

# Board Gender Diversity and Corporate Financial Investment: Evidence from China

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## ABSTRACT

We investigate the impact of board gender diversity on corporate financial investment. The results show that the board gender diversity in China is negatively correlated with corporate financial investment. This association is robust to a series of robustness checks, including fixed firm-effect models and models containing several possible omitted variables. Further analyses show that the effect of board gender diversity is more pronounced at companies audited by Big 4 auditors. Overall, our findings provide new insights and suggest a positive corporate governance effect of board gender diversity.

**Keywords:** Board gender diversity, Corporate financial investment, From real to virtual

## 1. INTRODUCTION

Generally, female characters in a company play a role like avoiding risks. In 2017 the study conducted by Olofsson Ida and Larsson Mikaela showed a significant positive correlation between the gender composition and the performance of a company measured by factors like profit margin [1]. However, in 2007, the study conducted by Caspar Rose revealed a different result. Caspar Rose's investigation concluded no significant correlation between company performance measured by Tobin's Q and female board representation [2]. Different from extant studies, this paper aims to examine the impact of board gender diversity on the company's financialization.

Financialization refers to the increase in size and importance of a country's financial sector relative to its overall economy [3]. Financialization means that the country, market, and enterprises have adopted a resource allocation method that is partial to capital operation. With financialization, corporate assets are used more for investment than traditional production and operation activities. Under the trend of financialization, people can use financial tools as a medium to promote the economic exchange process. Financialization may allow real goods, services, and

risks to be easily exchanged for currency, making it easier for people to rationalize their assets and income flows. A financial asset is a liquid asset whose value comes from contractual rights or ownership requirements. Cash, stocks, bonds, mutual funds, and bank deposits are all examples of financial assets [4]. Since financialization began in the 1970s and 1980s, the overall value of global financial assets has skyrocketed. In 1990, the value of global financial assets was US\$56 trillion, accounting for 263% of global GDP. Twenty years later, this figure has reached a staggering 219 trillion U.S. dollars. In the existing research, there are also some critics of financialization. For example, MIT professor Suzanne Berger wrote a case about Timken, an Ohio-based manufacturer of power transmission, gears, and special steel [5]. As shareholders want to maximize profits, the company is forced to split its vertically integrated business. The management opposed the spin-off, believing that it would affect the overall product quality. Controlling the attributes of each component used in the final assembly helps manufacturers provide consumers with quality products.

There are three reasons why we adopt the China's A-share market as the subject of our study. First, the China A-share market is relatively young compared to that of developed countries, such as the U.S. market. At

both individual-level and firm-level, stock markets play a more evident role in the U.S. economy than the Chinese economy, thus highlighting the demand for deeper analysis of Chinese stock markets. Second, Chinese investors and activists have put more attention on the problem of performing least favorably in boardroom gender diversity. In response to this issue, Ms. Teresa Ko, the former chair of the Hong Kong stock exchange listing committee, had called for the exchange to implement quotas demanding listed companies to have more female directors within the next six years, with a target of at least 30 percent female representation on boards [6]. Therefore, the Chinese market will only focus more on board gender diversity in the future instead of weakening the trend. Third, as the Chinese capital market has captured more weight around the world, such development in capital markets has marked it as a significant indicator of the financialization process [7]. It gradually becomes clear that China has already faced observable financialization progress. Therefore, the Chinese stock market can provide an ideal setting to examine the relationship between board gender diversity and corporate financial investment.

Using data from the Chinese stock market covering 2007 to 2018, we explore the impact of board gender diversity on corporate financial investment. We find that the board gender diversity is negatively correlated with corporate financial investment. This correlation remains significant after a series of robustness tests, including fixed firm-effect models and several models containing some potential omitted variables. Our further analysis shows that the impact of board gender diversity is more pronounced for companies audited by Big 4 auditors, which shows that good institutional background can provide strong support for female directors to exert their monitoring role.

This study contributes to the existing literature in three aspects. First, to the best of our knowledge, this study is the first to explore the impact of board gender diversity on the financialization of companies. Our findings support the idea that women directors are generally more robust and appear to reduce companies' excessive financial investments (risky investments). In this regard, we believe this study adds an interesting and important article to the literature on board gender diversity and corporate financialization.

Second, our study extensively supplements the literature on corporate financialization by exploring the impact of the proportion of female board members on a firm's financial investments.

Third, our study also complements the literature on the economic effects of board gender diversity. Previous studies have examined the effect of gender diversity on the dividend payout [8], financial performance [9], informativeness of stock prices [10], and stock price

crash risk [11]. Our study examines the impact of board gender diversity on corporate financial investments, which enriches the literature by exploring the new economic consequences of gender diversity on boards.

The organizations of this paper are as follows: Section 2 presents the literature review and hypothesis development. In Section 3, we give detailed data sources, sample selection, and model specifications. Section 4 presents the regression results, robustness checks of this paper. Meanwhile, this section also conducts additional analysis based on whether Big 4 auditors audit a given firm. Section 5 concludes this paper and gives potential policy implications.

## **2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT**

### ***2.1. Literature Review***

#### ***2.1.1. Board gender diversity***

The conclusion drawn by previous literature on the influence of board gender diversity on the company's performance did not reach a consensus. In the 2007 study conducted by Caspar Rose [2], the relationship between company performance and board gender diversity is unclear. This relationship is positive in the 2017 study conducted by Olofsson, Ida, and Larsson, Mikaela [1]. However, in the 2017 study, the authors did mention that, although there is a positive relationship, the correlation strength is very low.

#### ***2.1.2. Financialization***

In the previous literature, the research on financialization has very diverse research results. At present, the financialization of entity enterprises has a profound impact on firm value. Entity companies invest in financial assets motivated by market arbitrage [12]. In the existing literature, some scholars believe that companies can obtain higher returns and increase the company's value when they allocate an appropriate proportion of financial assets. The excessive investment will occupy the capital resources of the physical business, leading to restrictions on the development of the main business, resulting in a decline in the overall investment efficiency of the enterprise. This phenomenon has also contributed to the current trend of Chinese companies turning away from reality [12]. Therefore, financialization still requires a reasonable allocation of financial assets. In another study, some scholars pointed out that the financialization of physical enterprises will also affect the risk of stock price crash [13]. Studies have shown that the financialization of physical enterprises has increased the uncertainty of company operations and corporate risks and has worsened the stock price crash risk. The agency

problem of the company increases the risk of stock price crash. Under the general trend of financialization of real enterprises, it is very important for people to prevent credit funds from falling out of reality, curb investment bubbles, revitalize the real economy, and strengthen financial supervision.

## 2.2. Hypothesis Development

Furthermore, financialization can have negative consequences on society and the economy. Kornrich [14] states that “increased financialization is clearly associated with a reduction in workers' bargaining power and in the strictness of employment protection”. Other scholars also present similar results. According to Palley [15], “the era of financialization has been associated with tepid real economic growth, and growth also appears to show a slowing trend, [as well as becoming] indications of increased financial fragility.” Epstein [16] finds financialization to be “associated with substantial economic costs: increased income inequality; increased shares of GDP going to owners of financial assets, who tend to be among the very rich in most countries”. So far, financialization raises concerns at both macro and micro levels.

Gender can play a significant role in corporations' risk aversion. Nadeem [17] asserts that “female directors are believed to be less overconfident and less overestimating in their decisions than male counterparts”. Nadeem [17] also presents that “[women] are better able to manage risk through improved ‘group dynamics’ in the boardroom”. The result is consistent with Adams and Ferreira's [18] study, where they propose that “female presence in boardrooms increases (a) information sharing, (b) quality of monitoring, (c) collective intelligence and (d) participation in committee meetings.” Women possess unique characteristics which largely contribute to the well-being of the board and ultimately lead to high-quality decision-making which benefits the whole organization. Thus, increasing board gender diversity can manage investment risks better and restrain unreasonable decision-making, such as overdue investment in financial assets. Based on the above analyses, we propose our hypothesis:

*Hypothesis 1: Board gender diversity can reduce corporate financial investment, ceteris paribus.*

## 3. DATA AND METHODOLOGY

### 3.1. Data and Sample

We obtain our data from the China Stock Market & Accounting Research (CSMAR) Database. And our sample consists of firms listed on the Chinese A-share stock market from 2007 to 2018. We exclude (1) listed firms in the financial industry, (2) ST firms, and (3)

observables that cannot be calculated with controlled variables. Additionally, we winsorize variables and replace extreme values with values at the 1% and 99% levels in order to cut outliers from the data.

## 3.2. Variable

### 3.2.1. Dependent variable: corporate financial investment

Following the method of measuring corporate financial investments in extant studies [19-20], we use the ratio of financial assets to the total assets in the balance sheet of enterprises (denoted by *Fin*) to measure the degree of financialization of non-financial enterprises. Five items are selected as the basis for estimating financial assets: transaction financial assets, purchase and resale financial assets, the net value of transaction assets available for sale, loan issuance and advance, and holding-to-maturity investment.

### 3.2.2. Test variable: board gender diversity

Following Galbreath [9], we adopt the variable (*Female*) to measure the percentage of women in the boardroom with respect to the total number of board members.

### 3.2.3. Control Variables

We control for several other factors that might trigger the financialization of the company. The (*Size*) of a firm is expressed as the natural logarithm of the total closing assets of the firm. The book-to-market ratio (*BM*) is measured by the ratio of a company's market value to its shareholders' equity. Return on total assets (*ROA*) is calculated by dividing the net profit of the enterprise by the average of the total assets at the beginning and the end of the enterprise. The growth rate of operating income (*Growth*) is calculated by deducting the current period's operating income by dividing the previous period's operating income. A *Duality* variable is used to indicate whether the two jobs of chairman and CEO are combined. If the same person occupies the two jobs, the value equals 1. If not, the value is assigned to 0. *Mgshare* is used to indicate the shareholding ratio of the management of the company.

## 3.3. Regression Model

We control for a number of other factors that might trigger the financialization of the company. The (*Size*) of a firm is expressed as the natural logarithm of the total closing assets of the firm. The book-to-market ratio (*BM*) is measured by the ratio of a company's market value to its shareholders' equity. Return on total assets (*ROA*) is calculated by dividing the net profit of the enterprise by the average of the total assets at the

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The hypothesis to be tested is that corporate financialization is a function of board gender diversity and control variables. Our basic empirical model is:

$$\begin{aligned}
 & Fin_{t+1} \\
 & = \beta_0 + \beta_1 Female_t \\
 & + \sum_{q=2}^m \beta_2(qth\ ControlVariable_t) + \varepsilon_{t+1}
 \end{aligned} \tag{1}$$

Where *Fin* represents financialization and *Female* is the ratio of female directors on board, our main

variables are described in sections 3.2.1-3.2.2. Meanwhile,  $\beta_i$  represents regression coefficients. *ControlVariable* contains the variables list in section 3.2.3, and  $\varepsilon$  is an error term.

## 4. EMPIRICAL RESULTS

### 4.1. Summary Statistics

Table 1 contains the descriptive statistics of the variables used in our empirical analyses. *Fin\_ratio* is our target variable which quantifies the extent of financialization. *Female* is the main independent variable, and the others are control variables. We have a number of observations around 25,000. Table 1 summarizes the mean, standard deviation, min, 25 percentile, median, 75 percentile, and max for each variable. For *Fin\_ratio*, the mean value is 0.06 with a standard deviation equals 0.1. For *Female*, the mean value is 0.36 with a standard deviation equals to 0.24.

**Table 1.** Summary statistics

Variable	N	mean	sd	min	p25	p50	p75	max
<i>Fin_ratio</i>	25467	0.06	0.1	0	0	0.02	0.07	0.5
<i>Female</i>	25284	0.36	0.24	0	0.15	0.35	0.55	0.88
<i>Size</i>	25481	15.05	1.1	12.72	14.28	15.01	15.75	18.06
<i>BM</i>	24837	0.6	0.23	0.11	0.42	0.6	0.78	1.1
<i>ROA</i>	25555	0.05	0.06	-0.2	0.02	0.04	0.08	0.24
<i>Growth</i>	23850	0.21	0.44	-0.33	0.02	0.1	0.24	3.15
<i>Duality</i>	25195	0.26	0.44	0	0	0	1	1
<i>Mgshare</i>	24598	0.06	0.13	0	0	0	0.07	0.79

### 4.2. Baseline Results

In the baseline results, we focus on the results of the regression model with different parameters. Columns 1 and 2 report the regression results without/with additional control variables in the model. We can tell from the following Table 2 that whether we include control variables or not, the regression coefficients are all negative at the 1% significance level.

### 4.3. Robustness Checks

#### 4.3.1. Firm-Year Fixed Effects Model

One may argue that the effect of board gender diversity on corporate financial investment is from omitting unobservable firm-level factors such as corporate culture. To address the above endogeneity concern, we re-estimate the regressions controlling for the firm and year fixed effects model. The regression results are shown in Table 3, which indicates that there still exists a significantly negative effect of board gender diversity on corporate financial investment.

**Table 2.** Baseline regression results

Dependent variable =	<i>Fin_ratio</i> (1)	<i>Fin_ratio</i> (2)
<i>Female</i>	-0.014*** (-5.62)	-0.016*** (-4.91)
<i>Size</i>		-0.000 (-0.43)
<i>BM</i>		-0.027*** (-8.81)
<i>ROA</i>		0.114*** (10.01)
<i>Growth</i>		-0.008*** (-5.36)
<i>Duality</i>		0.003* (1.82)
<i>Mgshare</i>		-0.007 (-1.15)
Constant	0.036*** (6.47)	0.055*** (4.28)
Observations	25,196	21,752
R-squared	0.129	0.131
Industry FE	Yes	Yes
Year FE	Yes	Yes

**Table 3.** Robustness check 1: firm-year fixed effects model

Dependent variable =	<i>Fin_ratio</i> (1)	<i>Fin_ratio</i> (2)
<i>Female</i>	-0.005* (-1.69)	-0.014*** (-3.85)
<i>Size</i>		0.000 (0.32)
<i>BM</i>		-0.027*** (-6.42)
<i>ROA</i>		-0.025** (-2.55)
<i>Growth</i>		0.002 (1.42)
<i>Duality</i>		0.001 (0.67)
<i>Mgshare</i>		-0.043*** (-5.92)
Constant	0.038*** (19.87)	0.052*** (2.67)
Observations	25,196	21,752
R-squared	0.156	0.160
Firm FE	Yes	Yes
Year FE	Yes	Yes

4.3.2. Adding other variables

We conduct robustness checks and continue to add other control variables. *Fixed* represents the percentage of fixed assets in total assets, *Cash* represents the percentage of cash holdings, and *Board* represents the percentage of independent directors among all directors.

**Table 4.** Robustness check 2: including additional control variables

Dep var.=	<i>Fin_ratio</i> (1)	<i>Fin_ratio</i> (2)	<i>Fin_ratio</i> (3)	<i>Fin_ratio</i> (4)
<i>Female</i>	-0.011*** (-3.26)	-	-	-
<i>Size</i>	-0.000 (-0.42)	-0.016*** (-4.91)	0.016*** (-4.70)	0.010*** (-3.06)
<i>BM</i>	-0.015*** (-4.92)	-	-	-
<i>ROA</i>	0.084*** (7.52)	0.027*** (-8.74)	0.027*** (-8.76)	0.015*** (-5.01)
<i>Growth</i>	-0.013*** (-8.87)	0.008*** (-5.36)	0.008*** (-5.53)	0.013*** (-9.09)
<i>Duality</i>	0.002 (1.15)	0.003* (1.80)	0.002 (1.58)	0.001 (1.01)
<i>Mgshare</i>	-0.018*** (-3.10)	-0.007 (-1.20)	-0.007 (-1.18)	-
<i>Fixed</i>	-0.121*** (-28.86)			0.017*** (-2.93)
				0.122*** (-28.82)

<i>Cash</i>	0.000 (0.69)		-0.000** (-2.20)	
<i>Board</i>			0.032*** (2.78)	0.025** (2.27)
Constant	0.089*** (7.04)	0.054*** (4.20)	0.046*** (3.45)	0.085*** (6.42)
Observations	21,752	21,752	21,672	21,672
R-squared	0.163	0.131	0.132	0.164
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

In the first three sets of results, we added a variable respectively. In the last group, add 3 variables at the same time. According to the data, we find that the significance of *Female* is always negative. With the addition of variables, *Female* is still significant at the 1% significance level. Through the robustness checks, there is indeed a negative relationship between *Fin\_ratio* and *Female*.

4.4. Additional Analysis on Big 4

To further explore the heterogeneous impacts of board gender diversity on corporate financial investment, we divide our full sample into Big 4 and Non-Big 4 sub-samples according to whether the big four auditors audit a given firm in a given year or not. Generally speaking, Big 4 Companies' bylaw is much stricter, carrying out more authoritative and convincing results. Table 5 reports show that formal regulations and rules help women to be sensible and better equipped to play their supervisory role on the board. Although results of the relationship between female and financialization in both Big 4 and Non-Big 4 are significant at the 1% significance level (*t*-value = -3.91; *t*-value = -4.11), the coefficient under the Big 4 (-0.042) has a larger scale than that of Non-Big 4 (-0.014), indicating that auditing by Big 4 can have a more significant effect on the female's monitoring role on board.

**Table 5.** Additional analyses

Dependent variable =	<i>Fin_ratio</i> (1) Big 4	<i>Fin_ratio</i> (2) Non-Big 4
<i>Female</i>	-0.042*** (-3.91)	-0.014*** (-4.11)
<i>Size</i>	0.010*** (4.47)	-0.001 (-1.55)
<i>BM</i>	-0.016 (-1.44)	-0.029*** (-8.83)
<i>ROA</i>	0.032 (0.73)	0.118*** (10.09)
<i>Growth</i>	0.002 (0.41)	-0.008*** (-5.35)
<i>Duality</i>	0.026*** (4.19)	0.002 (1.19)
<i>Mgshare</i>	0.015 (0.62)	-0.008 (-1.30)
Constant	-0.167*** (-2.92)	0.069*** (4.98)
Observations	1,141	20,611
R-squared	0.176	0.134

Firm FE	Yes	Yes
Year FE	Yes	Yes

## 5. CONCLUSION

Using the Chinese stock market data covering from 2007 to 2018, we explore the impact of board gender diversity on corporate financial investment. We find that the ratio of female directors on board is negatively correlated with corporate financialization, suggesting that more women directors lead to less corporate financial investments and appear to improve investment robustness. Further analysis shows that the impact of gender diversity on boards is more pronounced in firms audited by the Big 4, indicating that a favorable institutional environment can provide strong support for exploiting the advantages of female directors.

Our study adds to the literature on board gender diversity and its implications on companies. We focus on the role of board gender diversity in reducing corporate financial investment and provide new evidence on the economic consequences of gender diversity on boards. We also extend previous research by identifying a new factor that has a mitigating effect on the financialization of firms. Our results are beneficial to firms that want to manage investment risk. Our findings also have important policy implications. Given the significant impact of gender diversity information on corporate financial investment, women's steadiness can inhibit venture investments. Thus, Chinese regulators should consider encouraging listed companies to hire more female directors.

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