

# Board Gender Diversity and Firm Performance: Evidence from China

Jiabo Fan<sup>1, \*, a, †</sup>, Haochen Wang<sup>2, \*, b, †</sup>, Ziqi Xu<sup>3, \*, c, †</sup>, Fanrui Zhao<sup>4, \*, d, †</sup>

<sup>1</sup> School of International Trade and Economics, Central university of finance of economics

<sup>2</sup> School of Science, Beijing Forestry University

<sup>3</sup> School of Accounting, Central university of finance of economics

<sup>4</sup> School of Science, Xi'an Jiaotong-Liverpool University

\*Corresponding authors. Email: <sup>a</sup>2018310967@cufe.edu.cn; <sup>b</sup>Whc18501282357@bjfu.edu.cn;

<sup>c</sup>2019310473@cufe.edu.cn; <sup>d</sup>Fanrui.Zhao18@student.xjtlu.edu.cn

<sup>†</sup>These authors contributed equally.

## ABSTRACT

This paper examines the impact of board gender diversity on firm performance. Based on the data of Chinese listed companies, we find that, first, there exists a significant positive effect of board gender diversity on firm performance. The result still holds after a series of robustness checks, such as using the next period of the independent variable to address the reverse causality problem, and adding more control variables into the regression models. In addition, our empirical results also indicate that the gender diversity effect on firm performance are more pronounced in firms with weaker corporate governance mechanisms, such as firms not audited by the international big four auditors. The findings provide notions to understand the role of board gender diversity and female directors in the developing markets better.

**Keywords:** Board gender diversity, firm performance, corporate governance, China

## 1. INTRODUCTION

With the rapid development of the economy and society and the increase of studies on women in academic circles, the role of women in listed companies has caught more and more attention. Current research results show that female executives have a specific impact on corporate information disclosure, investment behavior, cash holding, earnings management, internal control, and other aspects. There are many examples of prominent female executives. For instance, Mingzhu Dong, chairwoman of Gree Electric Appliances co. LTD., ranked 11th on Forbes China's best CEO List 2020 in August 2020, is one of the best representatives. Under the leadership of Mingzhu Dong, Gree Electric Appliances co., ranked first in production and sales, sales revenue, and market share in China for 11 consecutive years from 1995 to 2005. Christianson is co-CEO of Morgan Stanley Asia Pacific and CEO of Morgan Stanley China. Christianson has led Morgan Stanley's offshore business to remain a market leader for a long time and has led Morgan Stanley to remain active in the forefront of China's capital markets, etc.

However, the role of women in listed companies always has controversies. On the one hand, compared with male directors, female directors are more cautious and risk-averse and have higher executive power and affinity. Existing empirical evidence shows that female executives are more careful than male executives in making critical corporate decisions [1]. At the same time, women are more sensitive and able to maintain corporate relationship capital, which means female executives tend to cope with some conflict scenarios better than male executives due to their patience and calmness. Additionally, we find that boards with three or more female directors have a much stronger impact on firm performance than boards with two or fewer, supporting the critical mass theory, which states "one is a token, two is a presence, and three is a voice" [2]. With the data we collected and like the examples mentioned in the first paragraph, female executives have a specific and considerable impact on many aspects of a listed company. Assuming that the basic knowledge and management ability of male executives are the same as that of female executives, due to the behavioral and psychological characteristics of female executives, female executives have more substantial comprehensive strength to deal with more and more interpersonal

problems in companies nowadays. So, there is no doubt that female executives such as Mingzhu Dong and Christianson are playing an increasingly significant role in the senior management of the workplace. What's more, women may pay more attention to detail than men and can offer a unique perspective on problem-solving that differs from male members. This lays an essential foundation for female executives to provide new viewpoints different from conventional enterprises and the general traditional views are often put forward by a large proportion of male executives in the past. Therefore, we can conclude that different gender ratios of the board of directors can significantly improve the diversity of corporate governance issues. Compared with listed companies with only male directors, female directors can bring heterogeneous knowledge, ideas and viewpoints to the board of directors, so we need to highlight the importance of board gender diversity. To find more positive relationships between Board gender diversity and firm performance, we investigate the effects of female executives on gender-specific wage distributions and firm performance. Female leadership has a positive impact at the top of the female wage distribution. The impact of female leadership on firm performance increases with the share of female workers. In addition, Female directors may bring scarce professional resources to the board of directors of listed companies, promote the diversification of professional competence of the board of directors, and thus improve the efficiency of corporate consulting and decision-making.

And an increase in the proportion of women could increase male board participation. Meanwhile, the more diverse the board, the more the CEO is responsible for the low stock price. Those are all positive effects of female executives. As for communication channels, women leaders, due to their different life experiences and perspectives, are better equipped to connect their firms to female customers, women in the labor force and society at large. Hillman et al. [3] apply the resource dependence theory to examine board gender diversity and find that U.S. firms with gender-diverse boards can accrue these benefits. In sum, the resource dependence theory points to the beneficial effects of gender-diverse boards.

On the other hand, the characteristics of females' aversion to risk and uncertainty might affect the choice of innovative strategies, which are essential for more extended corporate development. Psychological studies have proven that females are especially manifested as weak competition, conservativeness and caution, undermining the possibility of high-risk activities [4]. Some scholars argue that female directors have a more prominent risk aversion tendency than male directors [5]. Meanwhile, innovation strategy, including R&D, features sizeable initial investment and long investment period in commercialization, demanding continuous input for the uncertainty of innovation output that might

contradict with the perceptions of a female-dominated board. Moreover, in a male-dominated business environment, women are inclined to obey the attributes given by society. Out of the sense of identity, women tend to invest corporate funds in stable routine projects to gain recognition and support from the corporation instead of innovation projects which increase the possibility of making mistakes. Besides, the capability of rational thinking of females might be weaker than that of males when it comes to decision-making due to physiological differences leading females to think out of instinct. Thus, the rational consideration from females could be more challenging to establish, drawing contradicts among the whole team deteriorating the firm performance.

The increasing gender heterogeneity of the senior managing board might lead to team split and proliferation of small groups within the team, which enhance the cost of information transmission and reduce the efficiency of decision-making in the long term. Early studies have already paid much attention to the active impact of appropriate gender ratios on corporate governance [6]. For example, once the fault lines are activated [7], which refers to hypothetical dividing lines that may split the team into several sub-teams based on the varied dispositions, the clashes between the conservative and cautious attitude of females and the radical style of males will intensify, putting forward obstacles to corporate governance. The existed difference within the board team on the decision-making procedure will be stretched and enlarged due to too many females included in the board, resulting in the appearance of the divided subgroups and an increase in management costs. In addition, the independent decision-making ability of female managers is not as good as that of male managers. They are often hesitant about dealing with business and not as bold as men. Barber reveals that females tend to have less overconfidence than men from the perspective of psychological research [8]. Moreover, family factors, such as looking after infants and coordinating the relationship between family and work, are also a heavy burden on performing duties for female managers, acting as a distraction disturbing the females' efficiency over the business affairs. This might lower the stability of the board's personnel and, in the long run, elicit higher risk over the management. For a long time, the social environment has consistently affirmed and trusted the value of men, leading to females' lack of confidence in themselves, and even inferiority in an environment with strong men. The performance is strong dependence and lack of independent opinions in work.

Different from the existing studies, this paper starts from the perspective of firm performance and takes ROA as the proxy variable to explore whether female directors in the capital market in China, the largest emerging capital market in the world, can play a corresponding role in the process of corporate governance and corporate development. Specifically, the reasons why this paper

chooses the capital market of China as the research object are as follows: first, the capital market of China is the second-largest capital and the first largest emerging capital market in the world. The analysis and exploration of the Chinese market are of great significance to understand the operation and development of the global capital market; Second, different from the mature capital market (developed capital market), the capital market of China is still facing an imperfect institutional mechanism and legal environment. The current situation of internal and external corporate governance still needs to be further improved. Therefore, it is of great significance to explore the role of female directors in this case. To sum up, this paper selects the Chinese capital market as the research object.

Adopting the Chinese stock market as an object and using the sample period from 2004 to 2017, we explore the relationship between board gender diversity and firm performance. Evidence shows that there exists a significant positive effect of board gender diversity on firm performance. This result still holds after a series of robustness checks, such as using the next period of the independent variable to address the reverse causality concern and adding more control variables into the regression models. In addition, we also find that the gender diversity effect on firm performance is more pronounced in firms with weaker corporate governance mechanisms, such as firms not audited by the international big four auditors.

The contributions of our study are as follows. Firstly, we expanded the research on the gender diversity of the board of directors. Secondly, we extend the relevant research on the factors affecting the performance of listed companies. Finally, we extend the research on how gender diversity of the board of directors affects corporate governance in different situations.

## 2. DATA AND METHODOLOGY

### 2.1. Data and sample

Our sample initially comprised all firms listed on the SHSE and SZSE from 2004 to 2017. We chose 2004 as the beginning year of our sample period because the variables we used had many missing values before 2004. The data on the representation of women on boards and the return on assets of our sample came from China Stock Market & Accounting Research Database. We excluded financial institutions, which have different reporting rules than most ordinary firms.

### 2.2. Model

To explore the impact of board gender diversity on firm performance, we construct the following regression model:

$$ROA_{t+1} = \beta_0 + \beta_1 femalep + \sum_{q=2}^m \beta_q (qth\ ControlVariable_t) + \varepsilon_t \quad (1)$$

Where  $\beta_1$  represents regression coefficients;  $\varepsilon$  is an error term; and *Control Variable* contains *size<sub>t</sub>*, *bm<sub>t</sub>*, *lev<sub>t</sub>*, *age<sub>t</sub>*, *cash<sub>t</sub>*, *board<sub>t</sub>*, year dummies, and industry dummies. *ROA<sub>t+1</sub>* measures the return on assets, while *femalep* represents the gender diversity on the board. A negative (positive)  $\beta_1$  suggests that gender diversity on boards tends to decrease (increase) a firm's return on assets.

### 2.3. Key variable

#### 2.3.1. Dependent variable

*Return on assets*: return on assets, calculated by net profit divided by the book value of total assets.

#### 2.3.2. Test variable

*Gender diversity on the board*: Proportion of female directors in all directors.

#### 2.3.3. Control variable

*Size*: The natural logarithm of the book value of total assets.

*Bm*: Book-to-market ratio, calculated by the book value of equity divided by the market value of equity.

*Lev*: Firm financial leverage, calculated by the book value of total debt divided by the book value of total assets.

*Age*: Years of listing.

*Cash*: Cash and cash equivalents held by the enterprise divided by total assets.

*Board*: Proportion of independent directors in all directors.

## 3. EMPIRICAL RESULTS

### 3.1. Descriptive statistics

Table 1 provides descriptive statistics for the variables used in our analysis. The ROA of these companies has an average of 0.04. The representation of women on boards has an average of 0.13. The firms in our sample have an average size of 6.43, an average book-to-market ratio of 0.95, average leverage of 0.42, an average stock of cash and cash equivalents of 0.21, an average listed year of 9.91 (take the logarithm).

**Table 1.** Descriptive statistics

Variable	N	Mean	SD	Min	p25	p50	p75	Max
<i>roa</i>	29414	0.04	0.07	-0.28	0.01	0.03	0.07	0.22
<i>roa_pre</i>	26039	0.03	0.07	-0.29	0.01	0.03	0.06	0.23
<i>femalep</i>	28351	0.13	0.11	0.00	0.00	0.11	0.20	0.45
<i>size</i>	29421	6.43	0.54	5.27	6.05	6.43	6.77	7.93
<i>bm</i>	27187	0.95	0.90	0.09	0.39	0.67	1.17	5.56
<i>lev</i>	29416	0.42	0.23	0.02	0.24	0.41	0.58	1.16
<i>age</i>	29421	9.91	6.31	1.00	4.00	9.00	15.00	24.00
<i>cash</i>	23937	0.21	0.20	0.01	0.08	0.15	0.26	1.19
<i>board</i>	29265	0.37	0.05	0.27	0.33	0.33	0.40	0.57

### 3.2. Multivariate results

Table 2 displays the results of two regression models used to test our hypotheses.

Our hypothesis is supported by the positive and significant coefficients of *femalep* in regressions using ROA. Specifically, the coefficient of the variable ROA in columns (2) is 0.019, which is statistically significant at the 1% level, indicating that the improvement of gender diversity in the board of directors has an increasing effect on the return on assets of the company. This result is consistent with the notion that the improvement of gender diversity in the board of directors has an increasing effect on the return on assets of the company, which is shown in the firm’s financial status and operating results.

The coefficients of the control variables are generally consistent with prior studies [8]. Firms with bigger company size, lower book-to-market ratios, lower leverage, relatively new, more capital stock, and fewer independent directors are associated with a higher return of assets.

**Table 2.** The impact of board gender diversity on firm performance

VARIABLES	ROA (1)	ROA (2)
<i>femalep</i>	0.016*** (4.50)	0.019*** (5.88)
<i>size</i>		0.041*** (42.91)
<i>bm</i>		-0.005*** (-9.36)
<i>lev</i>		-0.091***

		(-46.51)
<i>age</i>		-0.001***
		(-13.05)
<i>cash</i>		0.043***
		(19.88)
<i>board</i>		-0.036***
		(-5.16)
<i>Constant</i>	0.003	-0.166***
	(0.86)	(-10.63)
Observations	28,345	22,487
R-squared	0.031	0.229
Industry FE	Yes	Yes
Year FE	Yes	Yes

### 3.3. Robustness checks

#### 3.3.1. The alternative firm performance measure

Table 3 excluding the impact of reverse causality on the empirical results, especially the level of ROA may affect the choice of board members of listed companies. For example, due to the principle of prudence, female directors often tend to choose companies with high profitability and stable development. In order to eliminate the impact of the above problems on the empirical results of this paper, we use the t+1 variable of ROA to regress with the t gender diversity index of the board of directors. The results show that the proportion of female directors still has a significant positive impact on fire performance, that is, the gender diversity of the

board of directors can effectively promote the performance of listed companies.

**Table 3.** Alternative firm performance measure

VARIABLES	ROA_pre	ROA_pre
	(1)	(2)
<i>femalep</i>	0.015***	0.018***
	(3.95)	(4.66)
<i>size</i>		0.034***
		(31.67)
<i>bm</i>		-0.008***
		(-13.28)
<i>lev</i>		-0.049***
		(-22.41)
<i>age</i>		-0.001***
		(-8.63)
<i>cash</i>		0.048***
		(19.53)
<i>board</i>		-0.029***
		(-3.66)

<i>Constant</i>	-0.012***	-0.143***
	(-3.19)	(-8.45)
Observations	25,055	19,563
R-squared	0.026	0.144
Industry FE	Yes	Yes
Year FE	Yes	Yes

### 3.3.2. Adding more control variables

Studies have shown that factors such as management's shareholding ratio, institutional investors' shareholding ratio and coverage from analysts can also affect corporate performance. Therefore, in order to eliminate the influence of the above factors, we have controlled the above three factors in the first column to the third column in Table 4. At the same time, we add the above three variables to the regression in the fourth column. Our regression results indicate that the positive effects of board gender diversity on corporate performance are still significant after controlling the influence of the above factors.

**Table 4.** Adding more control variables

	(1)	(2)	(3)	(4)
VARIABLES	ROA_pre	ROA_pre	ROA_pre	ROA_pre
<i>femalep</i>	0.016***	0.019***	0.015***	0.015***
	(4.27)	(4.91)	(4.04)	(3.96)
<i>size</i>	0.036***	0.028***	0.015***	0.010***
	(32.63)	(22.57)	(11.53)	(7.32)
<i>bm</i>	-0.007***	-0.008***	-0.007***	-0.007***
	(-12.93)	(-13.50)	(-12.34)	(-12.34)
<i>lev</i>	-0.048***	-0.050***	-0.050***	-0.050***
	(-21.81)	(-22.84)	(-23.16)	(-23.03)
<i>age</i>	-0.000***	-0.001***	-0.000	0.000
	(-4.08)	(-9.24)	(-1.18)	(1.60)
<i>cash</i>	0.047***	0.047***	0.041***	0.040***
	(19.26)	(19.15)	(17.15)	(16.52)
<i>board</i>	-0.033***	-0.025***	-0.028***	-0.027***
	(-4.10)	(-3.19)	(-3.55)	(-3.46)
<i>mgshare</i>	0.024***			0.024***
	(7.88)			(7.69)
<i>inst</i>		0.023***		0.028***
		(9.86)		(11.40)

<i>analy</i>			0.001***	0.001***
			(25.25)	(23.64)
<i>Constant</i>	-0.149***	-0.109***	-0.031*	-0.012
	(-9.40)	(-6.33)	(-1.80)	(-0.70)
Observations	19,547	19,563	19,563	19,547
R-squared	0.146	0.148	0.171	0.177
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

### 3.4. Additional analysis

We divide the sample into two subsets: the firms that appoint Big 4 auditors to provide annual reports auditing service and those that do not appoint Big 4 auditors. Then we re-estimate the model with the two subsets separately. We report the results in Table 5 when ROA is adopted to measure firm performance. The estimated coefficient of *femalep* in column (1) is 0.014 and is not significant. In contrast, the estimated coefficient of *femalep* in column (2) is 0.015 and is significant at the 1% level. Therefore, the effect of females on firm future performance is more pronounced in firms that do not appoint Big 4 auditors.

**Table 5.** Additional analysis

	(1)	(2)
VARIABLES	ROA	ROA
<i>femalep</i>	0.014	0.015***
	(0.97)	(3.72)
<i>size</i>	0.010**	0.019***
	(2.45)	(11.48)
<i>bm</i>	-0.003**	-0.004***
	(-1.98)	(-5.37)
<i>lev</i>	-0.097***	-0.094***
	(-13.00)	(-40.19)
<i>age</i>	0.000	0.000
	(1.21)	(0.18)
<i>cash</i>	0.042***	0.032***
	(4.33)	(11.96)
<i>board</i>	-0.073***	-0.030***
	(-2.98)	(-3.47)
Constant	0.035	-0.051*
	(1.18)	(-1.70)

Observations	1,145	15,716
R-squared	0.370	0.276
Industry FE	Yes	Yes
Year FE	Yes	Yes

## 4. CONCLUSION

This paper analyzes the effect of board gender diversity on firm performance. By using the data of listed firms in the Chinese stock market, this paper finds that there exists a significant positive effect of board gender diversity on firm performance. And this research carries on a series of robustness checks and add more control variables into the regression models to pursue more accuracy. Additionally, this also finds that the weaker the corporate governance mechanisms the more obvious the gender diversity effect on firm performance is. The findings provide methods to better understand the role of board gender diversity and female directors in developing markets.

This study adds to the return on assets and its implications on firm performance. The findings also have important policy implications. To take full advantages of them, firstly further researchers need to give full play to the supervision and governance role of female directors. Secondly, when making investment decisions, investors can also pay attention to the gender diversity and governance of the board of directors of listed companies. Finally, in policy, the whole society needs to pay attention to the positive effect of female executives on firm performance.

## REFERENCES

- [1] Liu, Y., Wei, Z., & Xie, F. (2014). Do women directors improve firm performance in China? — Journal of Corporate Finance, -28, 169-184.
- [2] Kristie, J. (2011). The power of three Boards at their best: Women on boards.

- [3] Hillman, A. J., Shropshire, C., & Cannella Jr, A. A. (2007). Organizational predictors of women on corporate boards. —Academy of Management Journal, -50(4), 941-952.
- [4] Eckel, C. C., & Füllbrunn, S. C. (2015). Thar she blows? Gender, competition, and bubbles in experimental asset markets. —American Economic Review, -105(2), 906-20.
- [5] Huang, J., & Kisgen, D. J. (2013). Gender and corporate finance: Are male executives overconfident relative to female executives? —Journal of Financial Economics, -108(3), 822-839.
- [6] Lau, D. C., & Murnighan, J. K. (1998). Demographic diversity and faultlines: The compositional dynamics of organizational groups. —Academy of Management Review, -23(2), 325-340.
- [7] Kumada, F., & Kurahashi, S. (2018, November). Influences of Diversity on Organizational Performance. ~ By Using Faultline Theory~. In JSAI International Symposium on Artificial Intelligence (pp. 34-49). Springer, Cham.
- [8] Barber, B. M., & Odean, T. (2001). Boys will be boys: Gender, overconfidence, and common stock investment. —Quarterly Journal of Economics, -116(1), 261-292.