Across the Board: The Impact of Gender Quotas on Corporate Boards in India

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Abstract

In 2013, India introduced a gender quota mandating the inclusion of one female board member on all boards of listed companies. This is the first paper in a developing country setting to rigorously assess the impact of gender quotas on boards on women's leadership, and subsequently on firm performance and staff welfare. I find that while the reform was successful in increasing women's representation on corporate boards, consistent with the existing literature, it also surprisingly exacerbated gender pay gaps for board membership. I also estimate impacts on firm performance using an established instrumental variables strategy where I instrument on pre-reform female board membership. I find positive impacts on income, sales and return on assets, but not necessarily on profits. In addition, I find indicative evidence of improvements in women's employment and staff welfare. Overall, I conclude that the quota was successful in increasing female leadership on boards, with positive effects on firm performance and staff welfare, but with unanticipated widening of gender pay gaps for board members.

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1 Introduction

Globally, the number of women in leadership positions in business have risen in the last two decades (Grant Thornton 2020). Despite progress, only 29 per cent of all senior management positions globally are occupied by women. India has the third lowest global representation of women managers, ahead only of South Korea and Japan. In 2019, women held only 8

Over the last two decades, a common policy to improve gender parity in leadership has been to institute quotas, in business as in politics. For example, in 2003, Norway mandated listed companies to reserve at least 40

This paper examines the introduction of board quotas for women in 2013 in India, adding to previous studies examining the impact of board quotas in Norway (Bertrand, et al. 2019; Ahern and Dittmar, 2012; Yang et al, 2019), Italy (Ferrari, et al. 2016), Western Europe (Comi et al, 2020) and other countries. India has already had political gender quotas in politics for many years. Evidence from previous studies suggest that exposure to female leaders in India can help align public expenditure with women's needs (Chattopadhyay and Duflo 2004), improve early childhood development outcomes (Pathak and Macours 2017), reduce gender biases and stereotypes and improve perceptions of women's ability (Beaman, Chattopadhyay, et al. 2009), increase women's willingness to report crime (Iyer, et al. 2012), and raise women's aspirations (Beaman, Duflo, et al. 2012, Bhalotra, Clots-Figueras and Iyer 2018, Ghani, Mani and O'Connell 2013). While prior work has focused on the impact of political gender quotas in India, there is no rigorous study examining the impact of the board gender quotas, enacted in 2013, making it mandatory for all publicly listed firms to have at least one woman on their company boards starting in 2014. This paper investigates the effects of the gender quotas – on the quantity and quality of women's participation on women's boards, as well as impacts on firm performance and other staff welfare outcomes.

Following the instrumental variable strategy laid out in Bertrand, et al. (2019) and Ahern and Dittmar (2012), I exploit variation on women's leadership on boards prior to the legislation to identify the impact of the quotas. Companies that had women already had to

make no changes whereas other companies without female members had to initiate changes by bringing women on board.

I find that the quotas did introduce greater gender parity in terms of participation, but it also, surprisingly, widened gender pay gaps for board membership. Moreover, the reform helped improve firm performance and staff welfare outcomes. To my knowledge, this is one of the first studies assessing board quotas in a developing country setting and it adds to the literature by also showing how gender equality on boards can contribute to staff welfare outcomes.

The paper is organized as follows. In Section 2, I explore the relevant literature on women's leadership and quotas, in the corporate and other sectors. In Sections 3 and 4, I lay out the research questions as well the data sources and sampling strategy. In Section 5, I lay out stylized facts related to the evolution of women's representation on boards before and after the reform, including the nature, form and remuneration of their participation. Next, in Section 6, I look at the impact of the reform on firm performance and employees in Section 6. Finally, I discuss the conclusion in Section 7.

2 Literature Review

There is a growing body of research examining the effects of gender diversity in leadership and board membership. Studies have examined a range of outcomes of interest from improved financial performance, return on assets and shareholder value, to increased customer and employee satisfaction, greater investor confidence and social performance. However, the evidence base is mixed and ambiguous. Two reviews by Pande and Ford (2011) and Hughes, Paxton and Krook (2017) suggest that the evidence on gender quotas in business is limited and inconclusive, especially relative to political quotas where is there consensus on positive impacts. Moreover, the majority of studies are descriptive, correlational and focused on high income countries. There is a dearth of rigorous evidence, particularly in low-income

countries, on the causal impact of quotas on firm performance and other outcomes. Below, I review the literature and findings on implementation, firm performance and social impacts.

The evidence suggests that mandating board quotas for women in other countries has been largely successful in increasing female representation on boards. Encouraging companies to place women on boards through laws without sanctions (Germany) or guidelines (Britain) is positively correlated with the number of women on boards, but countries with strict quota policies with sanctions show greater growth (The Economist 2018). Furthermore, Bertrand, et al. (2019) and Ferrari, et al. (2016) also suggest that quotas in Norway and Italy have helped positively restructure the board by, for example, increasing the level of qualifications and experience of board members. For example, the Italian gender quotas increased the share of women and newer members and increased the average education qualification of board members (Ferrari, et al. 2016). Bertrand, et al. (2019) suggest that the policy helped make way for previously untapped networks of qualified and able businesswomen, and erased the gender gap in educational background that had existed prior to the policy.

A number of studies find that gender diversity on boards is associated with firm financial performance (Erhardt et al, 2003; Ararat et al, 2010; Brahma et al, 2018; Liu et al, 2014). Several other studies find a positive relationship between female board membership and financial performance (Lückerath-Rovers 2010, Kotiranta et al, 2007; Campbell et al, 2007; Duppati et al, 2020; Garanina et al, 2021). By contrast, Adams and Ferreira (2009) show that average effect of gender diversity on the performance of American firms is negative, with lower Tobin Q's and return on assets. Other studies also find negligible or negative effects on firm performance, risk, share prices and value (Yang et al, 2019; Comi et al, 2020; Dale-Olsen et al, 2003; Gertberg et al, 2021). These studies, however, are largely correlational, and face the limitation that better performing companies may just choose to appoint more women leaders.

However, there are a few more causal papers emerging to assess the impact on firm performance. Causal evidence presented in Matsa and Miller (2011) indicates that corporate

gender quotas led to a short-term loss of profits, largely driven by increased spending on labor. Similarly, Ahern and Dittmar (2012) also finds that the corporate gender quota in Norway had a negative impact on firm value in the short term, in Tobin's Q though that disappears once board characteristics are controlled for. Overall, while there are some indications that firm performance might look worse in the short run the link between women on the board and firm outcomes remains tenuous. As Pande and Ford (2011) and Hughes, Paxton and Krook's (2017) note, more research is needed on impacts in the long term, since many policies have been too recently implemented for meaningful implications, and short term costs may translate into greater benefits in the long term.

A few papers also look beyond firm performance outcomes at social, personnel and workplace outcomes. Harjoto et al (2020) find that the presence of female executives in American corporate social responsibility leadership teams is positively associated with firms' future social performance and can enhance their social objectives. Matsa and Miller (2011) find there is a positive relationship between female board membership and the participation of women in executive positions in American companies. In addition, Bloom et al (2011) find that firms with a higher proportion of female managers and more skilled workers, tend to implement more female friendly workplace practices. This agrees with large scale Swedish survey evidence presented by Adams and Funk (2009) and others that female managers may be more stakeholder-oriented and benevolent than men and care more about workers at the lower end of the wage distribution. Additionally, employees might trust female executives more: In Pew's "Women and Leadership" survey, more American workers reported perceiving female executives as being more honest and ethical in 2015. 34% of respondents reported that women were better in this category, relative to 3% who said men were better (64% said there was no difference).

This is in contrast to other studies which find that the positive effects of quotas were concentrated among a small group of insiders. Bertrand, et al. (2019) found that the Norwegian quotas had very little discernible impact on women in business beyond its direct

effect on the women who made it into boardrooms. A prominent group of Norwegian women (most of them insiders, in non-executive positions), nicknamed the "golden skirts", turned themselves into multiple board directors, following the implementation of quotas. The quotas were not found to have changed broader representation of women in senior management or female students pursuing business degrees or the gender pay gap beyond the boards. This resonates with findings from Flabbi et al (2018) who find that Italian female executives have a positive impact on women only at the top of the wage distribution, and a negative impact on those at the bottom. Evidence from Brazil (Lazzaretti and Godoi 2016) also suggest that the main reason for female board member nominations was linked to family ties, rather than skills. In these countries, quotas seem to have had no discernible beneficial effect on women at lower levels of the corporate hierarchy, and may not challenge existing norms related to gender in companies. These results were not in line with the expectations behind these quotas was that they would encourage companies to promote more women in order to fill the upper echelons faster, which , in turn, would help shrink the wage gap between men and women. This suggests that broader reform might be necessary to increase leadership at all levels of organizations. However, contextual differences in lower income countries may also lead to divergent effects.

A recent descriptive study of the top 500 firms in the National Stock Exchange in India suggests that unlike Norway, mandating quotas for women on boards in India did not limit benefits to only a small section of insiders (such as in Norway or Italy); most appointed women were independent and the policy was successful in significantly enlarging the pool of distinct women serving as directors (Kuppuswamy et al, 2020). However, the study found that independent female members in boards were also less likely to be appointed to prominent boards/key board committees such as compensation or nomination committees. Independent women were particularly less likely to sit on prominent committees, compared to similar male directors who were also independent. Family or ownership ties played a part in fetching women membership into key board committees (Kuppuswamy et al, 2020).

However, this study has a restrictive sample and does not assess the impact of these policies on firm performance, staff welfare and other variables.

This paper aims to fill a gap in the literature by providing more a comprehensive assessment of the uptake of the quota, and rigorous, causal evidence on the impact of the quota on firm performance and staff welfare outcomes.

3 Study Objectives and Sample

This study uses secondary data from different sources to determine the evolution of women's leadership on corporate boards as well as the impact of board gender quotas legislated in 2013, and enacted in 2014, for publicly listed companies.

The quota, introduced as part of the Companies Act passed in 2013, mandated that all listed companies in India should introduce at least one female board member. The quota came into effect in end March 2014, and required compliance within 6 months, failing which there would be a penalty of Rs 50,000- Rs 50 lakhs (USD 700-USD 70,000).

To better understand the impact of the quotas, the study poses the following questions:

1. Did the gender quotas succeed in improving female representation on corporate boards?
2. How did the gender quotas change the nature and structure of female representation on boards?
3. Did the quotas change gender pay gaps for board members?
4. What was the impact of the quotas for female board representation on firm performance (such as income, profit, sales, return on assets)?
5. What was the impact of the quotas for female board representation on staff training, welfare and recruitment of female employees?

Since the legislation was universally applicable to all publicly listed companies, we use a sample of 1948 publicly listed firms for which data on board composition was available.

4 Data

4.1 Data sources

The primary data sources for this study are two popular firm datasets in India. The first dataset is the PRIME Board dataset which provides up to date information on board membership and composition of actively traded Indian listed (and a few unlisted) companies which share their data. This dataset provides details on board members every year such as their names, gender, age, education and status. However, it does not provide details on their earnings or remuneration for their participation, which comes from the second dataset. This is a paid, private dataset and is built and managed by a private company -Praxis Consulting & Information Services Pvt. Ltd. From this dataset, I use the full sample of listed companies for this study, which encompasses 1948 listed companies as of 2021 for the years 2006-2020.

The second source of data is known as the PROWESS dataset, which provides key data for our sample companies on firm and financial performance, board compensation, staffing and corporate ownership details. This dataset, in turn, draws on audited Annual Reports of companies and information submitted to the Ministry of Company Affairs. This paid dataset is maintained by the Centre for Monitoring Indian Economy (CMIE), an independent non-government entity that serves both as an economic think-tank as well as a business information company. For the listed companies with board information present in the PRIME dataset, we use complementary data from PROWESS on firm performance, board compensation and staffing.

4.2 Sample selection

The PRIME dataset contained information on a total of 1948 listed companies and 35079 board members, all of which were used for analyzing the effect of the female board quotas on key firm performance and staff welfare variables. Of this sample of 1948 firms, 1905 or 97.7 per cent of the firm sample could be successfully matched and merged with the PROWESS

board dataset. This enabled the procurement of matching information on salary and remuneration details for 32916 board members, or 93.8 per cent of the sample of individual board members. The analysis on gender pay gaps is thus based on the sub-sample of 1905 firms and 32916 board members in the study. It is also important to note that data is not reported or captured for all firms present across all years in both datasets, so there is sample attrition for different variables in different periods.

The results, however, are also estimated with a balanced sample of 914 firms for which data was present across the years 2008-2020. This analysis is available on request.

5 Stylized facts and results

5.1 Did the gender quotas succeed in improving female representation on boards?

First, I look at whether there was compliance and implementation of the quotas mandated by the Companies Act in 2013. The Companies Act 2013, came into effect by the end of March in 2014, and mandated that at least one woman join the board of all listed companies,

As illustrated in Figure 1 below, the legal reform was successful in ensuring near universal compliance, within a couple of years of the introduction of the quota. Prior to the introduction of the act, under half (42.5 per cent) of listed companies had at least one female board member. By 2015, this number had soared to 95 per cent, that is within two years of the announcement of the quota, and 99 per cent by the third year. Full compliance was achieved by 2020. The quota was thus successfully adopted universally within a short period of time, ensuring female representation on all listed company boards.

In addition, the reform was also successful in spurring an increase in the overall proportion of board members who were female. As shown in Figure 2, the proportion of board members who were female rose sharply following the quotas, and has continued to increase steadily over time. At the time of the introduction of the quotas, approximately 6 per cent of

board members were female. While this nearly doubled to 10 per cent within two years, the proportion of female board members has continued to rise steadily over time. Moreover, even after complying with the quota, the rate of increase in the proportion of female directors is much higher than before the introduction of the quotas. This can be seen in the steeper slope of the curve in the post-reform period in Figure 2.By 2021, the proportion had risen to 16 per cent. While this still means, only 1 in 6 board members are female, this is a significant, over triple, increase from the proportion prior to the quota when only 1 in 20 board members were female. Change is afoot.

5.2 Did the quotas change the nature and structure of female representation on boards?

Given that the quotas were successfully adopted, I look next at how the quotas changed the form of female and male representation on boards, by comparing the characteristics of members appointed before and after the reform.

In Table 1, I examine the male and female board characteristics for the pre-treatment period (2006-2013) and post-treatment period (2014-2020). I see that the proportion of female directors nearly triples in these two periods. In absolute numbers, the number of female board members increases by about 6 times, from 690 to 3978 female directors overall – indicating a large influx of women joining the ranks of board directors following the introduction of the quota. While the quota only mandates having one female board member, the post-treatment period sees an average of 3 female directors in a company on average. On the other hand, the size of the board itself grows larger, and the number of male directors in a company also increases from 14 to 18, on average.

On average, these women leaders are slightly younger, and more qualified than their male counterparts – this was true before and after the legislation. The average age of both male and female board members is over 50 in both periods, though it increases by a couple of years following the reform. Women are also more likely to have higher qualifications such as

a technical degree, masters or PhD than their male counterparts. Before the reform, 74 per cent of women on boards had a post-graduate or technical degree, and this increased to 81 per cent following the reform. The proportion of similarly qualified men also increased with the reform from 65 to 74 per cent, but the gap in qualifications between the two genders shrunk slightly by about 2 percentage points.

While more qualified women are joining boards, their tenures are on average much shorter than their male peers, and shorten further following the reform, partly given the recency of the legislation and women's entry on boards. On the other hand, the average tenure of male board members increases slightly by 1.4 years following the reform. Both men and women are also more likely to hold other directorships following the reform. Women and men are also more likely to be more active, and participate on a greater number of committees than before. Women engage in 3.5 committees on average, whereas men are on nearly 4 committees, on average.

One interesting change relates to the independence of male and female board directors. Before the legislation, women were substantially less likely to be independent directors, suggesting a pre-existing relationship with the company ownership. 53 per cent of women were independent directors compared to 62 per cent of men. However, following the legislation, this trend reverses. Women are more likely to be independent (67

Men and women's contributions to the board including participation in different committees. Panel B in Table 1 shows how the distribution of female board members changes across different committees within a company. as compared to men. These specific Committees of the Board provide recommendations which would be available to the Board while making final decisions or recommendations. The table shows that women's participation on boards also differs from their male counterparts. While the share of women across all committees has increased after the reform, there continues to be sectoral segregation. Since men outnumber women on the board, they do so on all committees as well. However, committees such as Ethics committees or Nomination and Remuneration committees seem relatively more

female in their composition. On the other hand, Business Development and Management committees continue to be in men's dominion. I observe that, in spite of the reform, there is still sectoral segregation in responsibilities of board members, perhaps in line with prevalent gender stereotypes.

5.3 Did the board quotas change gender gaps in remuneration on the board?

I also look at the gender gaps in salaries and overall remuneration, which includes other incomes such as sitting fees, retirement benefits, bonus commission etc, following the reform. Figures 3 and 4 capture the evolution of inflation-adjusted mean salaries and total remuneration for male and female board members from 2006 to 2020. It is interesting to note that while the salaries of female board members fluctuate over time, the gender gap in salaries increased following the legislation, as seen in Figure 3.1. While salaries for men and women overlap at times before the reform, there is a clear divergence following the reform. The gender gap for overall remunerations also widens further following the legislation, as captured in Figure 3.2. Thus, while the proportion of educated, qualified female board members increased on boards following the reform as seen in the last section, their relative remuneration remains significantly below their male peers. Figure 4.2 shows that the gender gaps in remuneration are especially marked for non-independent women vis-à-vis their male peers. I investigate this gender gap further going beyond the means.

I also use regression analysis to control for other underlying differences to understand changes in earnings for board members by gender, following the reform. In order to capture these post-reform changes, I estimate the following equation, as done in Bertrand et. al (2014):

$$Y_{ij} = \alpha_0 + \beta_1 Female + \beta_2 X_{it} + \gamma_j + \lambda_t + \varepsilon_{it} \tag{1}$$

where Y, the outcome of interest comprises of log (salaries) or log (total remuneration) for individual i in year t, Female is a dummy for being a woman board member, λ_t is a set of year dummies and X_{it} is a vector of individual controls such age, education, tenure, independent status and number of other directorships. I also use a specification with and without firm fixed effects captured by γ_j.

As Table 2 shows, while the gender gap in salaries and remuneration predated the reform, it increased on average, following the reform. Prior to the reform, women earned 5 to 13 per cent less in salaries, as shown in Columns 1 and 3 for Panel A, though the difference in the absence of firm fixed effects is not significant. Similarly, overall remuneration for women was also far lower – their total remuneration was 24 to 36 per cent lower, as seen in Columns 1 and 3 for Panel B. However, even after controlling for individual covariates and firm fixed effects, we do not see a convergence for salaries and remuneration in the post-reform period. The gender gap for salaries more than doubles on average in the post-reform period, where women earn less than 27 to 38 per cent than men following the form (Panel A Columns 2 and 4). The widening of the post-reform gender gap is true for overall remuneration, as found in Panel B, where women receive 40 per cent below men.

These results are puzzling, since we know that more qualified and educated women are joining boards following the reform, and have the same number of directorships as men, as shown earlier in Table 1. It is possible that the premium for joining boards lowers for women, given the increased supply of independent female board members. While this paper is not able to shed light on the drivers, this is an important and intriguing phenomenon which requires further investigation in future research.

6 Did the board quotas have an impact on firm performance and staff welfare?

In this section, I look at the impact of the gender quotas on firm performance and staff welfare and training. I first present the summary statistics for key firm outcome variables, followed by the specific identification strategy and results.

6.1 Summary Statistics

First, I present some summary statistics on the firms in our sample for key firm performance and staff welfare variables before and after the reform, averaged over the pre-treatment period (2006-2013) and post-treatment period (2014-2020) in Table 3. I find that the average annual real income for firms increases by 33 per cent from 28483 crores to 38148 crores in the post-reform period, while looking at total income. Similarly, net sales increase significantly as well by over 25 per cent in the post-reform period. There is a significant increase in total assets, which increase by more than 75 per cent over the two periods. Annual net profits were negative in both periods, but post-reform losses are a third of what they had been prior to the reform. There is also an increase in staff welfare and staff training expenses, by 21 and 52 per cent respectively.

However, there are a few important downward trends as well. The return on assets decreases, almost by half, in the post-reform period. There is an important change in staffing and employment as well. First, the average number of employees decreases, by a fifth, from 5058 to 4090 employees. Secondly, while not significant, the average number of female employees also decreases by a third.

6.2 Identification strategy

I use an instrumental variable (IV) identification strategy to determine the effect of the women board quotas on firm performance outcomes such as total income, assets, sales, return

on assets and staff and welfare outcomes such as expenditure on staff welfare, training and female employment. I adopt the IV strategy established previously in Ahern and Dittmar (2012) and Bertrand, et al. (2019) to assess Norwegian gender board quotas which mandated that a fixed percentage (40 per cent) of board members should be female. This IV strategy relies on the fact that pre-reform variation in female board representation can be used to capture exogenous variation in the mandated changes in the proportion of female board members. The logic is as follows – the pre-reform female board membership in 2013 would not be affected by the subsequent quotas introduced in late 2013, enacted in 2014, but is a good predictor for post-reform variation. For example, the publicly listed companies that started with women on their board before the reform would have had to make no changes compared to the ones that did not.

In particular, focusing on the post-treatment period (2014-2020), I estimate the following baseline regression based on Bertrand et al (2019):

$$Y_{jj} = \alpha_0 + \beta_1 FemaleDummy_{jt} + \gamma_k + \lambda_t + \varepsilon_{jt} \tag{2}$$

where Y_{jt} is the outcome of interest in firm j at time t, such as the total income, sales, value of assets, Return on assets, staff welfare, training and number of female employees. γ_k are industry fixed effects, and λ_t are year fixed effects. $FemaleDummy_{jt}$ is a binary variable that takes the value of 1 if female board members are present in firm j at time t and 0 if otherwise, which is in turn instrumented with $FemaleDummy_{j2013}$ interacted with year fixed effects. Note that Ahern and Dittmar (2012) and Bertrand et al (2019) use the variable that captures the percentage of female board members in Norway, given the quota stipulated a minimum proportion of female members. I also show alternative specifications with the percentage as well as the number of female board members, but my preferred specification is a binary variable for the presence of a female board member, given the Indian law mandates the inclusion of only one female member

As the first stage regression results presented in Table 4 show, the instrument itself is

promising. The dependent variable is the binary variable that takes the value of 1 if any female board members are present in the company following the reform, and 0 if there are none. The instruments are the female dummy variable in 2013 interacted with year dummies, to control for any extraneous time effects or shocks that might differentially affect the dependent variable. The regressions also include year dummies, with industry fixed effects, with standard errors clustered at the industry level. As we see in Table 4, the point estimates on the instrumental variables show that they are significantly and positively associated. The firms who had a woman on their board in 2013 are most likely to have one right after the reform, in compliance with the rule. The coefficient is smaller over time, indicating lower explanatory power in later years, as adoption increases. However, given an R squared of 0.81, I observe high explanatory power overall for the dependent variable. Overall, the first stage results indicate that this is indeed a viable instrumental variable strategy.

I also check for any potential threats to this identification strategy, following Bertrand et al (2019), on parallel trends. One possibility is that firms that had women on their board in 2013, and were thus differentially impacted by the reform, were also on different time trends related to the outcomes. I conduct time trend analysis to explore any pre-reform trend variation in 2012 to 2013 in in Tables 7b and 8b. Of interest is the estimated coefficient on the female dummy in 2013 interacted with the year dummy, where year is a linear time effect. I observe no statistically significant difference in time trends pre-reform across most of the set of indicators for firm performance and staff welfare. However, there is some statistical evidence of different time trends for the return on assets, staff training and number of employees and female employees, which suggest that the growth in that particular outcome was larger for firms that started with women on their board, thereby possibly biasing downwards the IV estimates for this outcome. Similarly, I also check for differences in levels for those outcomes at baseline in Tables 7a and 8a, and draw similar conclusions. I observe no statistically significant differences for most indicators, except the

three mentioned above. Given these pre-reform differences, I also control for baseline levels in additional specifications in Annexure Tables 1 and 2 which do not alter the main conclusions from the paper. Finally, I also test for the exclusion restriction by ruling out any near-term direct effects of the instrument by dropping early years of the post-reform period, in a robustness check explained below.

6.3 Impacts

I now present the main IV results on the effects of firm performance in Tables 5 and 6.

As seen in Table 5 from Columns 1-5, there is strong, consistent evidence that female board membership quota had significant positive gains for key firm performance outcomes such as total income, net sales, total assets and return on assets in the post-reform period. Although return on assets declines on average for firms in the post-reform period as seen in Table 3, female board membership is associated with a positive impact (Table 5, Column 5). However, there is a small but significant negative impact on net profits, as shown in Column 3, in contrast to an overall mean increase in profits for firms in this period.

Next, we turn to the impact of the quotas on staff welfare, training, number of employees and female employment. As Table 6, shows the quotas for female board membership are associated with an increase in staff welfare and staff training costs, indicating a greater allocation and concern for employee welfare and development. I also find a positive and significant impact of the quotas on employee growth and hiring. However, while there is positive overall effect on number of female employees, despite general decline in this period, the coefficient is not significant. These increases in staff capacity, welfare and development, may partly help explain the decrease in net profits, seen in the previous table.

These results are largely consistent, though with smaller coefficients, even with alternative specifications and while controlling for baseline analogs for the outcome variables. These results are discussed below and shown in Annexure Tables 1 and 2.

6.4 Robustness Checks and Alternative Specifications

In order to rule out any possibility of near term direct effects of female board membership prior to the reform, I conduct analyses focusing on later years 2016-2020. I drop the first two years following the reform where arguably the board in 2013 may have exercised some influence from their past decisions. Regardless, I find that the effects are consistent with the broader analysis. In fact, there is an additional positive effect for net profits, strengthening the case for women's board membership for firm performance. The impacts on staff variables are also largely consistent though there is no significant impact on staff training or number of female employees.

I also run alternative specifications where I replace $FemaleDummy_{jt}$ with a) the number of women board members in a company b) the percentage share of female board members in a company. These are instrumented with the number of women board members in 2013 and the percentage share of female board members in 2013 respectively, both of which are interacted with year fixed effects, as in the main specification. Both instruments are promising based on first-stage regressions ([1]

The results from these alternative specifications are presented in Annexure Tables 3-6.[2] These results are consistent with the key findings of the analysis above. One key difference is that both alternate specifications also find a positive effect of the reform on the firm's net profits, in line a story of an overall positive impact of the reforms on firm performance.

7 Conclusion

This paper examines the evolution of women's leadership, subsequent to the introduction of a gender quota introduced for boards of listed companies in India in 2013, and its impact on staff training and welfare. To my knowledge, this is the first large sample study in India to examine the causal impact of women's board membership in the corporate sector. It is one

[1]These additional first-stage regression tables are available on request

[2]Further pre-trends analyses on firm performance and staff welfare variables are available on request

of the first studies globally to examine impacts on employee welfare and training.

I find that there is rapid and universal compliance with the law, in a short period of time. However, the influx of new and more qualified, educated women on boards does not help close gender pay gaps for board participation with their male peers. Instead, an important finding in this paper is that the reform unintentionally leads to increased gender pay gaps for board members, despite controlling for differences in age, education, experience and other characteristics. There may be other drivers or determinants to explain this pay gap, and this is an interesting area for further investigation in the future.

Using an instrumental variable strategy, I also find that the gender quota has significant downstream impacts on firm performance and employee outcomes. Increased participation from women on corporate boards, following the reform, translates into improved sales, income and return on assets. The effect on net profits is unclear and mixed. On the other hand, there is increased investment and allocation towards staff training and welfare, as well as growth in the number of employees. There is no significant impact, however, on female employment. These results are largely consistent across multiple specifications.

These results contribute to the literature on women's leadership, and add a fresh example of the impact of gender quotas from a developing country context with a rapidly growing corporate sector. Future research efforts on women's corporate quotas should also examine the mechanisms and channels driving these downstream impacts.

Notes

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Figures

Figure 1: Percentage of listed companies with any female board member

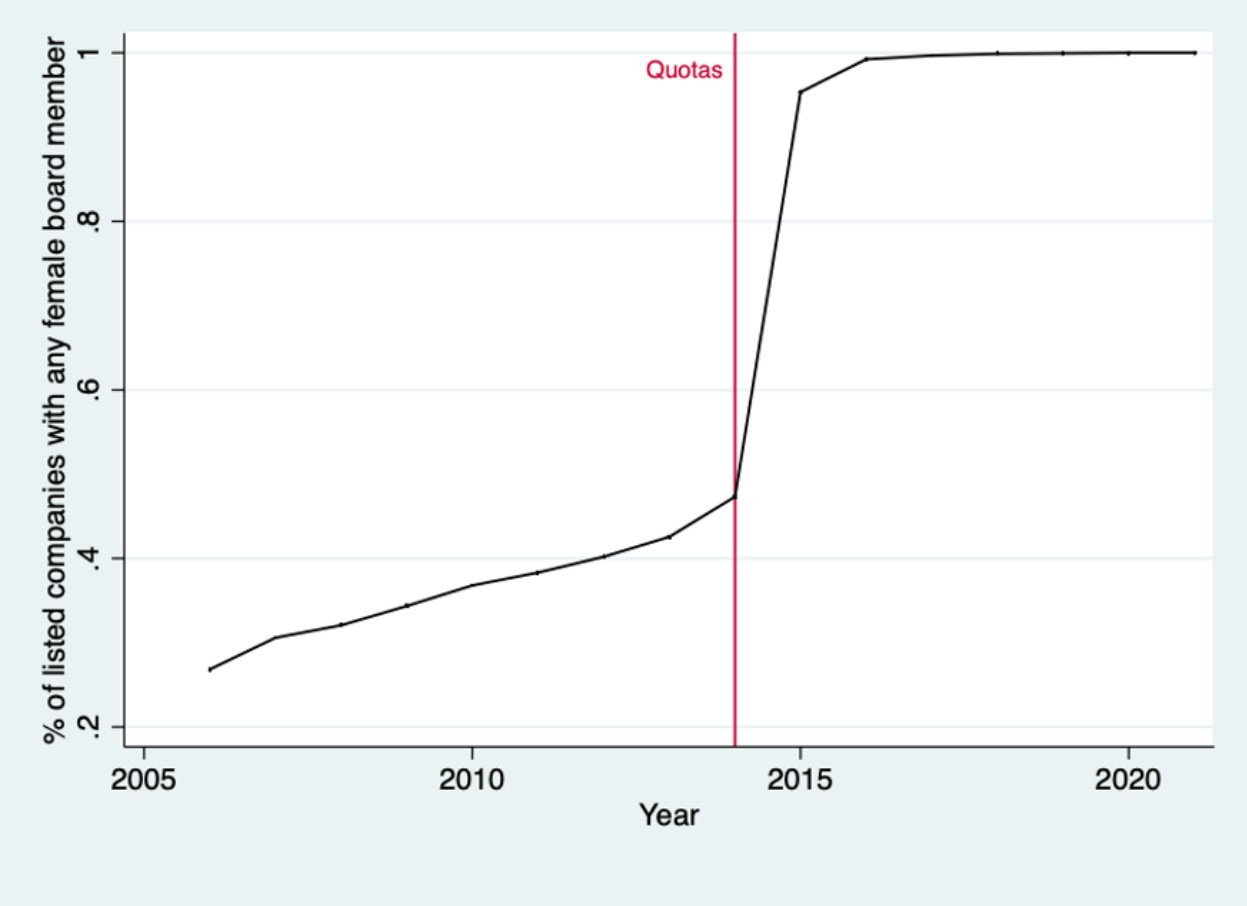


Figure 2: Percentage of female board members in a listed company

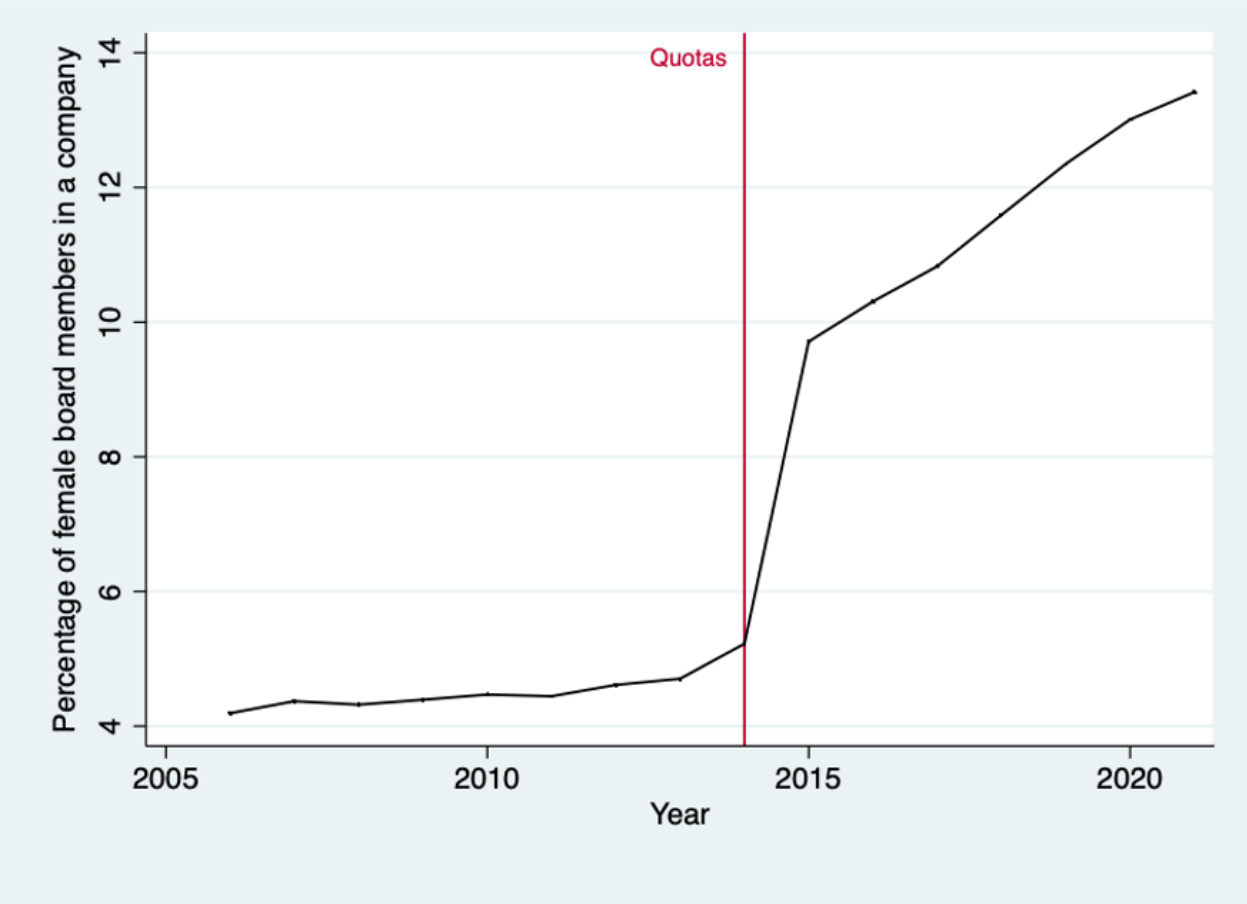


Figure 3: Mean (real) Salaries and remuneration by Gender

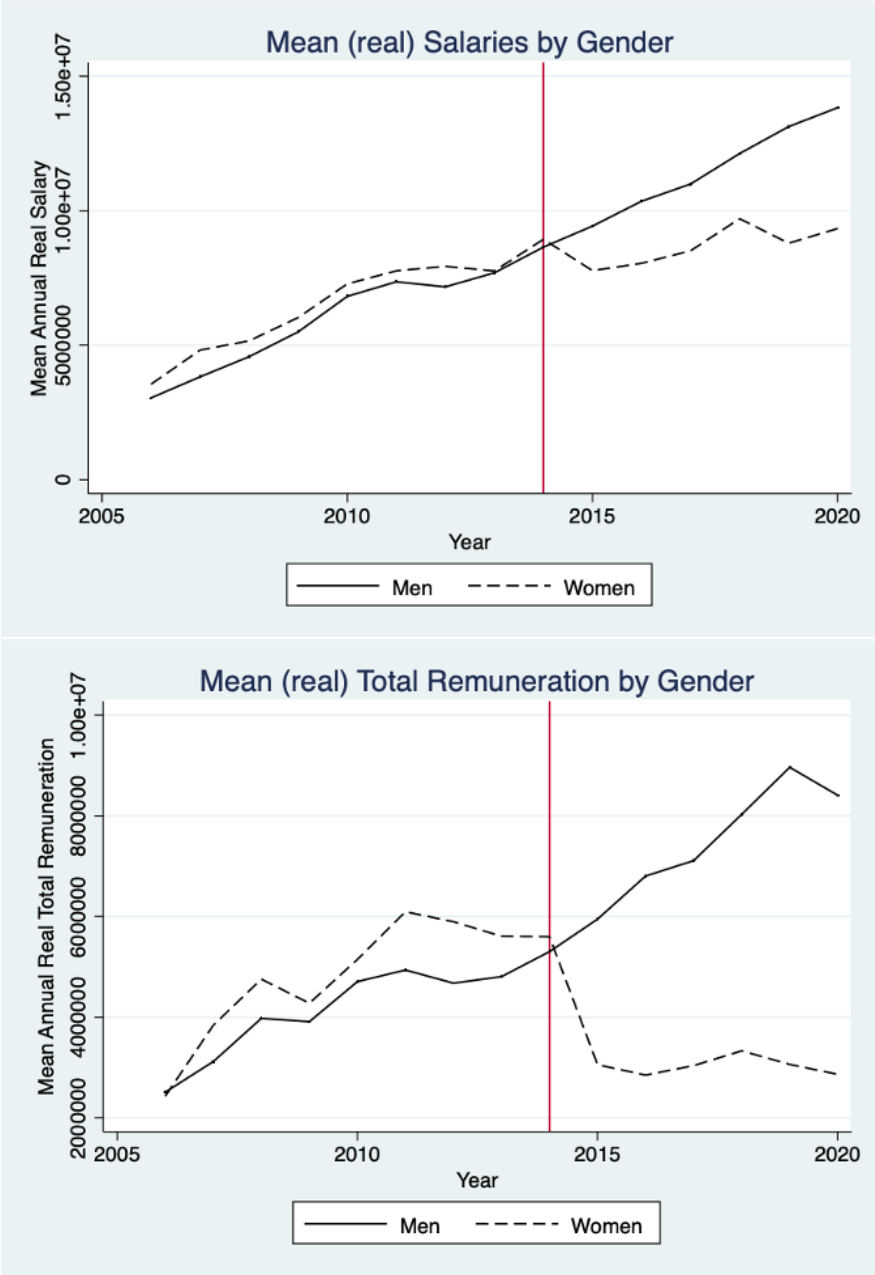
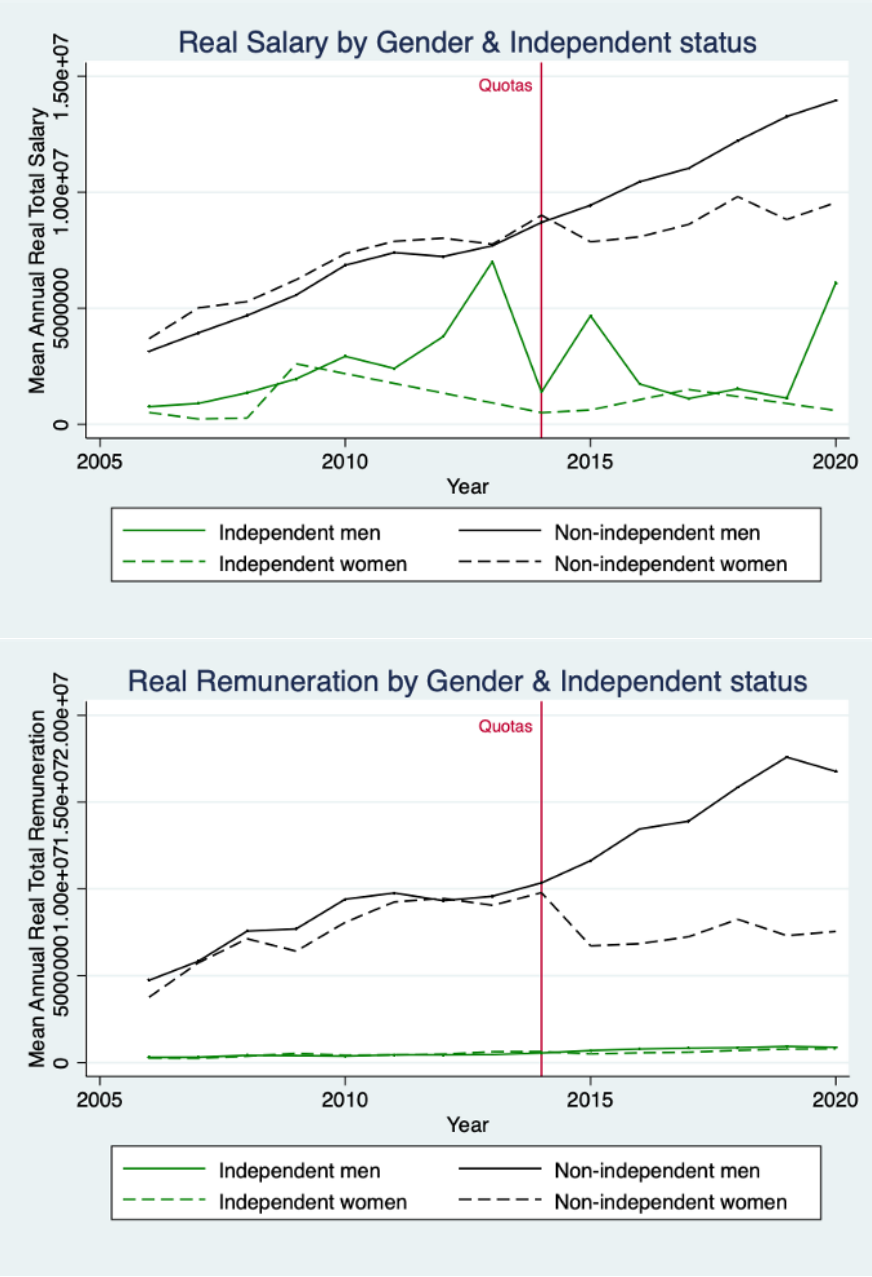


Figure 4: Mean (real) Salaries and remuneration by Gender and independent status for women



Tables

Table 1: Summary Statistics

Variable/Committee Name	Female directors			Male directors		
	Pre-treatment (2006-2013)	**Post-treatment (2014-2020)**	**Difference**	**Pre-treatment (2006-2013)**	**Post-treatment (2014-2020)**	**Difference**
Panel A. Board member characteristics						
Avg. % of directors	5.51	15.88	10.37***	94.48	84.11	-10.37***
	(0.0007)	(0.0008)	(0.0013)	(0.0007)	(0.0008)	(0.0013)
Avg. num of directors per year	690.22	3978.80	3288.58***	11724.08	20347.28	8623.19***
	(0.5718)	(3.1517)	(4.1425)	(7.9878)	(5.1916)	(9.1320)
Avg. num of directors per company per year	0.92	3.18	2.25***	14.56	18.30	3.73***
	(0.0060)	(0.0072)	(0.0105)	(0.0276)	(0.0286)	(0.0429)
Avg. age of directors (years)	53.81	55.39	1.58***	58.33	60.58	2.24***
	(0.1527)	(0.0835)	(0.1817)	(0.0412)	(0.0351)	(0.0541)
% of directors with a master's/technical degree or PhD	74.28	81.08	6.80***	65.66	74.16	8.49***
	(0.0062)	(0.0025)	(0.0062)	(0.0016)	(0.0012)	(0.0020)
Avg. tenure (years)	7.58	5.05	-2.53***	8.60	9.98	1.37***
	(0.0971)	(0.0369)	(0.0938)	(0.0279)	(0.0246)	(0.0381)
Avg. num of other directorships held	0.31	1.86	1.54***	0.38	1.87	1.49***
	(0.0122)	(0.0091)	(0.0214)	(0.0042)	(0.0042)	(0.0064)
Avg. num of committees directors are part of	2.71	3.48	0.76***	3.08	3.93	0.84***
	(0.0202)	(0.0103)	(0.0249)	(0.0050)	(0.0048)	(0.0073)
% of directors who are independent	53.09	67.18	14.08***	62.71	55	-7.71***
	(0.0183)	(0.0029)	(0.0175)	(0.0043)	(0.0013)	(0.0046)
Panel B. Participation in committees within firms						
Audit, Risk, Finance committees	4.37	14.08	9.71***	95.62	85.91	-9.71***
	(0.0015)	(0.0018)	(0.0028)	(0.0015)	(0.0018)	(0.0028)

Continued on next page

Table 1: – continued from previous page

Variable/Committee Name	Female directors			Male directors		
	Pre-treatment (2006-2013)	**Post-treatment (2014-2020)**	**Difference**	**Pre-treatment (2006-2013)**	**Post-treatment (2014-2020)**	**Difference**
Business Development, Management committees	2.84	6.61	3.77***	97.15	93.38	-3.77***
	(0.0057)	(0.0066)	(0.0096)	(0.0057)	(0.0066)	(0.0096)
Nomination & remuneration committees	4.36	16.46	12.09***	95.63	83.53	-12.09***
	(0.0019)	(0.0025)	(0.0038)	(0.0019)	(0.0025)	(0.0038)
Assistant Committees (HR, Legal, IT, Admin)	7.44	13.40	5.96***	92.55	86.59	-5.96***
	(0.0126)	(0.0105)	(0.0183)	(0.0126)	(0.0105)	(0.0183)
Ethics Committee	12.37	18.39	6.01***	87.62	81.60	-6.01***
	(0.0162)	(0.0030)	(0.0192)	(0.0162)	(0.0030)	(0.0192)
Investment, Empl/Shareholder reln & Grievance redressal committees	5.18	14.25	9.06***	94.81	85.74	-9.06***
	(0.0017)	(0.0022)	(0.0030)	(0.0017)	(0.0022)	(0.0030)
Other Committees	5.48	10.96	5.47***	94.51	89.03	-5.47***
	(0.0028)	(0.0029)	(0.0044)	(0.0028)	(0.0029)	(0.0044)
N Board members	651	3220		9803	13898	
N firms	1414	1900		1414	1900	

Notes: Standard errors in parentheses. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level.
Data for Independence status is available only for 2013 pre-treatment so we use only 2013 as the main year for this variable.

Table 2: Gender gap in salaries and total remuneration

Dependent variable	**Before companies act (2006-2013)**	**After companies act (2014-2020)**	**Before companies act (2006-2013)**	**After companies act (2014-2020)**
	(1)	**(2)**	**(3)**	**(4)**
Panel A. Log(salary)				
Female	-0.0462	-0.269***	-0.129***	-0.380***
	(0.0485)	(0.0432)	(0.0452)	(0.0358)
Male mean	14.43	14.61		
	(1.510)	(1.976)		
Female mean	13.43	14.77		
	(0.559)	(1.694)		
Constant	8.427***	8.516***	11.03***	15.61***
	(1.043)	(1.087)	(0.996)	(0.972)
Controls	Yes	Yes	Yes	Yes
Firm fixed effects	No	No	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations	9,353	10,867	9,353	10,867
R-squared	0.139	0.094	0.671	0.727
Panel B. Log(Total remuneration)				
Female	-0.246***	-0.405***	-0.366***	-0.387***
	(0.0482)	(0.0294)	(0.0414)	(0.0232)
Male mean	12.03	12.50		
	(2.435)	(2.480)		
Female mean	11.76	11.67		
	(2.453)	(2.163)		
Constant	7.099***	2.928***	9.711***	12.32***
	(0.930)	(0.864)	(0.858)	(0.758)
Controls	Yes	Yes	Yes	Yes
Firm fixed effects	No	No	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations	28,460	36,968	28,460	36,968
R-squared	0.284	0.246	0.597	0.615

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The sample of firms considered here is 1905 listed firms in the Prime database for which we had information on the ages and education of board members as well as their salaries. The outcome of interest is log(salaries) and log(total remuneration). Total remuneration includes salaries of board members, along with other incomes earned such as sitting fees, retirement benefits, bonus commission etc. Year FE are included along with individual controls (age and age squared, years of education and years of education squared, tenure, independent status and number of total other directorships). We estimate the equation separately for the pre-reform years (2006-2013) and the postreform years (2014-2020) using the population of individuals serving as board members in a given year. To account for changes in the number and composition of firms over time, we also estimate a version of the equation that includes firm fixed effects.

Table 3: Summary Statistics- Firm performance characteristics

Variable/ Indicator	**Before companies act (2006-2013)**	**After companies act (2014-2020)**	**Difference**
Avg. annual income (Rs. Cr)	28483.26 (1754.54)	38148.56 (2046.34)	9665.30*** (2792.00)
Avg. annual net sales (Rs. Cr)	24882.09 (1660.13)	31396.14 (1809.83)	6514.04** (2531.44)
Avg. annual net profits (Rs. Cr)	-56100000 (31800000)	-17400000 (13100000)	38700000 (29700000)
Avg. total assets (Rs. Cr)	49391.83 (2552.85)	87770.95 (4840.09)	38379.12*** (5946.89)
Avg. annual return on assets (%)	4.95 (0.10)	2.49 (0.11)	-2.46*** (0.15)
Avg. annual staff welfare expenses (Rs. Cr)	24882.09 (1660.13)	31396.14 (1809.83)	6514.04** (2531.44)
Avg. annual staff training expenses (Rs. Cr)	45.71 (5.46)	69.71 (7.79)	24.00** (9.54)
Avg. number of employees	5058.52 (235.75)	4090.43 (156.28)	-968.08*** (281.74)
Avg. number of women employees	1238.22 (161.51)	795.49 (53.90)	-442.72 (314.35)
N firms	1297	1948	

Notes: Standard errors in parentheses. ***, **, and * indicate significance at the 1, 5, and 10 percent critical level. The figures in crore rupees are in nominal terms.

Table 4: First stage regression (with female dummy)

Dependent variable: Female Dummy (2014-2020)		
Any female board member in year 2013 *		
	2014 Dummy	0.911 (0.00627)***
	2015 Dummy	0.0819 (0.00829)**
	2016 Dummy	0.0134 (0.00237)**
	2017 Dummy	0.00536 (0.00142)*
	2018 Dummy	0.00284 (0.0005)**
	2019 Dummy	0.00141 (0.0003)**
	2020 Dummy	1.80e-06 (7.28e-05)
2015 Dummy		0.830 (0.00420)***
2016 Dummy		0.898 (0.00838)***
2017 Dummy		0.906 (0.00752)***
2018 Dummy		0.909 (0.00579)***
2019 Dummy		0.910 (0.00602)***
2020 Dummy		0.911 (0.00627)***
Industry fixed effects		Yes
Observations		8,809
R-squared		0.808

Notes: Standard errors in parentheses and are clustered at industry level. *** p<0.01, ** p<0.05, * p<0.1. We instrument for the female dummy with female dummy in 2013 interacted with year fixed effects. The sample of interest here is 1948 listed companies for which board member data from Prime was merged with Prowess. We focus on the treatment years 2014-2020 for these firms. Year FE & Industry FE are also included.

Table 5: Effect of female board membership on key firm performance variables (female dummy)

Dependent variable	**Total income (Rs.Cr)**	**Net Sales (Rs.Cr)**	**Net Profits (Rs.Cr)**	**Total Assets (Rs.Cr)**	**Return on Assets (%)**
Any female board member in year t	40,013***	33,638***	-1.396e+08***	78,215**	1.826***
	(3,286)	(3,789)	(1.398e+07)	(31,637)	(0.301)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	8,386	8,168	4,264	8,401	8,390
R-squared	0.161	0.158	0.130	0.262	0.005

Notes: Standard errors in parentheses and are clustered at industry level. *** p<0.01, ** p<0.05, * p<0.1. We instrument for the female dummy with female dummy in 2013 interacted with year fixed effects. The sample of interest here is 1948 listed companies for which board member data from Prime was merged with Prowess. We focus on the treatment years 2014-2020 for these firms. Year FE & Industry FE are included. The pre-reform average change in net profits is also added as a control.

Table 6: Effect of female board membership on staff welfare variables (female dummy)

Dependent variable	**Staff Welfare (Rs.Cr)**	**Staff Training (Rs.Cr)**	**Number of employees**	**Number of women employees**
Any female board member in year t	188.5***	109.5***	6,769***	948.8
	(18.32)	(20.68)	(564.8)	(917.5)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Observations	7,844	610	7,288	1,844
R-squared	0.037	0.027	0.033	0.028

Notes: Standard errors in parentheses and are clustered at industry level. *** p<0.01, ** p<0.05, * p<0.1. We instrument for the female dummy with female dummy in 2013 interacted with year fixed effects. The sample of interest here is 1948 listed companies for which board member data from Prime was merged with Prowess. We focus on the treatment years 2014-2020 for these firms. Year FE & Industry FE are included. The pre-reform average change in net profits is also added as a control.

Table 7a: Effect of female board membership on key firm performance variables pre-reform (2012-2013- using female dummy in 2013 as main independent variable)

Dependent variable	**Total income (000' Rs.Cr)**	**Net Sales (000' Rs.Cr)**	**Net Profits (000' Rs.Cr)**	**Total Assets (000' Rs.Cr)**	**Return on Assets (%)**
Any female board member in year 2013	6.43	0.47	-93,400	61.40	1.590***
	(6,435)	(8,071)	(4.227e+07)	(32,055)	(0.115)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Mean (2012-2013)	35.55 (201785.8)	30.88 (190267.9)	139,000 (2.75e+09)	63.69 (288101.9)	3.05 (9.285)
Observations	2,425	2,369	1,058	2,428	2,426
R-squared	0.353	0.510	0.018	0.265	0.012

Notes: Standard errors in parentheses and are clustered at industry level. *** p<0.01, ** p<0.05, * p<0.1. The sample of interest here is 1948 listed companies for which board member data from Prime was merged with Prowess. We focus on the pre-treatment years 2012-2013 for these firms. Total assets is added as a control and Industry and Year FE are included as well.

Table 7b: Effect of female board membership on key firm performance variables pre-reform (2012-2013- using female dummy in 2013*linear time trend as main independent variable)

Dependent variable	**Total income (000' Rs.Cr)**	**Net Sales (000' Rs.Cr)**	**Net Profits (000' Rs.Cr)**	**Total Assets (000' Rs.Cr)**	**Return on Assets (%)**
Any female board member in year 2013* linear time trend	6.28	0.38	-149,200	57.54	1.804***
	(6,032)	(7,338)	(4.017e+07)	(29,513)	(0.117)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Mean (2012-2013)	35.55 (201785.8)	30.88 (190267.9)	139,000 (2.75e+09)	63.69 (288101.9)	3.05 (9.285)
Observations	2,425	2,369	1,058	2,428	2,426
R-squared	0.353	0.510	0.017	0.258	0.010

Notes: Standard errors in parentheses and are clustered at industry level. *** p<0.01, ** p<0.05, * p<0.1. The sample of interest here is 1948 listed companies for which board member data from Prime was merged with Prowess. We focus on the pre-treatment years 2012-2013 for these firms. Total assets is added as a control and Industry and Year FE are included as well.

Table 8a: Effect of female board membership in staff welfare variables pre-reform (2012-2013- using female dummy in 2013 as main independent variable)

Dependent variable	**Staff Welfare (000' Rs.Cr)**	**Staff Training (000' Rs.Cr)**	**Number of employees**	**Number of women employees**
Any female board member in year 2013	0.05	0.051**	3,152***	-70.14
	(18.32)	(20.68)	(564.8)	(917.5)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Mean (2012-2013)	0.122	0.051	5750.78	1153.95
	(639.06)	(180.11)	(20200.57)	(1462.33)
Observations	2,289	218	1,221	41
R-squared	0.416	0.150	0.128	0.439

Notes: Standard errors in parentheses and are clustered at industry level. *** p<0.01, ** p<0.05, * p<0.1. The sample of interest here is 1948 listed companies for which board member data from Prime was merged with Prowess. We focus on the pre-treatment years 2012-2013 for these firms. Total assets is added as a control and Industry and Year FE are included as well.

Table 8b: Effect of female board membership in staff welfare variables pre-reform (2012-2013- using female dummy in 2013*linear time trend as main independent variable)

Dependent variable	**Staff Welfare (000' Rs.Cr)**	**Staff Training (000' Rs.Cr)**	**Number of employees**	**Number of women employees**
Any female board member in year 2013*linear time trend	0.035	0.057**	2,162***	-649.8*
	(16.94)	(6.669)	(74.93)	(188.4)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Mean (2012-2013)	0.122	0.051	5750.78	1153.95
	(639.06)	(180.11)	(20200.57)	(1462.33)
Observations	2,289	218	1,221	41
R-squared	0.415	0.143	0.124	0.449

Notes: Standard errors in parentheses and are clustered at industry level. *** p<0.01, ** p<0.05, * p<0.1. The sample of interest here is 1948 listed companies for which board member data from Prime was merged with Prowess. We focus on the pre-treatment years 2012-2013 for these firms. Total assets is added as a control and Industry and Year FE are included as well.

Table 9: Robustness check- Effect of female board membership on key firm performance variables (female dummy, years 2016-2020)

Dependent variable	**Total income (Rs.Cr)**	**Net Sales (Rs.Cr)**	**Net Profits (Rs.Cr)**	**Total Assets (Rs.Cr)**	**Return on Assets (%)**
Any female board member in year t	3.387e+06***	2.596e+06***	5.995e+08***	8.463e+06**	104.7***
	(971,519)	(968,640)	(4.896e+07)	(3.842e+06)	(39.80)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	5,948	5,793	3,118	5,957	5,950

Notes: Standard errors in parentheses and are clustered at industry level. *** p<0.01, ** p<0.05, * p<0.1. We instrument for the female dummy with female dummy in 2013 interacted with year fixed effects. The sample of interest here is 1948 listed companies for which board member data from Prime was merged with Prowess. We focus on the treatment years 2016-2020 for these firms. Year FE & Industry FE are included.

Table 10: Robustness check- Effect of female board membership on staff welfare variables (female dummy, years 2016-2020)

Dependent variable	**Staff Welfare (Rs.Cr)**	**Staff Training (Rs.Cr)**	**Number of employees**	**Number of women employees**
Any female board member in year t	14,073***	2,279	356,263***	-5,523
	(5,057)	(3,038)	(119,123)	(8,493)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Observations	5,548	402	5,597	1,721
R-squared				0.008

Notes: Standard errors in parentheses and are clustered at industry level. *** p<0.01, ** p<0.05, * p<0.1. We instrument for the female dummy with female dummy in 2013 interacted with year fixed effects. The sample of interest here is 1948 listed companies for which board member data from Prime was merged with Prowess. We focus on the treatment years 2016-2020 for these firms. Year FE & Industry FE are included.

Annexure

Table 1. Controlling for baseline analog: Effect of female board membership on key firm performance variables (female dummy)

Dependent variable	**Total income (000' Rs.Cr)**	**Net Sales (000' Rs.Cr)**	**Net Profits (000' Rs.Cr)**	**Total Assets (000' Rs.Cr)**	**Return on Assets (%)**
Any female board member in year t	1.08**	3.26***	154,600***	-43.35	1.024***
	(493.4)	(329.8)	(1.280e+07)	(26,734)	(0.371)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Baseline analog (2013)	Yes	Yes	Yes	Yes	Yes
Mean outcome value (2014-2020)	38.14	31.39	-17400	87.77	2.49
	(2046.34)	(1809.83)	(13100000)	(4840.09)	(0.11)
Observations	8,313	8,060	3,258	8,330	8,309
R-squared	0.953	0.950	0.131	0.861	0.213

Notes: Standard errors in parentheses and are clustered at industry level. *** p<0.01, ** p<0.05, * p<0.1. We instrument for the female dummy with female dummy in 2013 interacted with year fixed effects. The sample of interest here is 1948 listed companies for which board member data from Prime was merged with Prowess. We focus on the treatment years 2014-2020 for these firms. Year FE & Industry FE are included. The pre-reform average change in net profits and baseline analogs are also added as controls.

Table 2. Controlling for baseline analog: Effect of female board membership on staff welfare variables (female dummy)

Dependent variable	**Staff Welfare (000' Rs.Cr)**	**Staff Training (000' Rs.Cr)**	**Number of employees**	**Number of women employees**
Any female board member in year t	0.045***	-0.005	808.8***	-109.7
	(18.32)	(20.68)	(564.8)	(917.5)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Baseline analog (2013)	Yes	Yes	Yes	Yes
Mean outcome value (2014-2020)	0.12	0.069	4090.43	795.49
	(6.65)	(7.79)	(156.28)	(53.90)
Observations	7,685	545	4,083	1,217
R-squared	0.659	0.937	0.915	0.083

Notes: Standard errors in parentheses and are clustered at industry level. *** p<0.01, ** p<0.05, * p<0.1. We instrument for the female dummy with female dummy in 2013 interacted with year fixed effects. The sample of interest here is 1948 listed companies for which board member data from Prime was merged with Prowess. We focus on the treatment years 2014-2020 for these firms. Year FE & Industry FE are included. The pre-reform average change in net profits and baseline analogs are also added as controls.

Table 3. Effect of female board membership on key firm performance variables (with number of women)

Dependent variable	**Total income (Rs.Cr)**	**Net Sales (Rs.Cr)**	**Net Profits (Rs.Cr)**	**Total Assets (Rs.Cr)**	**Return on Assets (%)**
No. of female board members in year t	19,463***	15,074***	4.048e+06***	50,087*	0.770***
	(1,955)	(1,180)	(251,995)	(28,007)	(0.214)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	8,386	8,168	4,264	8,401	8,390
R-squared	0.170	0.168	0.130	0.268	0.004

Notes: Standard errors in parentheses and are clustered at industry level. *** p<0.01, ** p<0.05, * p<0.1. We instrument for the number of female board members with the number of female board members in 2013 interacted with year fixed effects. The sample of interest here is 1948 listed companies for which board member data from Prime was merged with Prowess. We focus on the treatment years 2014-2020 for these firms. Year FE & Industry FE are also included. The pre-reform average change in net profits is also added as a control.

Table 4. Effect of female board membership on staff welfare variables (with number of women)

Dependent variable	**Staff Welfare (Rs.Cr)**	**Staff Training (Rs.Cr)**	**Number of employees**	**Number of women employees**
No. of female board members in year t	57.91***	15.03***	1,292***	39.77
	(3.130)	(1.975)	(279.5)	(56.77)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Observations	7,844	610	7,288	1,844
R-squared	0.052	0.061	0.046	0.027

Notes: Standard errors in parentheses and are clustered at industry level. *** p<0.01, ** p<0.05, * p<0.1. We instrument for the number of female board members with the number of female board members in 2013 interacted with year fixed effects. The sample of interest here is 1948 listed companies for which board member data from Prime was merged with Prowess. We focus on the treatment years 2014-2020 for these firms. Year FE & Industry FE are also included. The pre-reform average change in net profits is also added as a control.

Table 5.Effect of female board membership on key firm performance variables (with percentage of women)

Dependent variable	**Total income (Rs.Cr)**	**Net Sales (Rs.Cr)**	**Net Profits (Rs.Cr)**	**Total Assets (Rs.Cr)**	**Return on Assets (%)**
Pct Women on Board in year t	86,507**	44,975***	1.014e+08***	439,497	7.827***
	(37,228)	(3,576)	(5.353e+06)	(408,865)	(2.889)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	8,386	8,168	4,264	8,401	8,390
R-squared	0.158	0.156	0.130	0.257	

Notes: Standard errors in parentheses and are clustered at industry level. *** p<0.01, ** p<0.05, * p<0.1. We instrument for the percentage of female board members with the percentage of female board members in 2013 interacted with year fixed effects. The sample of interest here is 1948 listed companies for which board member data from Prime was merged with Prowess. We focus on the treatment years 2014-2020 for these firms. Year FE & Industry FE are also included. The pre-reform average change in net profits is also added as a control.

Table 6. Effect of female board membership on staff welfare variables (with pct of women)

Dependent variable	**Staff Welfare (Rs.Cr)**	**Staff Training (Rs.Cr)**	**Number of employees**	**Number of women employees**
Pct Women on Board in year t	308.5***	238.9***	9,766*	215.0
	(4.120)	(9.978)	(5,650)	(1,650)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Observations	7,844	8,366	610	7288
R-squared	0.033	0.041	0.020	0.027

Notes: Standard errors in parentheses and are clustered at industry level. *** p<0.01, ** p<0.05, * p<0.1. We instrument for the percentage of female board members with the percentage of female board members in 2013 interacted with year fixed effects. The sample of interest here is 1948 listed companies for which board member data from Prime was merged with Prowess. We focus on the treatment years 2014-2020 for these firms. Year FE & Industry FE are also included. The pre-reform average change in net profits is also added as a control.