decision (action plan) for workplace GE. Negotiations on GE have then to be renewed after one year in case of an action plan, three years in case of a collective agreement. These sanctions were implemented from January 1st, 2012 and have since been reinforced by the prohibition to bid on public contracts. The Decree of December 18, 2012 made bargaining on the effective compensation area compulsory. Finally, the *Real equality* Act (2014) streamlined obligations into a unique global negotiation on gender professional and pay equality, the *Rebsamen* Act (2015) has consolidated and streamlined the obligations of negotiation, merging equality bargaining with quality of working life and the *El Khomri* Act (2016) has taken further disposition to develop collective bargaining and modernise social dialogue.

Milner et al. (2019) argue that in France, the “development of increasingly strong employer duties and complex compliance requirements has [...] created a distinctive model of ‘bargained equality’” (p. 277-278). Another feature of the French negotiated equality model is that it is based on a principle of complementarity, enshrined in law, between industry and firm level collective bargaining. Both levels have an obligation to negotiate and bargaining at the firm level is supposed to add to agreements set at the industry level (on pay scales, classifications, joint initiatives on

key issues of the industry) provisions tailored to address gender equality issues which are specific to the workplace. However, if legislation developments since 2013 have maintained pressure on GE bargaining, they have also generated uncertainties on enforcement mechanisms and procedures of agreements, especially between the time when the new laws were enacted and their decrees published. In particular, uncertainty touched the bargaining level (firm or industry) of the collective agreement required to be in compliance with the law and the validity period of the bargained texts. Furthermore, [Mias et al. \(2016\)](#) argue that by putting more pressure through financial penalties on the firm level, legal provisions have increasingly made the firm rather than the industry the locus of negotiation. This is likely to have driven the relationship between the two levels of negotiations from complementarity towards substitution, as illustrated by the fall in the number of industry level agreements between 2010 and 2016 while firm level collective bargaining accelerated.

Thus, despite a real impetus given to negotiations on GE at firm level, the effectiveness of the *bargained gender equality policy* has yet to be assessed. In this paper we will focus on two indicators: on the one hand, the compliance of firms with their legal obligations, and on the other hand, the signing of an agreement when the firms have actually negotiated.

### 3 Data

In this paper, we combine survey data on labor relations issues with administrative data for representative samples of French establishments.

The main data set consists in establishment- and firm-level informations collected in the RE-PONSE<sup>7</sup> survey over its two most recent editions : 2011 and 2017. This survey is carried out by the French Ministry of Labor and covers several issues on labor relations and collective bargaining. In each edition of the survey, we mainly rely on data collected from the employer representative interviewed face to face in each establishment of the sample.<sup>8</sup> Samples of the 2011 and 2017 surveys are composed of 4,023 and 4,363 establishments respectively, and are each representative of establishments of 10 employees and more from private and semi-public industries (excluding administration and agriculture). Most questions addressed to employer representatives cover the three-year period preceding the interview, *i.e.* 2008-2010 for the 2011 survey, and 2014-2016 for the 2017 survey. It is the case for the questions that we exploit to define our dependent variables, which indicate whether *i)* GE has been negotiated in the firm or the establishment ; *ii)* the negotiation has resulted in a collective agreement at the firm- or establishment-level. The first question is slightly different between the two editions of the survey. While the 2017 survey questions refer to negotiations only, the 2011 survey questions refer to negotiations and discussions with respect to GE. Therefore, more firms are likely to be concerned in 2011 than in 2017, regardless of the actual differences in bargaining activity between the two editions. In addition, while the questions were addressed to all firms in

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7. REPONSE is the acronym of French *RElations PrOfessionnelles et NégociationS d'Entreprises*.

8. In each edition of the REPONSE survey, data were also collected from an employee representative and a selection of employees in the establishment.

2011, they were addressed in 2017 only to firms with employee representatives (elected by employees or designated by labor unions).

Negotiations on GE have to be renewed every three year in case of collective agreement or over a shorter time period in other cases. Hence, we consider that firms with 50 employees and more that have not been negotiating on GE over each three-year period in the 2011 and 2017 surveys do not comply with their legal obligations. Furthermore, as we want to capture compliance with law using a similar question for 2011 and 2017, we focus our analysis on establishments from firms with 50 employees and more with at least an elected (or designated) employee representative. Our working samples are thus composed of 2,753 establishments in 2011 and 3,361 establishments in 2017.

As regards the outcomes of collective bargaining on GE, we make the choice to exploit exhaustive data on firm-level collective agreements and other texts related to collective bargaining, provided by the French Ministry of Labor over the period 2005-2016. By law, French firms are requested to report to the Ministry of Labor all collective agreements negotiated between employee and employer representatives. This also applies to other texts related to collective bargaining, such as disagreements, amendments or unilateral employer decisions (action plans in the field of GE). Information contained in these agreements is standardized by the Ministry of Labor to build a longitudinal firm-level dataset : the D@ccord database. Beyond variables identifying the establishment or firm filing the agreement (name, city, identification number, industry, branch agreement identification), each collective agreement is characterized with the following variables: type of text (agreement, amendment, denunciation, disagreement, accession to an agreement, unilateral decision of the employer), signatory unit (establishment, firm, group, branch), topic(s) of the negotiation (including wages, bonuses, employment, hours, union rights, labor conditions, on-the-job training, GE), signatories (union delegate, mandated employee, elected employee representative, works council, employer only, single delegation), the unions present at the negotiation and those signatories of the agreement (CGT, CFTC, CFDT, CFE-CGC, FO, others). Unlike REPOSE data, this dataset is not subject to reporting bias on the bargaining outcomes and makes it possible to analyze other results than just signing a collective agreement on GE over the three-year period (*e.g.* filing an action plan). It also allows us to refine the information provided by survey data on the implementation of negotiations. Indeed, firms that claim having not negotiated on GE but that have filed an agreement on this topic have been reclassified as firms negotiating on GE.<sup>9</sup>

Beyond firm-level collective agreements, we also consider information on industry-level agreements.<sup>10</sup> These agreements initially apply only to firms that belong to the employer associations engaged in the negotiations, but are generally extended to the whole industry in the months following the signing of the agreement. Information on industry-level agreements is public and available online. From this open data, we have retrieved information on agreements focused on GE. In partic-

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9. Over the period 2014-2016, about 65% of firms have negotiated on GE following reclassification while they were initially about 55%.

10. Note that the industry refers here to a finer level (over 250 IDCC) in the classification of firms than the level we already control for in our estimates (21 sections). This finer level is called *branche*.

ular, we know when the agreement was signed, when it was extended to the whole industry (when appropriate) and until when it was or is valid. From the extension date of the agreement, every firm belonging to the corresponding industry can be considered as covered by that agreement. Thus, we are able to identify whether firms are covered or not by an industry-level agreement on GE.

The last data source is the Annual Declaration of Social Data (DADS<sup>11</sup>), a French administrative file coming from firms' social security records, *i.e.* the annual form that French firms have to fill for every employee subject to payroll taxes. As administrative data, DADS have the advantage to be exhaustive and so to cover all firms from the REPOSE survey. The French National Statistical Institute (INSEE) transforms the raw DADS data into several files available for researchers under restricted access. We specifically exploit the position files (*fichier postes*) to get further information on the structure of the workforce and wages at firm level. In particular, we recover the total share of women in the workforce within the establishment and within the firm (for multi-establishment firms) using positions filled at December 31, each year. Then, to be consistent with the timetable of the REPOSE survey, we consider for each firm the average share of women over the two three-year periods (2008-2010, 2014-2016).

We are particularly interested in the role played by female negotiators on the employees' side at the bargaining table. Based on the REPOSE survey, we use the share of women among elected employee representatives as a proxy of the share of women among employee representatives at the bargaining table. This is a proxy because all elected employee representatives do not bargain with the employer in French firms. Until recently, only union delegates were authorized to do so. Among employee representatives, union delegates have the specificity to be designated by a labor union. Some of them are also elected as employee representatives. Previously and until 2008, an employee who was designated by one of the five major unions at the country level was automatically authorized to represent all employees in collective bargaining with the employer. Since 2008, to have the right to bargain with the employer, a union must have obtained at least 10% of votes at the first ballot of the professional elections, designed to elect the employee representatives. The REPOSE survey also provides information on several characteristics of the firm – or the establishment in case of multi-establishment firms –, which are deemed, according to the literature, to explain a significant part of differences across firms in the propensity to negotiate on GE : industry, workforce size<sup>12</sup>, region<sup>13</sup>, presence of union representatives<sup>14</sup>, legal category<sup>15</sup>, publicly traded vs. privately held,

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11. Déclaration Annuelle de Données Sociales

12. See details on these characteristics in Table A.1

13. The historical 22 regions in mainland France are considered here, *i.e.* before the grouping into 13 regions operated by the territorial reform in January 2016. Controlling for the region is particularly relevant when examining bargaining outcomes on GE since certain regions have been the place of experiments designed to strengthen GE bargaining in SMEs, experiments conducted as part of the program *Territoires d'Excellence*.

14. Several studies stress the importance of union representatives to get equal pay and work-life balance issues on the bargaining agenda (Heery 2006; Williamson 2012), although other studies mitigate their role given their weakness (Hantrais and Ackers 2005; Seeleib-Kaiser and Fleckenstein 2009) and lack of interest in these issues (Baird 2004).

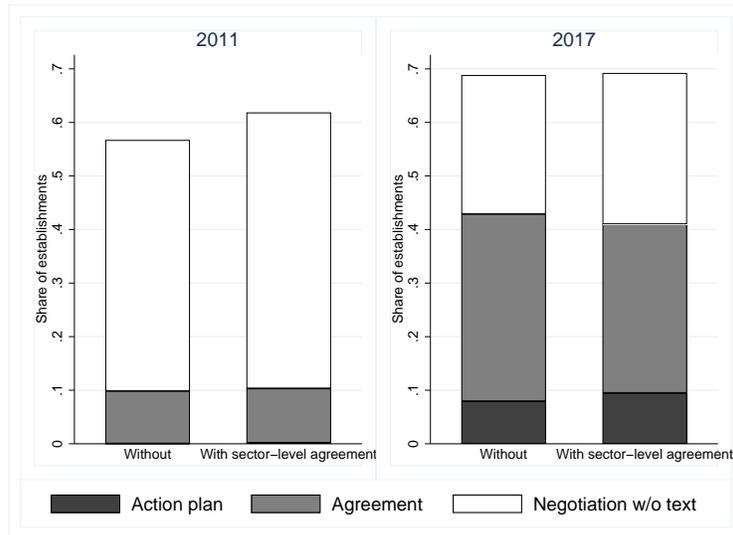
15. Five broad legal categories are distinguished: 1) simplified joint-stock companies, 2) other commercial companies, 3) legal person under public law subject to commercial law (public companies), 4) private law groupings (*e.g.* associations), 5) other organizations. In the literature, Figart et al. (2002) and Whitehouse et al. (2001) stress

belonging to a group vs. independent. If these characteristics are decisive in triggering negotiations on GE, we must control for them in order to correctly identify the effect of female presence on these bargaining outcomes.

## 4 Descriptive analysis

In this section, as in the rest of the paper, we focus on establishments from firms with 50 or more employees, smaller firms being not concerned with the obligation to negotiate on GE. The proportion of the latter firms having negotiated on GE over both periods is consequently very small (less than 20%). In addition, we focus on firms with employee representatives because, as mentioned earlier, information on GE bargaining is available only for these firms in the 2017 edition of the REPONSE survey.

**Figure 2** – Proportion of firms negotiating on GE, with or without filing a text



Notes : Firms with 50 or more employees with employee representatives. Percentages were computed using the establishment weights provided in the REPONSE survey. The periods corresponding to the 2011 and 2017 surveys are 2008-2010 and 2014-2016, respectively. Over 2008-2010, only 0.07% firms have filed an action plan, a percentage too small to appear graphically in the left-hand side panel.

We first examine in Figure 2 the proportion of establishments having negotiated on GE and those having filed a text (agreement or action plan) on this topic over the two periods corresponding to the 2011 and 2017 surveys, *i.e.* 2008-2010 and 2014-2016. We compare at the same time the proportions obtained among establishments covered and those not covered by an industry-level agreement on GE. Overall, the proportion of establishments having negotiated on GE has slightly increased between the two periods, from 58% in 2011 to 65% in 2017. In addition, the proportion of establishments having filed a text following negotiations has greatly increased, from 10% in 2011 to

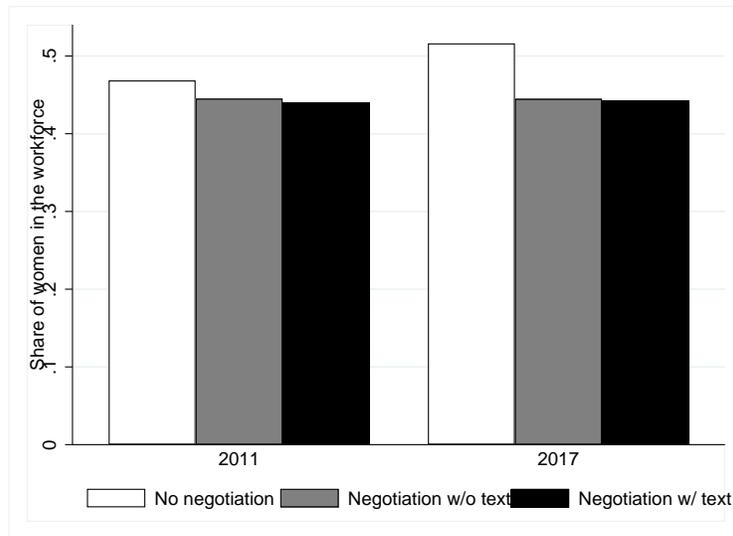
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out a particularly important weight of GE bargaining in public organizations, that provide a more receptive context for union influence (Heery 2006).

more than 40% in 2017. These figures are in line with those provided by the French bureau of labor (*Direction Générale du Travail*), as mentioned by Pochic et al. (2019). Although the introduction of financial penalties has led to a decrease in the proportion of establishments not covered by a text despite negotiations, it has not eliminated this phenomenon, still representing about 30% in 2017. This high proportion may result from the assimilation by some employer representatives of mandatory annual negotiations as negotiations on GE.<sup>16</sup> The introduction of financial penalties has led to closer propensities to negotiate between establishments covered and not covered by an industry-level agreement. However, the two types of establishments differ in 2017 in the outcome of negotiations: in establishments covered by an industry-level agreement, negotiations result less frequently in a local collective agreement than in an action plan (8.8% against 6.6%).

We then compare in Figure 3 the average share of women in the workforce of establishments depending on whether a negotiation on GE has taken place and resulted into a text. Are establishments involved in GE bargaining more feminized? Figure 3 rather describes the opposite. In both periods the average feminization rate is lower among establishments having negotiated on GE than among the others, but the difference is more pronounced in the more recent period due to the higher share of women in establishments without negotiation. However, there is hardly no difference in terms of gender mix between those establishments whose negotiations have resulted in a text (agreement or action plan) and those whose negotiations have not.

**Figure 3** – Share of women in the workforce : no negotiation, negotiation with or without agreement



Notes : Establishments from firms with 50 or more employees and employee representatives. Percentages were computed using the establishment weights provided in the REPOSE survey.

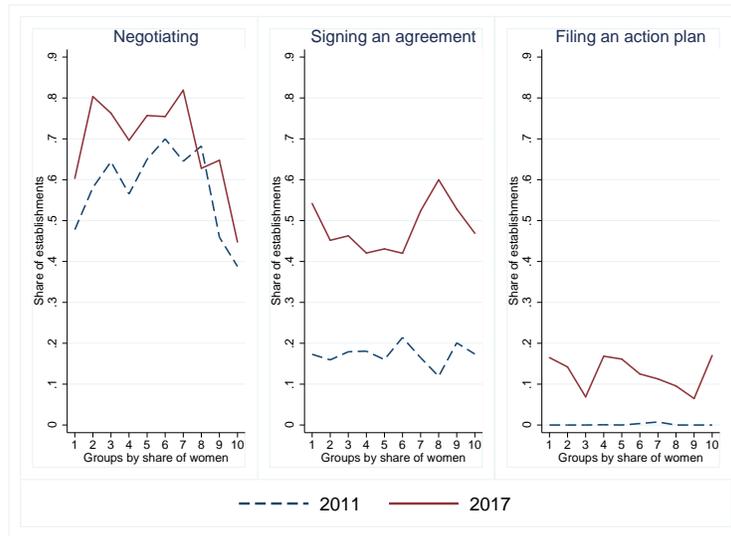
Does it mean that the probability for a firm to negotiate and sign a collective agreement on GE depends on the gender mix of the workforce? We first propose a descriptive answer to this question

16. Initially focused only on wages, the mandatory annual negotiation for firms has been extended in 2014 to other bargaining topics, including the gender pay gap.

in Figure 4. Based on the 2017 sample of establishments, we have first computed the deciles of the distribution of the share of women in the workforce, allowing us to divide each sample (2011, 2017) in 10 groups of establishments. Theoretically these groups have the same size in 2017. As there has been no significant changes in the distribution of the share of women between the two periods, they should also be balanced in 2011. Figure A.1 (Appendix A) shows that each group made up represents about 10% of the sample in 2017 but also in 2011, with small variations compared to 2017. We then compute for each group the proportion of establishments having negotiated on GE, and the proportion of these establishments for which negotiations on GE have resulted in an agreement and in an action plan over the corresponding three-year period. These proportions are reported in dashed line for 2011 and solid line for 2017. The left-hand side panel shows that the proportion of establishments with GE bargaining is lower in the tails than in the middle of the distribution, thus forming an inverted-U shape relationship with the share of women. In other words, establishments with a very low or a very high share of women are less likely to negotiate on GE than establishments where the gender mix is more balanced. This inverted-U shape is observed in both 2011 and 2017 but the proportions are much higher in 2017, except at the right end of the distribution where the proportions of the two periods are closer. We do not find the same shape when considering then the proportion of negotiating establishments having signed an agreement (see Figure 4, middle panel). While no clear relationship emerges in 2011, the probability of signing an agreement in 2017 is clearly higher in male-dominated and female-dominated establishments than in mixed establishments. However, as for the negotiation rate, the most feminized establishments (top 10%) report a signature rate which is lower with respect to other female-dominated establishments. In contrast, their likelihood of filing an action plan – used when negotiations could not lead to an agreement – is higher than that reported by other female-dominated establishments having negotiated on GE (see Figure 4, right-hand side panel). These highly feminized establishments thus seem to have a specific negotiation behavior that it will be worth investigating further in the upcoming econometric analysis. Note that both the signature rate for agreements and the filing rate for action plans have increased between 2011 and 2017 among negotiating establishments and this whatever the workforce gender mix. The signature rate hovers around 50% in 2017 while it is capped at 20% in 2011. The filing rate fluctuates between 10% and 20% in 2017 while it is almost uniformly zero in 2011, as action plans were not yet defined in law.

Beyond the share of women in the workforce, we then look at how GE bargaining outcomes vary depending on the share of female among employee representatives – thereafter share of female reps. As for the share of women, we describe these variations across different threshold values defined using the 2017 distribution of the share of female reps over all establishments with employee representatives belonging to firms with at least 50 employees. Unlike the share of women, defining 9 threshold values of the share of female reps – so as to have 10 same-size groups of establishments – is not relevant given the shape of the distribution (see Figure A.2 in Appendix A). Over both periods, we observe a large proportion of establishments where the share of female reps is zero or 100%. Each extreme case

**Figure 4** – Proportion of establishments negotiating and then filing a text on GE by the share of women



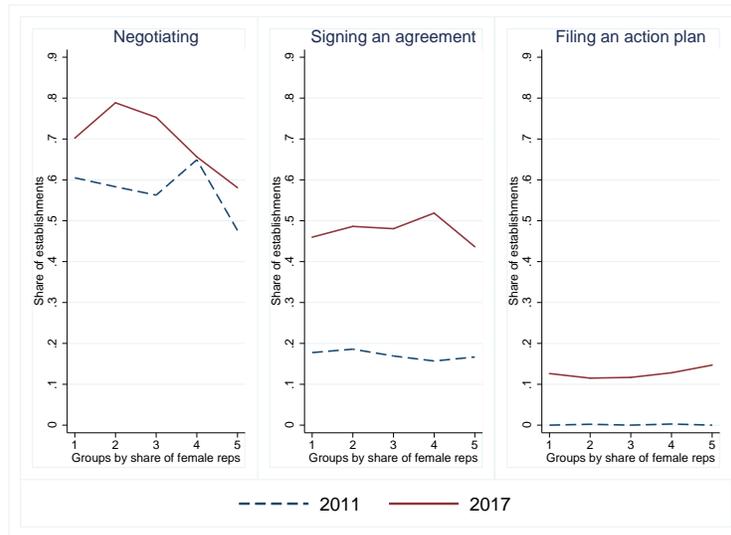
Notes: Establishments from firms with 50 or more employees with employee representatives. Proportions were computed using the establishment weights provided in the REPOSE survey. The left-hand side panel covers all establishments while the two others cover only establishments negotiating on GE. The 10 groups reported on the x-axis are formed using the decile threshold values from the 2017 distribution of shares of women. The values of these thresholds as well as sample distributions across these thresholds are reported in Figure A.1 in Appendix A.

represents at each period about 20% of the sample. Between these two extreme cases, the density follows an inverted-U shape, so that establishments are concentrated around 50% of female reps. This particular distribution encourages us to consider apart these extreme cases and two relevant thresholds between them: 33% and 50%.<sup>17</sup> Once groups of establishments are defined based on these threshold values, we then compute for each group the proportion of establishments having negotiated on GE, and then among the latter the proportion having signed an agreement and the proportion having filed an action plan. All these proportions are reported in Figure 5. Establishments where employee representatives are exclusively women are those where the negotiation rate is the lowest in both periods (see left-hand side panel). However, this is the only common feature between the two curves describing the negotiation rate of establishments by the share of female reps in 2011 and 2017. While the highest negotiation rate in 2011 is reached in establishments with female-dominated representatives (with at least one male representative), this is observed in 2017 in establishments where women are a minority among representatives (but still present). The negotiation rate has sharply increased between the two periods in the latter and particularly in establishments with less than one-third of female reps, where the negotiation rate has increased by almost 20 pp. In contrast,

17. The extreme values are not exclusive to small establishments or firms, where the low number of employee representatives makes the shares 0% and 100% more likely. Indeed, the proportion of small firms is not especially high among those where employee representatives are exclusively women or exclusively men. Similarly, these extreme values are not exclusive to specific industries.

in establishments where women are the majority but not all representatives, the negotiation rate has hardly changed between the two periods. Among establishments having negotiated, the greater or lesser representation of women among representatives seems to have little impact on the likelihood of reaching an agreement or, conversely, of filing an action plan (see middle and right-hand side panels). Again, the most striking difference between 2011 and 2017 is the difference in level: almost 50% of establishments engaged in negotiations reached an agreement in 2017 while they were less than 20% in 2011.

**Figure 5** – Proportion of establishments negotiating and then filing a text on GE by the share of female reps



Notes: Establishments from firms with at least 50 employees and employee representatives. Proportions were computed using the establishment weights provided in the REPOSE survey. The left-hand side panel covers all establishments while the two others cover only establishments having negotiated on GE over the previous three-year period. The 5 groups reported on the x-axis are formed using the threshold values reported in Figure A.3 in Appendix A.

At this stage, we cannot infer any impact of the gender mix on GE bargaining outcomes because establishments may differ in terms of other explanatory factors for bargaining depending on their share of women. This is why we propose in the next section a *ceteris paribus* analysis.

## 5 Identification strategies

We aim at assessing the causal relationship between the share of women in the establishment and the negotiation of a local collective agreement on GE, which can also lead to an action plan or no text at all if negotiations between the employer and employee representatives fail. We first investigate the effect of the share of women on the likelihood that negotiations on GE take place, starting from the following specification:

$$y_i^* = \mathbf{x}_i' \beta + \delta_1 \text{Share}_i + \delta_2 \text{Share}_i^2 + \varepsilon_i, \quad \varepsilon_i \sim N(0, 1), \quad y_i = 1(y_i^* > 0) \quad (1)$$

where  $y_i$  is a binary variable which is equal to 1 if negotiations on GE have taken place, 0 otherwise.<sup>18</sup>  $y_i^*$  is the unobserved latent variable which is related to the observed  $y_i$  as described above.  $\mathbf{x}_i$  includes all relevant establishment characteristics used as control variables, as described in Section 3.<sup>19</sup>  $\text{Share}_i$  refers to the share of women in the establishment  $i$ .  $\text{share}_i$  is also introduced in quadratic form to account for non-linearities in the effect of the share of women on the probability of negotiating on GE.<sup>20</sup> We assume that residuals  $\varepsilon_i$  are normally distributed, consistently with a probit specification.

In the second part of our analysis, we consider instead as dependent variable  $y_i$  an unordered categorical variable taking into account the different outcomes of GE bargaining : (1) no text, (2) agreement, and (3) action plan. To analyze this data, we use a multinomial response model, specifically a multinomial probit model, assuming the following latent threshold model:

$$y_{ij}^* = \mathbf{x}_i' \beta + \delta_1 \text{Share}_i + \delta_2 \text{Share}_i^2 + \varepsilon_i, \quad (2)$$

where the  $\varepsilon$ 's follow a multivariate normal distribution and where the observable dependent variable  $y_i$  is linked with its latent counterpart  $y_i^*$  via:

$$y_i = \begin{cases} j & \text{if } y_{ij}^* = \max(y_{i1}^*, y_{i2}^*, y_{i3}^*) \\ 0 & \text{otherwise} \end{cases} \quad (3)$$

## 5.1 Endogenous share of women

Statistically, the coefficient estimated on  $\text{Share}_i$  in equations (1) and (2) may only report a correlation between that proportion and the outcome  $y_i$ , and not necessarily a causal relationship. Indeed,  $\text{Share}_i$  is likely to be correlated with the residual  $\varepsilon_i$ , due to plausible unobserved heterogeneity<sup>21</sup> and reverse causation issues.

We propose two alternative strategies to improve identification of the causal relationship between  $\text{share}_i$  and the outcome. The first strategy consists in using the lagged value of the share of women,  $\text{LagShare}_i$ , instead of its current value among covariates. The model is then specified as follows :

$$y_i^* = \mathbf{x}_i' \beta + \delta_1 \text{LagShare}_i + \delta_2 \text{LagShare}_i^2 + \varepsilon_i, \quad (4)$$

As the share of women is computed as an average over the previous three-year period – 2008-

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18. The reference period is the three-year period preceding the year of observation. Negotiations may have taken place both at establishment level and firm level in the case of multi-establishment firms.

19. These characteristics include the size of the firm, the industry, the major occupational category (between (i) managers and professionals, (ii) intermediate occupations, (iii) clerical, sales and service workers, (iv) blue-collar workers), union presence (one or more union delegates in the firm), capital holders (publicly traded *vs.* privately held), legal category, belonging to a group *vs.* independent.

20. We have also tried a specification including in addition the cubic form of  $\text{share}_i$  among covariates but decided not to keep it as it does not add explanatory power and leads to the same results as with this specification.

21. Among unobserved factors of GE bargaining that may be correlated with the share of women, there is for instance the employer's sensitivity to GE issues: an employer who is very sensitive to these issues will presumably be more inclined to hire and promote women, but also to negotiate on GE.

2010 for 2011 and 2014-2016 for 2017 –, we consider an equivalent time period when computing the lagged value of this share. Thus,  $\text{LagShare}_i$  refers to the average share of women over 2005-2007 for 2011 and over 2011-2013 for 2017. We can use this strategy only for the share of women in the workforce, not for the share of female reps, because information on the latter is available only from the REPOSE survey and thus not available outside the periods covered by the survey.<sup>22</sup> In contrast, information on the share of women is derived from the DADS and thus available every year. Including the lagged value of the share of women allows us to address potential biases from reverse causation but not from unobserved heterogeneity. In fact, some unobserved factors of GE bargaining are likely to be correlated with the past share of women. In addition, the effect of the past share of women on GE bargaining may not reflect perfectly the true effect of the current share of women on GE bargaining.

Alternatively, as a second strategy, we propose to use the lagged value of the share of women as an instrument of the current share of women in a two-stage residual inclusion (2SRI) estimation framework (see *e.g.* [Terza et al. 2008](#)). The 2SRI estimator is a nonlinear extension of the conventional instrumental variable (IV) method. Instead of replacing the endogenous variable by the first-stage predictor in the second stage, as in the conventional IV methods, the 2SRI method includes the first-stage residual as an additional regressor in the second stage. First proposed by [Hausman \(1978\)](#) in the linear context, this method proves to be consistent in the class of nonlinear models, for which the two-stage predictor substitution is inconsistent (see [Terza et al. 2008](#)). The first-stage equation specifies the share of women ( $\text{Share}_i$ ) as a function of exogenous variables, including those introduced in the  $y_i^*$  equation ( $\mathbf{x}$ ) and a variable that affects just the share of women ( $\text{LagShare}_i$ ) :

$$\text{Share}_i = \mathbf{x}'_i \gamma + \theta \text{LagShare}_i + \nu_i, \quad (5)$$

$\text{LagShare}_i$  is correlated with  $\text{Share}_i$  but not with the residual  $\varepsilon_i$ , so it can be excluded from the  $y_i^*$  equation. Both properties must be satisfied to ensure consistent IV estimates. A nonzero correlation between the instrument and the residual  $\varepsilon_i$ , as well as a weak correlation between  $\text{Share}_{i,t-1}$  and  $\text{Share}_i$ , can induce an inconsistency in the IV estimates that exceeds the inconsistency of naive estimates.

The second-stage equation is then specified as:

$$y_i^* = \mathbf{x}'_i \beta + \delta_1 \text{Share}_i + \delta_2 \text{Share}_i^2 + \delta_3 \hat{\nu}_i + \varepsilon_i, \quad (6)$$

where  $\hat{\nu}_i$  is the residual from the first-stage equation (5). Implementing a significance test on the coefficient  $\delta_3$  provides a simple and direct way to test the assumption that  $\text{Share}_i$  is exogenous with respect to  $y_i^*$ . We will reject this assumption if  $\delta_3$  is significantly different from 0. This strategy

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22. Using information from the previous wave of the survey is not relevant because the survey waves are widely spaced over time – *i.e.* 6 years – and only a small proportion of establishments are surveyed two editions in a row.

allows us to address biases from unobserved heterogeneity. As previously, this strategy is possible only for the share of women, not for the share of female reps, due to the availability of lagged values.

To test exogeneity of the share of female employee representatives, we use as instrumental variable the average share of female employee representatives among other establishments belonging to the same 2-digit industry, as defined using the 88 divisions of the French nomenclature of activities (NAF). We can reasonably expect the share of female employee representatives in a given establishment to be positively correlated with the average share of female employee representatives in the rest of the industry. We compute the latter share using for each period the total sample of establishments surveyed and applying the establishment weights provided to ensure the representativeness of the sample. We proceed in the same way to compute the average share of women among other establishments belonging to the same industry, that we will consider as an alternative instrumental variable for the share of women if the lagged share of women turns out to be a weak instrument or/and a non-valid instrument. For each specification, we will check the strength and the validity of each candidate instrument, and will choose the instrument(s) satisfying these hypotheses.

## 5.2 Endogenous selection of bargaining establishments

To analyze the effect the share of women has on the probability of signing an agreement or, failing that, of filing an action plan among establishments having started negotiations on GE, we face an additional methodological challenge: the non-random selection of the sub-sample of firms having negotiated on GE. To address biases from such endogenous selection, we use a non-parametric procedure designed to impose to this subsample of establishments the industry-size composition of the whole sample of establishments. We rely on the cell-by-cell approach suggested by Lemieux (2002), which is equivalent to the well-known reweighting method of DiNardo et al. (1996) while being more flexible. This consists first of dividing the data into a limited number  $J$  of industry-size cells, using the following dummy variables : we consider 18 industries, as defined in Table A.1, and within each industry we distinguish 4 size groups (50-99, 100-199, 200-499, 500 employees and more). For each cell  $j$ , at period  $t$ , we then estimate a reweighting factor  $\Psi_{jt}$  to be used in the computation of the counterfactual sample weight  $\omega_{jt}^c$ :

$$\omega_{jt}^c = \Psi_{jt} \omega_{jt}, \quad (7)$$

with  $\omega_{jt}$  the original sample weight of cell  $j$  at period  $t$ . The reweighting factor  $\Psi_{jt}$  is defined as :

$$\Psi_{jt} = \frac{\eta_{jt}^c}{\eta_{jt}}, \quad (8)$$

where  $\eta_{jt}$  corresponds to the share of cell  $j$  in the sub-sample and  $\eta_{jt}^c$  is the share of the same cell  $j$  in the whole sample, at period  $t$ . That is, the numerator stands for the counterfactual sample share of cell  $j$  that we want to impose to be identical in the subsample. The resulting counterfactual

sample weights allow to control for unobserved factors related to the industry and the size of the firm, which may affect both the decision to negotiate on GE and the decision to sign a collective agreement on this issue, and thus induce a selection bias in estimates.<sup>23</sup>

## 6 Results

We first analyze the extent to which a stronger female presence, both within the workforce and among employee representatives, affects the likelihood of starting negotiations on GE in the establishment, and then investigate how it can affect the likelihood that these negotiations result in a collective agreement or another bargaining outcome.

### 6.1 On the probability to start negotiations on GE

#### The influence of the gender mix

**Table 1** – The influence of the share of women on the probability of negotiating on GE

	2011	2011	2011	2011	2017	2017	2017	2017
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
ShareOfWomen	0.106 (0.249)	2.317** (0.712)	–	2.064*** (0.470)	-0.428 (0.270)	3.012*** (0.773)	–	2.650*** (0.570)
ShareOfWomen <sup>2</sup>	–	-2.300** (0.768)	–	-2.456*** (0.497)	–	-3.618*** (0.782)	–	-3.861*** (0.636)
LagShareOfWomen	–	–	2.129** (0.704)	–	–	–	2.611*** (0.750)	–
LagShareOfWomen <sup>2</sup>	–	–	-2.312** (0.769)	–	–	–	-3.110*** (0.752)	–
First-stage residual	–	–	–	0.571 (0.335)	–	–	–	0.807* (0.403)
Observations	2,562	2,562	2,562	2,562	3,199	3,199	3,199	3,199

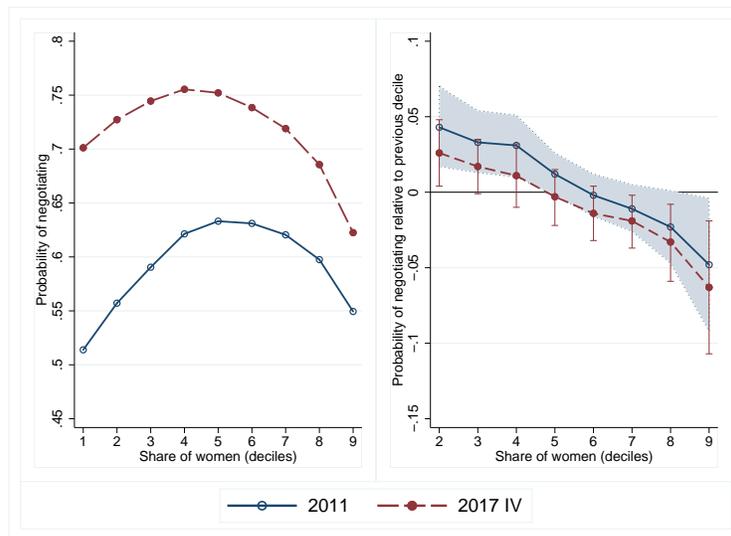
Notes: Estimates weighted using establishment weights provided in the REPOSE survey. Robust standard errors and bootstrapped standard errors (200 replications) for the 2SRI estimator in column (4) are given in parentheses. All regressions include the set of controls defined in Section 5.

We first assess how the share of women affects the probability of negotiating on GE. Coefficient estimates for both periods are reported in Table 1. For each period, column (1) reports the coefficient on the share of women while assuming it is exogenous and has a linear effect on the probability of negotiating. Column (2) adds the quadratic form of the share of women, as in Equation 1, to possibly take into account its non-linear effect on the probability of negotiating. Column (3) replaces contemporaneous values by lagged values of the share of women and its quadratic form (see Equation 4), which are less or not affected by possible reverse causation coming from the dependent variable. Column (4) reports coefficient estimates from Equation 6, including the residual from the first-stage

23. The conventional Heckman (1979) sample-selection correction procedure could not be used here in the absence of a relevant exclusion restriction that could be used in a first stage to explain the probability of negotiating on GE.

equation 5 to address potential biases from unobserved heterogeneity and reverse causation.<sup>24</sup> The coefficient associated to this residual is non-significant in 2011, while it is weakly significant in 2017, implying that this specification is relevant only in 2017. Our preferred specification in 2011 is then that reported in column (2), where the significant coefficient on the quadratic term indicates that the effect of the share of women on the probability of negotiating is indeed nonlinear and so the specification reported in column (1) not relevant. Coefficient estimates from column (2) indicate that, in both periods, the share of women has a positive effect on the probability of negotiating but the magnitude of this effect decreases when the share of women increases until eventually it becomes zero or even negative. Such nonlinearity is consistent with the descriptive evidence reported in Figure 4 (left-hand side panel) and is persistent for both periods while controlling for endogenous issues in columns (3) and (4).

**Figure 6** – The influence of the share of women on the probability of negotiating on GE



Notes : Estimates weighted using establishment weights provided in the REPONSE survey. Decile threshold values on the x-axis correspond to the following percentages : 1: 10.1%, 2: 18%, 3: 25.9%, 4: 37.2%, 5: 47.4%, 6: 56.5%, 7: 64%, 8: 72.8%, 9: 84.3%. “IV” estimates refer to estimates obtained using the 2SRI estimator. Probit estimates for 2017 are compared with 2017 IV estimates in Figure B.1 in Appendix B. IV estimates are preferred to probit estimates in 2017 given the non-zero coefficient on the first-stage residual in Table 1, column (8). All regressions include the set of controls defined in Section 5.

To better understand how this effect varies depending on the share of women in the establishment, we take again the 9 decile-thresholds of the 2017 distribution of the share of women (as defined in Figure A.1) and report in Figure 6 the probabilities of negotiating predicted using these threshold

24. In both periods, we use as instrument the industry-level share of women, which is strongly correlated with the establishment-level share of women and not correlated with the dependent variable indicating negotiations on GE, as shown in Table B.1. We report at the top of this table the coefficient associated to each candidate instrument when included in the first-stage equation (see the left side) and in the second-stage equation (see the right side). In 2011, the industry-level share of women is preferred as instrument to the establishment-level lagged share of women because the latter is significantly correlated with the dependent variable. For comparison purposes, we use the same instrument in 2017 as in 2011, although the lagged share of women is apparently a valid instrument in 2017.

values (see left-hand side panel). Overall, controlling for differences in characteristics between establishments, we find again that GE bargaining has particularly increased between 2011 and 2017 in male-dominated establishments, more than in female-dominated establishments. Interestingly, the difference in probability between the two periods increases with the share of women: it is almost 20 pp at the 1st decile while it is less than 10 pp at the 9th decile. Otherwise, the probability of negotiating follows a similar inverted-U shape in 2011 and 2017 depending on the share of women. It increases with the share of women when they are poorly represented and decreases above a certain threshold when women are (highly) over-represented in the workforce, while it does not vary significantly between these two extreme cases. Due to the higher probability increase in the lower part of the distribution, the 2017 curve is flatter than the 2011 curve in this part of the distribution. In contrast, the 2017 curve is steeper than that of 2011 in the upper part of the distribution. In the right-hand side panel, we report changes in probability resulting from the transition from one decile-threshold to another and the corresponding 95% confidence intervals. The latter clearly indicate whether changes in probability are significantly different from 0 in the overall population of the establishments of interest, depending on whether they include or not zero. In 2011 transitions up to the 4th decile-threshold are each associated with an increase in the probability of negotiating – up to 5 pp –, while in 2017 only the transition from the 1st to the 2nd decile induces a significant increase in the probability of negotiating – with half the magnitude of 2011. Thus, increasing the share of women in male-dominated establishments was more decisive for GE bargaining in 2011 than in 2017. On the other side of the distribution, the probability of negotiating in 2017 starts to decline from a lower share of women and with greater magnitude than in 2011.<sup>25</sup>

The literature provides different explanations for both the increase in the lower part and the decrease in the upper part of the distribution. These explanations are linked either to the overall share of women in the workforce or to the share of women among employee representatives. Indeed, the increased interest for women’s issues at the bargaining table may be just linked to their increasing share in the workforce – *i.e.* the share of women in the workforce is now large enough for their working conditions to be discussed – or may also result from their greater influence at the bargaining table through their greater representation among employee representatives. The decline in GE bargaining above a certain share of women may come from a reduced interest for equal opportunities between men and women when the latter are largely over-represented in the workforce. This decline may also be linked to the lower propensity to negotiate of women (see [Exley et al. 2020](#)), who are likely to be the majority among employee representatives. To disentangle this specific role of female representatives from the overall influence of a greater female presence in the workforce, we then investigate the effect of the share of female representatives on the likelihood to initiate negotiations on GE.

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25. Transitions from the 6th decile-threshold are each associated to a decrease in the probability of negotiating in 2017, while only the transition from the 8th to the 9th decile-threshold is associated to a significant decrease in the probability of negotiating in 2011

## The role of female representatives

**Table 2** – The influence of the share of female reps on the probability of negotiating on GE

	2011	2011	2011	2017	2017	2017
	(1)	(2)	(3)	(1)	(2)	(3)
ShareOfFemaleReps	-0.053 (0.131)	0.390 (0.396)	0.216 (0.444)	-0.182 (0.146)	1.035* (0.433)	1.156* (0.461)
ShareOfFemaleReps <sup>2</sup>	–	-0.451 (0.387)	-0.461 (0.303)	–	-1.222** (0.435)	-1.220*** (0.308)
First-stage residual	–	–	0.194 (0.349)	–	–	-0.129 (0.364)
Observations	2,417	2,417	2,417	3,048	3,048	3,048

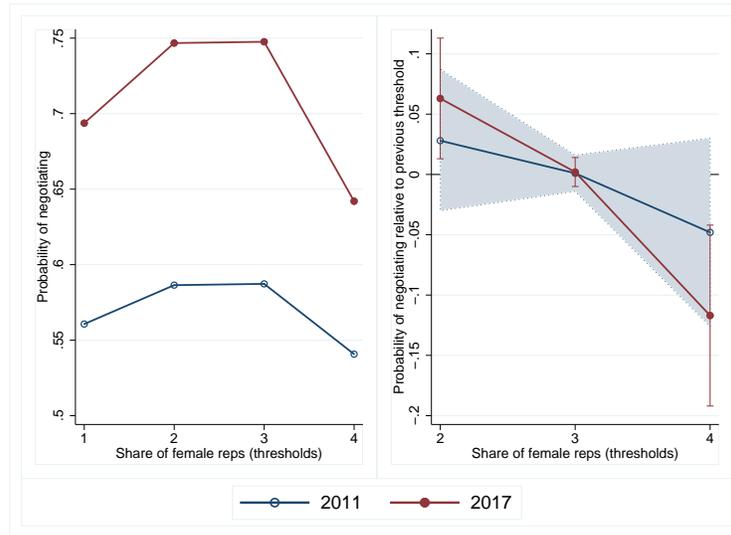
Notes: Estimates weighted using establishment weights provided in the REPNSE survey. Robust standard errors and bootstrapped standard errors (200 replications) for the 2SRI estimator in column (3) are given in parentheses. All regressions include the set of controls defined in Section 5.

We report in Table 2 the coefficient estimates associated to the share of female representatives when explaining the probability of negotiating on GE. For each period, the specification in column (1) relies on the assumptions that the share of female representatives is exogenous and has a linear effect on the probability of negotiating. Column (2) adds the quadratic form of the share of female reps, as in Equation 1, to possibly take into account its non-linear effect on the probability of negotiating. Column (3) contains coefficient estimates from Equation 6, including the residual from the first-stage equation (5) to address potential biases from unobserved heterogeneity and reverse causation.<sup>26</sup> The coefficient associated to this residual is non-significant in both periods, implying that the specification in column (3) is not relevant. In 2017 the coefficient on the quadratic term is negative while the coefficient on the share of female reps is positive (see column (2)), suggesting that the share of female reps has a positive but decreasing effect on the probability of negotiating – as the share of women. In 2011 none of the coefficients reported in column (1) and (2) is significant, suggesting that the probability of negotiating on GE is not affected by the share of female reps over this period.

As for the share of women, we then compute the predicted probabilities at the different thresholds of the 2017 distribution of the share of female reps, as defined in Section 4, to get a better representation of its nonlinear effect (see Figure 7, left-hand side panel). The probability of negotiating follows an inverted-U shape depending on the share of female reps especially in 2017, the curve being rather flat in 2011. It is increasing between 0% and 33% of female reps, remaining constant up to 50% of female reps and then decreasing to reach its minimum for 100% of female reps. In the

26. For each period, we use as instrument the industry-level share of female reps (without the establishment in question), which is strongly correlated with the establishment-level share of female reps but not correlated with the dependent variable indicating negotiations on GE, as shown in Table B.2. We report at the top of Table B.2 the coefficient associated to this instrumental variable when included in the first-stage equation (see the left side) and in the second-stage equation (see the right side).

**Figure 7** – The influence of the share of female reps on the probability of negotiating on GE



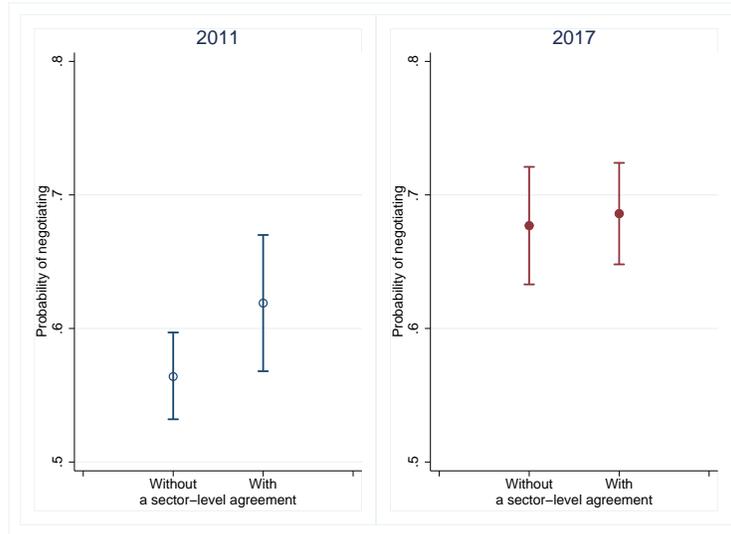
Notes : Estimates weighted using establishment weights provided in the REPOSE survey. Threshold values on the x-axis correspond to the following percentages : 1: 0%, 2: 33%, 3: 50%, 4: 100%. All regressions include the set of controls defined in Section 5.

right-hand side panel of Figure 7, we report changes in probability resulting from the transition from one threshold to another as well as the corresponding 95% confidence intervals. The latter confirm the flat curve in 2011, as all include zero, while they support in 2017 the increasing probability in the first third and the decreasing probability in the second half of the distribution. While the 2017 curve mimics the curve obtained for the share of women over the same period, the 2011 curve does not replicate the increase in probability found on the first decile-thresholds of the share of women (see Figure 6). This suggests that the increased interest for women’s issues at the bargaining table along the share of women is not specifically due to the influence of female reps. While existing literature has focused on the role of female negotiators in collective bargaining outcomes, we show that the weight of women in the workforce is already affecting the start of negotiations on GE.

### Heterogeneity depending on the coverage by an industry-level agreement

The significant decrease in the probability of negotiating on GE found in 2017 in highly feminized establishments is at first sight surprising. With the introduction of sanctions against non-compliant establishments, we could expect a flatter curve in 2017, that would imply a lower dependence of GE bargaining on the gender composition. Instead, the decline in the probability of negotiating is further accentuated at the top of the distribution in 2017. In fact, the probability of negotiating has less increased in this part than in the rest of the distribution (see Figure 6 and Figure 7). This implies that a larger proportion of highly feminized establishments would have taken the risk of being financially sanctioned rather than negotiating an agreement. Given the legislative changes that have occurred each year during this period in the area of collective bargaining, we believe that

**Figure 8** – Predicted probability of negotiating on GE depending on the coverage by an industry-level agreement on GE



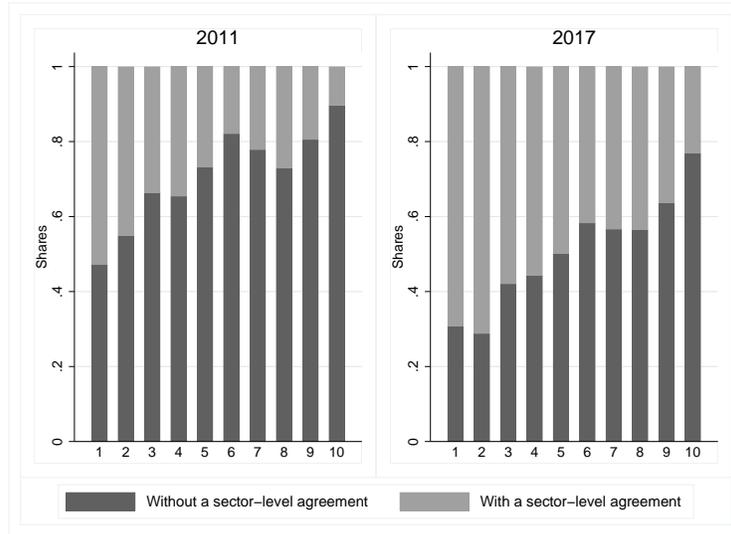
Notes : Predictions from regressions including the set of controls defined in Section 5 and weighted using establishment weights provided in the REPOSE survey. 95% confidence interval around each point estimate. All regressions include the set of controls defined in Section 5.

some establishments have not bargained on GE because of uncertainty as to the level of bargaining that would bring them into compliance with the law. Thus, rather than negotiating locally, several establishments may have chosen to apply an industry-level agreement – thereby believing to comply with the law. This behavior is likely to be more prominent in highly feminized establishments as they operate in industries where firm-level bargaining is traditionally less established.<sup>27</sup> In this section, we investigate whether the relatively low probability of negotiating on GE in highly feminized establishments may come from a greater use of industry-level agreements on this topic, by analyzing how the effect of the share of women varies depending on whether the establishment is covered by an industry-level agreement or not.

We first examine in Figure 8 whether establishments covered by an industry-level agreement on GE are less likely than other establishments to negotiate on this topic. In both periods, we find that the probability of negotiating on GE is not significantly different between establishments covered and those not-covered by an industry-level agreement. Although there is no difference on average between these two categories of establishments, we may still expect differences according to the share of women. Indeed, the probability of negotiating may differ between industry-level covered and uncovered establishments on specific deciles of the share of women. Figure 9 indicates that the proportion of establishments covered by an industry-level agreement differs strongly from a decile to another in both periods. The proportion of covered establishments decreases with the share of

27. In particular, a large proportion of highly feminized establishments operate in the industry of Human health and social action, as shown in Figure A.6 in appendix.

**Figure 9** – Distribution of deciles of the share of women depending on the coverage by an industry-level agreement on GE

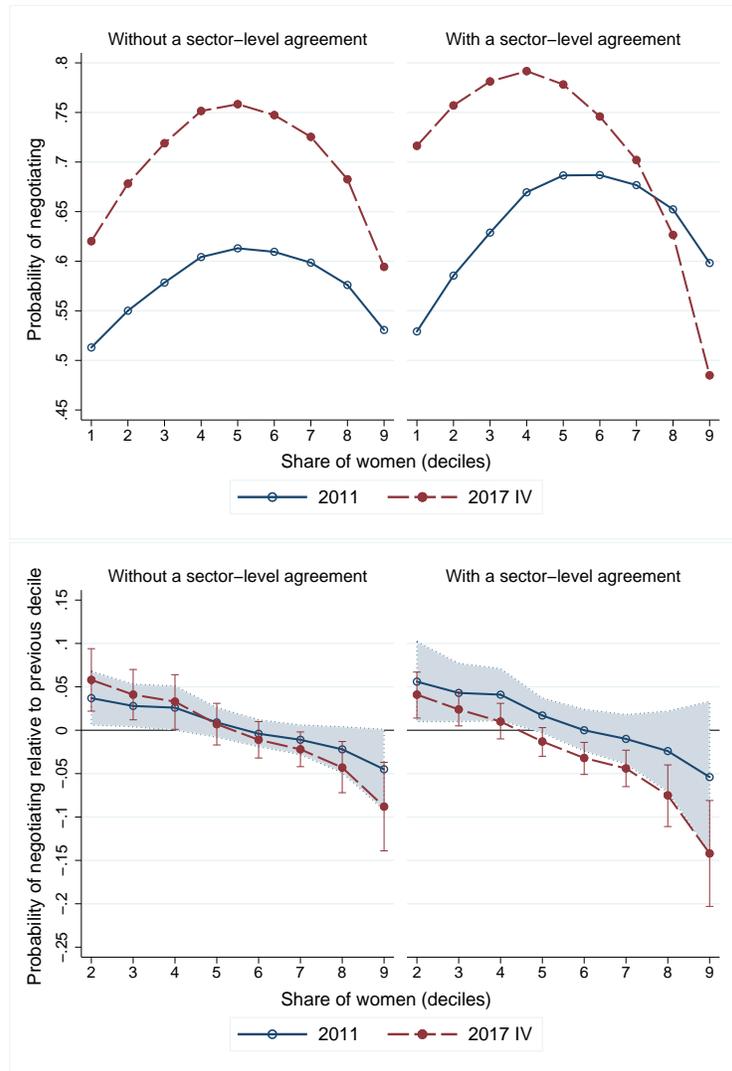


Note : Percentages were computed using establishment weights provided in the REPOSE survey.

women. In 2017, around 20% of the 10% most feminized establishments were covered by an industry-level agreement, against almost 70% of the 10% least feminized establishments. However, while the proportion of covered establishments has increased in all deciles, it has particularly increased in the top deciles. Indeed, this proportion has increased by 124% in the highest decile of the share of women when the average increase is around 80%. Thus, despite the lower weight of industry-level agreements in the top deciles of the share of women, their particularly strong increase in this part of the distribution may contribute to explaining the sharper decline in the probability of negotiating in 2017.

We further examine whether the effect of the share of women differs according to the coverage of an industry-level agreement. To do this, we add in the previous regression an interaction term between the share of women and a dummy variable indicating the industry-level coverage. This interaction term allows us to estimate separately the effect of the share of women on the probability of negotiating according to whether or not establishments are covered by an industry-level agreement on GE. We report in Figure 10 the predicted probabilities of negotiating at the different deciles of the share of women among industry-level covered establishments (right-hand side panel) and uncovered establishments (left-hand side panel). The most striking fact is the larger decrease in 2017 in the probability of negotiating for high shares of women among industry-level covered establishments than among uncovered establishments. Unlike in 2011, in 2017 the decrease in this part of the distribution is significant whether or not an agreement exists at the industry-level, but it is much stronger in covered establishments. This is in line with our guess that highly feminized establishments have been more likely to apply an industry-level agreement on GE instead of negotiating a local agreement.

**Figure 10** – The influence of the share of women on the probability of negotiating on GE depending on the coverage by an industry-level agreement on GE



Notes : Estimates weighted using establishment weights provided in the REPOSE survey. “IV” estimates refer to estimates obtained using the 2SRI estimator. IV estimates are preferred to probit estimates in 2017 given the non-zero coefficient on the first-stage residual in Table 1, column (8). All regressions include the set of controls defined in Section 5.

However, this specific behavior of highly feminized establishments does not explain totally their lower probability of negotiating in 2017, given the decrease also found in non-covered establishments. Therefore, this decrease can also be partly attributed to the gender composition of the workforce.

## 6.2 On the outcome of negotiations on GE

Once negotiations on GE have been initiated, do women play a role in the outcome of these negotiations? Do they facilitate the signing of an agreement on this issue? To answer that, we analyze in this section how variations in the total share of women in bargaining establishments affect the probability of reaching a text on gender equality, which can either be an agreement or an action plan. This distinction only makes sense in 2017, after the action plan has been legally defined as an alternative to the agreement for establishments to comply with the law. As 2011 precedes the law, texts on GE over the corresponding period include almost exclusively agreements.

### The influence of the gender mix

**Table 3** – The influence of the share of women on the probability of filing a text on GE

	2011 (1)	2011 (2)	2011 (3)	2011 (4)	2017 (1)	2017 (2)	2017 (3)	2017 (4)
ShareOfWomen	-1.195 (0.989)	-1.572 (0.989)	-1.303 (0.680)	-1.732* (0.681)	0.332 (0.810)	0.224 (0.831)	0.346 (0.539)	0.238 (0.539)
ShareOfWomen <sup>2</sup>	1.098 (1.057)	1.568 (1.060)	1.137 (0.732)	1.625* (0.732)	-0.176 (0.854)	-0.156 (0.861)	0.022 (0.606)	-0.023 (0.606)
First-stage residual	–	–	1.504 (1.110)	1.957 (1.114)	–	–	-1.906** (0.715)	-1.443* (0.708)
Observations	1684	1684	1684	1684	2574	2574	2574	2574
Weights	Standard	CF	Standard	CF	Standard	CF	Standard	CF

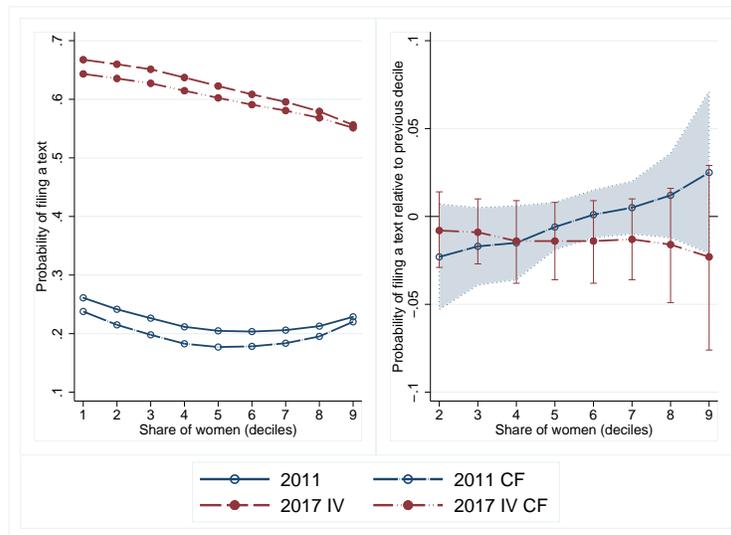
Notes: Estimates weighted using establishment weights provided in the REPOSE survey. Robust standard errors and bootstrapped standard errors (200 replications) for the 2SRI estimator in columns (3)-(4) are given in parentheses. All regressions include the set of controls defined in Section 5.

We first assess how the share of women affects the probability of filing a text on GE – agreements and action plans combined. Coefficient estimates for both periods are reported in Table 3. For each period, column (1) contains the coefficient on the share of women when assuming it is exogenous and allowing a non-linear effect on the probability of filing a text. Column (2) reports the same specification but using the counterfactual weights, instead of the standard weights provided in the survey, to control for selectivity into bargaining. Columns (3) and (4) add to columns (1) and (2), respectively, the residual from the first-stage equation to address potential biases from unobserved heterogeneity and reverse causation.<sup>28</sup> The coefficient associated to this residual is non-significant in

28. For each period, we use as instrument the lagged share of women, which is strongly correlated with the share of women but not correlated with the dependent variable indicating a text on GE. We report in Table B.1 the coefficient associated to each candidate instrument when included in the first-stage equation (see the left side) and in the second-stage equation (see the right side), with standard weights (see middle part) and with counterfactual weights (see

2011, while it is weakly significant in 2017, implying that this specification is relevant only in 2017. Our preferred specification in 2011 is then that reported in column (2). Although the specification differs between the two periods, the result is the same: the share of women does not affect the probability of filing a text on GE, once negotiations on this issue have been engaged. This result is confirmed in Figure 11, where we report the following predicted probabilities of filing a text for the different deciles of the share of women (see left-hand side panel), changes in probability resulting from the transition from one threshold to another and the corresponding 95% confidence intervals. The latter clearly always include 0, indicating that none of the changes in probability is significantly different from 0. The outcome of negotiations on GE seems thus to be orthogonal to the share of women in the workforce in both periods.

**Figure 11** – The influence of the share of women on the probability of filing a text on GE



Notes : Estimates weighted using establishment weights provided in the REPONSE survey. Decile threshold values on the x-axis correspond to the following percentages : 1: 10.1%, 2: 18%, 3: 25.9%, 4: 37.2%, 5: 47.4%, 6: 56.5%, 7: 64%, 8: 72.8%, 9: 84.3%. IV estimates refer to estimates obtained using the 2SRI estimator. Probit estimates for 2017 are compared with 2017 IV estimates in Figure B.2 in Appendix B. IV estimates are preferred to standard probit estimates given the non-zero coefficient on the first-stage residual in Table 3, column (8). CF means that counterfactual weights were applied to control for selection into the sample of establishments negotiating on GE. All regressions include the set of controls defined in Section 5.

This overall zero effect may hide in 2017 different effects of the share of women depending on the type of text considered. We then investigate how variations in the share of women affect the probability of signing an agreement on the one hand, and the probability of filing an action plan on the other hand. These two outcomes are analyzed jointly with respect to the no-text bargaining situation using the multinomial probit model described in Section 5. Coefficient estimates are reported in Table 4, in the upper part for the probability of signing an agreement and in the lower bottom part). The lagged share of women is preferred as instrument to the industry-level share of women because the latter is significantly correlated with the dependent variable. We chose to select the same instrument in both periods, although the two candidates are valid in 2017, for comparison purposes between the two periods.

part for the probability of filing an action plan. Columns (1) and (2) contain the coefficient on the share of women when assuming it is exogenous, and applying the standard weights and counterfactual weights, respectively. Column (3) adds to column (1) the residual from the first-stage equation, to address potential biases from unobserved heterogeneity and reverse causation. The coefficient on the first-stage residual is weakly significant for both outcomes, implying that specification in column (3) is preferred to specification in column (1). However, the result does not differ between the two specifications: the share of women has no effect either on the probability of signing an agreement or on the probability of filing an action plan. The corresponding predicted probabilities (upper part) and changes in probability from one threshold to another (lower part) reported in Figure 12 confirm that all along the distribution of the share of women, there is no significant variation in the probability of signing an agreement or filing an action plan. Again, the outcome of negotiations on GE seems to be orthogonal to the share of women.

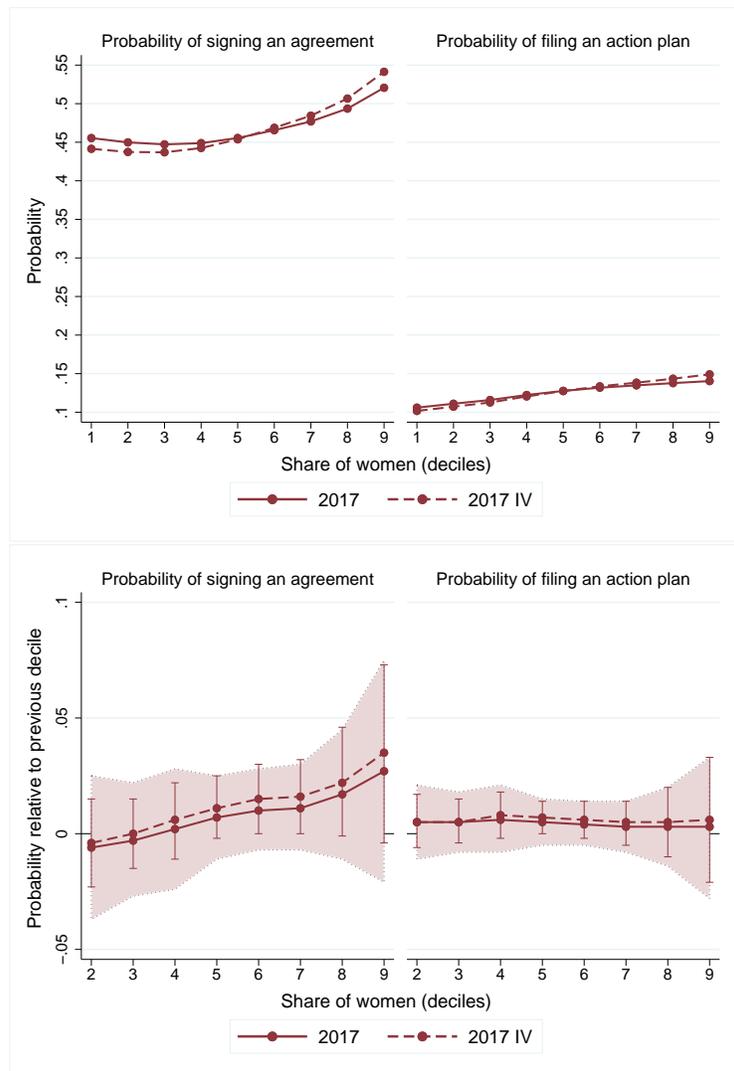
**Table 4** – The influence of the share of women on the probability of signing an agreement / filing action plan on GE (multinomial probit)

	(1)	(2)	(3)
	2017	2017	2017
<i>Dependent variable: Signing an agreement</i>			
ShareOfWomen	-0.460 (1.143)	-0.512 (1.185)	-0.443 (0.773)
ShareOfWomen <sup>2</sup>	1.006 (1.216)	0.829 (1.246)	1.261 (0.840)
First-stage residual	–	–	-2.438* (1.174)
<i>Dependent variable: Filing an action plan</i>			
ShareOfWomen	0.594 (1.734)	0.435 (1.733)	0.636 (1.373)
ShareOfWomen <sup>2</sup>	0.134 (1.838)	0.219 (1.823)	0.422 (1.438)
First-stage residual	–	–	-3.846* (1.668)
Observations	2580	2574	2580
Weights	Standard	CF	Standard

Notes: Estimates weighted using establishment weights provided in the REPONSE survey. Robust standard errors and bootstrapped standard errors (200 replications) for the 2SRI estimator (column 3) are given in parentheses. All regressions include the set of controls defined in Section 5.

While the share of women in the workforce plays a decisive role in initiating negotiations on GE, it seems not to affect the outcome of these negotiations. We investigate in the next section whether and to what extent the share of women among employee representatives plays a more decisive role in the outcome of these negotiations.

**Figure 12** – The influence of the share of women on the probability of signing an agreement / filing an action plan on GE (multinomial probit)



Note : Estimates weighted using establishment weights provided in the REPOSE survey. Decile threshold values on the x-axis correspond to the following percentages : 1: 10.1%, 2: 18%, 3: 25.9%, 4: 37.2%, 5: 47.4%, 6: 56.5%, 7: 64%, 8: 72.8%, 9: 84.3%. All regressions include the set of controls defined in Section 5.

## Role of the share of female employee representatives

**Table 5** – The influence of the share of female reps on the probability of filing a text on GE

	2011	2011	2011	2011	2017	2017	2017	2017
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
ShareOfFemaleReps	-0.661 (0.526)	-0.445 (0.546)	-1.352 (0.764)	-0.988 (0.542)	0.055 (0.484)	0.316 (0.487)	-0.343 (0.654)	-0.038 (0.433)
ShareOfFemaleReps <sup>2</sup>	0.622 (0.523)	0.325 (0.541)	0.521 (0.517)	0.243 (0.433)	0.003 (0.466)	-0.323 (0.470)	-0.019 (0.470)	-0.339 (0.326)
First-stage residual	–	–	0.850 (0.600)	0.668 (0.460)	–	–	0.447 (0.542)	0.390 (0.352)
Observations	1596	1596	1596	1596	2467	2467	2467	2467
Weights	Standard	CF	Standard	CF	Standard	CF	Standard	CF

Notes: Estimates weighted using establishment weights provided in the REPOSE survey. Robust standard errors and bootstrapped standard errors (200 replications) for the 2SRI estimator in columns (3)-(4) are given in parentheses. All regressions include the set of controls defined in Section 5.

We follow with the share of female representatives the same steps as for the share of women in the workforce. Coefficient estimates for both periods are reported in Table 5, using the same specifications as in Table 3. The coefficient associated to the first-stage residual is non-significant in both periods<sup>29</sup>, implying that this specification is not relevant and the specification (2) will be preferred. Whatever the specification used and the period analyzed, the result is the same : the share of female reps does not affect the probability of filing a text on GE, once negotiations on this issue have been engaged. This zero effect is confirmed in Figure B.3 in Appendix B, where we show that changes in the probability of filing a text across the distribution of the share of female reps are not statistically significant.

Again, this zero effect can hide in 2017 different results for the two types of text considered. Using the same empirical strategy as the one followed for the share of women in the workforce, we then investigate how variations in the share of female reps affects the probability of signing an agreement on the one hand, and the probability of filing an action plan on the other hand. Coefficient estimates are reported in Table 6, in the upper part for the probability of signing an agreement and in the lower part for the probability of filing an action plan, using the same specifications as in Table 4 for the share of women. The coefficient on the first-stage residual is (weakly) significant only for the probability of signing an agreement. This implies that specification in column (3) will be preferred to specification in column (1) for this outcome only. As for the share of women, whatever the specification used, the coefficients suggest that each outcome is not affected by the share of female reps. However, the predicted probabilities reported in Figure 13 (upper part) give

29. In both periods, we use as instrument the industry-level share of female reps (without the establishment in question), which is strongly correlated with the establishment-level share of female reps but not correlated with the dependent variable indicating a text on GE, as shown in Table B.2. We report in the middle part and the bottom part of Table B.2 the coefficient associated to the industry-level share of female reps when included in the first-stage equation (see the left side) and in the second-stage equation (see the right side), with standard weights and counterfactual weights, respectively.

a slightly different picture. Indeed, when using the IV specification – corresponding to column (3) in Table 6 –, the probability of signing an agreement declines when passing from one threshold to another (see left-hand side panel) while the probability of filing an action plan shows an increase (see right-hand side panel). The changes in probability and the corresponding 95% confidence intervals reported in the lower part of Figure 13 indicate that only the decrease in the probability of signing an agreement is significantly different from 0. Specifically, when the share of female reps goes from 50% to 100%, the probability of signing an agreement decreases by about 15 pp. There is also a significant decrease in that probability when the share of female reps goes from 33% to 50%, but it is smaller in magnitude (about 6 pp).

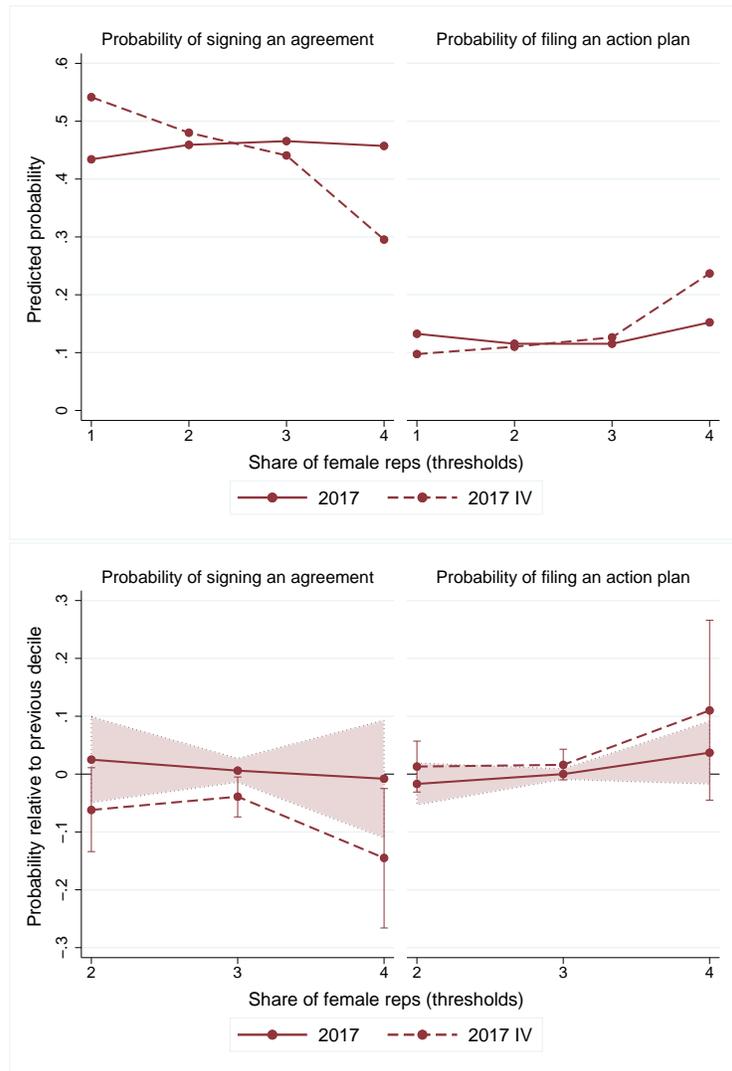
**Table 6** – The influence of the share of female reps on the probability of signing an agreement / filing action plan on GE (multinomial probit)

	(1)	(2)	(3)
	2017	2017	2017
<i>Dependent variable: Signing an agreement</i>			
ShareOfFemaleReps	0.262 (0.683)	0.693 (0.692)	-0.663 (0.556)
ShareOfFemaleReps <sup>2</sup>	-0.121 (0.664)	-0.639 (0.672)	-0.175 (0.443)
First-stage residual	–	–	1.044* (0.444)
<i>Dependent variable: Filing an action plan</i>			
ShareOfFemaleReps	-0.798 (0.883)	-0.904 (0.898)	-0.247 (0.990)
ShareOfFemaleReps <sup>2</sup>	1.053 (0.867)	1.059 (0.885)	1.090 (0.624)
First-stage residual	–	–	-0.634 (0.845)
Observations	2473	2467	2473
Weights	Standard	CF	Standard

Notes: Estimates weighted using establishment weights provided in the REPONSE survey. Robust standard errors and bootstrapped standard errors (200 replications) for the 2SRI estimator (column 3) are given in parentheses. All regressions include the set of controls defined in Section 5.

To sum up, the place of women at the bargaining table has had in recent times an impact on the outcome of firm-level negotiations on GE, which was not the case over 2008-2010, before the recent reforms on GE bargaining. Surprisingly, more women at the bargaining table reduces the likelihood that negotiations on GE lead to an agreement. This does not necessarily imply that a strong female presence at the bargaining table undermines the success of negotiations on GE. Indeed, beyond signing an agreement, the success of negotiations on GE is also assessed by the quality of the agreement, *i.e.* the thickness of gender inequality reduction targets and actions defined to achieve them. The signing of an agreement could be less likely in very feminized bargaining environments, because the demands of the employee representatives for the reduction of gender inequalities are

**Figure 13** – The influence of the share of female reps on the probability of signing an agreement / filing an action plan on GE (multinomial probit)



Notes : Estimates weighted using establishment weights provided in the REPOSE survey. Threshold values on the x-axis correspond to the following percentages : 1: 0%, 2: 33%, 3: 50%, 4: 100%. IV estimates refer to estimates obtained using the 2SRI estimator. CF means that counterfactual weights were applied to control for selection into the sample of establishments negotiating on GE (see section 5.2 for details). All regressions include the set of controls defined in Section 5.

more ambitious and less likely to get employer approval. Thus, agreements in these environments would be less frequent but more effective in addressing inequalities, an interesting hypothesis to test but which is outside the scope of this paper.

## 7 Conclusion

We analyze the influence of the gender mix in initiating collective bargaining on gender equality (GE) in French establishments and, once initiated, how it affects the outcome of these negotiations. Using administrative and survey data for a representative sample of French establishments over two recent periods (2008-2010 and 2014-2016), we show that contexts of gender diversity in the workforce are those that are the most favorable to initiate collective bargaining on GE in both periods. We indeed find that the probability of negotiating increases with the share of women when they are poorly represented and ends up decreasing when women become (strongly) over-represented in the workforce. This non-linear effect is an original result compared to existing evidence in the literature, which describes a single positive effect or no effect. In addition, while existing studies link the bargaining outcome to the gender of negotiators, we show that the gender composition of the workforce plays a role in initiating negotiations which is independent to that associated to the gender composition of employee representatives.

While there has been a general increase in GE bargaining between the two periods, due to financial penalties against firms not complying with the obligation to negotiate, the increase has been relatively more pronounced in male-dominated establishments and almost zero in highly feminized establishments. We show that the situation of the latter can be partly explained by the application of industry-level agreements instead of negotiating a local agreement, given temporary uncertainty on the right bargaining level to comply with law. Indeed, between 2014 and 2016, the law has modified each year the parameters of the French model of negotiated equality. This contributed to the disorientation of the actors and pushed some of them to postpone their negotiations.

When negotiations are undertaken, the likelihood of them leading to an agreement has increased overall with the introduction of financial penalties. However, the chances of reaching an agreement are significantly lower in highly feminized bargaining environments. Only the gender composition of employee representatives plays a role at this stage – not the composition of the workforce – which is consistent with the literature. However, we find a negative influence of the share of female representatives which does not echo results in existing studies.

This last finding leaves open the question of the role of women in the success of negotiations on GE. Indeed, it would be inappropriate to conclude that a greater female presence at the bargaining table undermines the success of negotiations on GE if it reduces the likelihood that an unambitious agreement will be signed in the fight against gender inequalities. Assessing the quality of collective agreements is particularly timely in the field of GE, where agreements are often suspected to be “empty shells”. It is therefore a major challenge for the future to better understand the role of

women in GE bargaining.

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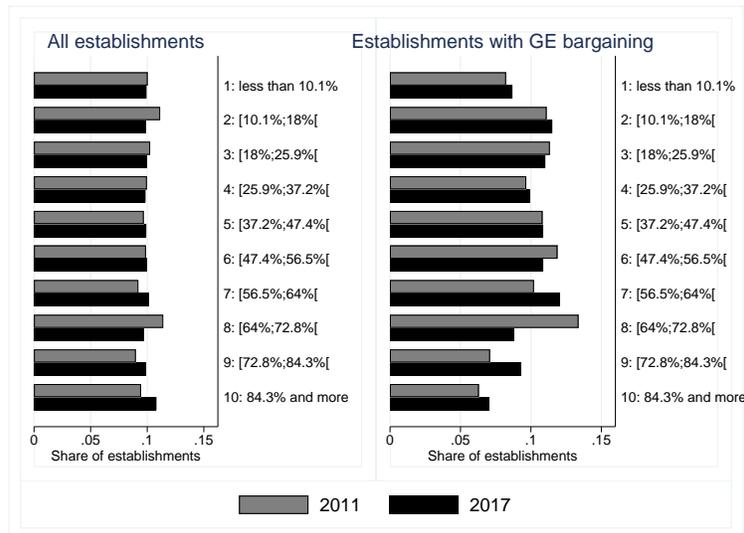
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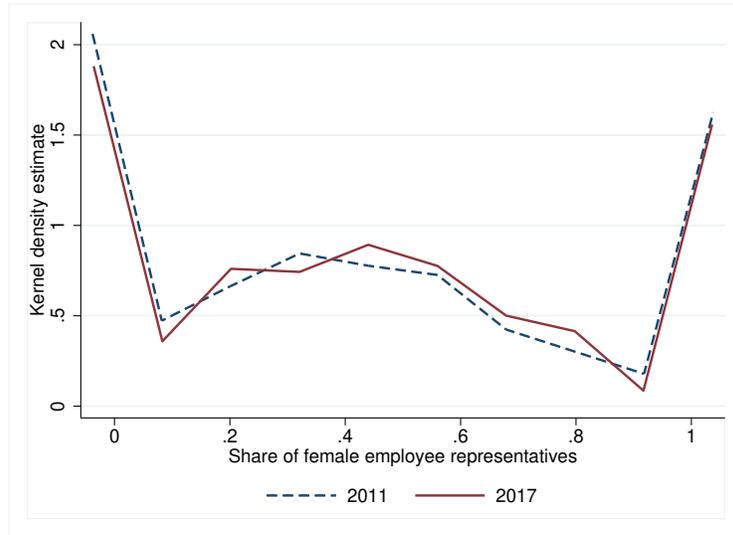
## A Appendix : Descriptive statistics

Figure A.1 – Sample distributions across decile thresholds of the share of women

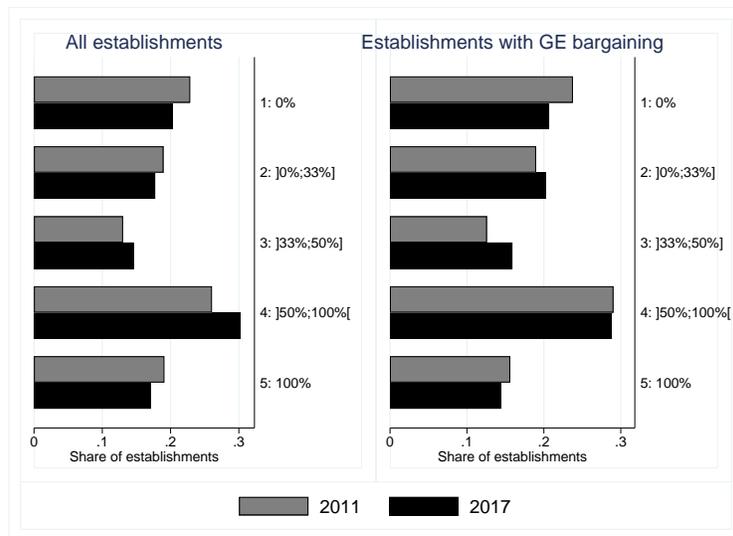


## B Appendix : Additional estimates

**Figure A.2** – Kernel density estimate of the share of female reps



**Figure A.3** – Sample distributions across thresholds of the share of female reps



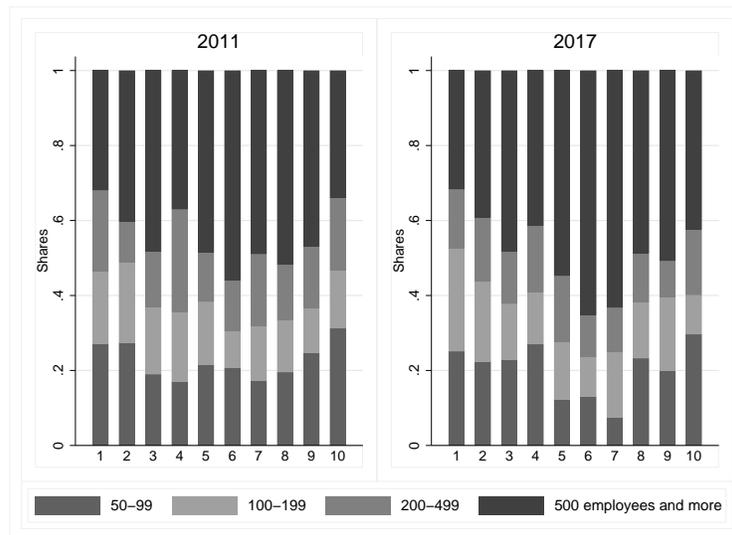
**Table A.1** – Explanatory variables : means and frequencies

Variables	REPONSE 2011	REPONSE 2017
Total share of women	0.454	0.466
Share of female employee representatives	0.434	0.446
Presence of union representatives	0.780	0.747
Belonging to a group	0.578	0.645
Publicly traded	0.044	0.272
<b>Legal category</b>		
1. Simplified joint-stock companies	0.000	0.000
2. Other commercial companies	0.749	0.771
3. Public companies	0.035	0.014
4. Private law groupings ( <i>e.g.</i> associations)	0.186	0.181
5. Other organizations	0.030	0.034
<b>Firm size</b>		
50 – 99 employees	0.226	0.204
100 – 199 employees	0.161	0.166
200 – 499 employees	0.170	0.146
500 employees and more	0.444	0.485
<b>Industry*</b>		
B - Extractive industries	0.006	0.002
C - Manufacturing	0.142	0.125
D - Electricity, gaz, steam, aircon	0.011	0.008
E - Water production and distribution	0.013	0.015
F - Construction	0.050	0.059
G - Trading	0.219	0.213
H - Transport and storage	0.095	0.077
I - Accommodation and catering	0.047	0.047
J - Information and communication	0.028	0.038
K - Finance and insurance	0.054	0.046
L - Real estate activities	0.008	0.022
M - Specialized, scientific and technical activities	0.054	0.068
N - Administrative and support services	0.051	0.048
P - Teaching	0.029	0.027
Q - Human health and social action	0.156	0.182
R - Arts, entertainment and recreation	0.006	0.007
S - Other services	0.020	0.014
U - Extra-territorial activities	0.120	0.000
Observations	2,753	3,361

Note : Figures are obtained using establishments weights provided in the REPONSE survey.

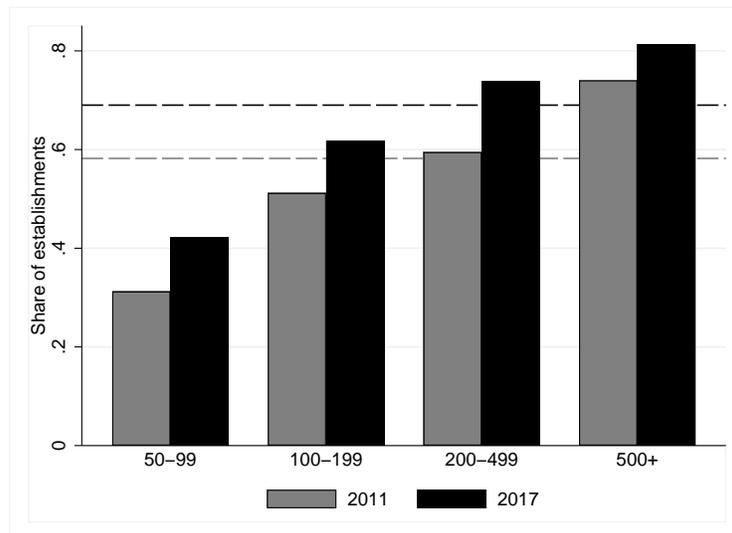
\* Sections from the French nomenclature of activities (NAF).

**Figure A.4** – Firm-size distribution of the groups formed by share of women



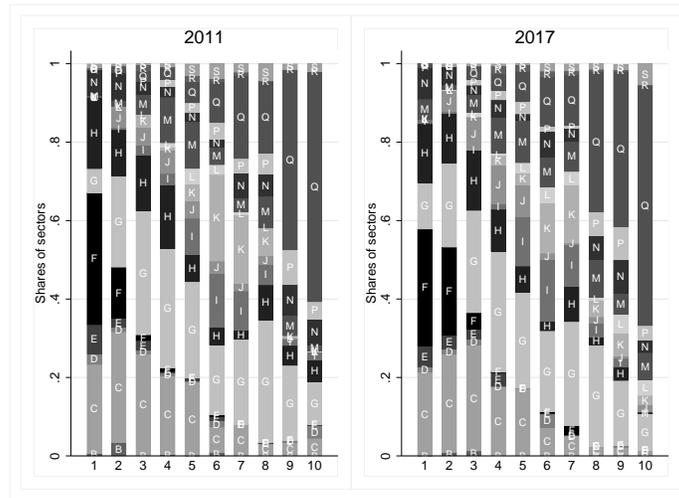
Note : Establishments from firms with 50 or more employees with employee representatives. Percentages were computed using the firm weight variable provided in the REPOSE survey.

**Figure A.5** – Proportion of establishments negotiating on gender equality by firm size



Notes: Establishments from firms with 50 or more employees with employee representatives. Percentages were computed using the firm weight variable provided in the REPOSE survey. The horizontal gray (black) dashed line indicates the average proportion of firms negotiating in 2011 (2017).

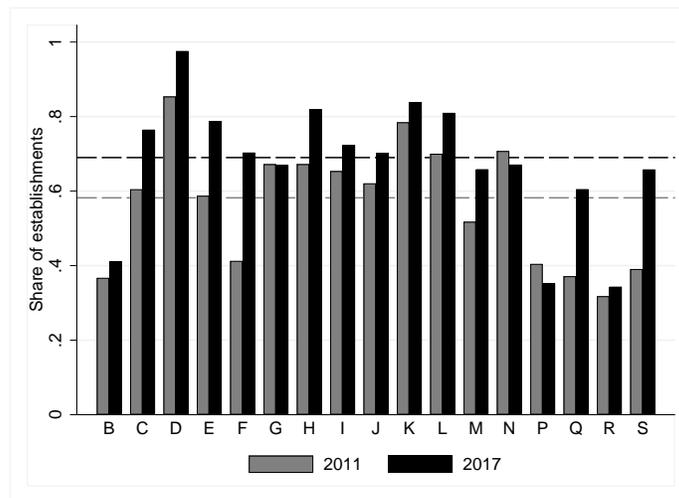
**Figure A.6** – Industry distribution of the groups formed by share of women



Note : Establishments from firms with 50 or more employees with employee representatives. Percentages were computed using the firm weight variable provided in the REPOSE survey.

Industries : B - Extractive industries, C - Manufacturing, D - Electricity, gaz, steam, aircon, E - Water production and distribution, F - Construction, G - Trade, H - Transport and storage, I - Accommodation and catering, J - Information and communication, K - Finance and insurance, L - Real estate activities, M - Specialized, scientific and technical activities, N - Administrative and support services, P - Teaching, Q - Human health and social action, R - Arts, entertainment and recreation, S - Other services, U - Extra-territorial activities.

**Figure A.7** – Proportion of establishments negotiating on gender equality by industry



Notes : Establishments from firms with 50 or more employees with employee representatives. Percentages were computed using the firm weight variable provided in the REPOSE survey. The horizontal gray (black) dashed line indicates the average proportion of firms negotiating in 2011 (2017).

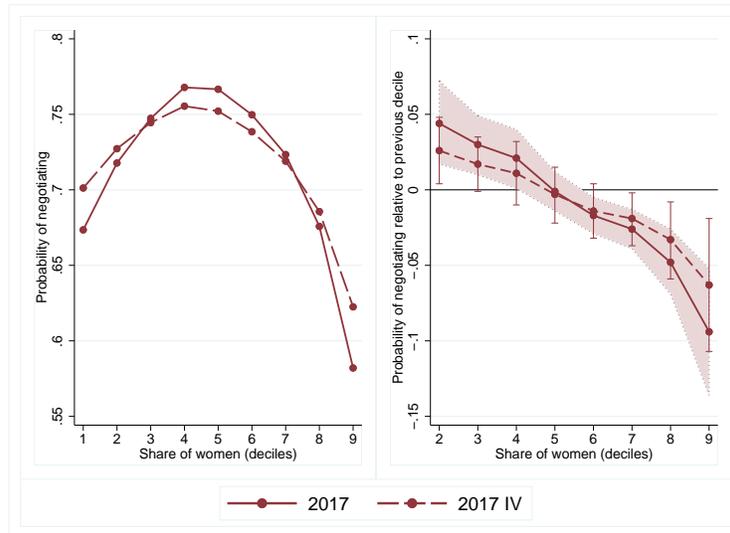
Industries : B - Extractive industries, C - Manufacturing, D - Electricity, gaz, steam, aircon, E - Water production and distribution, F - Construction, G - Trade, H - Transport and storage, I - Accommodation and catering, J - Information and communication, K - Finance and insurance, L - Real estate activities, M - Specialized, scientific and technical activities, N - Administrative and support services, P - Teaching, Q - Human health and social action, R - Arts, entertainment and recreation, S - Other services, U - Extra-territorial activities.

**Table B.1** – Instrument strength and validity for the share of women

	First stage				Second stage			
	2011 (1)	2011 (2)	2017 (3)	2017 (4)	2011 (5)	2011 (6)	2017 (7)	2017 (8)
<i>Dependent variable:</i>	<i>ShareOfWomen</i>				<i>NegotiatingOnGE</i>			
LagShareOfWomen	0.958*** (0.015)	–	0.917*** (0.019)	–	-2.722** (1.001)	–	0.234 (0.915)	–
IndustryShareOfWomen	–	0.817*** (0.038)	–	0.834*** (0.039)	–	-0.467 (0.406)	–	-0.673 (0.492)
Observations	2562	2562	3199	3199	2562	2562	3199	3199
Weights	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
<i>Dependent variable:</i>	<i>ShareOfWomen</i>				<i>FilingATextOnGE</i>			
LagShareOfWomen	0.970*** (0.008)	–	0.909*** (0.017)	–	-1.459 (1.352)	–	1.724 (1.037)	–
IndustryShareOfWomen	–	0.807*** (0.041)	–	0.796*** (0.040)	–	-1.420** (0.530)	–	0.850 (0.460)
Observations	1684	1684	2580	2580	1684	1684	2580	2580
Weights	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
<i>Dependent variable:</i>	<i>ShareOfWomen</i>				<i>FilingATextOnGE</i>			
LagShareOfWomen	0.967*** (0.009)	–	0.918*** (0.015)	–	-1.892 (1.369)	–	1.325 (1.099)	–
IndustryShareOfWomen	–	0.792*** (0.042)	–	0.772*** (0.045)	–	-1.327* (0.521)	–	0.602 (0.476)
Observations	1684	1684	2574	2574	1684	1684	2574	2574
Weights	CF	CF	CF	CF	CF	CF	CF	CF

Notes: Estimates weighted using establishment weights provided in the REPOSE survey. Robust standard errors are given in parentheses. All regressions include the set of controls defined in Section 5.

**Figure B.1** – The influence of the share of women on the probability of negotiating on GE



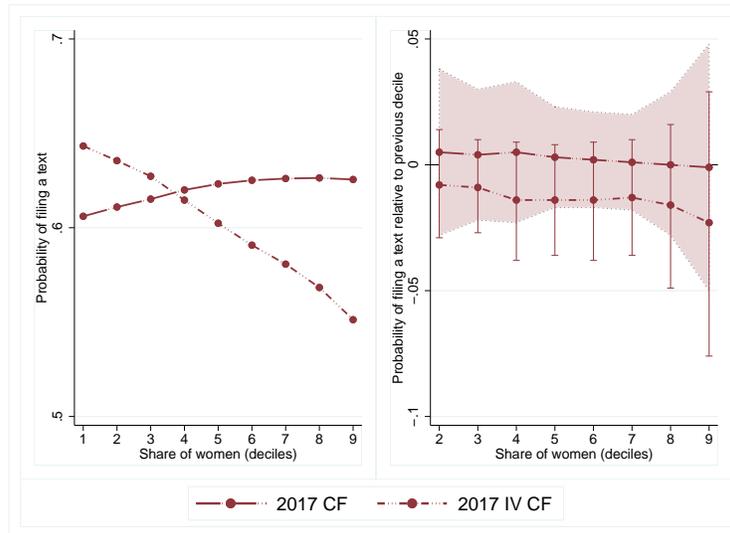
Notes : Estimates weighted using establishment weights provided in the REPOSE survey. Decile threshold values on the x-axis correspond to the following percentages : 1: 10.1%, 2: 18%, 3: 25.9%, 4: 37.2%, 5: 47.4%, 6: 56.5%, 7: 64%, 8: 72.8%, 9: 84.3%. “IV” estimates refer to estimates obtained using the 2SRI estimator. By default, estimates are obtained using a probit model. All regressions include the set of controls defined in Section 5.

**Table B.2** – Instrument strength and validity for the share of female reps

	First stage		Second stage	
	(1)	(2)	(3)	(4)
	2011	2017	2011	2017
<i>Dependent variable:</i>	<i>ShareOfFemaleReps</i>		<i>NegotiatingOnGE</i>	
IndustryShareOfFemaleReps	0.676*** (0.090)	0.694*** (0.100)	-0.483 (0.398)	0.075 (0.419)
Observations	2417	3048	2417	3048
Weights	Standard	Standard	Standard	Standard
<i>Dependent variable:</i>	<i>ShareOfFemaleReps</i>		<i>FilingATextOnGE</i>	
IndustryShareOfFemaleReps	0.832*** (0.107)	0.755*** (0.111)	-0.789 (0.533)	-0.393 (0.440)
Observations	1596	2473	1596	2473
Weights	Standard	Standard	Standard	Standard
<i>Dependent variable:</i>	<i>ShareOfFemaleReps</i>		<i>FilingATextOnGE</i>	
IndustryShareOfFemaleReps	0.814*** (0.111)	0.698*** (0.112)	-0.643 (0.520)	-0.268 (0.454)
Observations	1596	2467	1596	2467
Weights	CF	CF	CF	CF

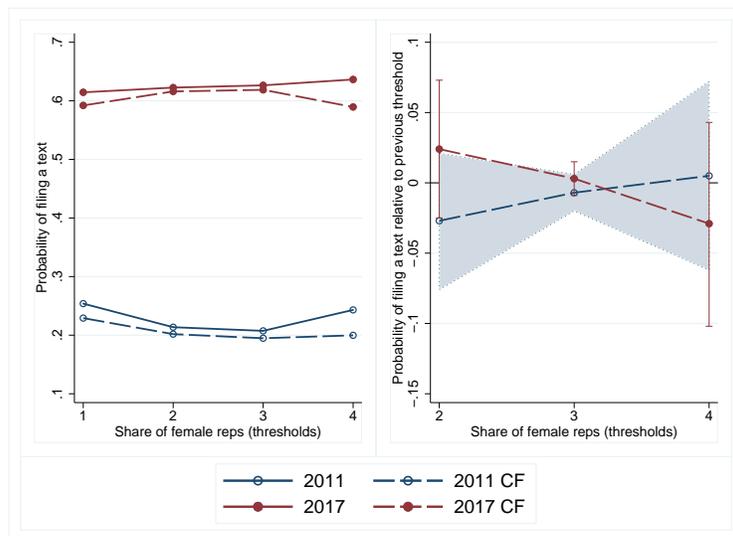
Notes: Estimates weighted using establishment weights provided in the REPOSE survey. Robust standard errors are given in parentheses. All regressions include the set of controls defined in Section 5.

**Figure B.2** – The influence of the share of women on the probability of filing a text on GE in 2017



Notes : Estimates weighted using establishment weights provided in the REPOSE survey. Decile threshold values on the x-axis correspond to the following percentages : 1: 10.1%, 2: 18%, 3: 25.9%, 4: 37.2%, 5: 47.4%, 6: 56.5%, 7: 64%, 8: 72.8%, 9: 84.3%. “IV” estimates refer to estimates obtained using the 2SRI estimator. By default, estimates are obtained using a probit model. CF means that counterfactual weights were applied to control for selection into the sample of establishments negotiating on GE. All regressions include the set of controls defined in Section 5.

**Figure B.3** – The influence of the share of female reps on the probability of filing a text on GE



Notes: Estimates weighted using establishment weights provided in the REPOSE survey. Threshold values on the x-axis correspond to the following percentages : 1: 0%, 2: 33%, 3: 50%, 4: 100%. CF means that counterfactual weights were applied to control for selection into the sample of establishments negotiating on GE (see section 5.2 for details). All regressions include the set of controls defined in Section 5.

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