Can Female Directors Shrink the Gender Gap? Evidence from France*

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Abstract: This paper investigates whether the gender composition of corporate boards impacts gender gaps in representation and wages throughout the firm's hierarchy, and whether this leads to a trade-off between equity and economic efficiency. We construct a comprehensive panel of directors for all French firms from 2008 to 2021, and exploit a 2010 gender quota as an exogenous shock to board composition. In response to the quota, publicly listed firms increase their female board share from 11% to 42% while large non-listed firms exhibit a much more modest rise. Exploiting firms' pre-quota listing status in difference-in-differences and IV strategies, we find that female representation on the board significantly improves labor outcomes for women: an increase in the female board share leads to (i) a rise in the representation of women among top earners and a higher likelihood that a woman becomes CEO ; and (ii) a reduction in gender wage gaps throughout the wage distribution. We show that these gains for women do not come at the expense of the firm's financial performance. While we observe an increase in labor costs, overall profitability remains unaffected. Finally, we identify factors that may explain the effectiveness of female directors. Boards with higher female representation are more likely to use their CEO compensation-setting power to advance gender equality. Our evidence also suggests that the impact of female directors may be enhanced by their past top executive experience and access to key board committees.

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Introduction

Gender imbalances are prevalent in the economy, both in upper management and the broader workforce. Women remain heavily under-represented in corporate leadership: in 2023, they accounted for only 16% of the CFOs and 7% of the CEOs of large companies in the United States and Europe (Deloitte, 2023). Moreover, the gender wage gap ranges from 11% at the bottom decile to 20% at the top decile in OECD countries (OECD, 2022).

Over the past two decades, investors, business leaders and policymakers have pushed for higher female representation on corporate boards, presenting it as a crucial step toward addressing these disparities.[1] In the US, investor-led initiatives, such as the 2017 "Fearless Girl" campaign, have increased pressure on firms to appoint more female directors. In Europe, gender board quotas have become widespread, beginning with Norway in 2003 and culminating in a European Union-wide quota in 2022.[2] As a result, women held about 30% of board seats in large US and European firms in 2023, up from 15% in 2010.

In this paper, we investigate whether increasing female representation on boards can indeed improve gender equality firm-wide, and, if so, whether there is a trade-off between equity and economic efficiency. More specifically, we take advantage of a gender quota on French corporate boards to address two questions: first, does the female board share impact gender gaps in representation and wages throughout the firm's hierarchy? Second, is this achievable without hurting the firm's performance?

A key finding of this paper is to provide the first evidence that a larger female board share can significantly improve gender equality, by increasing female representation among top earners and reducing gender wage gaps throughout the wage distribution. While prior literature has leveraged board quotas to examine the impact of the female board share on related outcomes in Norway (Bertrand et al., 2019) and in Italy (Maida and Weber, 2022), it has primarily focused on female representation in non-board leadership roles, and has consistently found no significant effects. However, the specificities of both contexts may have limited the statistical power of the analysis of these outcomes,[3] thereby warranting further exploration in a different setting.

[1] For instance, Deloitte's Chair declared in 2019 that "*boards are in a position to reset the tone at the top when it comes to diversity by making gender parity a priority throughout the entire organization and holding leadership accountable to make progress*," while the 2021 Sustainability Yearbook of S&P Global underlined that "*having more women on the board will have trickle-down effects on the rest of the workforce.*" A key argument of the European Commission to promote the quota was that "*a higher share of women on company boards has a positive impact on closing both the gender employment gap and the gender pay gap*" (Directive 2022/2381).

[2] Norway (2003), France (2010), Iceland (2010), Italy (2011), Belgium (2012), Denmark (2012), Germany (2015), and Spain (2023). In the US, California implemented a quota in 2018 (since overturned in court), and Washington in 2020.

[3] In Norway, a highly gender-equal country (it has constantly ranked 2nd on the Global Gender Gap Ranking since its inception in 2006), room for improvement in gender equality may have been limited. In Italy, the staggered implementation of the quota led Maida and Weber (2022) to exploit a variation in the female board share that may have been too small to detect any effects.

Three main factors make our setting ideally suited for this investigation. First, the gender quota, introduced in 2010, mandated that targeted firms increase the proportion of women on their boards to 40% by 2017. This led to a sharp rise in female board representation of about 30 percentage points relative to the pre-quota average.[4] Second, France exhibits substantial gender wage gaps across the earnings distribution, with a 12% median gap and a 20.4% gap at the top decile in 2022 (OECD, 2023), and ranks 40th out of 146 countries in the Global Gender Gap Ranking in 2023.[5] This indicates considerable scope for improving gender equality in the labor market. Third, in France, similarly to the US, corporate boards play a direct role in shaping firm strategy. This likely strengthens directors' ability to influence corporate policies and practices, particularly those related to gender equality.

This paper presents two additional key findings beyond the impact on gender equality. First, the observed gains for women do not come at the expense of firms' economic performance: while we observe an increase in labor costs, overall profitability remains unaffected. Second, we identify several factors that help explain the effectiveness of female directors in our context. We show that boards with higher female representation are more likely to tie the CEO compensation to gender equality goals, leading to stronger reductions in gender gaps in firms that implement these incentives. Moreover, female directors appointed after the quota tend to have prior top executive experience and greater access to key board committees, thereby likely enhancing their legitimacy and influence within the boardroom.

To conduct our investigation, we leverage information from three data sources. The first is a matched employer-employee dataset with comprehensive coverage of the French formal private sector. The second is a comprehensive firm panel with detailed accounting and financial information. The third is a panel of directors that we compiled by exploiting mandatory reporting on changes in directors and CEOs. This allows us to track the board composition of all firms from 2008 to 2021, including non-listed companies.

The main challenge in estimating a causal effect is the endogeneity of director selection, as firms that tend to appoint women to their boards may systematically differ from those that do not. Our source of exogenous variation is the quota passed in 2010, which initially applied to two groups: (i) all listed firms, regardless of size, and (ii) non-listed firms with more than 500 employees and more than €50 million in either turnover or net assets. However, the absence of monitoring by a government agency responsible for identifying the firms subject to the quota or collecting information on their board composition results in significantly different compliance incentives between these two groups. Indeed, listed firms must publish annual proxy statements with detailed board composition, thereby making it easy to identify non-compliers. By contrast,

[4] By contrast, the quota-induced variation exploited for identification is substantially smaller in Italy (11 percentage points) (Maida and Weber, 2022) and in Norway (20 percentage points) (Bertrand et al., 2019).
[5] Global Gender Gap Report 2023.

the precise board composition of non-listed firms is much harder to determine, as is whether they are even subject to the quota.[6]

We leverage the difference in pre-quota compliance incentives in two complementary empirical approaches: a Difference-in-Differences (DiD) and an Instrumental Variable (IV) strategy. With high incentives to comply, firms listed in 2009 (i.e., the pre-quota year) form our treatment group (henceforth "listed firms"), and we use the 2009 listing status as an instrument. By contrast, non-listed firms satisfying the quota requirements in 2009 constitute a valuable control group (henceforth "large non-listed firms"). While having ex-ante weak incentives for compliance, these firms are more comparable to listed firms than small non-listed firms, thereby reducing the risk of omitted variable bias.

Our data shows a strong first stage, i.e., that these two groups indeed reacted very differently. Listed firms quadrupled their female board share, from 11.3% in 2009 to 42.3% in 2021. By contrast, large non-listed firms exhibited a more modest rise, from 16.7% to 27.6% over the same period. These differences in implementation are also reflected in compliance rates: by 2021, 80% of listed firms had met the quota, compared to only 35% of large non-listed firms.

We conduct a series of robustness checks to confirm that the assumptions needed for identification are satisfied. First, we verify that listed and large non-listed firms were not on different time trends prior to the quota. Second, we ensure that large non-listed firms did not become less pro-women after 2010, and that our results are not driven by an increase in the gender gap among them but rather by a larger reduction among listed firms. Third, we provide evidence that listed firms did not have additional incentives to reduce the gender gap after 2010 beyond their female board share.

Our first key finding reveals that a larger female board share can improve gender equality firm-wide. First, it leads to increasing female representation at the highest corporate echelons. To provide a sense of magnitude, a 30 percentage point rise in the female board share (the average increase among treated firms) results in a 5.8 percentage point increase in the likelihood of having a female CEO, effectively doubling the likelihood observed in 2009. Additionally, the representation of women among top earners rises substantially: the fraction of women among employees whose earnings are above the 99th, 90th and 75th percentiles increases by 30%, 11%, and 4% respectively. The mitigation of this effect lower down the earnings ladder is not

[6] A 2021 review of the quota by the Prime Minister's Office tellingly acknowledges its "*inability to identify all the companies subject to the quota and the lack of comprehensive oversight.*" (Haut Conseil à l'Egalité entre les Femmes et les Hommes, *10 ans de la loi Copé-Zimmermann*, January 2021). Crucially, this suggests the law lacks proper enforcement. Relevant information on board composition is available but scattered, making it challenging to track the targeted firms effectively without considerable effort. For instance, non-listed firms do not have to disclose their financial statements publicly, making it hard to know if they meet the criteria, but detailed financial information is included in one of the administrative datasets we use. They do not have to disclose their board composition either, but have to report changes (appointments and departures). This makes it possible to reconstruct it although it is far from straightforward.

surprising: one of the board's primary roles is to appoint the CEO and oversee the recruitment of other top executives, so it is expected that stronger effects will be observed at the very top, as has already been observed in the US (Matsa and Miller, 2011). Second, a larger female board share also benefits women in lower ranks through a decrease in gender wage gaps. This 30 percentage point rise in the female board share leads to a reduction in the unadjusted mean gender wage gap by 2.1 percentage points (a 12% decrease relative to 2009). Crucially, this decrease is not driven only by highest earners: we observe a closing of the gender wage gap throughout the wage distribution. The median wage gap declines by 3.7 percentage point in the median wage gap (a 19% decrease relative to 2009), while wage gaps at the 25th and 75th percentiles respectively decrease by 2.2 and 3.9 percentage points. Evidence suggests that these changes mostly affect incumbent employees, which is supported by the fact that we do not detect any significant impact on the female share of total workforce.

Our second key finding suggests that these changes did not come at the cost of firms' financial performance. This may have been a concern, as we observe that the reduction in gender wage gaps is not due to a slowdown in men's wage growth, but to an increase in women's wage growth. Consequently, the share of the total wage bill allocated to women increased in treated firms by approximately 4% between 2009 and 2021, while the ratio of labor costs to employees rose by an 8% rise over the same period. However, we find no evidence of a decline in profitability – as measured by the ratio of operating income to net assets – and our results suggest that this may be partly explained by an increase in productivity. This would be consistent with the findings of Bennedsen et al. (2022) who observe that a decrease in the gender wage gap occurring through a slowdown of men's wage growth has a negative impact on productivity.

Our third key set of finding sheds light on factors that may explain why female directors have led to an improvement in gender equality in our context. Due to data limitation, this part of the analysis focuses on listed firms (our treated group). First, we find evidence that boards use their compensation-setting power to advance gender equality within the firm. They do so by tying part of the CEO variable compensation on related metrics, and female directors appear to play a key role in driving these efforts. As expected, firms implementing such incentives exhibit stronger effects on gender equality outcomes. Second, we document results that are inconsistent with the emergence of a "patronizing equilibrium" (Coate and Loury, 1993).[7] Rather, they suggest that female directors appointed post-quota are likely to be perceived as legitimate and to be able to wield significant influence in the boardroom. Notably, we observe that the gender gap in directors' top executive experience is halved in the post-quota period – primarily driven by a large increase among female directors (a 33% increase relative to pre-quota female

[7]In this scenario, newly appointed female directors and executives may either scale back their investment in human capital, or be perceived as not owing their positions to their own merit.

directors) – and that female directors are given broad access to key board committees.

Related literature. Our paper first contributes to the literature on corporate governance by showing that boards can have considerable influence in shaping firm labor policies, and by emphasizing the pivotal role of compensation-setting in aligning the CEO's actions with the board's vision. This is not immediately obvious, as it has been argued that boards play a fairly limited role (Demb and Neubauer, 1992; Hermalin, 2005; Schwartz-Ziv and Weisbach, 2013; Jenter and Kanaan, 2015; Edmans et al., 2017). In particular, in countries where boards primarily serve a supervisory function such as Germany, their influence on firm wage policy has been found to be limited (Jäger et al., 2021). However, in other countries where boards can actively shape firm strategy, evidence suggests that boards, and especially their gender composition, can have a significant impact on firms' economic and financial performance (Ahern and Dittmar, 2012; Matsa and Miller, 2013; Comi et al., 2020; Maghin, 2022). Our results show that this extends to the firm's labor policy, especially in wage setting. They also highlight an explicit channel through which the board influences the firm's strategy, namely executive compensation. This complements the existing literature exploring how boards actually affect corporate strategy. For instance, Matsa and Miller (2013) suggest that it can do so by selecting like-minded executives and advising them.

Our paper also speaks to the growing literature on gender and organization by showing that female directors can have positive spillover effects in the rest of the firm. Barriers women face on the job have long been documented (Athey et al., 2000; Goldin, 2014; Kleven et al., 2019; Hospido et al., 2022) and male-dominated corporate leadership has been found to foster a less women-friendly corporate culture (Tate and Yang, 2015). Against this backdrop, women in leadership positions can contribute to combating gender inequality. Outside the firm, evidence suggests that female leaders can act as effective role models (Beaman et al., 2009; Porter and Serra, 2020) and advocate for a greater focus on the needs of women (Pande, 2003; Chattopadhyay and Duflo, 2004; Langan, 2019).[8] Within the firm however, most papers focus on executive rather than boardroom positions. They find that female executives can even the standards to which women are held accountable (Egan et al., 2022),[9] decrease the gender promotion gap in lower ranks (Kunze and Miller, 2017; Cullen and Perez-Truglia, 2023), reduce the gender wage gap among high earners (Flabbi et al., 2019), or increase the responsibilities allocated to female managers (Duchin et al., 2021). By contrast, the effect of female directors on other women within the firm is unclear: while Bertrand et al. (2019) and Maida and Weber (2022) tend to conclude that it is negligible, Matsa and Miller (2011) suggest that they may encourage the promotion of women to top executive positions.

[8] Although increasing female representation might sometimes lead to negative reactions from male leaders (Bagues et al., 2017).

[9] They point out that the harsher outcomes women face following misconduct are mitigated in the presence of more female executives.

Within the literature on gender board quotas, our paper is the first to provide evidence that quotas can effectively achieve their goal of reducing gender disparities throughout the firm. Most studies investigating this question restrict their analysis to women in senior non-board positions within listed firms. They find null or negative effects but do not delve into the mechanisms that may explain these results (Bertrand et al., 2019; Maida and Weber, 2022), and, as discussed previously, the specificities of the Norwegian and Italian contexts may also have led to limited statistical power in their analysis of gender equality outcomes. Dalvit et al. (2021) examine a similar question in the French context and find modest positive effects, but only for women in managerial roles, though their analysis likely faces the same limitations.[10] Our paper complements this literature in three important ways. First, we examine a broader range of outcomes to assess firm-wide impacts, including gender gaps across the wage distribution. Second, our empirical strategy encompasses a wider set of firms, not just listed ones. This allows us to avoid relying on a shift-share instrument, whose exogeneity has been questioned (see, e.g., Eckbo et al., 2022), and instead use a difference-in-differences (DiD) approach that remains agnostic about the functional form, in the vein of Matsa and Miller (2013). Third, by investigating the mechanisms at play, we provide insight into why some of our findings differ from those in previous studies. For example, Maida and Weber (2022) suggest that the limited effect of the Italian quota may stem from female directors lacking access to key board committees – a hypothesis they do not directly test. Our results are consistent with committee membership being critical for directors to influence firm policies, as already observed by Green and Homroy (2018), but also suggest that how broadly these positions are allocated (i.e., the share of directors belonging to committees) may also matter.

This paper also contributes to the literature on board composition and recruitment patterns (Adams and Ferreira, 2009; Kramarz and Thesmar, 2013; Kim and Starks, 2016; Bertrand et al., 2019). Previous studies on the impact of gender quotas have largely focused on documenting how listed firms react. Our new dataset allows us to extend this analysis to non-listed firms, a segment that has been largely overlooked. For example, in France, Ferreira et al. (2020) find that women appointed post-quota in listed firms tend to be more qualified and are more likely to be foreign compared to those appointed before the reform. Our results confirm this pattern for listed firms but show that non-listed firms do not exhibit a similar increase in foreign appointments. This may be due to non-listed firms either overlooking this pool of candidates or being less attractive to them. Finally, we also highlight two additional contrasts with the existing literature regarding the characteristics of newly appointed directors. First, we document a reduction in family connections, which contrasts with the findings of Chevrot-Bianco (2021) in

[10]Notably, the analysis stops in 2016, one year before the implementation deadline, while we detect most of the effects after 2017. Furthermore, they do not take into account pyramidal ownership, thereby failing to encompass the relevant firm scope, a major concern when looking at within-firm outcomes.

the context of the Danish quota. Second, we find that women appointed post-quota are more likely to have top executive experience, differing from the results of Gormley et al. (2023), who observe the opposite in the US.[11] While pinpointing the exact sources of these differences is beyond the scope of this paper, we view this as a promising direction for future research.

The remainder of this paper is structured as follows. Section 1 presents the institutional context and quota law. Section 2 describes our dataset, study sample, and the construction of our key outcomes. Section 3 documents the effects of the quota on board composition. Section 4 lays out our empirical strategies. Section 5 discusses our main results. Section 6 investigates potential mechanisms driving these results. Section 7 concludes.

1 Institutional context and the 2010 reform

1.1 Corporate Governance in France

Types of firms. By law, a board can be established under only three corporate structures: *Sociétés par Actions Simplifiées* (SAS), where the formation of a board is optional; *Sociétés Anonymes* (SA); and *Sociétés en Commandite par Actions* (SCA), that both require the establishment of a board. Publicly listed firms cannot be organized as SAS. SCA firms have a two-tier board system in which the management board (*Directoire*) is distinct from the supervisory board (*Conseil de surveillance*), with no possible membership overlap. Firms operating as SAS that opt to form a board, as well as SA firms, have the discretion to adopt either a dual-board system analogous to that of SCAs or a unified board system (*Conseil d'administration*) that integrates executive and non-executive directors. In this paper, the term "board" is used interchangeably to refer to both a board of directors and a supervisory board. Firms with a board remain a minority in France: as of 2021, about 28% of firms had a corporate structure compatible with having a board, with a mere 1.1% actually required to establish one.[12]

Role of the board. The responsibilities of a board are defined by law.[13] In a one-tier board system, the board is responsible for defining the firm's overall strategy and overseeing its implementation. In a two-tier board system, the board primarily has a supervisory role. However, in both systems, boards have two essential prerogatives. First, they appoint the CEO and/or the members of the management board, with the authority to dismiss them *ad nutum* (at any time). Second, they set the compensation for the CEO and the management directors. Thus, even a supervisory board has the capability to advocate for pro-women policies within

[11] Their study does not examine the effects of a quota but rather a push by major shareholders to increase the proportion of women on boards.

[12] Further details are reported in Appendix Table A1 that displays the number of firms by legal structure in 2021. In 2021, only 4% of the firms that can or must operate with a board actually had one.

[13] Articles L225-35, L225-37, L225-51, L225-59, L225-63, and L225-68 of the *Code of Commerce (CC)*.

the firm by choosing chief executives who support such policies.

Whether boards should be expected to exert more influence on management in a one- or two-tier system is unclear. On the one hand, Jäger et al. (2021) suggest that, in a two-tier system, it might be harder for boards to constrain the management to implement specific policies. On the other hand, in France, Belot et al. (2014) find evidence that monitoring is more effective under a two-tier system.

Appointment and compensation of directors. By law, the board size must range between three and eighteen members.[14] A one-tier system allows 'executive directors' on boards—directors who also hold managerial positions within the firm, typically the CEO or top managers. This is not permitted under a two-tier system. New appointments are proposed by incumbent directors and must be ratified by shareholders at the yearly General Meeting. Similarly, directors' yearly compensation (*jetons de présence*) must be approved by shareholders.

A director can be deemed "independent" upon meeting certain criteria recommended by the MEDEF, the largest employer federation in France,[15] Ultimately, the board itself has the discretion to assess the independence of each of its members. Independent directors are expected to be more impartial due to the absence of conflicts of interest, and thus, they are perceived as promoting better governance (Masulis and Mobbs, 2011; Guo and Masulis, 2015). However, they may also suffer from an informational deficit, which can diminish their influence and effectiveness on the board (Duchin et al., 2010; Cavaco et al., 2017).

1.2 The Gender Quota Reform

Adoption of the law. Formally known as *Loi 2011-103 du 27 janvier 2011*, the quota was introduced by the government in December 2009, initially targeting publicly listed companies. The government's rationale was that female directors are more likely to champion gender equality initiatives, and thus increasing their representation on boards would help close gender disparities within firms.[16] The lower chamber of the Parliament passed an initial version of the law in January 2010, expanding its scope to include non-listed firms. Although the law was formally adopted in January 2011 after discussion in the upper chamber, firms knew as early as 2010 that a quota would be implemented, and we thus consider 2010 as the implementation year. The adopted law stipulated that by January 1, 2017, each gender must constitute at least 40% of the directors. In addition to the quota requirement, the law also mandates that directors discuss gender equality issues during at least one board meeting per year.

[14] This upper bound can be raised to 24 for at most three years under certain conditions.

[15] These criteria include not having family connections with any of the firm's executives, not being or representing a large shareholder, not being employed by the firm, etc.

[16] Explanatory Memorandum, *Loi 2011-103 du 27 janvier 2011*.

Targeted firms. Two sets of firms were initially targeted: (i) all publicly listed firm; (ii) any firm with more than 500 employees and more than €50 million in assets or turnover for three consecutive years. The law imposes that both men and women account for at least 40% by January 1, 2017.[17]

Penalties. Firms face two main penalties in case of non-compliance: payments to directors are suspended until the quota is met, and any new appointments that do not contribute toward meeting the required threshold are invalid.

Incentives to comply. The law does not establish a government agency responsible for identifying firms subject to the quota or collecting information on their board composition. This lack of monitoring was noted by the Prime Minister's Office itself in a review of the quota law in 2021, which acknowledged its "*inability to identify all the companies subject to the quota and the lack of comprehensive oversight.*"[18]

This highlights the two factors that lead to markedly different compliance incentives for the two types of firms covered by the law. First, a firm's listing status is public knowledge, and, consequently, so is its coverage by the quota. By contrast, it is hard to know whether a non-listed firm is subject to the quota, as its accounting statements are not publicly available. Second, listed firms are legally required to publish annual proxy statements, including detailed information about their board composition,[19] which is thus public information. On the other hand, the exact board composition of non-listed firms is much more difficult to obtain. It is thus clear that while listed firms have high incentives to comply, large non-listed have low incentives.

2 Data and sample construction

2.1 Construction of the Analysis Sample

Two principles guided our sample selection. First, we select firms with more than 50 full-time equivalent employees from 2010 onward. This threshold allows us to ensure that our entire sample is subject to two other regulations enacted after 2010 that could impact our outcomes. A 2010 law imposed yearly negotiations about gender equality.[20] A 2020 law requires these firms to publicly disclose a yearly measure of gender equality called "Index of Gender Equality." Ranging from 0 (worst) to 100 (best), this index is a weighted average of different gender gap

[17] In 2014, the employee threshold was reduced to 250, and firms with more than 250 but fewer than 500 employees had until 2020 to meet the quota.

[18] Haut Conseil à l'Egalité entre les Femmes et les Hommes, *10 ans de la loi Copé-Zimmermann*, January 2021.

[19] Article L451-1-2 of the Monetary and Financial Code and directives of the *Autorité des Marchés Financiers*, the French equivalent of the SEC.

[20] Coly (2022) analyzes the short-term implementation of this law, finding that most of the firms subject to it had complied by 2013, with no difference by firm size.

measures.[21] A public database is updated every year. Our restriction thus allays concerns that our results might be driven by these laws rather than the quota.

Second, we restrict the main analysis to firms that (i) are observed every year from 2006 to 2021 and (ii) consistently have a board from 2008 to 2021.[22] This results in a balanced sample of 1,743 firms.

2.2 Categories of Firms

We base our categorization of firms on the pre-reform (2009) characteristics. The government set the law thresholds exogenously without any intention to specifically target firms that would inherently be less women-friendly.[23]

As explained in Section 1.2, the two groups of firms targeted by the quota have different incentives to comply: listed firms have high compliance incentives while large non-listed have low incentives. Thus, in our empirical approach, we categorize firms into three distinct groups: (i) firms listed in 2009 (hereafter, "listed firms"); (ii) firms non-listed in 2009 but meeting the quota requirements that year[24] (hereafter, "large non-listed firms"); (iii) firms not meeting the quota requirements in 2009 (hereafter, "small non-listed firms"). This categorization allows us to avoid endogeneity issues, as it is immune to firms' strategic behaviors to evade quota requirements – e.g. delisting or staying below the legal threshold necessary for quota compliance.

Table 1 reports the number of employees, and value added for firms included in our analysis sample in 2009 and 2021. It shows that our main sample represents a substantial portion of the French economy: in 2021, 21% of total workers, and 27% of total value-added.

2.3 Data and Main Outcomes

Board composition. We rely on two main data sources to recover the board compositions for all firms in our sample and over our period of interest: (i) the firms' proxy statements when available on the AMF website, and (ii) the *Bulletin Officiel des Annonces Civiles et Commerciales* (BODACC).

We also leverage the legal requirement that mandates both listed and non-listed firms to report changes in board or top management (CEO and deputy CEOs) to the local Commercial Court. These reports must at least include the first and last names of incoming or departing individuals, as well as the date of the event. Data dating back to January 1, 2008, was made available by the government in 2020 and has been continuously updated since then. However, the information is scattered and no previous effort has been made to compile it. By tracking

[21] Mean wage gap, wage raise gap, promotion gap, fraction of women among top ten earners, and number of pay rise upon return from maternal leave.

[22] As subsequently explained, we cannot reconstitute the board composition prior to January 1st, 2008.

[23] There was no deliberate effort to target firms identified as less pro-women. Instead, the focus on the largest firms was intended to maximize the impact of the law.

[24] More than 500 employees and €50 million in sales/net assets.

changes since January 1, 2008 ("flows"), and complementing this with a database detailing the board compositions of all French firms as of May 2017 ("stock"), we created the first comprehensive database covering board and top management compositions of all French firms from 2008 to 2022. After reconstitution of boar members' appointments, we infer the gender of directors based on their names.

Employees level outcomes. To compute our main outcomes, we utilize a comprehensive nationwide firm census: the *Déclarations Annuelles des Données Sociales* (DADS). Built from the annual mandatory workforce declarations required of all French firms, it provides complete coverage of private-sector employment and contains detailed information on all employees, such as gender, salary, job title, hours worked, etc. Each yearly dataset includes data from the previous year, allowing us to distinguish between incumbent and newly hired employees, as well as to examine changes in job titles.

We use the first digit of job title codes to categorize employees into distinct hierarchical layers, following Caliendo et al. (2015): Layer 1 comprises managerial occupations; Layer 2 professional occupations; Layer 3 intermediate occupations; Layer 4 clerical occupations; and Layer 5 production occupations. However, although job title codes help us get a sense of firms' human capital composition, they are not suited to examine promotions or to identify specific employees such as the CEO or members of the C-suite.[25]

Our main outcomes are gender hourly wage gaps. In accordance with the literature, we construct them such that a decrease in g_{jt} always indicates a narrowing of the gender wage gap. For firm j in year t, we compute the un-adjusted and adjusted mean hourly wage gaps g^u_{jt} and g^a_{jt} as follows:

$$\begin{aligned} \log w_{ijt} &= \alpha^u_{jt} + g^u_{jt} M_{ijt} + \varepsilon_{ijt} \\ \log w_{ijt} &= \alpha^a_{jt} + g^a_{jt} M_{ijt} + age_{ijt} + age^2_{ijt} + \text{Layer}_{ijt} + \eta_{ijt} \end{aligned} \tag{1}$$

where w_{ijt} is the hourly wage of employee i in firm j at year t and M_{ijt} is a dummy variable equal to one if the employee is male. The adjusted hourly wage gap accounts for employee i's age, which we use as a proxy for experience, as well as an indicator for her hierarchical layer.[26] Additionally, to investigate effects across the wage distribution, we look at percentile hourly

[25] A specific job title chiefly depends on the qualification required for the job, as well as the size and type of the firm. As noted in Caliendo et al. (2015), a broad categorization into layers based on the first digit of the job title can reflect hierarchies. However, job titles are not ranked within layers, making it impossible to identify promotions.

[26] As job title codes for Layer 1 are inconsistently reported across firms, we control for three indicators in this regression: one corresponding to Layers 1 and 2, one corresponding to Layer 3; and one corresponding to Layers 4 and 5.

wage gaps, which are computed as follows:

$$g_{q,jt} = \frac{w^m_{q,jt}}{w^f_{q,jt}} - 1, \quad q \in \{25, 50, 75\} \tag{2}$$

where $w^m_{q,jt}$ (resp. $w^f_{q,jt}$) is defined as the hourly wage such that q% of male (resp. female) employees in firm j and year t earn less than this amount.

We also examine other indicators of gender inequality, notably pertaining to the representation of women at the top: the gender of the CEO and the board chair, as well as the representation of women in the C-suite (proxied by looking at the firm's top ten earners), and among employees whose earnings are above the 75th, 90th and 99th percentiles. To examine if there was any impact on female representation in lowest rank, we also look at the female share of employees whose earnings are below the 10th and 25th percentiles.

Firms' Financial Outcomes. To explore the impact on financial performance, we exploit a nationwide panel providing complete coverage of private-sector firms: the *Fichier approché des résultats ESANE* (FARE). Based on firms' tax income data, it includes detailed items from their balance sheet and income statements.

Analysis Period. We focus on the period from 2006 to 2021. This provides us with enough years to credibly rule out pre-trends while ensuring consistent sample selection over time. Indeed, prior to 2006, it is impossible to identify interim workers in the DADS dataset, whom we exclude from the analysis. We also exclude 2016 from the analysis: major changes in the data collection process were initiated that year and were phased in instead of being applied to every firm at once, which leads to breaks in our time series.

Defining the relevant unit of analysis. French firms are uniquely identified by a number called "SIREN," which corresponds to a "legal unit." However, pyramidal ownership structures are common in France, and large firms often comprise multiple legal units. For example, the largest French insurance company reported employing about 20,000 people in France in 2021, yet its official SIREN is that of a company with fewer than 10 employees.[27] Consequently, the French Bureau of Statistics (Insee) has been systematically tracking the ownership structure of French firms since 2017, identifying parent companies and their subsidiaries, which together form a "group."

We use the 2017 structure to identify groups for two main reasons. First, data on ownership structures does not exist prior to 2017. We must thus assume that the 2017 structure was

[27] Béguin and Hecque (2015) show that, in France, neglecting pyramidal ownership could result in a 50% underestimation of the number of firms with more than 5,000 employees.

in place before then. Second, our treatment period goes from 2010 to 2017, and it seems logical to attribute changes occurring in one subsidiary after 2017 to changes in the board composition of its parent company occurring during this period.

3 How Was Board Composition Affected by the Quota?

3.1 Compliance with the Quota

Changes in the female board share. The quota led to significant changes in board composition, though the responses varied markedly among targeted firms. Figure 1 Panel A shows that the average female board share in listed firms nearly quadrupled from 11.3% in 2009 to 42.3% in 2021. By contrast, it only rose from 16.7% to 27.6% in large non-listed firms over the same period. The small non-listed firms, which had the highest initial female board share in 2009 at 21.9%, experienced a more modest increase, reaching 25.4% by 2021.

This translates into substantial differences in compliance across groups: while about 80% of the firms listed in 2009 met the quota by 2021, only 35% of the large non-listed firms did so, slightly higher than the share of small non-listed firms (Figure 1 Panel B).

"Reshuffling" vs. "packing". An increase in the female board share can be achieved in two ways: substituting women for men at constant board size ("reshuffling"), or gradually adding more women to the board without removing incumbent men ("packing").

Panel A to Panel C of Appendix Figure A9 plot the yearly average number of female and male directors. Together with Table A4, they show that the differences in female board shares in 2009 were due to a difference in board size and not in the number of women on boards: listed firms had on average 9.3 members on their boards while large and small non-listed firms had smaller boards (average size of 8.3 and 6.7 respectively). Figure A9 shows that, in listed firms, the adjustment differed from the other two groups: listed firms started substituting men for women as early as 2011, i.e., the year following the reform. By contrast, the number of men remains roughly constant in the other two groups until 2017, when it decreases slightly. We also observe that, in 2021, the average number of women on the boards of large non-listed firms barely exceeds that of small non-listed firms.

3.2 Changes in Boards' Hiring Practices

Examining this sudden influx of new female directors raises two questions: Did firms expand their pool of candidates compared to before the reform? How did this affect incumbent and newly appointed male directors?

Characteristics of newly appointed directors. To answer these questions, we examine two observable characteristics of directors in every firm: family links with other directors and nationality.

Table A5 shows a contrasted picture. First, across all groups, we observe a decrease in the fraction of newly appointed directors who are family-related to other directors across both genders. Listed firms exhibit the strongest reaction, with the proportion of family-linked directors being halved for men and reduced by more than two-thirds for women, effectively erasing the gender gap along this dimension. By contrast, in the other two groups, the reduction is more pronounced for men than for women, leading to a widening of the gender gap.

Second, we find an increase in the proportion of foreigners among new appointees. Again, listed firms reacted more strongly: the proportion increased by 100% for women and by 50% for men, with no significant difference across gender. The increase in the other two groups is less pronounced, and, if anything, the gender gap appears to have slightly widened.

These results suggest that listed firms managed to comply with the quota by expanding the pool of female candidates. The comparable evolution that we detect for men supports the hypothesis of a change of the overall hiring process affecting all new appointees, resulting in an improvement of the average "quality" of directors across both genders. This is consistent with what has been observed in similar contexts (Besley et al., 2017; Ferreira et al., 2020), as well as anecdotal evidence.[28] By contrast, it appears that the quota did not set large non-listed firms on a different trend from small non-listed firms, as the decline in the fraction of family-related appointees they experience is comparable. The fact that the proportion of foreign appointees did not change significantly suggests that large non-listed firms may have been hindered in attracting foreign directors, thereby losing access to a crucial channel to increase their female board share.

The reduction in family connections observed for all firms indicates a broader shift towards diversification of corporate boards, irrespective of the quota. This interestingly contrasts with what Chevrot-Bianco (2021) observes in Denmark, where the board quota led to an increase in nepotism, with newly appointed women more likely to be family-related to incumbent directors.

Potential implication for corporate governance. What implications might this have for our outcomes of interest? First, foreign and non-family-related directors are more likely to be independent and thus serve as effective monitors (Knyazeva et al., 2013; Guo and Masulis, 2015). Second, if foreign directors come from countries with greater awareness of gender issues, they may be more inclined to advocate for reducing gender gaps within the firm or help diversifying

[28] Interviews with directors of large listed firms revealed that complying with the quota led to a streamlining of the recruitment process for both women and men. Indeed, these firms started relying heavily on executive search firms that refined the selection criteria for all new directors, regardless of gender.

the pool of candidates considered for top executive positions. Therefore, we might expect to observe some effects among listed firms.

4 Empirical Strategy

To assess the impact of increasing female representation on corporate boards, we rely on two complementary approaches. We first use a Difference-in-Differences approach. Its main advantage is that it remains agnostic about the functional form that maps the female board share to the our outcomes of interest. To obtain more interpretable estimates, we also utilize an IV strategy, assuming a linear relationship between the female board share and our outcomes of interest. As the treatment/instrument is the same in both cases, the DiD can be viewed as the reduced form of our IV strategy.

4.1 Treatment and control groups

As discussed in Section 2.2, we categorize firms based on their incentives to comply in the pre-reform year. Results in Section 3 show that there is indeed a strong first stage: firms listed in 2009 overwhelmingly complied while large firms that were not listed in 2009 did not. Firms listed in 2009 thus constitute a good treatment group. We choose large firms not listed in 2009 as our main control group for three main reasons. We present these reasons below, and discuss the assumptions necessary to ensure identification in Section 4.4.

First, they are of comparable size. Table 2 shows that the difference in Log Employees is not significant, suggesting that the larger average workforce implied by Table 1 is mostly due to the presence of a few outliers. By contrast, small non-listed firms' workforce is lower by two orders of magnitude, which may render comparison unreliable (Appendix Table A3). The female share of employees and the fraction of the total wage bill going to female employees are also comparable across listed and large non-listed firms. The difference in Log Sales is significant at the 10% level and indicates that, on average, large non-listed firms' sales are 25% lower than listed firms'. Finally, similar to what Matsa and Miller (2013) observe in Norway, listed firms appear to have twice as much assets as large non-listed firms, although this dimension is not relevant for our main outcomes of gender disparities within the firm.

Second, large non-listed firms have boards of a similar size to those of listed firms. However, as previously noted, the changes in their board composition after the quota resemble those of small non-listed firms, whether in terms of gender, family link or foreignness. Consistent with their low compliance incentives, large non-listed overwhelmingly failed to comply with the quota, with a female board share and a fraction of complying firms not significantly different from those of small non-listed firms in 2021 (Figure 1). If anything, the fact that they were also subject to the quota should lead us to estimate a lower bound of the true effect.

Finally, the mere fact of being subject to the quota could have encouraged firms to

address internal gender imbalances, regardless of board gender diversity, thereby confounding our estimates. Using firms that are also targeted as our control group allows us to directly address this concern.

4.2 Difference-in-Differences

Specification. We estimate the following DiD specification:

$$Y_{jt} = \alpha + \gamma_j + \lambda_t + \sum_{\tau \neq 2009} \delta_\tau L_{j\tau} + X_{jt} + \epsilon_{jt} \quad t \geq 2006 \tag{3}$$

where Y_{jt} is our outcome of interest, γ_j and λ_t are firm and year fixed effects and $L_{j\tau}$ are dummy variables such that $L_{j,\tau} = \mathbb{1}_{\{\tau=t\}} \times \mathbb{1}_{\{j \text{ is listed in } 2009\}}$. To account for firms' human capital composition and ensure that our results are not driven by composition effects, we control for the fraction of employees in each layer (see Section 2). This set of firm-specific, time-varying controls is denoted by $X_{j,t}$.

The parameters of interest are δ_τ. They capture the differential change in outcomes for firms in our treatment group compared to the control group. The estimates of Eq. (3) for our outcomes of interest are plotted in Appendix Figures 2 and 3.

For the sake of readability, we present slightly different DiD results in the the main tables, distinguishing between the implementation phase (2010-2015) and the post-implementation phase (2017-2021). We thus report $\hat{\kappa}_1$ and $\hat{\kappa}_2$ from the following equation:

$$Y_{jt} = \tilde{\alpha} + \tilde{\gamma}_j + \tilde{\lambda}_t + \kappa_1 L_{j,t,1} + \kappa_2 L_{j,t,2} + X_{j,t} + \varepsilon_{jt} \quad t \geq 2009 \tag{4}$$

where $L_{j,t,1}$ is a dummy variable equal to one if firm j is listed in 2009 and $t \in \{2010, .., 2015\}$ and $L_{j,t,2}$ is a dummy variable equal to one if firm j is listed in 2009 and $t \in \{2017, .., 2021\}$.

4.3 Instrumental Variable Approach

Specification. We estimate the following:

$$Y_{j,t} = \alpha + \beta_1 FBS_{j,t} + \gamma_j + \lambda_t + X_{j,t} + \eta_{j,t}, \quad t \geq 2009 \tag{5}$$

with the same notations as in Eq. (3). $FBS_{j,t}$ denotes the share of women sitting on firm j's board in year t.

We instrument $FBS_{j,t}$ with $L_{j\tau}$, i.e., as before, a dummy equal to one if firm j is listed in 2009 interacted with a year dummy. The rationale is that firms listed in 2009 are more likely to comply with the quota, and thus to increase their female board share. Furthermore, since the criteria were exogenously set by the government for reasons unrelated to the degree of women-friendliness, the exclusion restriction is likely satisfied in our context.

First stage. We estimate:

$$FBS_{j,t} = \alpha + \sum_{\tau=2010}^{2021} \beta_\tau L_{j,\tau} + \gamma_j + \lambda_t + X_{j,t} + \zeta_{j,t}, \quad t \geq 2009 \tag{6}$$

Appendix Table A7 reports the results of this estimation, which indicate that our instrument is relevant. The size and magnitudes of the coefficients are as expected: being listed in 2009 is associated with larger adjustments after 2010. The magnitude of these adjustments increases over time, consistent with the fact that listed firms overwhelmingly complied with the quota.

4.4 Identification assumptions

We now discuss the three assumptions necessary to ensure the validity of our empirical strategies.

Assumption 1: Similar time trends. The first necessary assumption is that the treatment and the control groups are not on different time trends prior to the quota. If listed firms were inherently more pro-women than large non-listed firms, and were already improving gender equality before the quota was implemented, this would bias our estimates upward.

We provide evidence of the validity of this assumption by examining δ_τ for $\tau \in \{2006, 2007, 2008\}$ from Equation (3) for all our outcomes of interest. Appendix Figures 2 and 3 show that this assumption is satisfied for our main outcomes.

We also verify that outcomes are comparable in level across treatment and control firms in the pre-reform year (2009), we estimate the following regression:

$$Y_{j,2009} = \alpha + \beta C_j + X_{j,2009} + I_j + \epsilon_{j,2009} \tag{7}$$

where C_j is a dummy variable equal to one if j belongs to the control group, I_j denotes firm j's industry and $X_{j,2009}$ the fraction of employees in each layer in 2009. Notice that I_j is captured by the firm fixed effect in Eq. (3) and (4).

Table A6 shows no significant differences at conventional levels between our treatment group and our main control group (i.e. large non-listed firms), except regarding the probability that the board chair is a woman. The probability that the CEO is a woman is different at the 10% level only. By contrast, small non-listed firms are significantly different on most of our outcomes, strengthening the case against using them as a control group.

Assumption 2: Large non-listed firms did not become less pro-women after 2010. A second concern is that the reason large non-listed firms failed to comply with the quota was

not due to low compliance incentives, but because they became less pro-women after 2010.[29] If this were the case, we would mistakenly attribute any impact of the female board share to an improvement in gender equality among listed firms, rather than to a decline in gender equality among large non-listed firms.

We address this concern in two ways (results are discussed in Section 5.3). First, we present event-study graphs using 2009 as the reference year, showing that gender equality improves in both groups of firms, but that stronger gains are observed in listed firms. Second, we report estimates of our main effects using the small firms not listed in 2009 as an alternative control group and check that the results hold.

Assumption 3: Listed firms had no additional incentives to improve gender equality after 2010. A final concern is that listed firms may have faced greater incentives to reduce gender gaps, irrespective of their female board shares. Again, due to the absence of pre-trends, this would be a concern only if these incentives appeared or became stronger after 2010.

To provide suggestive evidence that listed firms were not particularly more concerned about appearing as woman-friendly, we use a 2020 law instating an "Index of Gender Equality". Since March 2020, the law has required firms with more than 50 employees to report this index once a year. It is computed as a weighted average of the following indicators: pay gap within the firm, pay gap within the top 10 earners, pay rise gap, promotion gap, and number of female employees experiencing a pay rise upon returning from maternity leave. Importantly, this does not include the female board share. Results are then made publicly available on a government website.

This law is valuable because every firm has the same incentives to comply and to get an index as high as possible. If listed firms were on average more concerned than the non-listed ones about being publicly perceived as pro-women, we should find that they complied more on average.

Columns 1 and 2 of Table A8 show heterogeneity in the disclosure of the index in 2021. Half of the firms did not report their index, with no difference between listed and non-listed firms (Column 1). The probability of complying with the index is also not correlated with the female board share (Column 2). It thus appears that the listing status in and of itself did not prompt firms to appear as more women-friendly or more committed to women-friendly policies. Column 3 shows that being listed is associated with a higher index, although it is not significant. This may be due to a selection effect since firms disclosing their index might be more pro-women, whether listed or not. Furthermore, the variables used to compute the index are not the same as ours – for instance, they do not include the female share of top earners or CEOs. Finally, Column 4 shows that, as expected, a higher female board share is associated

[29] Since we do not detect pre-trends, we can rule out that they were less pro-women before 2010.

with a significantly higher index.

Two main conclusions can be drawn. First, listed firms do not appear to have been under particularly intense pressure to appear more pro-women in the public eye. Second, being listed did not, by itself, provide firms with stronger incentives to adopt or implement more women-friendly policies. Importantly, among firms that comply with the index disclosure, the female board share is positively associated with the index value, thereby supporting the claim that changes occur through shifts in board gender composition. This discrepancy may be explained by the fact that the female board share is a metric that can be communicated more easily than an Index, which is difficult to interpret.

5 Main Results

5.1 Representation of Women

Our first set of results focuses on female representation, particularly at the top where changes in board composition are likely to have the most direct impact. Indeed, boards are legally responsible for appointing and firing the CEO, as well as electing the chair of the board. Furthermore, as already discussed by Bertrand et al. (2019) and Maida and Weber (2022), if they exert any influence on the firm's policies, it is likely to be reflected in appointments at the top of the organization, particularly within the C-suite. While we are able to identify the CEO and the board chair from the BODACC data, the employee-level data does not allow us to identify the employees belonging to the C-suite. We thus proxy for it by looking at employees whose earnings are above the 99th percentile (top 1%). We broaden the scope of this investigation by looking at the employees whose earnings are above the 75th and 90th percentiles (top 25% and 90%) and below the 10th and 25th percentiles (bottom 10% and 25%) of the firm-year distribution of earnings.

We then estimate how the female board share impacts the likelihood that the CEO or board chair is a woman, and the fraction of women among the top 25%, 10% and 1% earners as well as among the bottom 10% and 25% earners.

DiD Estimates. Panel A of Table 3 reveals a significant increase in the the likelihood that the CEO is a woman, as well as the representation of women among top executives. Interestingly, the probability that the board chair is a woman is not affected. Most outcomes display a similar pattern: changes occurring during the implementation period of the reform (2010-2015) are small and insignificant, even though their sign already points toward an evolution. The post-implementation period (2017-2021) is characterized by larger and significant changes. Interestingly, 2015 is the year when the female board share reaches 30% on average, suggesting that there may be a threshold effect.

IV Estimates. Panel B of Table 3 confirms the previous results and coefficients lend themselves more easily to interpretation. To get a sense of magnitude, we consider the impact of an increase by 30pp in the female board share, which is the average change experienced by firms in our treatment group. This translates into an increase by 5.8pp in the probability that the CEO is a woman (Column 1). This is considerable given that only 2.8% of treated firms had a female CEO in 2009. As expected from the DiD results, the probability that the board chair is a woman is not significantly impacted (Column 2).

Furthermore, Columns 3 to 5 show that an increase in the female board share leads to an increase in the fraction of women in top earnings percentiles. Interestingly, the highest the percentile, the largest the impact: the female share of top 1% earners rise by 2.8pp, or +30% relative to 2009, while that of top 25% earners increase by 1.1pp, or +4% relative to 2009. This is consistent with the fact that boards have the most direct influence on the choice of top executives. We find no effect on the female share of bottom 10% and 25% earners (Columns 6 and 7).

5.2 Gender Wage gaps

We now turn to estimate how gender wage gaps were affected. To get as much a comprehensive picture as possible, we look at different measures of these wage gaps: unadjusted and adjusted mean wage gaps (computed from Eq. (1)) and percentile wage gaps (computed from Eq. (2)).

DiD Estimates. Panel A of Table 4 reveals a pattern similar to the one observed previously: significant changes in the post-implementation period, although they appear to be already underway in the implementation period. Both the unadjusted and the adjusted mean wage gaps decrease significantly in the post-implementation period. As expected, the decline is more pronounced for the unadjusted wage gap. Interestingly, this reduction occurs consistently along the hourly wage distribution: significant reductions are observed from 25th percentile wage gap up to the 75th.

IV Estimates. Panel B of Table 4 mostly confirms previous results. An increase in 30pp of the female board share leads to a decrease by 1.9pp in the unadjusted wage gap (Column 1), or a 10% reduction relative to 2009. Although imprecisely estimated, the reduction in the adjusted wage gap is of comparable magnitude, with a decline of about 7% relative to 2009 (Column 2). The absence of significance may be due to a lack of power, given the many controls included in the regression to compute it. The impact on the median wage gap is larger (Column 5): a 30pp increase in the FBS decreases it by 3.4pp (-17% relative to 2009). This seems to indicate that the decline in the mean wage gap was not only driven by the increase of female representation among top earners. This is confirmed by the decrease observed at both ends of

the distribution. Both the 3rd and 1st quartile wage gaps are reduced, an increase of 30pp in the female board share leading to a decline by 3.5pp (-12% relative to 2009) and 2pp (-15% relative to 2009) respectively.

These results suggest that an increase in the female board share resulted in a reduction of gender gaps all along the wage distribution.

5.3 Robustness Checks

In this section, we report results from the robustness checks discussed in Section 4.4 and test the prediction that firms making the largest adjustments also exhibit more pronounced effects.

Event study. First, we ensure that the observed effects are not driven by a degradation of gender equality among large non-listed firms that would be correlated with their reluctance to comply with the quota. Appendix Figures A10 and A11 display the event study graphs for every outcome, using the 2009 value as reference point. All show that gender equality improved in both groups: female representation among top earners increased and gender wage gaps decreased. This suggests that the estimated impacts come from a larger improvement in the treated firm while assuaging concerns that large non-listed firms started behaving differently after 2010.

Alternative sub-sample. Appendix Tables A9 and A10 show that most of our results are robust to switching control group, although the decline in the 3rd and 1st quartile wage gaps is no longer significant. This is reassuring, even though the large difference in size combined with the fact that small non-listed firms were also significantly less pro-women in 2009 (Appendix Table A6) invites caution in using these firms as a control group.

Distance from compliance. We also test the prediction that firms making larger adjustments in their female board share exhibit more pronounced effects.

To do so, we first estimate Eq. (5) as an OLS, i.e., without instrumenting the female board share. Results reported in Appendix Tables A11 and A12 show that the signs are as expected that is, a higher female board share is associated with either an increase in the female share of top earners or a decrease in the gender wage gap. We then replicate the standard IV strategy of the literature (Ahern and Dittmar, 2012; Bertrand et al., 2019): we estimate Eq. (5) but we now instrument the female board share by the fraction of women on the board in the pre-reform year interacted with year dummies. This instrument is meant to capture exogenous variation in mandated changes in the proportion of female directors. The logic of this identification strategy is that firms starting with a higher female board share before the reform have to make smaller changes to their boards to comply with the law relative to those

starting with a lower share. Due to limitations discussed below, we are cautious in interpreting these results as causal. Rather, we perform this exercise to verify that, in our sample of interest, larger changes in the female board share are associated with larger impacts. Appendix Table A13 shows that the instrument is relevant and the coefficients and magnitudes are as expected: on average, firms with a lower female board share in 2009 make larger adjustments, and the magnitude of these adjustments increases over time. Appendix Tables A14 and A15 confirm our main results: an increase in the female board share leads to an increase in the representation of women at the top, and to a decline in gender wage gaps. Compared to the results obtained with our strategy, impacts on outcomes related to the representation of women at the top are slightly smaller and no longer significant. By contrast, the impacts of changes in wage gaps are more precisely estimated and larger than our main estimates, although not significantly different at conventional levels.

However, we should remain cognizant of the limitations of this approach. First, the female board share in 2009 is endogenous, and likely correlated to our outcomes of interest. Second, the monotonicity assumption is very strong in this context, since it requires that, for all firms, a given pre-reform female board share consistently results in larger yearly changes in the female board share compared to a counterfactual scenario where the pre-reform female board share would have been higher. However, since the quota is not a ceiling (firms can have more than 40% women on their boards, and those starting with a large female board share can thus make large adjustments), and the adjustment pattern is firm-specific (some firms with low female board shares may be more reluctant to comply and make lower adjustments), this assumption is very strong. By contrast, our strategy relies on a weaker assumption, as it only imposes that being listed in 2009 leads to larger yearly changes in the female board share compared to a counterfactual scenario where the firm was not listed in 2009, regardless of the initial female board share.

5.4 Channels

What drives the reduction in wage gaps? The observed reduction in gender wage gaps could be achieved in two ways, which may have large implications on firms' revenues and employee productivity: either women's wages shrink less than men's, or they increase more.

Figure A12 plots the growth of the mean and median hourly wage by gender relative to 2009. The trends are similar for listed and large non-listed firms, although the wages of both men and women increased more in listed firms. These plots reveal that, among listed firms, the mean hourly wage growth between 2009 and 2021 was close to 10 percentage points higher for female employees than for male employees (40% increased vs. 30% for men). This is confirmed by Appendix Table A16. Therefore, the gender wage gap decline occurred through a larger increase in the wage growth for women rather than a decrease in the wage growth for men, and

thus was not achieved at the expense of men.

We also see that there was no pre-trends and that this increase mostly took place after 2017. This interestingly contrasts with what Bennedsen et al. (2022) found in Denmark: analyzing the impact of required pay transparency in Danish firms, they find that gender gaps declined through a lower wage growth for men, which in turn led to a contraction of the overall wage bill. In our case, we expect to observe a rise in labor costs among treated firms, which we explore in Section 5.5.

Incumbent vs. newly hired employees. We now explore the margins along which the increase in female representation at the top and the reduction in gender pay gaps occurred: did it primarily affect newly hired employees or did it also benefit incumbent workers? Results in this section should be interpreted with caution due to data limitation. Ideally we would track employees, and explore whether their trajectory in terms of promotions among top earners or hourly wage changes according to their hiring date. Unfortunately, our dataset is a cross-section at the employee level, allowing us to observe only whether an employee was already with the firm in the previous year or if they were newly hired in the current year. Our results may thus be noisy: indeed, the composition of the hired workforce is more likely to be impacted by idiosyncratic yearly events, and may therefore vary considerably from one year to the next, without it being indicative of structural changes within the firm.

We focus on the subset of outcomes for which we observe significant results: female representation among top earners and mean wage gaps. Results are displayed in Appendix Tables A17 and A18. They suggest that most of the adjustments occurred among incumbent employees. The magnitude and significance of the impacts are in line with our main results. However, none of the coefficients estimated on the subset of newly hired employees is significant. Surprisingly, they indicate that the female share of employees directly recruited among the top 10% and 1% earners declined as a result of an increase in the female board share. This tends to suggest that the increase in the representation of women at the top was primarily driven by internal promotions, though drawing definitive conclusions in that regard would be misguided. Indeed, not every firm hires employees that fall directly into the top earners category, making estimates less reliable. Regarding mean wage gaps, it appears again that the impact was mostly observed among incumbent employees. Results indicate that there was also a (non-significant) decrease in the wage gaps for newly hired, but we again remain cautious in overly interpreting these estimates.

5.5 Impact on Firms' Financial Performance

Upon observing that increasing the female board share led to a reduction in gender gaps within firms, and notably wage gaps, a natural question to ask is how profitability is affected. As noted

in the previous section, gender wage gaps appear to have declined through a larger growth in hourly wages for women than for men and an increase in the representation of women at the top. We thus expect to see an increase in labor costs and the fraction of the total wage bill that goes to female employees.

This ultimate impact on profitability is a priori unclear. On the one hand, an increase in labor costs should mechanically degrade it. On the other hand, this could be compensated by an increased productivity, although it is also ambiguous. Indeed, as noted earlier, women's wages appear to have grown faster than men's, without triggering a slowdown of men's wage growth. This could be beneficial to productivity if it led to increased job satisfaction for female employees without lowering that of men (Akerlof and Yellen, 1990) – and recent evidence from Denmark suggests that such an impact is plausible (Bennedsen et al., 2022). By contrast, if the increase in the representation of women among top managers and CEOs were based on gender rather than competence, lower-quality management could harm productivity.

In this section, we investigate if and how these changes have impacted treated firms' financial performance. The results presented in this section are exploratory, and we treat them as suggestive evidence rather than definitive proofs of a causal effect. Thus we only present the evolution of the raw means by groups and DiD results to compare the evolution in the two groups of firms.

Labor costs. As noted in the previous section, as gender wage gaps appear to have declined through a larger growth in hourly wages for women than for men, we expect to see an increase in labor costs and the fraction of the total wage bill that goes to female employees. This would confirm (in reverse) what Bennedsen et al. (2022) observe in Denmark where, following a decline in men's wage growth as a consequence of a pay transparency policy, labor costs significantly decreased in treated firms.

Panel A of Figure 4 confirms our expectations, by showing a significant increase in the fraction of the total wage bill going to female employees (+1.3pp between 2009 and 2021). Panel B reveals that the ratio of labor costs to employment in listed firms experienced a relative increase by 5,270€ between 2009 and 2021, or about 7.7%, an order of magnitude consistent with the results of the previous section.

Profitability. To investigate the impact on profitability, we look at sales, labor costs and operating income as a percent of net assets. In addition to being consistent with the literature (see, e.g., Matsa and Miller, 2013), this approach allows us to obtain variables that are comparable both within and across firms without censoring observations with negative operating income, which using a log transform would require. For each of these three variables, Figure 5 display the estimates of our main DiD (Equation (3)). Results are overall reassuring: for all

our variables, we detect neither pre-trends before the quota nor a substantial break in trends in the few years following its implementation, suggesting that no major shock differently impacted either group.

To further investigate the dynamics, we look at the event-study, taking 2009 as the reference year. Panel A Appendix Figure A13 shows that both groups experience a decline in their ratio of sales to net assets over the analysis period. Interestingly, treated firms seems to have been more resilient, and their less pronounced decline resulted in a relative increase compared to the control firms, as this ratio increased by 0.15pp in 2021 relative to 2009 (Figure 5 Panel A). Figure A13 Panel B shows that labor costs as a percent of assets also decreased over the analysis period but, again, less strongly for treated firms. As displayed on Figure 5 Panel B, this leads to a significant relative increase in this ratio, consistent with our previous results. Finally, the increase in labor costs appears to be compensated, since we observe a slight relative increase in profitability, as measured by the ratio of operating income over assets (Figure 5 Panel C). Again, Figure A13 Panel C shows that this relative increase is due to large non-listed firms experiencing a slightly larger decline in profitability rather than listed firms experiencing a larger increase.

Let's stress again that these results should be interpreted in the larger context of an overall and similar decrease of these three variables in both the treated and control groups. This should assuage any reverse causality concerns: indeed, it might have been the case that treated firms had been able to narrow gender gaps precisely because they suddenly became more profitable than control firms during the treatment period, and had thus more money to spend to tackle gender inequality through an increase in wages. Our findings rather suggest that it is implausible.

These results both confirm and contrast with prior literature. The fact that, following a sudden influx of female directors in Norway, Matsa and Miller (2013) do not detect any impact on wages might be due to the already very low gender wage gap in this country. By contrast, our findings echo what Bennedsen et al. (2022) observe in Denmark: a reduction in gender wage gaps can be neutral in terms of profitability through the impact of wages on productivity. In their case, however, productivity was negatively impacted since the decrease in gender wage gap occurred through a decline in men's wage growth. Ultimately, the reduction in the total wage bill was compensated by the reduction in productivity.

6 Mechanisms

Our findings are consistent with a growing body of literature that highlights the significant impact boards, and particularly their gender composition, can exert on firm strategy (Matsa and Miller, 2013; Green and Homroy, 2018; Maghin, 2022). Yet, they diverge from the results of

two recent papers investigating the effects of gender board quotas in different contexts on within-firm gender gaps outcomes: Bertrand et al. (2019) in Norway and Maida and Weber (2022) in Italy. These studies reported either no or negative effects on the proportion of top female earners or executives, although they acknowledge the complexity of identifying the underlying reasons for these modest impacts. For instance, Maida and Weber (2022) hypothesize, but do not test, that female directors might have been denied access to key positions within Italian boards, effectively limiting their ability to drive significant changes.

Although we believe the characteristics of the French context, notably large gender disparities combined with a high quota-induced increase, makes it more conducive to observing impacts, we now delve into the potential mechanisms at play in an attempt to reconcile our results with these previous findings.

To that end, we restrict our analysis to listed firms and focus on three dimensions.[30] We start by looking for evidence that boards levered their prerogatives to advance gender equality in the firm. As one of their main powers is to set executive compensation, we investigate whether boards sought to push CEOs to tackle gender disparities by including gender equality-related metrics among the performance measures. Then, given the concern that the quota might have led to a "patronizing equilibrium" (Coate and Loury, 1993), we ask two questions. First, are the characteristics of directors appointed post-quota, especially women, consistent with a situation of talent shortage? Second, is the allocation of key positions within the boardroom consistent with a "tokenization" of newly appointed female directors? In light of our previous results, we expect our findings to suggest that female directors are more likely to be perceived as legitimate due to their profile, and to be able to wield clout in the boardroom through access to key positions. To provide additional evidence that these two dimensions matter, we will compare France with Norway and Italy to the extent possible and look for potential differences.

6.1 Exerting pressure on the CEO through compensation

To explore whether boards actively attempted to shape firms' policies in addressing gender disparities, we examine the introduction of explicit incentives in executive compensation tied to this goal. Specifically, we assess whether part of the CEO's compensation is contingent upon the fulfillment of one or both of the following criteria: (i) a reduction in the gender wage gap and (ii) an increase in the female share of executives.

CEO compensation schemes typically feature a fixed and a variable part, and may also include other components, such as performance-based stocks. We focus on the variable component. This part is linked to financial and, in some cases, non-financial metrics. Using listed firms' proxy statements, we check whether the CEO compensation comprises a variable part and, if so, the performance metrics on which it is based. Appendix Table A19 shows that,

[30] Detailed data is limited on non-listed firms.

one-third of listed firms (87) explicitly tied a portion of the variable compensation to gender equality or diversity goals. Two facts are of notice: first, no firm in our sample had any gender diversity incentive scheme in 2009. Second, the 2009 female board share of both groups is not significantly different ($\Delta = -0.018$, p-value $= 0.24$).

We first explore whether firms implementing such incentives exhibit stronger effects. We estimate the following:

$$Y_{jt} = \alpha + \gamma_j + \lambda_t + \zeta_1 \Lambda_{j,1} \times Post2009_t + \zeta_2 \Lambda_{j,2} \times Post2009_t + X_{j,t}\varepsilon_{jt} \quad t \geq 2009 \tag{8}$$

where $Post2009_t$ is an indicator equal to one if $t \geq 2010$, $\Lambda_{j,1}$ is an indicator equal to one if the firm was listed in 2009 and implemented compensation incentives to push its CEO to reduce gender gaps, and $\Lambda_{j,2}$ is an indicator equal to one if the firm was listed in 2009 and did not implement such incentives. We keep 2009 as our reference year to remain consistent with our previous results, and for the sake of comparability with the subsequent IV strategy. Appendix Table A21 runs the equivalent regression on the 2006-2009 period, replacing $Post2009_t$ by $Pre2009_t$ (an indicator equal to 1 if $t \leq 2008$), and shows that there is no pre-trend.

Since the gender of the CEO or chair is not included in the gender equality goals, we discard them and focus our analysis on the other outcomes. Table 6 shows that firms in which the board introduced these incentives indeed display greater effects. This result suggests that part of our findings are attributable to explicit guidelines given by the board to the CEO to address gender inequalities. Note that our results are not entirely driven by the implementation of CEO incentives: even firms with no incentives display improvements on all our outcomes.

We now provide evidence that this incentives were also due to a higher female board share. We estimate the correlation between the magnitude of the change in the female board share and the probability of implementing such an incentive compensation scheme and, for firms that did, on the fraction of variable compensation that depended on these goals. We estimate the following regression:

$$Y_{i,t} = \alpha + \beta FBS_{i,t} + \lambda_t + \gamma_i + \varepsilon_{i,t}, \quad t \geq 2009 \tag{9}$$

where λ_t is a year fixed effect, γ_i a firm fixed effect and $FBS_{i,t}$ is the fraction of women on the board of firm i in year t. $Y_{i,t}$ is (i) either a dummy variable equal to one if firm i incentivizes its CEO through compensation in year t and 0 otherwise or (ii) equal to the share of variable compensation linked to gender equality outcomes in firm i and year t. Column (1) of Table A20 indicates that the stronger the magnitude of the increase in the female board share between 2009 and 2021, the higher the probability that the CEO compensation depends on reaching gender equality goals. Column (3) shows that the magnitude of the increase in the female board

share also seem to positively impact how much of the variable compensation depends on these goals, although the coefficient is only significant at the 10% level.

Finally, we address the concern of reverse causality that might bias $\hat{\beta}$ in Equation (9). Indeed, previous literature has argued that compensation incentives might be rigged by powerful CEOs inducing their boards to choose more favorable performance measures (Morse et al., 2011). In particular, ESG-based performance targets have recently been found to be evidence of weak governance (Badawi and Bartlett, 2024). In our case, a pro-women CEO could push for the appointment of more female directors, expecting they will tie a portion of her compensation to gender equality goals which she is confident of achieving. While we cannot perfectly assuage this concern, we provide evidence inconsistent with this hypothesis. To that end, we take Equation (9) and add an indicator variable that is equal to one if the CEO has a seat on the board. Column (2) of Table A20 shows a significantly (although only at 10%) negative relationship between the presence of the CEO on the board and the likelihood that such gender equality incentives are implemented. Interestingly, Column (4) also displays a negative, albeit insignificant, relationship between the share of variable compensation based on these measures and the presence of the CEO on the board.

Taken together, these results suggest that boards utilized the full extent of their authority to address gender disparities, and that female directors played a key role in driving these efforts.

6.2 Qualification of directors: No Evidence of Talent Shortage

As noted in Section 3, the likelihood of directors being family-related plummeted among post-quota appointees, while the fraction of foreign directors increased for both genders. This points towards a change in the hiring technology that affected both genders.

We now proceed with a more detailed comparison between directors appointed pre- (before or in 2009) vs. post-reform (after or in 2011). We focus on several dimensions: age, education, school network (i.e., is the appointee a graduate of the same institution as an incumbent director), top executive experience (i.e., having occupied a C-suite position before the first appointment on the board), independence, and cross-membership.[31] Experienced and independent directors are indeed more likely to be able to stand up to the CEO and assert their views in the boardroom. Results are reported in Table 5.

Among directors appointed before 2009, women were significantly younger than men. This gender age gap exhibits a small reduction among directors appointed after 2011, declining from 4.6 to 3.8. Interestingly, newly appointed directors of both gender are on average older (+2.8 years for women and + 1.8 years for men), suggesting a slightly higher experience.

Regarding educational qualifications, no gender gap was observed in terms of the frac-

[31] Consistent with the rest of the paper, the unit of analysis is the board: we compare the average female or male director in the average board. This ensures that we do not draw spurious conclusions, as appointments of highly qualified and experienced women could be concentrated in a subset of firms.

tion of directors holding an advanced degree,[32] standing at 30% for both genders. Directors appointed post-quota are slightly less likely to hold one, although the decline is non-significant. This suggests that educational requirements for newly hired directors were not lowered after the quota was passed.

Before the reform, a large gender gap was also observed along the executive experience dimension: while almost half of the male directors appointed before 2009 had held a C-suite position before their appointment, only 36% of women had, resulting in a gender gap of 12pp. The reform triggered a remarkable reduction of this gap, which more than halved: the fraction of female directors appointed after 2011 having a top executive experience increased by 12pp to reach 48% (or a 33% increase relative to the pre-quota period) while it only increased by 5pp among male directors.

Taken together, these observations suggest that firms did not face a shortage of qualified women and that there was a latent pool of educationally and professionally qualified women that could be tapped into (but were not) before the gender quota. However, given the speed at which they had to adjust to comply with the quota, it appears that firms had to look beyond French borders and enlarge the pool of potential candidates to foreign ones.

Another striking fact is the marked difference in trends in the fraction of independent directors between genders. Pre-quota, the proportion of independent directors was the same for both genders (29%). Women appointed post-reform are almost twice as likely to be independent compared to those appointed pre-reform, with an increase of 23pp. By contrast, the proportion of independent male directors did not change, leading to a substantial widening in the gender gap. These results run counter to fears of nepotism, as independent directors tend to be more inquisitive and tougher with the CEO relative to non-independent ones (Guo and Masulis, 2015).

Overall, our findings confirm and extend what Bertrand et al. (2019) observe in Norway, where similar changes for both men and women transpired in terms of experience and human capital: female directors were found to be much more likely to be in the C-suite (as proxied by their being among the top earners in their firms) and have a significantly higher average human capital index. Male directors experience similar increases but to a lesser extent.

6.3 Allocation of responsibilities in the boardroom: no evidence of tokenism

To examine whether newly appointed female directors have been "tokenized", we look at committee membership and chairmanship. Indeed, it has been argued that committees are where boards' real work is done (Jiraporn et al., 2009; Gormley et al., 2023), with female representation on board committees having a significant impact on firms' performance (Green and Homroy,

[32] Advanced degrees include Ph.D., JD, and MBA.

2018). It has also been found that firms may pay lip service to gender quotas by appointing more women while evicting them from such key positions (Hwang et al., 2018). Consistent with this view, female directors' lack of access to committees is one of the main hypotheses proposed by Maida and Weber (2022) to explain why they do not detect any effect of the Italian quota.

Since 2008, French listed firms have been mandated to establish an audit committee, although most of them already had one by then.[33] This committee is tasked with overseeing financial management and monitoring risk. In addition, most firms have established two other committees: (i) a compensation committee, in charge of determining the CEO and deputy CEOs compensation package, and (ii) a nomination committee, in charge of identifying suitable candidates for CEO and board positions. Together, these three core committees have emerged as a key pillar of corporate governance (Adams et al., 2010; Ferreira et al., 2020; Adams et al., 2021). We thus investigate whether female directors accessed boardroom key positions: committee membership, committee chairmanship, or board chairmanship.

Figure 6 Panel A shows that the female share of directors sitting on one of the three core committees or chairing them increased in line with their overall greater representation on the board: the former almost reaches 45% in 2021 while the latter exceeds 40%. Thus, four years after the quota deadline, women occupied close to half of the key positions on the board. This picture of an evolution mostly beneficial to female directors should be nuanced in light of their lack of access to the board chair position: the female share of board chairs only rose from below 4% in 2009 to slightly below 10% in 2021. The powers of a board chair can vary from firm to firm but they are nonetheless in charge of setting a board's agenda and can thus exert substantial influence on the way a board operates.

To examine whether these positions were distributed broadly or concentrated among a few directors, we analyze the probability of holding a committee position, conditional on gender. Figure 7 shows that this probability has remained high for both genders throughout the analysis period (between 60% and 80%). Although the probability for female directors experienced a slight decline in the years following the reform, it began to gradually rise from 2012 onwards. By contrast, the probability for male directors consistently decreased over 2008-2021, from 76% to 63%), being eventually surpassed by that of female directors as early as 2016.

How do these trends compare to those observed in Norway and Italy, two countries that imposed gender board quotas on listed firms in 2003 and 2011 respectively? Figures 6 Panel B and Panel C show a remarkably close evolution regarding the female share of key positions: the proportion of women sitting on or chairing key committees increases rapidly in the years following the reform, up to 40-50%, while the fraction of women being board chair rises only

[33] Article L823 of the *Code de Commerce* states that firms may opt to have the entire board serve as the audit committee instead of establishing a specific subcommittee. In such cases, all directors assume the responsibilities of committee members, and we treat the board as the committee in our analysis. Our results are robust to focusing exclusively on firms establishing specific subcommittees.

slightly. This would tend to disprove Maida and Weber (2022)'s hypothesis, since it appears that women were not denied access to key positions.

However, one striking difference is share of directors sitting on key committees (Figure 7). Relative to France, the probability to hold a committee position is low for both genders, albeit consistently on the rise. While this is partly explained by the fact that there are fewer committee seats relative to board size in these two countries (44% in Norway and 50% in Italy vs. 72% in France between 2008 and 2021), it also points toward a possible explanation for the observed difference in impact: newly appointed women in France may have indeed found it easier to exert power within an already structured framework. By contrast, with fewer "official" roles to strengthen their standing within the boardroom, female directors in Norway and Italy may have faced greater challenges.

7 Concluding Remarks

In this paper, we provide the first evidence that a gender board quota can be effective in reducing gender inequalities within firms. We show that an increase in the female board share leads to an increase in the representation of women among top earners and CEOs. We find that it also reduces gender wage gaps throughout the wage distribution. Interestingly, these outcomes, desirable from an equity point of view, are neutral from a profitability standpoint. Although the reduction in wage gaps stems from an acceleration of women's wage growth rather than a slowdown of men's, thereby leading to an increase in labor costs, this does not lead to a decrease in profitability, suggesting a concurrent increase in productivity.

Our investigation into the possible mechanisms driving the efficacy of the French quota among treated firms helps us make sense of the magnitude of our results and why some are at odds with the documented impacts in other settings. We find evidence that boards used their compensation-setting power to incentivize CEOs to address gender disparities within firms, and that female directors played a key role in this effort. We also document facts that are inconsistent with a situation of talent shortage and of tokenization of female directors: the gender gap in top executive experience among directors declines by 50% for directors appointed post-quota, while female directors become much more likely to be independent and enjoy broad access to key board committees.

Our results highlight that a greater access of women to the boardroom can indeed contribute to reducing gender imbalances in the labor market. However, albeit significant, the changes we observe are far from sufficient to fully bridge gender gaps, whether in terms of representation or wage disparities. Gender diversity at the top of the corporate ladder certainly has positive spillovers for other women and should be encouraged accordingly but, in the medium term, it alone will not close gender gaps within firms

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8 Figures

Panel A: Female Board Share

Panel B: Fraction of Firms Complying with the Quota

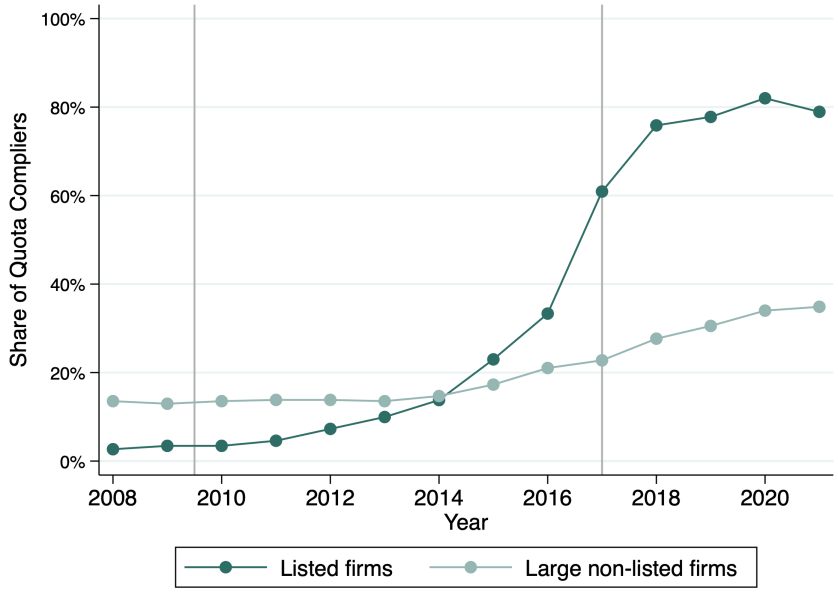


Figure 1: **Female Board Representation by Firm Group**

Note: These figures plot the evolution of the female board share (Panel A) and the fraction of quota-compliant firms (Panel B) for the two firm groups of our main analysis sample, as defined in Section 2.2. The dashed horizontal line in Panel A is the minimum female board share targeted firms had to reach by 2017. The two vertical lines delineate the quota implementation period (2010-2017). See Section 3 for details.

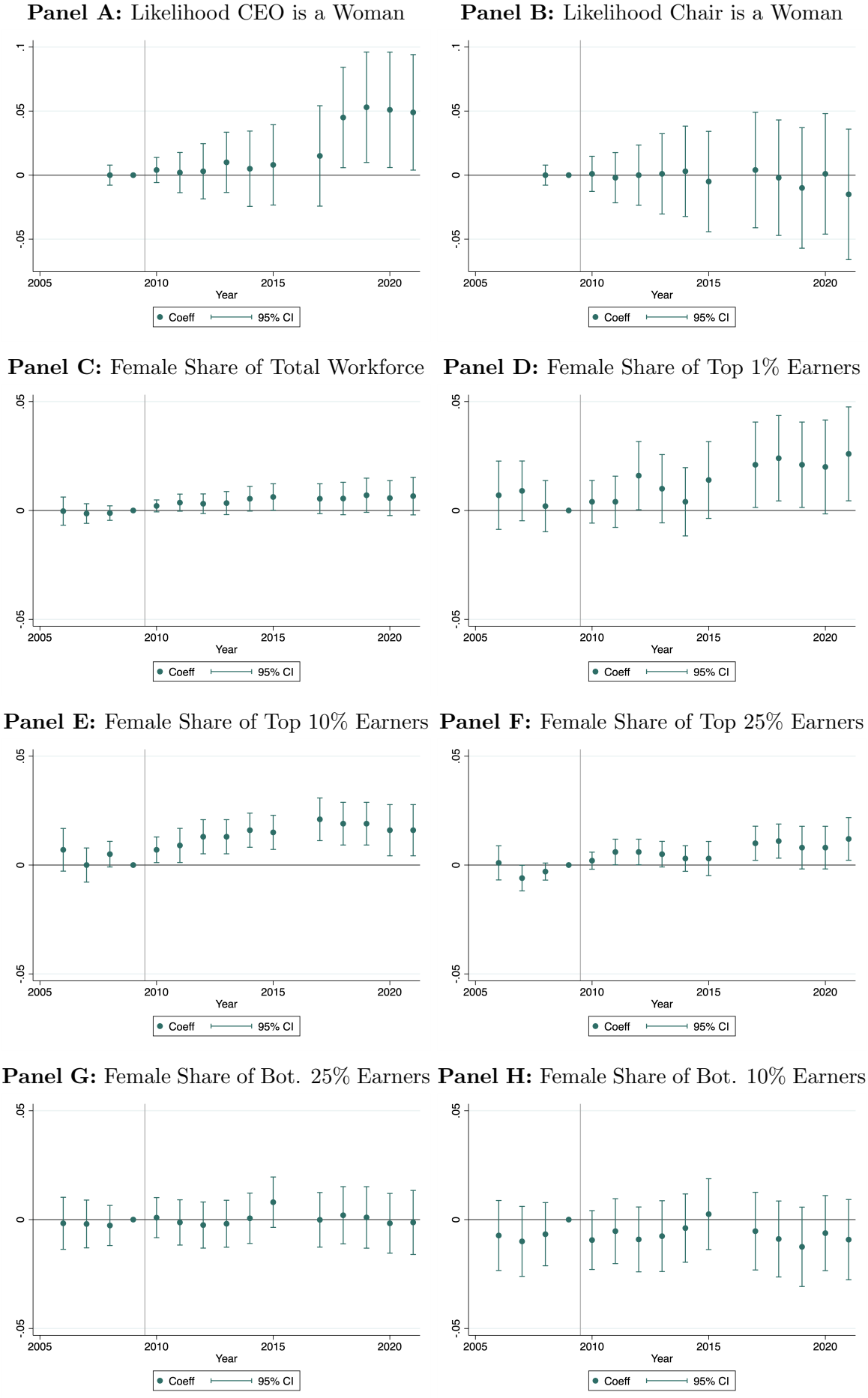


Figure 2: **DiD Estimates - Female Representation Throughout the Firm's Hierarchy**

Note: These graphs plot the DiD estimates from Equation (3). Large non-listed firms are the control group and listed firms are the treatment group. All panels cover the time-period 2009-2021, excluding 2016 (see Section 2), with 2009 as the (pre-reform) reference year. All regressions include year and firm fixed effects, as well as time-varying firm controls for the share of employees in each hierarchical layer (see Section 2.3). Standard errors are clustered at the firm level. See Section 4 for details.

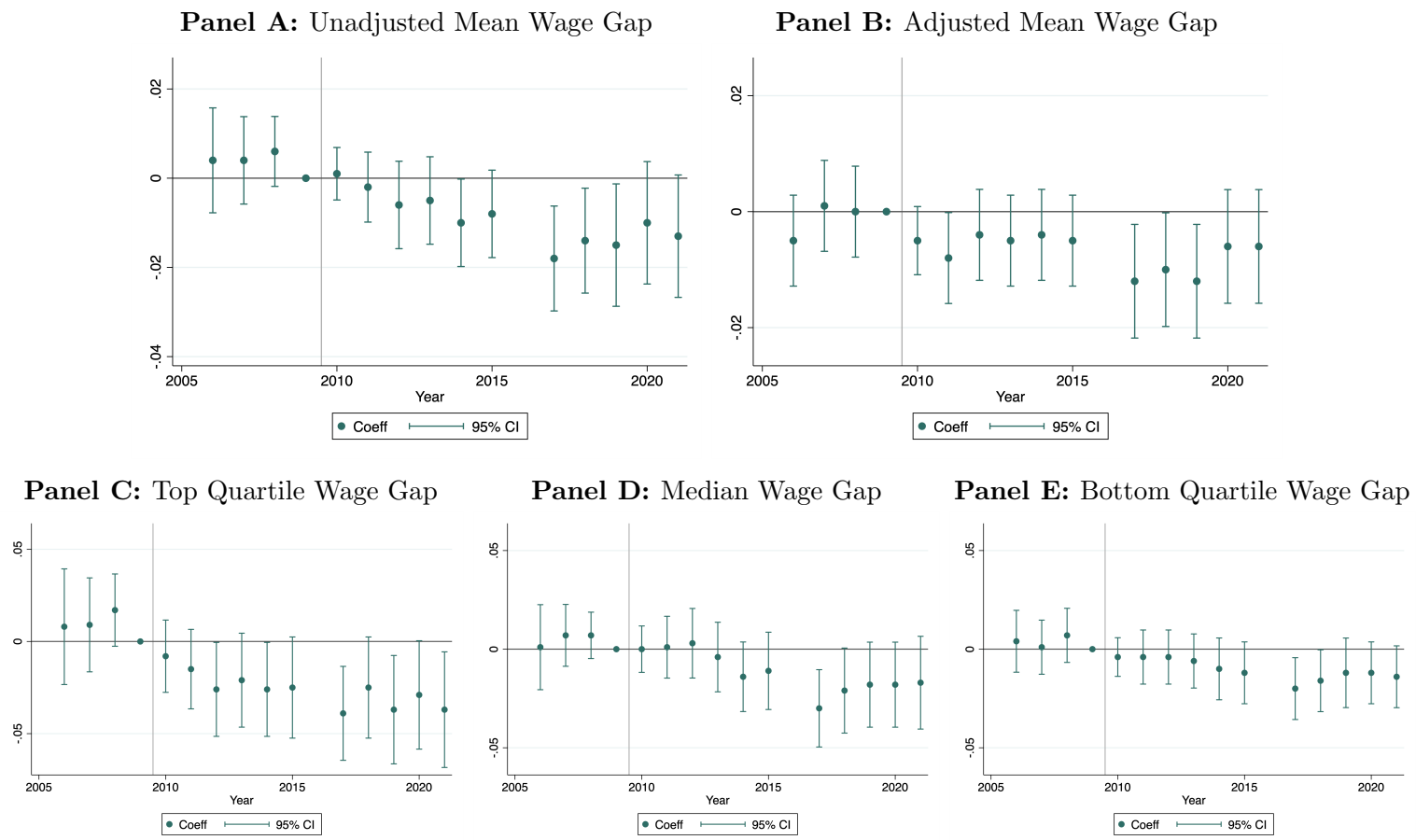
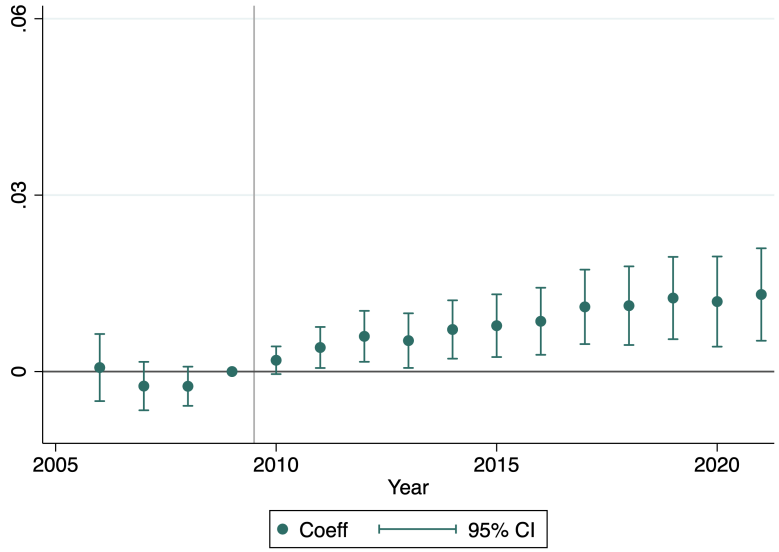


Figure 3: **DiD Estimates - Effects on the Gender Hourly Wage Gaps**

Note: These graphs plot the DiD estimates from Equation (3). Large non-listed firms are the control group and listed firms are the treatment group. All panels cover the time-period 2009-2021, excluding 2016 (see Section 2), with 2009 as the (pre-reform) reference year. Wage gap in Panel B is adjusted for age, age squared, and job title. The top quartile wage gap is computed as the ratio between the hourly wage such that 25% of men earn more, and the hourly wage such that 25% of women earn more. The bottom quartile wage gap is computed as the ratio between the hourly wage such that 25% of men earn less, and the hourly wage such that 25% of women earn less (see Section 2). All regressions include year and firm fixed effects, as well as time-varying firm controls for the share of employees in each hierarchical layer (see Section 2). Standard errors are clustered at the firm level. See Section 4 for details.

Panel A: Female Share of Total Wage Bill
DiD



Panel B: Labor Costs (K€) / Employment
DiD

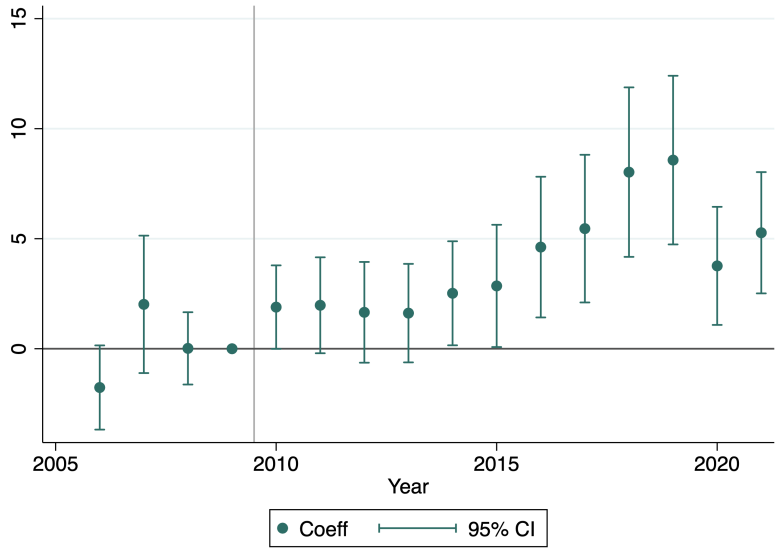


Figure 4: **Labor Costs**

Note: These figures plot the coefficients of the DiD regression of Female share of total wage bill (Panel A) and Labor Costs (K€) / Employment (Panel B) on firm and year fixed effects. The treatment is defined as being listed in 2009, the control group is comprised of large non-listed firms. The vertical line indicates the (pre-reform) reference year 2009. See Section 5.5 for details. Standard errors are clustered at the firm level.

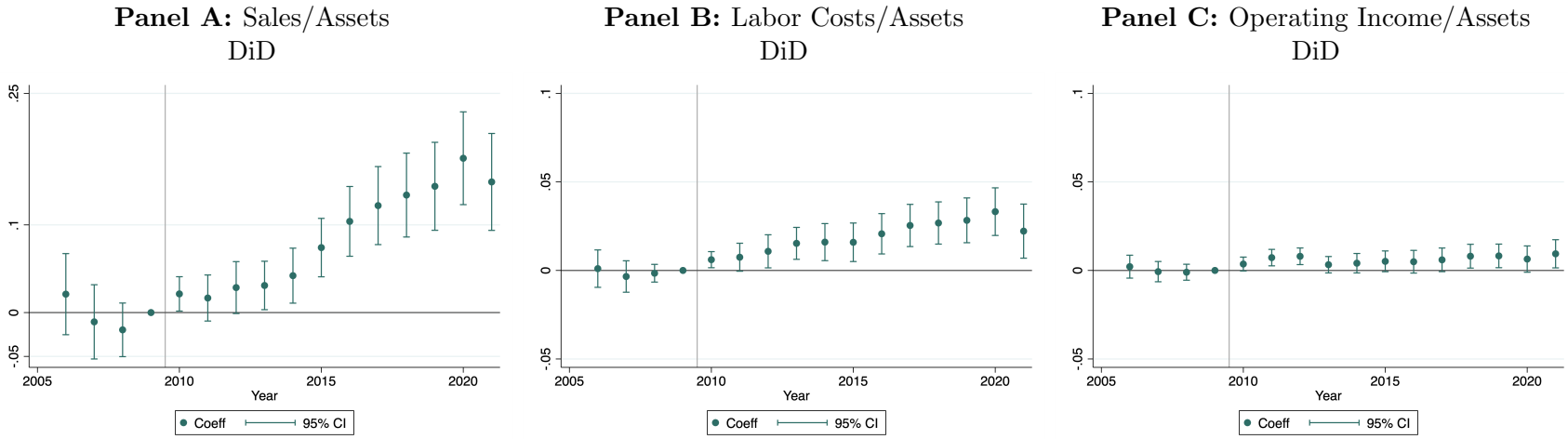


Figure 5: **Profitability**

Note: These graphs report DiD coefficients for the treatment group (listed firms) and the control group (large non-listed firms) (Equation 3). The dependent variables are: Sales/Asset (Panel A), Labor Costs/Assets (Panel B) and Operating Income/Assets (Panel C). Each of these dependent variables is regressed on firm and year fixed effects, the treatment being defined as being listed in 2009. The vertical line indicates the (pre-reform) reference year 2009. See Section 5.5 for details. Standard errors are clustered at the firm level.

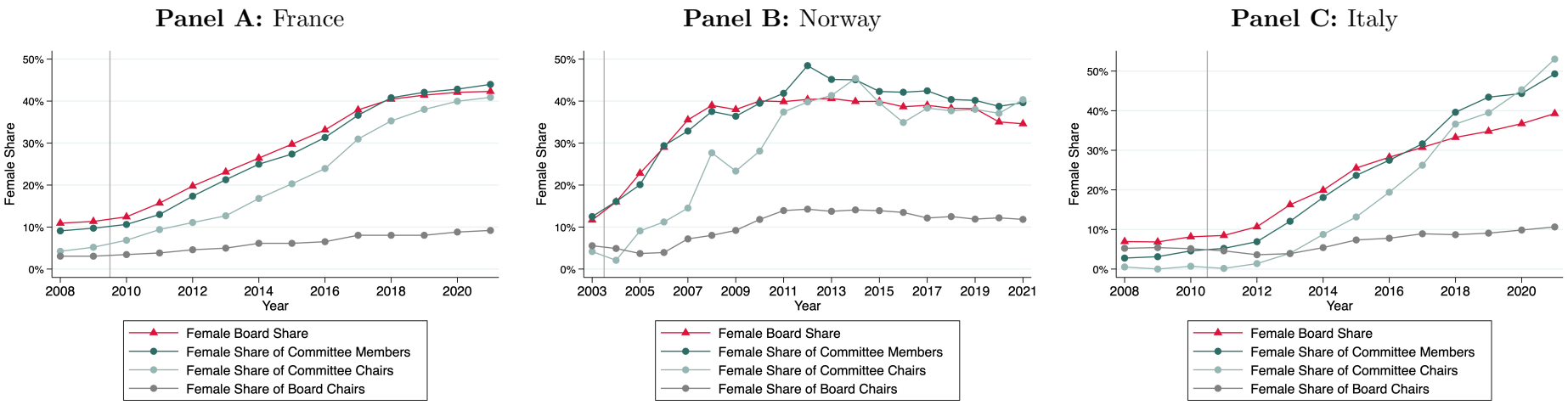
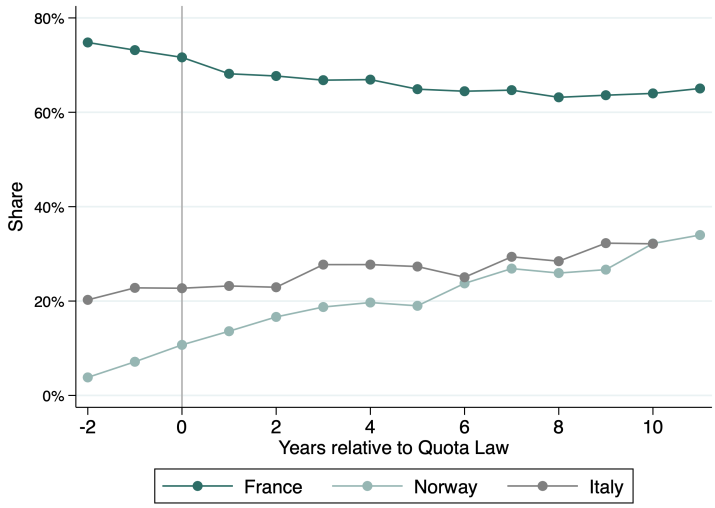


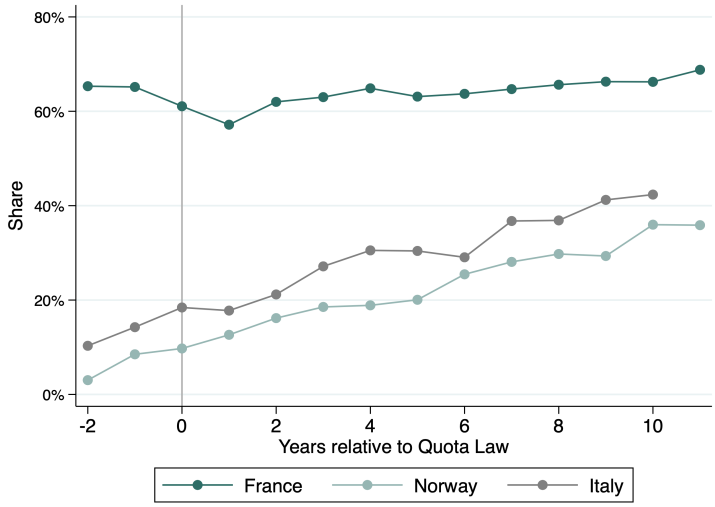
Figure 6: **Female Share of Key Positions in Listed Firms**

Note: These figures focus on listed firms only. The top figures plot the evolution of the fraction of committee member seats, committee chair seats and board chair seats going to female directors in France (Panel A), Norway (Panel B) and Italy (Panel B). The vertical line indicates the (pre-reform) reference year: 2003 in Norway, 2009 in France and 2010 in Italy. See Section 6.3 for details.

Panel A: All



Panel B: Women



Panel C: Men

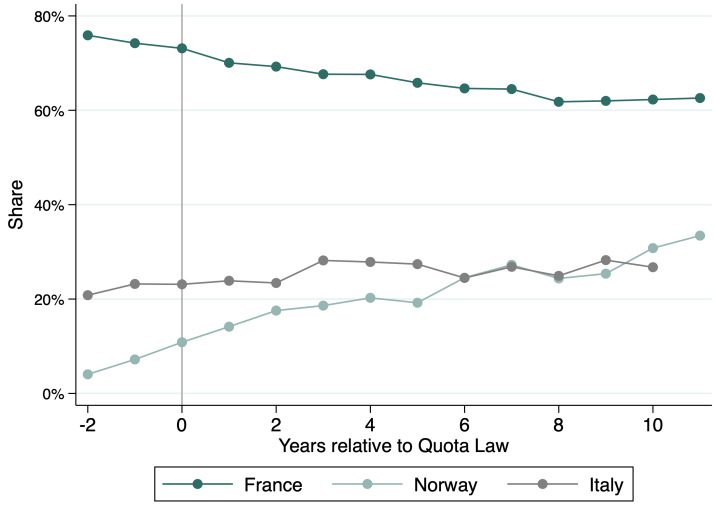


Figure 7: **Share of Directors sitting on Key Committees in Listed Firms**

Note: These figures focus on listed firms only. The bottom figures plots the fraction of directors who are given a seat on key committees among all directors (Panel A), female directors only (Panel B), and male directors only (Panel C). The vertical line indicates the reform year (2004 in Norway, 2010 in France, 2011 in Italy). See Section 6.3 for details.

9 Tables

Table 1: Our Sample in the Economy

	Listed (1)	Large Non-Listed (2)
	2009	
Employees	1,689,125	931,665
Share of total	*0.14*	*0.08*
Value Added (€M)	350,092	120,348
Share of total	*0.19*	*0.07*
	2021	
Employees	1,886,452	964,108
Share of total	*0.13*	*0.07*
Value Added (€M)	520,648	151,319
Share of total	*0.21*	*0.06*
Number of firms	261	347

Note: This table reports the total number of employees and the sum of value added (in million €) for the two groups of firms of our main analysis sample, as defined in Section 2.2, as well as the shares they account for in the entire French economy. See Section 2.2 for details.

Table 2: Balance Table in 2009

	Mean		Difference
	Listed	Large Non-Listed	
	(1)	(2)	(3)
Log Employees	7.21	7.12	-0.09
	[1.77]	[0.86]	(0.12)
Female Share of Employees	0.39	0.38	-0.01
	[0.17]	[0.22]	(0.02)
Female Share of Total Wage Bill	0.32	0.33	0.01
	[0.14]	[0.20]	(0.01)
Log Sales	5.93	5.68	-0.25*
	[1.92]	[1.13]	(0.13)
Log Assets	7.07	5.96	-1.11***
	[2.05]	[1.25]	(0.14)
Number of firms	261	347	

Note: This table reports summary statistics in 2009 for the two groups of firms of our main analysis sample, as defined in Section 2.2. Financial variables are winsorized at the 1 percent tails. Columns (1) and (2) report the mean value for listed and large non-listed firms respectively, with standard deviations in brackets. Column (3) reports the estimate of the difference, with standard errors in parentheses and clustered at the firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 3: Estimates – Female Representation Throughout the Firm's Hierarchy

	Female CEO	Female Chair	Female Share of					
			Total Workforce	Top .. Earners			Bottom .. Earners	
				1%	10%	25%	25%	10%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: DiD Estimates								
Listed x 2010-2015	0.0051	-0.000	0.004**	0.009	0.012***	0.004*	0.001	-0.005
	(0.009)	(0.012)	(0.002)	(0.006)	(0.003)	(0.002)	(0.005)	(0.006)
Listed x 2017-2021	0.043**	-0.005	0.007*	0.023**	0.018***	0.010**	0.001	-0.007
	(0.020)	(0.022)	(0.004)	(0.009)	(0.005)	(0.004)	(0.006)	(0.008)
Panel B: IV Estimates								
FBS	0.194**	-0.022	0.027	0.094**	0.063***	0.037*	0.011	-0.004
	(0.096)	(0.098)	(0.018)	(0.042)	(0.024)	(0.020)	(0.026)	(0.031)
Mean Listed 2009	0.027	0.031	0.394	0.103	0.200	0.260	0.495	0.500
Firm FE	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Clustering	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm
N	7296	7296	7296	7296	7296	7296	7296	7296

Note: This table reports DiD estimates from Equation (4) (Panel A) and IV estimates from Equation (5) (Panel B). large non-listed firms are the control group and listed firms are the treatment group. Both panels cover the time-period 2009-2021, excluding 2016 (see Section 2), with 2009 as the (pre-reform) reference year. FBS is the percentage of women on the board of the firm in a given year; it is instrumented for by the listing status in 2009 interacted with year dummies. All regressions include year and firm fixed effects, as well as time-varying firm controls for the share of employees in each hierarchical layer (see Section 2.3). The FBS is computed excluding the CEO (Column 1) or the board chair (Column 2) to avoid spurious correlation. Standard errors are clustered at the firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4: Estimates – Hourly Wage Gaps

	Mean Hourly Wage Gap		Percentile Hourly Wage Gap		
	Unadjusted	Adjusted	Top Quartile	50th	Bottom Quartile
	(1)	(2)	(3)	(4)	(5)
Panel A: DiD Estimates					
Listed x 2010-2015	-0.005	-0.005	-0.020**	-0.004	-0.006
	(0.004)	(0.003)	(0.010)	(0.007)	(0.006)
Listed x 2017-2021	-0.013**	-0.008*	-0.032**	-0.020**	-0.015*
	(0.006)	(0.004)	(0.013)	(0.010)	(0.008)
Panel B: IV Estimates					
Female Board Share	-0.063**	-0.025	-0.117*	-0.112**	-0.067*
	(0.026)	(0.019)	(0.060)	(0.047)	(0.035)
Mean Listed 2009	0.181	0.115	0.289	0.202	0.133
Firm FE	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Clustering	Firm	Firm	Firm	Firm	Firm
N	7296	7296	7296	7296	7296

Note: This table reports DiD estimates from Equation (4) (Panel A) and IV estimates from Equation (5) (Panel B). large non-listed firms are the control group and listed firms are the treatment group. Both panels cover the time-period 2009-2021, excluding 2016 (see Section 2), with 2009 as the (pre-reform) reference year. FBS is the percentage of women on the board of the firm in a given year; it is instrumented for by the listing status in 2009 interacted with year dummies. The adjusted wage gap in Column (2) is adjusted for age, age squared, and job title. All regressions include year and firm fixed effects, as well as time-varying firm controls for the share of employees in each hierarchical layer (see Section 2.3). Standard errors are clustered at the firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 5: Comparison of Board Members Characteristics Pre vs. Post Reform - 2009 Listed Firms Only

	Appointed before 31/12/2009			**Appointed after 01/01/2011**			**Post vs. Pre**	
	Women	Men	Diff.	Women	Men	Diff.	Women	Men
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Previously Top Executive	0.36	0.49	-0.12***	0.48	0.54	-0.06***	0.12***	0.05**
	[0.42]	[0.28]	(0.03)	[0.30]	[0.29]	(0.02)	(0.03)	(0.02)
Independent	0.29	0.29	-0.00	0.52	0.30	0.22***	0.23***	0.00
	[0.41]	[0.22]	(0.03)	[0.30]	[0.27]	(0.02)	(0.03)	(0.02)
Family link	0.34	0.17	0.16***	0.10	0.09	0.01	-0.23***	-0.08***
	[0.44]	[0.24]	(0.03)	[0.19]	[0.19]	(0.01)	(0.03)	(0.02)
Foreign	0.08	0.11	-0.03*	0.17	0.17	-0.00	0.09***	0.05***
	[0.23]	[0.16]	(0.02)	[0.24]	[0.23]	(0.02)	(0.02)	(0.01)
Age	48.35	52.93	-4.59***	51.15	55	-3.85***	2.80***	1.78***
	[8.160]	[6.630]	(0.70)	[4.860]	[6.270]	(0.47)	(0.66)	(0.52)
Advanced Degrees	0.29	0.30	-0.01	0.27	0.28	-0.00	-0.02	-0.03
	[0.35]	[0.25]	(0.03)	[0.25]	[0.28]	(0.02)	(0.03)	(0.02)
N	178	261		256	245			

Note: This table focuses on listed firms. It reports comparisons between female and male directors appointed before and after the reform, along several dimensions. Observations are averaged at the firm × gender level. Columns 1 and 2 report the mean values of characteristics for directors appointed before or on December 31, 2009 included. Columns 4–5 report the same for those appointed after January 1, 2011 included. Columns (3) and (6) compare genders within appointment periods. Columns (7) and (8) compare periods within genders. Note that 5 firms did not appoint new female directors after 2011, and 6 did not appoint new male directors after 2011. Advanced degrees include MBA, PhD and JD. Family link is a dummy equal to one if a director has family connections to another director. Standard deviations are in brackets. Standard errors are in parentheses and clustered at the firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. See Section 6.2 for details.

Table 6: Impact of Gender Equality Incentives in CEO Compensation on Main Outcomes

	Female Share of Top ... Earners			Mean Hourly Wage Gap		Percentile Hourly Wage Gap		
	1%	10%	25%	Unadjusted	Adjusted	Top Quartile	50th	Bottom Quartile
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: DiD Estimates								
Listed × Post2009 ×								
No Incentive	0.009	0.013***	0.006*	-0.004	-0.007*	-0.022*	-0.007	-0.003
	(0.007)	(0.004)	(0.003)	(0.005)	(0.004)	(0.012)	(0.009)	(0.006)
Incentive	0.026***	0.018***	0.008**	-0.016**	-0.006	-0.032*	-0.019*	-0.024**
	(0.008)	(0.005)	(0.004)	(0.007)	(0.005)	(0.018)	(0.010)	(0.009)
Mean Listed 2009	0.103	0.200	0.260	0.181	0.115	0.289	0.202	0.133
Firm FE	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Clustering	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm
N	7296	7296	7296	7296	7296	7296	7296	7296

Note: This table reports DiD estimates from Equation (8) (Panel A). Large non-listed firms are the control group and listed firms are the treatment group. The time-period covered is 2009-2021, excluding 2016 (see Section 2), with 2009 as the (pre-reform) reference year. Outcomes are regressed on an indicator for whether the firm is listed interacted with whether the firm's board tied part of the CEO compensation to gender equality goals after 2009, as well as a set of controls. All regressions include year and firm fixed effects, as well as time-varying firm controls for the share of employees in each hierarchical layer (see Section 2.3). The adjusted wage gap in Column (5) is adjusted for age, age squared, and job title. All regressions include year and firm fixed effects, as well as time-varying firm controls for the share of employees in each hierarchical layer (see Section 2.3). Standard errors are clustered at the firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

SUPPLEMENTARY APPENDIX

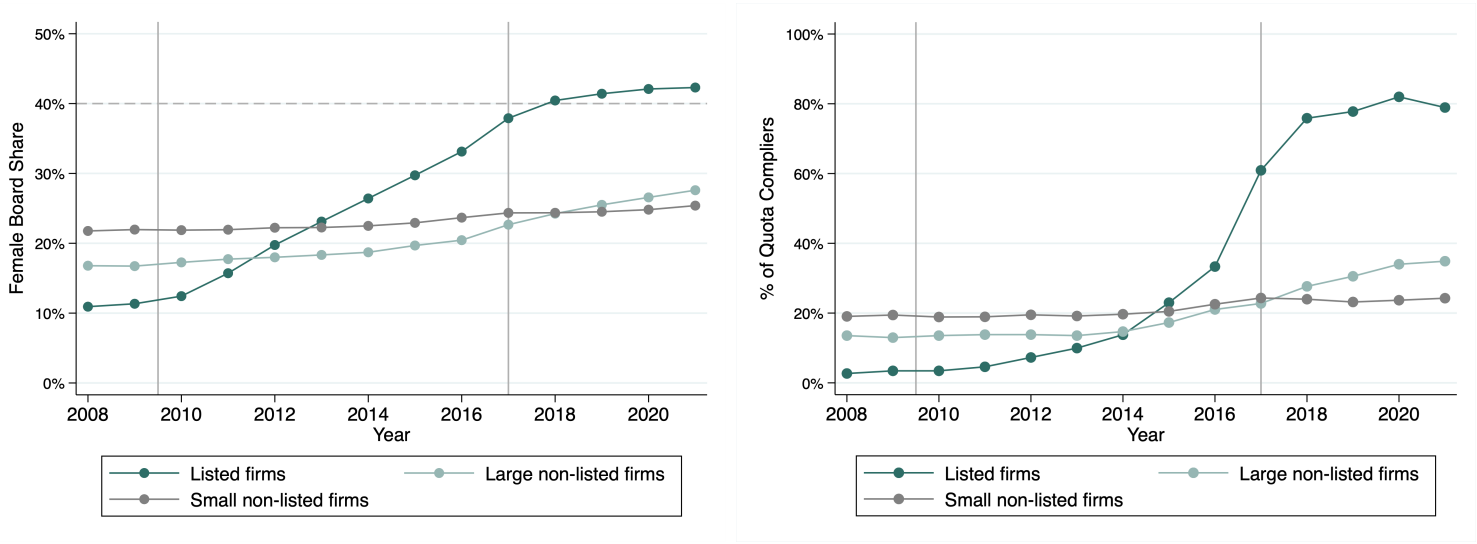


Figure A8: **Quota Implementation by Firm Group**

Note: These figures plot the evolution of the female board share (Panel A) and the fraction of quota-compliant firms (Panel B) for the three firm groups, as defined in Section 2.2. The dashed horizontal line in Panel A is the minimum female board share targeted firms had to reach by 2017. The two vertical lines delineate the implementation period (2010-2017). See Section 3 for details.

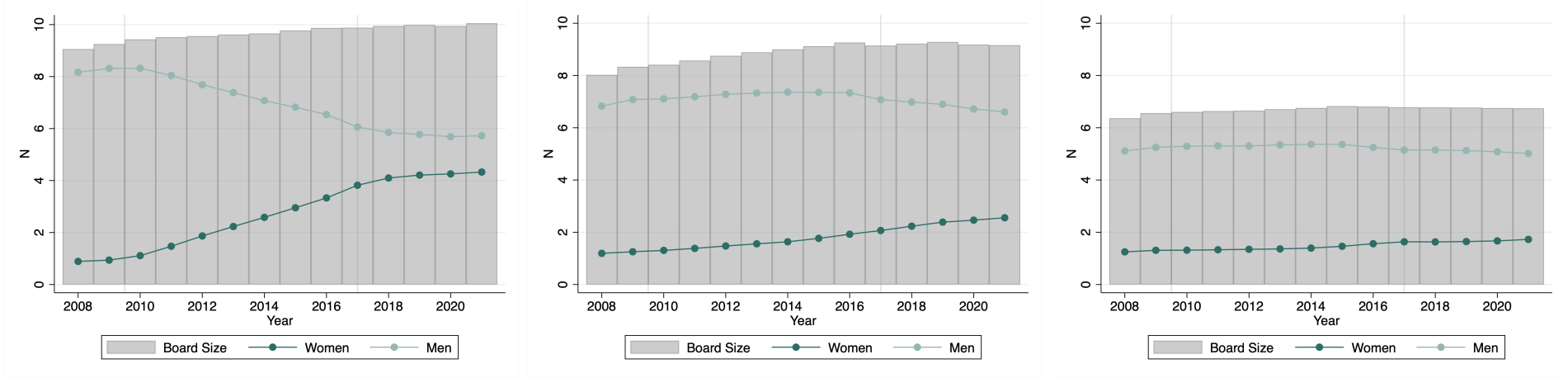
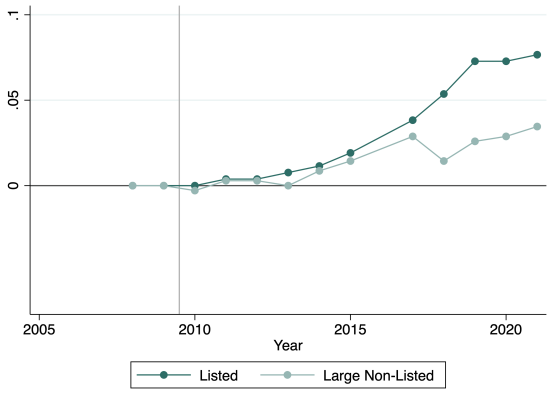


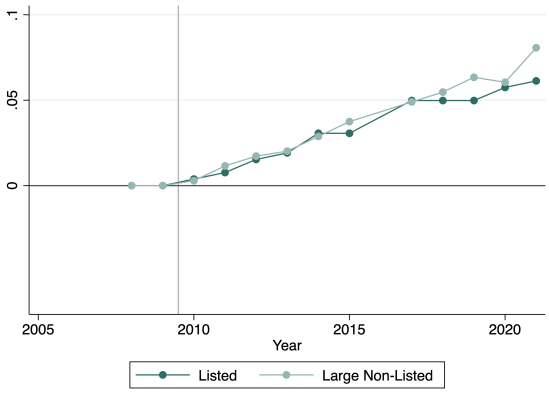
Figure A9: **Board Size**

Note: These figures plot the yearly average number of female and male directors for each of the three groups of firms, as defined in Section 2.2. Gray bars indicate the yearly average board size. Gray vertical lines delineate the implementation period (2010-2017). See Section 3 for details.

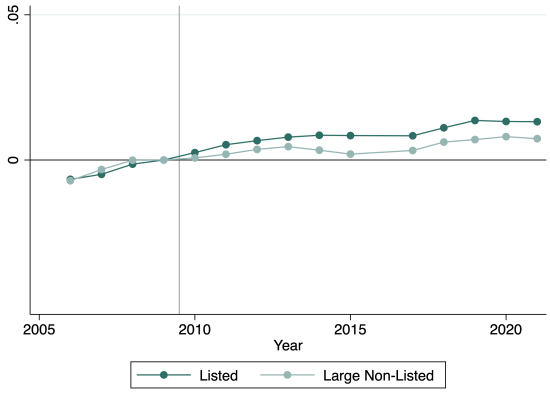
Panel A: Likelihood CEO is a Woman



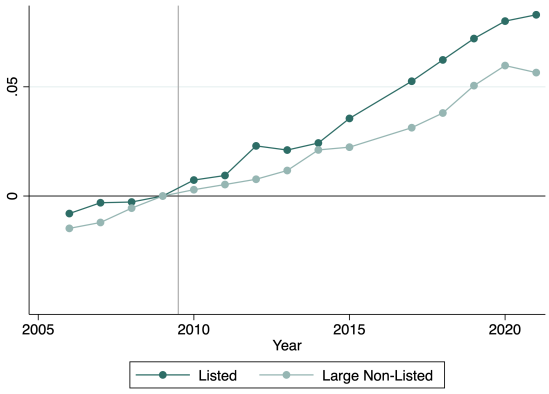
Panel B: Likelihood Chair is a Woman



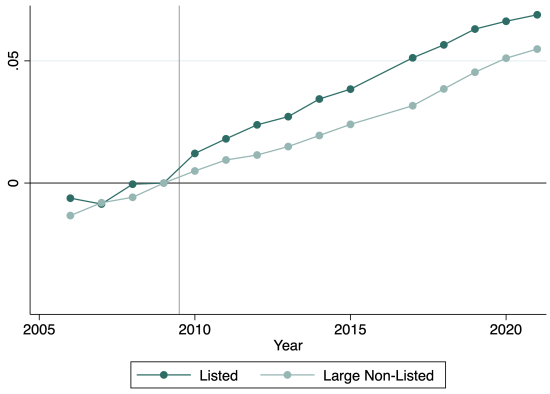
Panel C: Female Share of Total Workforce



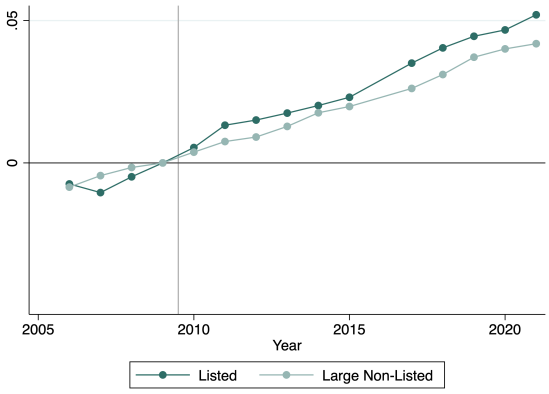
Panel D: Female Share of Top 1% Earners



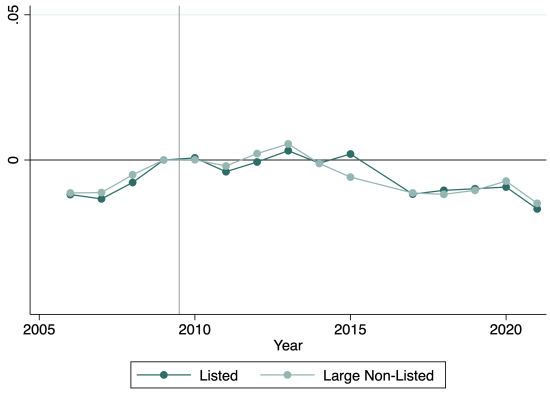
Panel E: Female Share of Top 10% Earners



Panel F: Female Share of Top 25% Earners



Panel G: Female Share of Bot. 25% Earners



Panel H: Female Share of Bot. 10% Earners

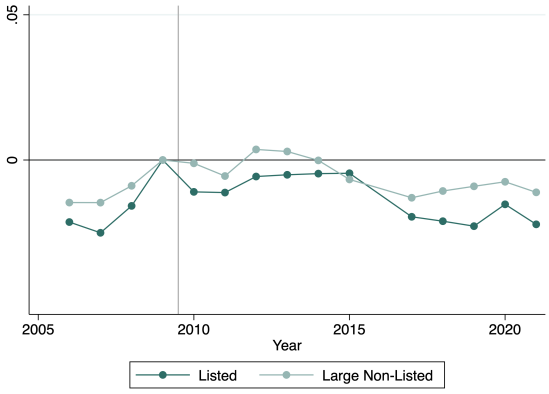


Figure A10: **Event Study - Female Representation Throughout the Firm's Hierarchy**

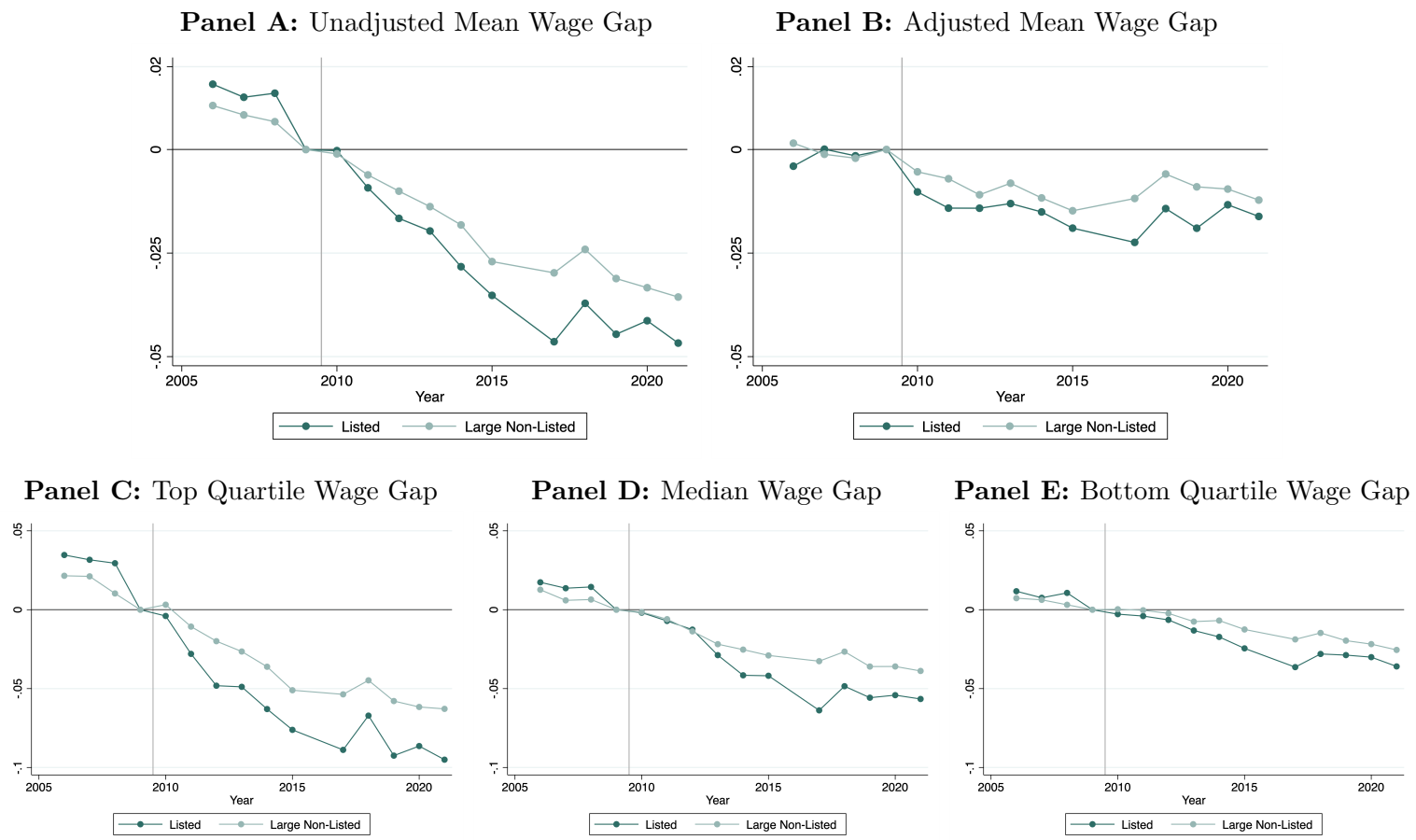


Figure A11: **Event Study - Gender Wage Gaps**

Note: These graphs plot the DiD estimates from Equation (3). Large non-listed firms are the control group and listed firms are the treatment group. All panels cover the time-period 2009-2021, excluding 2016 (see Section 2), with 2009 as the (pre-reform) reference year. Wage gap in Panel B is adjusted for age, age squared, and job title. The top quartile wage gap is computed as the ratio between the hourly wage such that 25% of men earn more, and the hourly wage such that 25% of women earn more. The bottom quartile wage gap is computed as the ratio between the hourly wage such that 25% of men earn less, and the hourly wage such that 25% of women earn less (see Section 2). All regressions include year and firm fixed effects, as well as time-varying firm controls for the share of employees in each hierarchical layer (see Section 2). Standard errors are clustered at the firm level. See Section 4 for details.

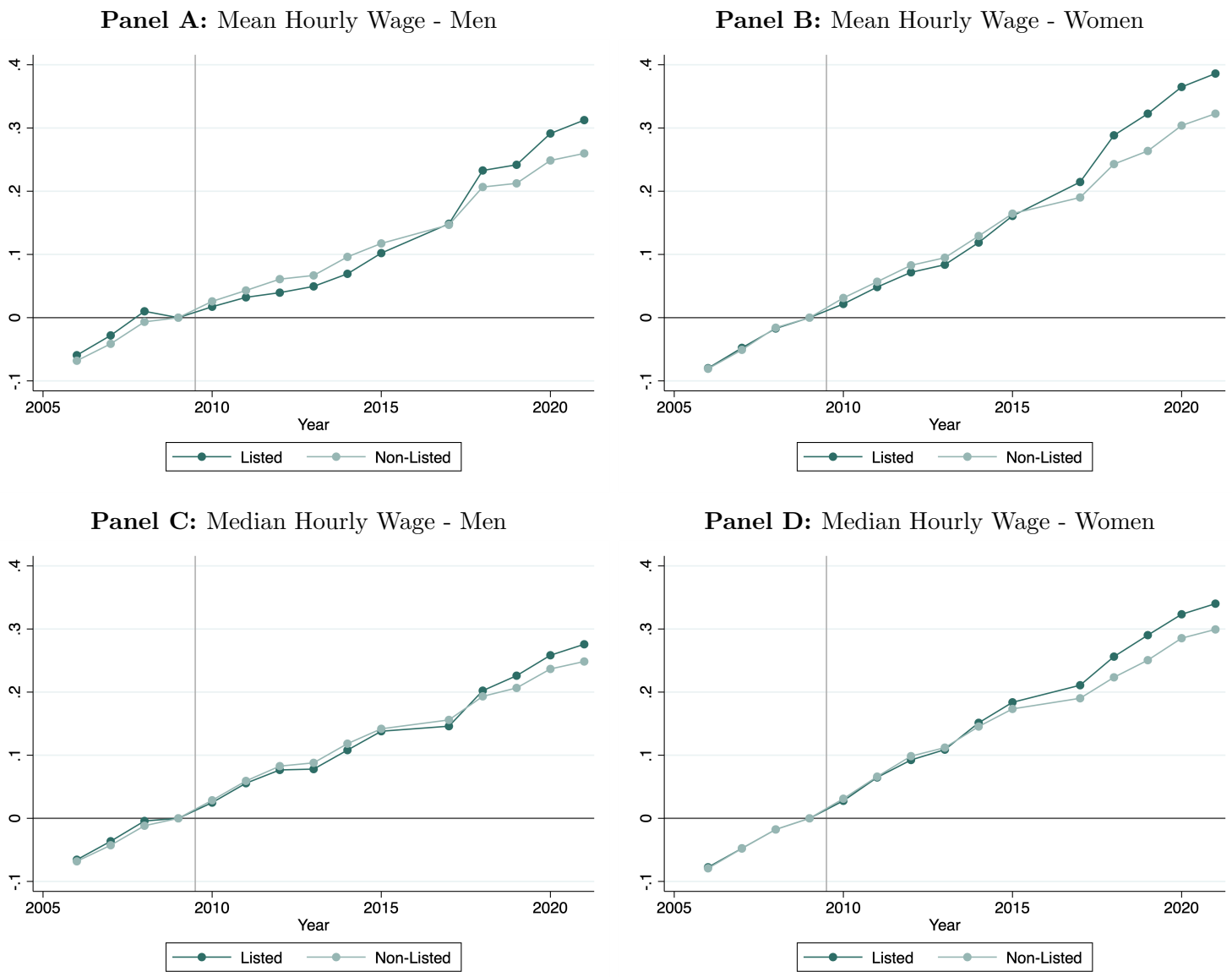


Figure A12: **Hourly Wage Growth by Gender**

Note: These figures plot the growth of the mean (Panel A and Panel B) and median (Panel C and Panel D) hourly wage for each gender relative to the value in 2009, among the listed and large non-listed firms. See Section 5.4 for details.

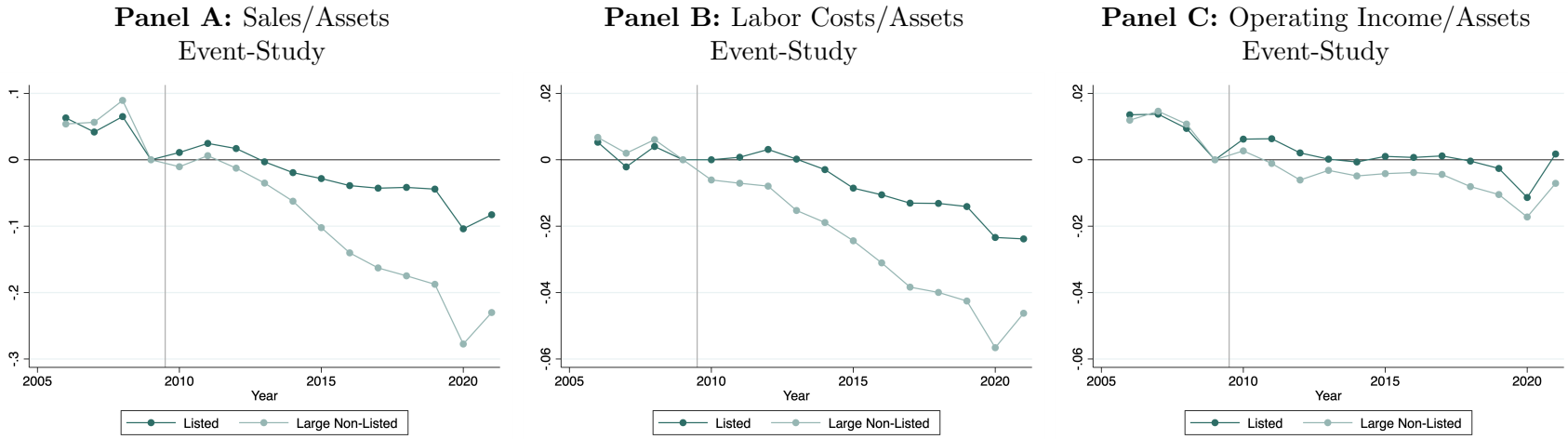


Figure A13: **Profitability - Event-Study**

Note: These graphs report the event study for the treatment group (listed firms) and the control group (large non-listed firms) (Equation 3) with 2009 as reference year. The dependent variables are: Sales/Asset (Panel A), Labor Costs/Assets (Panel B) and Operating Income/Assets (Panel C). The vertical line indicates the (pre-reform) reference year 2009. See Section 5.5 for details. Standard errors are clustered at the firm level.

Table A1: Corporate Forms in 2021

	SA/SCA	SAS	Other
	(1)	(2)	(3)
Board	Mandatory	Discretionary	Prohibited
N	36,749	916,220	2,472,618
Share	1.1%	26.7%	72.2%

Note: This table displays the number of firms by corporate forms in 2021. Three of them (SA, SCA and SAS) allows for the establishment of a board. As shown in Column 3, almost three quarter of firms cannot have one. Data is from the Base SIRENE of Insee as of 2023.

Table A2: Our Sample in the Economy

	Listed	Large Non-Listed	Small Non-Listed
	(1)	(2)	(3)
		2009	
Employees	1,689,125	931,665	295,575
Share of total	*0.14*	*0.08*	*0.02*
Value Added (€M)	350,092	120,348	43,480
Share of total	*0.19*	*0.07*	*0.02*
		2021	
Employees	1,886,452	964,108	380,001
Share of total	*0.13*	*0.07*	*0.03*
Value Added (€M)	520,648	151,319	64,887
Share of total	*0.21*	*0.06*	*0.03*
Number of firms	261	347	1,743

Note: This table reports the total number of employees and the sum of value added (in million €) by group of firms as defined in Section 2.2, as well as the shares they account for in the entire French economy. See Section 2.2 for details.

Table A3: Balance Table in 2009

	Mean Listed	Difference with Listed	
		Large Non-Listed	Small Non-Listed
	(1)	(2)	(3)
Log Employees	7.21	-0.09	-2.27***
	[1.77]	(0.12)	(0.11)
Female Share of Employees	0.38	-0.01	-0.02*
	[0.17]	(0.02)	(0.01)
Female Share of Total Wage Bill	0.32	0.01	0.00
	[0.14]	(0.01)	(0.01)
Log Sales	5.93	-0.25*	-2.59***
	[1.92]	(0.13)	(0.12)
Log Assets	7.01	-1.11***	-3.47***
	[2.05]	(0.14)	(0.13)
Number of firms	261	347	1,743

Note: This table reports summary statistics in 2009 for the three groups of firms, as defined in Section 2.2. Financial variables are winsorized at the 1 percent tails. Column (1) reports the mean value for listed firms, with standard deviations in brackets. Columns (2) and (3) report the estimate of the difference with large non-listed firms and small non-listed firms, with standard errors in parentheses and clustered at the firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A4: Evolution of Board Size Between 2009 and 2021

	2009	2021	Diff.	N
	(1)	(2)	(3)	
Listed (L)	9.25	10.05	0.80***	261
	[4.15]	[3.99]	(0.20)	
Large non-listed (LNL)	8.33	9.15	0.82***	347
	[6.50]	[7.30]	(0.21)	
Small non-listed (SNL)	6.56	6.74	0.18***	1,743
	[5.19]	[5.49]	(0.07)	
	Diff.	Diff.		
L - LNL	-0.92**	-0.89*		
	(0.43)	(0.46)		
L - SNL	-2.69***	-3.31***		
	(0.28)	(0.28)		

Note: This table reports the evolution of the mean board size for the three groups of firms, as defined in Section 2.2. The differences in Columns (1) and (2) compare the within-year board size across groups. Column (3) reports the within-group difference across years. Standard deviations are in bracket. Standard errors are in parentheses and clustered at the firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. See Section 3 for details.

Table A5: Comparison of Board Members Characteristics Pre vs. Post Reform

	Appointed before 31/12/2009			**Appointed after 01/01/2011**			**Post vs. Pre**	
	Women	Men	Diff.	Women	Men	Diff.	Women	Men
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				Panel A: Family link to another board member				
Listed	0.34	0.17	0.164***	0.10	0.09	0.011	-0.231***	-0.078***
	[0.44]	[0.24]	(0.030)	[0.19]	[0.19]	(0.013)	(0.031)	(0.016)
Large Non-Listed	0.33	0.29	0.042*	0.25	0.19	0.058***	-0.076**	-0.092***
	[0.42]	[0.34]	(0.022)	[0.35]	[0.28]	(0.0225)	(0.030)	(0.020)
Small Non-Listed	0.44	0.39	0.054***	0.34	0.27	0.072***	-0.102***	-0.121***
	[0.45]	[0.39]	(0.0122)	[0.41]	[0.35]	(0.013)	(0.016)	(0.010)
				Panel B: Foreign Board Members				
Listed	0.08	0.11	-0.033*	0.17	0.17	-0.001	0.086***	0.054***
	[0.23]	[0.16]	(0.018)	[0.24]	[0.23]	(0.015)	(0.021)	(0.013)
Large Non-Listed	0.07	0.07	-0.001	0.08	0.09	-0.014	0.009	0.022**
	[0.24]	[0.19]	(0.016)	[0.21]	[0.21]	(0.013)	(0.017)	(0.009)
Small Non-Listed	0.07	0.06	-0.008	0.08	0.10	-0.017**	0.020**	0.029***
	[0.22]	[0.19]	(0.007)	[0.24]	[0.23]	(0.008)	(0.008)	(0.005)
N	1,555	2,351		1,571	1,854			

Note: This table reports comparisons between female and male directors appointed before and after the reform, along two dimensions: family connections (Panel A) and whether or not they are French citizens (Panel B). Observations are at the firm × gender level. Columns 1 and 2 report the mean values of characteristics for directors appointed before or on December 31, 2009 included. Columns 4–5 report the same for those appointed after January 1, 2011 included. Standard deviations are in brackets. Standard errors are in parentheses and clustered at the firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. See Section 3 for details.

Table A6: Main Outcomes in 2009

	Mean Listed	Difference with Listed	
		Large Non-Listed	Small Non-Listed
	(1)	(2)	(3)
	Outcomes at the Top		
Female CEO	0.027	0.033*	0.057***
	[0.160]	(0.018)	(0.013)
Female Chair	0.031	0.380**	0.069***
	[0.173]	(0.017)	(0.014)
Women in Top 10 Earners	0.900	0.108	0.772***
	[1.040]	(0.095)	(0.087)
Female Share of Top 1% Earners	0.103	0.005	0.016*
	[0.120]	(0.010)	(0.009)
Female Share of Top 10% Earners	0.200	0.004	-0.013
	[0.125]	(0.011)	(0.009)
Female Share of Top 25% Earners	0.260	0.000	-0.020**
	[0.143]	(0.012)	(0.009)
	Hourly Mean Wage Gaps		
Unadjusted	0.181	-0.012	0.013
	[0.135]	(0.010)	(0.009)
Adjusted	0.115	-0.007	0.005
	[0.073]	(0.006)	(0.006)
	Percentile Hourly Wage Gaps		
75th	0.289	-0.024	0.065**
	[0.289]	(0.024)	(0.026)
50th (Median)	0.202	-0.016	0.017
	[0.216]	(0.018)	(0.016)
25th	0.133	-0.007	0.019*
	[0.140]	(0.011)	(0.010)
Number of firms	261	347	1,753

Note: This table reports summary statistics for our main outcomes in 2009 for the three groups of firms, as defined in Section 2.2. Column (1) reports the mean value for listed firms, with standard deviations in brackets. Columns (2) and (3) report the estimates of the adjusted difference with large non-listed firms and small non-listed firms (Equation (7)). The difference is adjusted for firm industry and share of employees in each hierarchical layer. Standard errors are in parentheses and clustered at the firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. See Section 4.2 for details.

Table A7: First stage - 2009 to 2021

	Female Board Share
	(1)
$\text{Listed}_{2009} \times 2010$	0.00555
	(0.00396)
$\text{Listed}_{2009} \times 2011$	0.0344***
	(0.00602)
$\text{Listed}_{2009} \times 2012$	0.0720***
	(0.00725)
$\text{Listed}_{2009} \times 2013$	0.102***
	(0.00853)
$\text{Listed}_{2009} \times 2014$	0.131***
	(0.00988)
$\text{Listed}_{2009} \times 2015$	0.155***
	(0.0110)
$\text{Listed}_{2009} \times 2016$	0.180***
	(0.0119)
$\text{Listed}_{2009} \times 2017$	0.206***
	(0.0128)
$\text{Listed}_{2009} \times 2018$	0.216***
	(0.0136)
$\text{Listed}_{2009} \times 2019$	0.213***
	(0.0137)
$\text{Listed}_{2009} \times 2020$	0.208***
	(0.0142)
$\text{Listed}_{2009} \times 2021$	0.200***
	(0.0141)
Observations	7,904
F-stat	24.44

Note: This table reports the first stage estimates from Equation (6) on the sub-sample of targeted firms. The time-period covered is 2009-2021. All regressions include year and firm fixed effects, as well as time-varying firm controls for the share of employees in each hierarchical layer (see Section 2.3). Standard errors are clustered at the firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A8: Compliance with Gender Equality Index Law in 2021

	Index Disclosure		Index Value	
	(1)	(2)	(3)	(4)
Listed	-0.023	-0.007	0.959	-1.067
	(0.041)	(0.045)	(1.609)	(1.676)
Female Board Share		-0.108		14.51**
		(0.124)		(6.40)
Constant	0.548***	0.577***	81.57***	77.60***
	(0.027)	(0.044)	(1.14)	(2.31)
Observations	608	608	327	327

Note: This table regresses the disclosure of the gender equality index in 2021 (Columns 1 and 2) or the index value in 2021 (Columns 3 and 4) on an indicator variable equal to one if the firm is listed in 2009 (Columns 1 and 3), and including a control for the Female Board Share in 2021 (Columns 2 and 4). The sample is comprised of listed and large non-listed firms (Columns 1 and 2), restricted to the firms that reported the index in 2021 (Column 3 and 4). Standard errors are clustered at the firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. See Section 4.3 for details.

Table A9: Estimates with Alternative Control Group – Female Representation Throughout the Firm's Hierarchy

	Female CEO	Female Chair	Female Share of					
			Total Workforce	Top .. Earners			Bottom .. Earners	
				1%	10%	25%	25%	10%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: DiD Estimates								
Listed x 2010-2015	-0.001	0.012	0.006***	0.011**	0.013***	0.005**	0.006	0.003
	(0.006)	(0.010)	(0.002)	(0.006)	(0.003)	(0.002)	(0.004)	(0.006)
Listed x 2017-2021	0.030*	0.015	0.007**	0.024***	0.020***	0.012***	0.004	0.000
	(0.015)	(0.018)	(0.003)	(0.009)	(0.005)	(0.004)	(0.006)	(0.007)
Panel B: IV Estimates								
FBS	0.121**	0.011	0.015	0.068**	0.052***	0.036**	0.001	0.003
	(0.060)	(0.062)	(0.011)	(0.031)	(0.018)	(0.014)	(0.018)	(0.022)
Mean Listed 2009	0.0270	0.0310	0.394	0.103	0.200	0.260	0.495	0.500
Firm FE	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Clustering	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm
N	23988	23988	23988	23988	23988	23988	23988	23988

Note: This table reports DiD estimates from Equation (4) (Panel A) and IV estimates from Equation (5) (Panel B). Results are estimated using an alternative control group: instead of large non-listed firms, the control group comprises small non-listed firms (i.e., not subject to the quota in 2009). Listed firms remain the treatment group. Listed firms remain the treatment group. Both panels cover the time-period 2009-2021, excluding 2016 (see Section 2), with 2009 as the (pre-reform) reference year. FBS is the percentage of women on the board of the firm in a given year; it is instrumented for by the listing status in 2009 interacted with year dummies. All regressions include year and firm fixed effects, as well as time-varying firm controls for the share of employees in each hierarchical layer (see Section 2.3). The FBS is computed excluding the CEO (Column 1) or the board chair (Column 2) to avoid spurious correlation. Standard errors are clustered at the firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A10: Estimates with Alternative Control Group – Hourly Wage Gaps

	Mean Hourly Wage Gap		Percentile Hourly Wage Gap		
	Unadjusted	Adjusted	Top Quartile	50th	Bottom Quartile
	(1)	(2)	(3)	(4)	(5)
Panel A: DiD Estimates					
Listed x 2010-2015	-0.002	-0.002	-0.012	0.001	0.004
	(0.004)	(0.003)	(0.010)	(0.006)	(0.005)
Listed x 2017-2021	-0.008	-0.002	-0.025*	-0.012	-0.002
	(0.005)	(0.004)	(0.015)	(0.009)	(0.007)
Panel B: IV Estimates					
Female Board Share	-0.036*	-0.003	-0.077	-0.056*	-0.022
	(0.019)	(0.015)	(0.057)	(0.033)	(0.024)
Mean Listed 2009	0.181	0.115	0.289	0.202	0.133
N	23988	23988	23988	23988	23988

Note: This table reports DiD estimates from Equation (4) (Panel A) and IV estimates from Equation (5) (Panel B). Results are estimated using an alternative control group: instead of large non-listed firms, the control group comprises small non-listed firms (i.e., not subject to the quota in 2009). Listed firms remain the treatment group. Both panels cover the time-period 2009-2021, excluding 2016 (see Section 2), with 2009 as the (pre-reform) reference year. FBS is the percentage of women on the board of the firm in a given year; it is instrumented for by the listing status in 2009 interacted with year dummies. The adjusted wage gap in Column (2) is adjusted for age, age squared, and job title. All regressions include year and firm fixed effects, as well as time-varying firm controls for the share of employees in each hierarchical layer (see Section 2.3). Standard errors are clustered at the firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A11: OLS Estimates – Female Representation Throughout the Firm's Hierarchy

	Female CEO	Female Chair	Female Share of		
			Top .. Earners		
			1%	10%	25%
	(1)	(2)	(3)	(4)	(5)
FBS	0.076	0.232***	0.060***	0.012	0.011
	(0.046)	(0.054)	(0.017)	(0.008)	(0.008)
Mean 2009	0.053	0.054	0.108	0.206	0.260
Firm FE	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Clustering	Firm	Firm	Firm	Firm	Firm
N	7296	7296	7296	7296	7296

Note: This table reports IV estimates from Equation (5). The time-period covered 2009-2021, excluding 2016 (see Section 2), with 2009 as the (pre-reform) reference year. FBS is the percentage of women on the board of the firm in a given year. In this specification, it is instrumented for by the percentage of women on the board in 2009 interacted with year dummies. All regressions include year and firm fixed effects, as well as time-varying firm controls for the share of employees in each hierarchical layer (see Section 2.3). The FBS is computed excluding the CEO (Column 1) or the board chair (Column 2) to avoid spurious correlation. Standard errors are clustered at the firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A12: OLS Estimates – Hourly Wage Gaps

	Mean Hourly Wage Gap		Percentile Hourly Wage Gap		
	Unadjusted	Adjusted	75th	50th	25th
	(1)	(2)	(3)	(4)	(5)
FBS	-0.029***	-0.005	-0.041*	-0.043**	-0.021
	(0.011)	(0.008)	(0.024)	(0.022)	(0.013)
N	7296	7296	7296	7296	7296
Mean 2009	0.157	0.107	0.251	0.166	0.109
Firm FE	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Clustering	Firm	Firm	Firm	Firm	Firm
N	7296	7296	7296	7296	7296

Note: This table reports IV estimates from Equation (5). The time-period covered 2009-2021, excluding 2016 (see Section 2), with 2009 as the (pre-reform) reference year. FBS is the percentage of women on the board of the firm in a given year. In this specification, it is instrumented for by the percentage of women on the board in 2009 interacted with year dummies. The adjusted wage gap in Column (2) is adjusted for age, age squared, and job title. All regressions include year and firm fixed effects, as well as time-varying firm controls for the share of employees in each hierarchical layer (see Section 2.3). Standard errors are clustered at the firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A13: First stage - 2009 to 2021 - IV a la Bertrand et al. (2019)

	Female Board Share
	(1)
$FBS_{2009} \times 2010$	-0.0386***
	(0.0141)
$FBS_{2009} \times 2011$	-0.114***
	(0.0223)
$FBS_{2009} \times 2012$	-0.188***
	(0.0239)
$FBS_{2009} \times 2013$	-0.265***
	(0.0357)
$FBS_{2009} \times 2014$	-0.371***
	(0.0392)
$FBS_{2009} \times 2015$	-0.436***
	(0.0433)
$FBS_{2009} \times 2016$	-0.486***
	(0.0460)
$FBS_{2009} \times 2017$	-0.555***
	(0.0485)
$FBS_{2009} \times 2018$	-0.597***
	(0.0491)
$FBS_{2009} \times 2019$	-0.617***
	(0.0469)
$FBS_{2009} \times 2020$	-0.647***
	(0.0467)
$FBS_{2009} \times 2021$	-0.658***
	(0.0447)
Observations	7,904
F-stat	20.12

Note: This table reports the first stage estimates from Equation (6) on the sub-sample of targeted firms. However, the instrument is now the fraction of women on the board in 2009 interacted with year dummies. The time-period covered is 2009-2021. All regressions include year and firm fixed effects, as well as time-varying firm controls for the share of employees in each hierarchical layer (see Section 2.3). Standard errors are clustered at the firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A14: Estimates a la Bertrand et al. (2019) – Female Representation Throughout the Firm's Hierarchy

	Female CEO	Female Chair	Female Share of					
			Total Workforce	Top .. Earners			Bottom .. Earners	
				1%	10%	25%	25%	10%
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FBS	0.159	0.095	-0.002	0.041	0.025	0.023	-0.020	-0.024
	(0.108)	(0.129)	(0.020)	(0.040)	(0.024)	(0.020)	(0.026)	(0.028)
Mean 2009	0.0530	0.0540	0.387	0.108	0.206	0.260	0.480	0.478
Firm FE	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Clustering	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm
N	7296	7296	7296	7296	7296	7296	7296	7296

Note: This table reports IV estimates from Equation (5). The time-period covered 2009-2021, excluding 2016 (see Section 2), with 2009 as the (pre-reform) reference year. FBS is the percentage of women on the board of the firm in a given year. In this specification, it is instrumented for by the percentage of women on the board in 2009 interacted with year dummies. All regressions include year and firm fixed effects, as well as time-varying firm controls for the share of employees in each hierarchical layer (see Section 2.3). The FBS is computed excluding the CEO (Column 1) or the board chair (Column 2) to avoid spurious correlation. Standard errors are clustered at the firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A15: Estimates a la Bertrand et al. (2019) – Hourly Wage Gaps

	Mean Hourly Wage Gap		Percentile Hourly Wage Gap		
	Unadjusted	Adjusted	75th	50th	25th
	(1)	(2)	(3)	(4)	(5)
FBS	-0.083***	-0.021	-0.153**	-0.168***	-0.074**
	(0.030)	(0.023)	(0.061)	(0.055)	(0.031)
Mean 2009	0.157	0.107	0.251	0.166	0.109
Firm FE	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Clustering	Firm	Firm	Firm	Firm	Firm
N	7296	7296	7296	7296	7296

Note: This table reports IV estimates from Equation (5). The time-period covered 2009-2021, excluding 2016 (see Section 2), with 2009 as the (pre-reform) reference year. FBS is the percentage of women on the board of the firm in a given year. In this specification, it is instrumented for by the percentage of women on the board in 2009 interacted with year dummies. The adjusted wage gap in Column (2) is adjusted for age, age squared, and job title. All regressions include year and firm fixed effects, as well as time-varying firm controls for the share of employees in each hierarchical layer (see Section 2.3). Standard errors are clustered at the firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A16: Estimates – Evolution of Hourly Wage Gaps

	Mean Hourly Wage		Median Hourly Wage	
	Men	Women	Men	Women
	(1)	(2)	(3)	(4)
	Panel A: DiD Estimates			
Listed x 2010-2015	-0.265	-0.042	0.080	0.131
	(0.245)	(0.123)	(0.160)	(0.121)
Listed x 2017-2021	0.924**	1.144***	0.425	0.644***
	(0.370)	(0.283)	(0.270)	(0.223)
	Panel B: IV Estimates			
Female Board Share	5.644***	6.523***	2.244*	3.506***
	(1.713)	(1.420)	(1.301)	(1.061)
Mean Listed 2009	25.55	20.12	21.13	17.44
N	7296	7296	7296	7296

Note: This table reports DiD estimates from Equation (4) (Panel A) and IV estimates from Equation (5) (Panel B). large non-listed firms are the control group and listed firms are the treatment group. Both panels cover the time-period 2009-2021, excluding 2016 (see Section 2), with 2009 as the (pre-reform) reference year. FBS is the percentage of women on the board of the firm in a given year; it is instrumented for by the listing status in 2009 interacted with year dummies. The adjusted wage gap in Column (2) is adjusted for age, age squared, and job title. All regressions include year and firm fixed effects, as well as time-varying firm controls for the share of employees in each hierarchical layer (see Section 2.3). Standard errors are clustered at the firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A17: Estimates – Female Representation – Incumbent vs. Newly Hired

	Female Share of							
	Total Workforce		Top 1% Earners		Top 10% Earners		Top 25% Earners	
	Inc.	NH	Inc.	NH	Inc.	NH	Inc.	NH
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: DiD Estimates								
Listed x 2010-2015	0.0051**	-0.002	0.007	0.035	0.013***	0.029	0.007***	0.007
	(0.002)	(0.007)	(0.006)	(0.035)	(0.003)	(0.022)	(0.003)	(0.017)
Listed x 2017-2021	0.007*	0.004	0.022**	0.007	0.019***	0.008	0.013***	0.008
	(0.004)	(0.008)	(0.009)	(0.038)	(0.005)	(0.024)	(0.005)	(0.019)
Panel B: IV Estimates								
FBS	0.023	0.038	0.098**	-0.133	0.067***	-0.020	0.041*	0.048
	(0.018)	(0.029)	(0.043)	(0.120)	(0.024)	(0.081)	(0.021)	(0.062)
Mean Listed 2009	0.389	0.432	0.103	0.130	0.199	0.222	0.259	0.271
Firm FE	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Clustering	Firm	Firm	Firm	Firm	Firm	Firm	Firm	Firm
N	7296	7295	7294	2891	7296	6020	7296	6854

Note: This table reports DiD estimates from Equation (4) (Panel A) and IV estimates from Equation (5) (Panel B). large non-listed firms are the control group and listed firms are the treatment group. Both panels cover the time-period 2009-2021, excluding 2016 (see Section 2), with 2009 as the (pre-reform) reference year. FBS is the percentage of women on the board of the firm in a given year; it is instrumented for by the listing status in 2009 interacted with year dummies. Odd columns report estimates on incumbent employees only; even columns report estimates on newly hired employees only. A smaller number of observations is due to the fact that some firms did not recruit employees directly into top earners groups. All regressions include year and firm fixed effects, as well as time-varying firm controls for the share of employees in each hierarchical layer (see Section 2.3). Standard errors are clustered at the firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A18: Estimates – Mean Hourly Wage Gaps – Incumbent vs. Newly Hired

	Unadjusted Mean Hourly Wage Gap		Adjusted Mean Hourly Wage Gap	
	Inc.	NH	Inc.	NH
	(1)	(2)	(3)	(4)
Panel A: DiD Estimates				
Listed x 2010-2015	-0.008*	-0.009	-0.008**	-0.013**
	(0.004)	(0.008)	(0.004)	(0.005)
Listed x 2017-2021	-0.019***	-0.008	-0.012**	-0.014**
	(0.006)	(0.009)	(0.005)	(0.006)
Panel B: IV Estimates				
FBS	-0.083***	-0.009	-0.035*	-0.027
	(0.028)	(0.035)	(0.021)	(0.021)
Mean Listed 2009	0.192	0.137	0.129	0.074
Firm FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓
Clustering	Firm	Firm	Firm	Firm
N	7296	7295	7296	7290

Note: This table reports DiD estimates from Equation (4) (Panel A) and IV estimates from Equation (5) (Panel B). large non-listed firms are the control group and listed firms are the treatment group. Both panels cover the time-period 2009-2021, excluding 2016 (see Section 2), with 2009 as the (pre-reform) reference year. FBS is the percentage of women on the board of the firm in a given year; it is instrumented for by the listing status in 2009 interacted with year dummies. Odd columns report estimates on incumbent employees only; even columns report estimates on newly hired employees only. The adjusted wage gap (Columns 3 and 4) is adjusted for age, age squared, and job title. Wage gaps on newly hired are winsorized at the 5% tails to account for outliers. A smaller number of observations is either due to the fact that some firms only hired one gender, making it impossible to compute a gender wage gap on the subset of newly hired employees. All regressions include year and firm fixed effects, as well as time-varying firm controls for the share of employees in each hierarchical layer (see Section 2.3). Standard errors are clustered at the firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A20: CEO Incentive to Increase Gender Equality

	Variable Compensation Linked to Gender Equality Goals			
	Yes = 1 / No = 0		Share of Var. Comp.	
	(1)	(2)	(3)	(4)
Female Board Share	0.237***	0.239***	0.032*	0.033*
	(0.083)	(0.083)	(0.017)	(0.017)
CEO on Board		-0.064*		-0.016
		(0.034)		(0.010)
Firm FE	✓	✓	✓	✓
Year FE	✓	✓	✓	✓
Clustering	Firm	Firm	Firm	Firm
Observations	3,393	3,393	3,393	3,393

Note: This table reports estimates from Equation (9). The time-period covered is 2009-2021. The dependent variable in Column (1) is an indicator equal to one if the firm reports linking part of its CEO compensation to gender equality goals, and zero otherwise. The dependent variable in Column (2) is the fraction of the variable compensation that depends on meeting these goals. FBS is the percentage of women on the board of the firm in a given year. The sample is restricted to listed firms, excluding the 25 firms that did not disclose the breakdown of their CEO variable compensation. Firm and year fixed effects are included. Standard errors are clustered at the firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. See Section 6.1 for details.

Table A19: Gender Equality Incentive in CEO Compensation - Listed Firms Only

	Mean		Difference
	Incentive	No Incentive	
	(1)	(2)	(3)
Mean Share of Variable Compensation			
in 2009	0.00	0.00	0.00
	[0.00]	[0.00]	-
in 2021	0.13	0.00	0.13
	[0.10]	[0.00]	-
Female Board Share			
in 2009	0.10	0.12	-0.02
	[0.09]	[0.14]	(0.02)
in 2021	0.46	0.41	0.05***
	[0.08]	[0.11]	(0.01)
Observations	87	174	

Note: This table reports descriptive statistics for listed firms, according to whether they incentivize their CEO to achieve gender equality goals through compensation (Column 1) or not (Column 2). Column (3) reports the difference between the two groups. See Section 6.1 for details.

Table A21: Impact of Including Gender Equality Incentives in CEO Compensation - Pretrends

	Female Share of Top ... Earners			Mean Hourly Wage Gap		Percentile Hourly Wage Gap		
	1%	10%	25%	Unadjusted	Adjusted	Top Quartile	50th	Bottom Quartile
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: DiD Estimates								
Listed × Pre-2009 ×								
No Incentive	0.004	0.004	-0.003	0.005	-0.003	0.007	0.006	0.009
	(0.007)	(0.004)	(0.003)	(0.004)	(0.004)	(0.013)	(0.009)	(0.007)
Incentive	0.010	-0.001	-0.005	0.004	0.003	0.013	-0.002	-0.002
	(0.008)	(0.005)	(0.004)	(0.007)	(0.005)	(0.018)	(0.011)	(0.010)
Mean Listed 2009	0.103	0.200	0.260	0.181	0.115	0.289	0.202	0.133
N	2432	2432	2432	2432	2432	2432	2432	2432

Note: This table reports DiD estimates from Equation (8) (Panel A), where $Post2009_t$ is replaced by $Pre2009_t$, an indicator equal to one if $t \leq 2008$. Large non-listed firms are the control group and listed firms are the treatment group. The time-period covered is 2006-2009, with 2009 as the reference year. Outcomes are regressed on an indicator for whether the firm is listed interacted with whether the firm's board tied part of the CEO compensation to gender equality goals after 2009, as well as a set of controls. All regressions include year and firm fixed effects, as well as time-varying firm controls for the share of employees in each hierarchical layer (see Section 2.3). The adjusted wage gap in Column (6) is adjusted for age, age squared, and job title. All regressions include year and firm fixed effects, as well as time-varying firm controls for the share of employees in each hierarchical layer (see Section 2.3). 25 listed firms from the main sample are excluded for lack of details about the CEO variable compensation. Standard errors are clustered at the firm level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.