

Barbies on Board: Grievances and Contributions in Unequal Gender Competition at Listed Companies – Evidence From China

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The Asian Conference on the Social Sciences 2024
Official Conference Proceedings

Abstract

This study investigates the experiences of female directors behind the corporate curtain, inspired by thought-provoking scenes of the boardroom in Barbie's latest film. Utilizing a socialist feminist lens, we leverage panel data spanning 2008-2018 to quantitatively assess whether reality reflects the cinematic portrayal of imbalanced board diversity. Causal inference examines if greater gender diversity on boards ("More Barbies on Board") positively influences financial performance, while probing for subtle systemic biases against women leaders. The results reveal that the presence of female directors significantly enhances profitability and firm valuation, spotlighting women's unrecognized potential. However, women face disproportionately high education requirements despite qualifications showing no meaningful impact on outcomes. This imbalance signals lingering gender bias, even as female directors demonstrate productive contributions. By rigorously debunking assumptions and revealing obstacles, this study aims to reshape outdated perceptions of women's capabilities on and off screen.

Keywords: Board Gender Diversity, Female Directors, Socialist Feminism, Chinese Firms, Corporate Governance

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1. Introduction: A New Story Starts From the Board of Mattel in Film

The colourful Barbie Land in the Barbie film depicts a female-led utopia where women occupy diverse leadership roles, from presidents, justices to construction workers and post officer. Within this pink cinematic bubble, the audience accepts this novel setting as natural. And as a fantasy world dominated by women, the Barbie Land aligns with expectations. However, upon leaving the theatre, viewers return to reality where society remains largely male-dominated. For instance, as of July 2022, women held 32.7% of all seats in national parliaments across the European Union's member states. This proportion surpassed the global average of 26.4% for women's legislative representation worldwide (Eurostat, 2023). However, while the EU outpaces global norms, women's parliamentary participation remains well below gender parity within European legislative institutions. And in China, women represented only 26.54% of National People's Congress delegates in 2023 (China National Bureau of Statistics, 2023), and there are no longer any female members among China's current Politburo Standing Committee (Li, 2017). In the United States, just 10.4% of Fortune 500 companies had female CEOs in 2023 (Hinchliffe, 2023). Across occupations like law enforcement, construction, and engineering, women remain underrepresented, making up 12.7% of U.S. police officers, 8.1% of electrical and electronics engineers, and 8.5% of U.S. construction managers in 2022 (U.S. Bureau of Labour Statistics, 2022). This dramatic reversal, from egalitarian fantasy to patriarchal reality, underscores the gulf between cinematic visions and lived experiences.

This is particularly the case in film when Barbie firstly enters the Mattel Corporation, where Barbie dolls are designed and sold. The appearance of the board members is impressive: all are well-dressed men in black-tie, generating a striking juxtaposition of pink and black when Barbie bursts into the boardroom.

In film, Barbie voices the audience's underlying question: where are the female executives of this company? This is particularly relevant for a company primarily producing female-character toys. Unfortunately, in the film, the all-male board of directors occupies every single seat, turning a company that produces dream toys for girls into an old boys' club. The total absence of women in leadership roles perpetuates the status quo of male dominance in the corporate world. The film uses multiple plot lines and visual language to present a panoramic portrayal and biting satire of this phenomenon. Will Ferrell, the arrogant CEO in film, basks in the sycophantic praise of the all-male board while disregarding suggestions from Gloria, the lone female secretary, to the point of pretending she's invisible. But not surprisingly, such arrogance from male leaders seems to be not uncommon, as research has found that men in leadership exhibit higher levels of overconfidence and hubris compared to female leaders. A comprehensive review showed that men tend to overestimate their abilities and performance in tasks that require confidence (Barber & Odean, 2001). In studies of leadership style, male executives were more likely than women to describe themselves as visionary leaders with innate skills, reflecting arrogant self-perceptions (Eagly & Karau, 2002).

Through a socialist feminist lens, we may find some reasons how corporate capitalism and class dynamics perpetuate gender inequality in positions of leadership. Socialist feminism argues that the capitalist system intrinsically oppresses women by exploiting their labour and restricting their economic opportunities (Young, 1980; Hartmann, 1979). The boardroom dynamics in the Barbie film reflect the capitalist corporate structure that concentrates power in the hands of wealthy elites at the expense of marginalized groups. The all-male directors

occupy a privileged class position, excluding women who represent an oppressed social group.

Recent research has provided further evidence for this perspective. For example, Cook and Glass's study (2014) on women in top corporate leadership found that even women CEOs experience role engulfment issues stemming from capitalist norms of productive labour. They argue this inhibits women's empowerment despite their elite class status. Additionally, a study by Dobbin and Kalev (2016) examined the impact of shareholder-driven capitalism on diversity initiatives within organizations. The authors found that financial firms, in particular, faced challenges in promoting gender and racial diversity in leadership roles due to the prioritization of short-term financial gains and the pressure to meet quarterly earnings targets. This emphasis on immediate financial performance was identified as a barrier to the implementation of long-term strategies aimed at fostering diversity and inclusion. Applying a socialist feminist perspective allows us to critique how corporate capitalism concentrates wealth and influence among male elites while denying women equal participation and leadership. As Hartmann (1979) explains, capitalist systems confine women to lower-paid labour and domestic roles that serve the interests of men. The lack of female corporate directors suggests women's labour remains undervalued and their leadership capabilities dismissed.

In Asian countries, traditional cultural norms often dictate distinct gender roles, which can lead to discrimination and mistrust in the working capability of women. These gender roles are deeply ingrained in the societal fabric and can have a significant impact on women's participation in the workforce. The traditional perception of men as providers outside the home and women as caretakers inside the home can create barriers for women seeking to enter or advance in the workforce. Research by Alesina and Giuliano (2010) supports the notion that traditional gender roles in Asian countries can lead to discrimination against women in the workforce. Their study found that cultural attitudes towards gender roles significantly impact women's labour force participation. In many Asian societies, the expectation that women prioritize their domestic responsibilities over their careers can result in suspicion and mistrust regarding their ability to perform in the workplace. Furthermore, a study by Kabeer (2016) highlights the impact of traditional gender roles on women's economic empowerment in Asia. The study emphasizes that the division of labour based on gender roles perpetuates the idea that women are less capable in the workforce, leading to discrimination and limited opportunities for career advancement. Additionally, in Chinese corporate leadership, traditional Confucian values emphasizing gender differences and hierarchy have been linked to exclusion of women from top positions (Cooke, 2004). Research in Singapore showed the perception that women lack leadership competencies was more prevalent among men, creating barriers to advancement (Sandhu et al., 2021). However, some empirical studies have already debunked this traditional narrative. For example, studies of female CEOs in China (Matsa & Miller, 2011) and India (Tate & Yang, 2015) found their leadership improved firm performance, contradicting any mistrust in their capabilities.

Consequently, while criticizing the discrimination resulting from these stereotypes, we also aim to debunk these gender biases with more fresh evidence. Firstly, we will investigate the contributions of female directors to the listed companies they serve in China. We plan to perform regression analysis, studying whether an increased proportion of female members on board results in positive outcomes for company performance. This will respond to societal doubts about women's work capabilities while focusing on the impact of women's contributions to enterprise development.

Further, we will explore the hurdles female executives face in securing their admission tickets on board. Specifically, are these female board members held to higher expectations than their male counterparts, such as more stringent requirements for educational qualifications? Do such heightened entry barriers genuinely enhance company performance, or do they merely raise the threshold for women to gain admission to corporate boards?

We chose China as our case study for several key reasons. As the world's largest developing country, China has a massive and expanding economy with increasing numbers of women entering the workforce (World Bank, 2023). However, traditional gender norms still exert influence. Moreover, China lacks legislated quotas for women on corporate boards as found in some Western nations (Sarkar & Selarka, 2016; Chandler, 2016). This makes gender diversity on Chinese boards more dependent on changing corporate cultures and attitudes. By exploring the experiences of female directors in China, we can gain crucial insights into the obstacles and contributions shaping unequal gender competition in leadership across cultural contexts.

2. Theoretical Framework and Hypothesis Development

In this act, we will synthesize the socialist feminist perspective into a powerful conceptual framework to investigate the research questions through a discerning theoretical lens. Drawing from socialist feminism's piercing critiques of patriarchal capitalism, key hypotheses will speak to the impact of female directors on companies and the barriers constraining their ascent. These premises will direct the coming scenes involving regression and analytical procedures. By rooting our quantitative investigations in nuanced theory and targeted hypotheses, we can judge the veracity of proposed relationships against objective data. With the stage set and hypotheses clearly voiced, we ready our feminist research to take centre stage, subjecting assumptions to the insight of firm data. As the curtain rises, we prepare to enact an empirical performance that will advance socialist feminist perspectives through rigorous hypothesis examination.

a. Firm Performance and Gender Diversity

Resource dependence theory offers valuable insights into how board gender diversity can enhance firm financial performance. At its core, this theory posits that organizations rely on external resources for survival, and the board plays a crucial role in securing these resources from the firm's environment (Pfeffer & Salancik, 2015). Gender-diverse boards contribute to expanding the firm's resources and networks through various means. Firstly, female directors bring diverse perspectives, experiences, and skills to the board, thereby improving decision-making, advisory capabilities, and the board's ability to address complex strategic issues (Liu et al., 2014). This strengthens the board's role as a source of guidance. Secondly, the appointment of female directors enhances the firm's legitimacy in contexts where gender equity is a socially institutionalized value, as it signals a commitment to non-discrimination norms (Cox et al., 1991). Thirdly, female board members provide access to broader communication channels and stakeholder networks, including interactions with female employees, customers, and societal groups (Siciliano, 1996). Specifically, with regard to communication channels, female directors bring unique life experiences, perspectives, and analysis methods that distinguish them from their male counterparts. Their distinct strengths enable them to effectively engage with female customers, women in the workforce, and society at large. This gender diversity fosters a stronger connection between the company and its target audience, enhancing overall societal impact and facilitates the inflow of information

and resources. Fourthly, interconnected boards promote the diffusion of innovation within their networks, thereby reducing coordination costs (Hillman & Dalziel, 2003). Female directors tend to expand a firm's networks. Moreover, in majority of developed countries, legislation mandates a minimum representation of women directors within companies to ensure compliance with legal requirements. This regulatory framework underscores the importance of gender diversity in corporate governance and emphasizes the need for equal opportunities and inclusion in leadership positions. By setting a specific percentage threshold, these laws aim to promote gender equality and foster a more inclusive business environment. Finally, diverse boards demonstrate a commitment to equity and can prioritize inputs from previously underrepresented groups, thus securing their support and resources (Baysinger & Butler, 1985). Overall, empirical studies grounded in resource dependence theory consistently reveal positive links between board gender diversity and financial performance, although the specific context plays a significant role (Hillman et al., 2007).

In addition to resource dependence theory, perspectives on human and social capital further illuminate the ways in which board gender diversity can enhance firm performance. Social capital encompasses the resources embedded within social networks that individuals and groups can access through direct and indirect connections (Portes, 1998). Firms acquire social capital by establishing relationships, making network diversity a valuable asset (Booth-Bell, 2018). Given that men and women often possess different social networks, the inclusion of females on boards expands a firm's social capital by providing access to new contacts and stakeholders (Ibarra, 1997). Their networks offer unique opportunities, particularly within female customer segments. Beyond the social capital, it is important to consider the distinctions in human capital between male and female directors (Hillman et al., 2002). According to prior research conducted by Adams and Funk (2012), the concept of the glass ceiling highlights the challenges faced by women in reaching higher positions within organizations. Historically, women were perceived as more risk-averse and were believed to lack self-confidence and ambition. Additionally, they were often assumed to have limited access to appropriate education and experience required for leadership roles (Terjesen & Singh, 2008). These barriers can be attributed to a gendered social system in which job structures and expectations are predominantly shaped by men, perpetuating direct discrimination, and reinforcing gender stereotypes (Terjesen & Singh, 2008). Although women have historically faced barriers in education and experience, they are now acquiring elite credentials, such as MBAs and accountancy qualifications, at a faster rate than their male counterparts (Burgess & Tharenou, 2002; Terjesen & Singh, 2008). Women directors often possess international expertise, albeit with less board experience. Overall, female directors contribute diverse human capital in terms of leadership styles, interpersonal skills, and international experience.

Agency theory provides another perspective on how board gender diversity can influence financial performance. At its core, agency theory examines issues arising from the separation of ownership and control in modern firms (Jensen & Meckling, 1919). The board plays a vital monitoring role to ensure managers act in shareholders' interests. Diverse boards are better equipped for this oversight function. Women directors enhance cognitive diversity, resulting in more perspectives on strategic issues and rigorous questioning of management (Liu et al., 2014). Based on empirical findings, the presence of female board members in the boardroom has been shown to contribute to mitigating information bias during strategy formulation and problem-solving processes. They bring forth fresh perspectives and insights that enhance the understanding of intricate issues (Westphal & Milton, 2000). Female directors also exhibit greater engagement in monitoring activities compared to male peers (Sarkar & Sarkar, 2009).

This strengthened oversight curbs agency costs and aligns management with shareholder wealth maximization. However, some scholars argue excessive monitoring from highly diverse boards could undermine communication between directors and managers (Adams & Ferreira, 2009). While the findings suggest that women directors can enhance a company's financial performance through the introduction of innovative ideas, it is important to note that greater dissimilarity among directors can also lead to an increase in divergent viewpoints and potential conflicts within the board (Adams & Ferreira, 2009). In well-governed firms, over-monitoring from gender-diverse boards may even damage performance. The applicability of such critiques is context specific. In China's weaker corporate governance environment, gender diversity is unlikely to cause excessive oversight. Rather, Chinese firms plagued by agency issues can benefit from more rigorous monitoring by diverse boards. With inadequate external governance mechanisms, board diversity provides internal mitigation of agency costs.

Social psychology theory provides additional insights into how board gender diversity can impact financial performance through group dynamics. Research shows men often exhibit competitive, controlling, and hierarchical behaviours, whereas women tend to be more cooperative, emotive, and intuitive (Gallego-Álvarez et al., 2010). The interaction of these varying traits through gender diversity may stimulate positive social synergies. Diverse boards can generate more creativity by combining cognitive styles, enhancing problem identification and solution development (Westphal & Milton, 2000). Homogeneous groups are prone to groupthink and ineffective decision-making without divergent thinking. However, some studies suggest diversity may undermine social cohesion and increase conflict. Women's appointments could reduce harmony between male-dominated boards (Mogbogu, 2016). Decision-making may become more time-consuming with more dissenting views (Miller & Triana, 2009). Homogeneous groups can communicate and collaborate more seamlessly due to shared mindsets. In essence, social psychology theory posits a contingent relationship between gender diversity and financial performance stemming from group dynamics. Greater diversity can foster innovation but also increase coordination costs and interpersonal friction. The net effect likely depends on mediating factors like the board's openness to diverse views and ability to leverage cognitive differences.

The relationship between board gender diversity and financial performance lacks consensus, with theoretical rationales supporting both positive and negative links. Resource dependence, human capital, and agency theories largely posit that gender-diverse boards enhance performance by expanding resources, oversight, and perspectives (Hillman et al., 2007; Liu et al., 2014). However, social psychology theory notes diversity may also increase conflict and coordination costs, potentially undermining outcomes (Westphal & Milton, 2000). Empirically, findings are also mixed across contexts. Studies in the US and other developing countries like Turkey tend to find positive diversity-performance connections (Conyon & He, 2017; Kılıç & Kuzey, 2016). However, European research is more ambiguous, with some studies showing no impact, and others linking mandated quotas to worse performance (Marinova et al., 2016; Ahern & Dittmar, 2012). China provides a unique institutional setting to examine this relationship given its nascent governance systems. The lack of stringent corporate oversight mechanisms implies that gender-diverse boards could provide particularly valuable monitoring and resource advantages relative to costs. With few women on boards currently, additions are unlikely to cause excessive diversity. The empirical evidence also indicates Chinese boards remain dominated by men, limiting inclusivity of diverse views.

Taken together, theory and China's context suggest gender diversity's benefits may outweigh costs. Diverse boards can compensate for inadequate external governance through enhanced oversight. They provide alternative human and social resources lacking in male-dominated boards. Additional perspectives may also spur innovation without excessive relationship conflict given the hierarchical nature. As such, we hypothesize a positive effect of gender diversity on financial performance in China's transitional institutional environment.

Hypothesis 1 (H1):

The board with more female directors has positive influence on firm's financial performance in China.

b. Firm Performance and Highly Educated Directors

The presence of highly educated directors on corporate boards has been a topic of interest in recent years. There is a growing body of research examining the relationship between the educational background of directors and firm performance. Several studies have explored the relationship between female directors and firm performance in China. Green and Homroy (2018) examined the impact of female directors and board committees on firm performance. They found that the presence of female directors had a positive effect on firm performance, but this effect was not significant when considering the educational background of directors. This suggests that the educational qualifications of directors may not be a significant factor in determining firm performance. Li and Zhang (2019) also investigated the relationship between female directors and firm performance in China. They found that the presence of female directors had a positive effect on firm performance, but they did not specifically examine the impact of educational qualifications.

From a theoretical standpoint, human capital and resource dependence perspectives posit that education enhances individual and board capital, thereby improving governance and performance (Hillman & Dalziel, 2003). Highly educated directors bring expertise and diverse perspectives to the boardroom (Darmadi, 2013). However, other studies argue that the effects of human capital depend on contextual factors (Terjesen et al., 2016). In emerging markets with limited quality assurance and prestigious hierarchies, educational signalling may hold weaker significance (Lester et al., 2008). China represents such a transitional context, where the link between director education and performance has become decoupled. As explained by Li et al. (2015), earlier market reforms led firms to prioritize the appointment of credentialed directors for the sake of legitimacy and access to resources. However, this emphasis on credentials over competence has waned as institutions and business practices have matured. Peng (2004) also observes that Chinese state interference distorts standard talent signalling. Educational screening endures more as an institutionalized norm than a reliable indicator of ability. Moreover, China's governance landscape remains relationship-based, with director appointments placing greater emphasis on connections rather than qualifications (Fan et al., 2007). The state exerts pressure on these appointments, while dominant owners wield control over boards to serve their own interests. In this relational governance context, independent directors' monitoring role is marginalized, and executive power is often derived from political capital rather than human capital (Wang et al., 2022). Against the backdrop of these dynamics, directors' educational credentials hold less significance compared to their background and connections. Therefore, we expected that the presence of highly educated female and male directors, such as those with master's or doctoral degrees, may not have a significant influence on firm performance in China.

Hypothesis 2 (H2):

The board with female directors with highly educated degree has no influence on firm's financial performance in China.

Hypothesis 3 (H3):

The board with male directors with highly educated degree has no influence on firm's financial performance in China.

3. Staging the Analysis: Research Design***a. Sample***

This study employs a panel data analysis spanning from 2008 to 2018, encompassing a large sample of companies. The data regarding the board composition and financial performance is sourced from CSMAR. Initially, the dataset includes Chinese-listed companies from various stock exchanges, such as the Shenzhen Stock Exchange (including SME board-listed and Main Board-listed shares), Shanghai Stock Exchange shares, and the Growth Enterprise Market. Specifically, this study focuses on firms with A-shares, denominated in Chinese renminbi, as opposed to B-shares, which are quoted in foreign currencies like US dollars and are more favoured by foreign investors. The research exclusively concentrates on the Chinese market, and thus only includes A-share listed companies over an 11-year period. The data encompasses information on the percentage of females in the boardroom, the proportion of female and male directors with higher education, and some financial metrics of the listed firms. The percentage of females and directors with higher education data are hand-collected by the author, while the other data comes from the CSMAR database. Furthermore, to assess the impact of board gender diversity on firms' financial performance, this study utilizes an entity fixed effects analysis.

b. Date and Variables***i Dependent Variable***

This paper aims to assess a firm's financial performance by utilizing two key metrics: Tobin Q and return on assets (ROA). These variables serve as the dependent variables for our hypotheses. ROA and Tobin's Q ratio are widely recognized indicators for evaluating a company's financial performance. In alignment with previous studies conducted by Adams and Ferreira (2009) and Gul et al. (2011), which investigated the relationship between board gender diversity and firm performance. Therefore, we adopt ROA and Tobin Q as the dependent variables in all of our hypotheses. Tobin's Q is measured as the market value of assets divided by the book value of assets. However, to address skewness in its distribution, we use the natural logarithm of Tobin's Q ($\ln \text{Tobin's Q}$) as the dependent variable in regressions involving this measure.

ii Independent Variable

In hypothesis H1, we will examine the overall impact of board gender diversity on a company's financial performance by utilizing the independent variable "Percentage Females", which represents the percentage of females in the boardroom. This approach aligns with the methodology commonly employed in existing literature, such as studies conducted by Faccio et al. (2016) and Gul et al. (2011).

Moving on to hypothesis H2, we will employ the independent variable “Females in High Education”, which represents the proportion of female directors with higher education, to investigate its influence on financial performance. Similarly, for hypothesis H3, we will utilize the independent variable “Males in high Education”, representing the proportion of male directors with higher education, to evaluate its impact on financial performance. To clarify, the board of directors with higher education in this context refers to directors with educational qualifications at the postgraduate level or above, including doctoral degrees and MBAs.

iii Control Variable

In addition to the pivotal variables, the regression model shall incorporate several control variables, drawing upon prior empirical research (Brahma et al., 2021; Haynes & Hillman, 2010; Liu et al., 2014). These control variables are selected to account for factors that may influence the percentage of females in the boardroom. The control variables included in this study are net income (Net income), total employment (Employment), total board size (Board size), firm age (Firm age) and total number of independent directors (Independent directors). The summary statistics for the variables are illustrated in Table 1.

Table 1: Summary statistics of variables

Variable	Observations	Mean	Std	Min	Max
Firm	28,397	292782.1	277644.8	1	900957
ROA	27,184	.0331012	.8287334	-51.94684	108.3657
Tobin Q	27,184	.5972586	.5310683	-1.878835	9.603079
Percentage Females	27,184	17.54369	10.86837	0	66.66667
Females in High Education	25,672	54.45728	37.31832	0	100
Males in high Education	27,184	59.61395	24.48294	0	100
Net income	27,184	9.41e+08	8.65e+09	-1.70e+10	2.99e+11
Employment	27,184	6443.465	25378.2	2	552810
Board size	27,099	8.783793	1.883756	0	21
Firm age	27,184	15.84748	5.74534	0	51
Independent directors	27,100	3.229262	.6578234	0	8

c. Method

The multivariate regression models are estimated using the following methodology:

$$Y_{i,t} = \alpha + \beta_1 * X_{i,t} + \beta_2 * Net\ income_{i,t} + \beta_3 * Employment_{i,t} + \beta_4 * Board\ size_{i,t} + \beta_5 * Firm\ age_{i,t} + \beta_6 * Independent\ director_{i,t} + \varepsilon_{it} \quad (1)$$

In the above equation, the subscripts represent different entities: “i” denotes Chinese firms, and “t” represents the time period spanning from 2008 to 2018. The coefficients α and β indicate the parameters to be estimated. The dependent variable, denoted as Y, is influenced by the independent variable X. In accordance with our first hypothesis, the independent variable will be the percentage of females on the board, while the dependent variables will be

ROA and Tobin's Q ratio, respectively. For the second hypothesis, the independent variable will be Females in High Education, while the dependent variables will remain as ROA and Tobin's Q ratio. Similarly, in the context of the third hypothesis, the independent variable will be Males in high Education. The control variables encompass net income, employment, board size, firm age, and the number of independent directors. These variables are included to account for their potential influence on the relationship being examined. Finally, the error term, represented by ε , captures unobserved factors that vary over time and impact the dependent variable.

4. Unveiling the Discoveries: What Happened to Barbie on Board

a. The Data Speaks: Better Board Gender Diversity, for Better Firm Performance

The findings are presented in Table 2, wherein all specifications include year and firm fixed effects to examine the relationship between board gender diversity and firm financial measures while accounting for unobserved time and entity heterogeneity.

In Columns 1 and 2, the dependent variable is ROA. Column 1 regresses the independent variable without additional controls, revealing a significant positive coefficient at the 5% level. In Column 2, control variables are introduced while maintaining the significant positive relationship at the 5% level. For Columns 3 and 4, Tobin's Q is employed as the dependent variable. In Column 3, without controls, a significant association is observed between the proportion of women directors and firm performance at the 1% level. Continuing to Column 4, with controls, a positive effect is still evident and now significant at the 5% level. These results provide empirical support for Hypothesis 1, indicating that increased female representation in the boardroom is associated with improved corporate financial outcomes. Both profitability and valuation metrics demonstrate that better outcomes are linked to boards with greater gender balance.

Table 2: Result for the effect of board gender diversity on firm performance

Hypothesis 1				
Regressor	(1) ROA	(2) ROA	(3) Tobin Q	(4) Tobin Q
Percentage Females	.0029719** (.0014742)	.0029791** (.0014691)	.0026955*** (.0010102)	.0024274** (.000997)
Control	No	Yes	No	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes
Entity Fixed Effect	Yes	Yes	Yes	Yes
_cons	-.034066 (.0353556)	-.0887485 (.0792466)	.2561161*** (.0180266)	.3826021*** (.0484991)
No. of observation	27,184	27,072	27,184	27,072
No. of firms	3,608	3,606	3,608	3,606
R-squared	0.0015	0.0019	0.2828	0.2902

*Note: *, **, and *** indicate significance at the 10%, 5%, and 1% levels respectively. The robust standard error is present in parentheses.*

b. Pride and Prejudice: The Imbalanced and Uncontributed Hurdles for Boardroom Admission

The results presented in Table 3 assess Hypothesis 2, examining the effect of female director education levels on corporate financial outcomes.

Columns 1 and 2 utilize ROA as the dependent variable, with Column 1 estimating the independent variable alone and Column 2 introducing control covariates. Consistently, neither specification demonstrates a statistically significant relationship. Columns 3 and 4 repeat the analysis using Tobin's Q as the performance metric. Again, both the baseline and full model estimations produce insignificant coefficients. These null findings provide empirical support for Hypothesis 2's prediction that directors' education level would not impact firm profitability. Whether considering the direct effect in isolation or controlling for other firm characteristics, no evidence emerges that boards combining female representation and highly educated members influence financial performance measures.

Table 3: Result for the effect of high educated female directors on firm performance

Hypothesis 2				
	(1)	(2)	(3)	(4)
Regressor	ROA	ROA	Tobin Q	Tobin Q
Females in High Education	.0000321 (.0002479)	9.14e-06 (.0002479)	-.0000691 (.0001907)	-.0000453 (.0001888)
Control	No	Yes	No	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes
Entity Fixed Effect	Yes	Yes	Yes	Yes
Constants	.0051965 (.0190754)	-.074182 (.084395)	.3057544*** (.014215)	.4248578*** (.050939)
No. of observation	25,672	25,577	25,672	25,577
No. of firms	3,560	3,558	3,560	3,558
R-squared	0.0013	0.0016	0.2857	0.2929

*Note: *, **, and *** indicate significance at the 10%, 5%, and 1% levels respectively. The robust standard error is present in parentheses.*

Table 4 examines Hypothesis 3, investigating whether boards comprising predominantly male directors with high educational attainment impact firms' financial performance. Columns 1 and 2 ROA as the dependent variable. Column 1 estimates the interacted term in isolation while Column 2 introduces control covariates. Both specifications yield insignificant relationships. Columns 3 and 4 repeat the analysis using Tobin's Q as the performance metric. In this context as well, the baseline and full model estimations produce insignificant results. These findings provide empirical validation for Hypothesis 3's prediction that directors' education backgrounds alone would not influence profitability or valuation outcomes when boards are male-dominated and highly educated.

Table 4: Result for the effect of high educated male directors on firm performance

Hypothesis 3				
Regressor	(1) ROA	(2) ROA	(3) Tobin Q	(4) Tobin Q
Males in High Education	-.0004714 (.0007231)	-.0004593 (.0007268)	.0006093 (.0004067)	.0006066 (.0004064)
Control	No	Yes	No	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes
Entity Fixed Effect	Yes	Yes	Yes	Yes
Constants	.0359593 (.0324463)	-.0334525 (.0825622)	.2663033*** (.0235211)	.390331*** (.052042)
No. of observation	27,184	27,072	27,184	27,072
No. of firms	3,608	3,606	3,608	3,606
R-squared	0.0012	0.0016	0.2815	0.2892

*Note: *, **, and *** indicate significance at the 10%, 5%, and 1% levels respectively. The robust standard error is present in parentheses.*

Figure 2 compares the average percentage of highly educated directors among all female and male directors serving on these company boards. It shows that female directors maintained a higher level of educational qualifications at 68.29%, compared to 63.77% for their male counterparts. Figure 3 then traces the longitudinal trend of these high education rates for both genders over the 11-year study period. While declining annually for both groups, the graphs clearly illustrate that the rate for females with high education consistently exceeded that of males throughout the time horizon under examination.

The declining trends observed for the percentages of males and females with high education backgrounds on corporate boards in Figure 3 provide context for interpreting the insignificant impacts of director education on firm performance found in Tables 3 and 4. Specifically, the lack of a significant relationship could potentially be explained by boards not prioritizing high education levels for directors in recent years, as reflected by the downward slopes in Figure 3, if having highly educated directors does not meaningfully contribute to company outcomes.

Despite this trend, the consistently higher educational qualifications of female directors shown in Figure 3 reflect persisting implicit gender biases in the board selection process. Even as board-level education becomes less material to board composition and company performance, women directors still face relatively elevated standards. This underscores the subtle, yet ingrained nature of unequal expectations faced by female candidates vying for limited board seats at major Chinese corporations, where implicit requirements continue to disadvantage women seeking board representation.

Together, the graphs and regressions provide multi-method evidence of disproportionate educational expectations for female directors. Women's overexpression on this irrelevant dimension highlights the imbalanced hurdles they must surmount for board appointments. It

signals the deeply embedded undercurrents of gender bias in Chinese corporate leadership, despite women's growing representation.

Figure 1: Male vs Female high education degree percentage

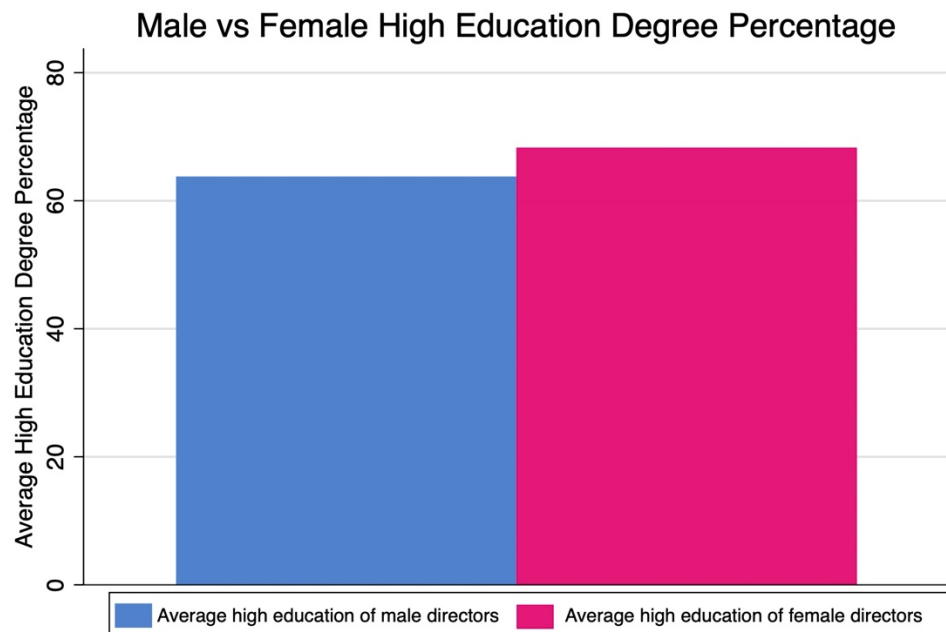
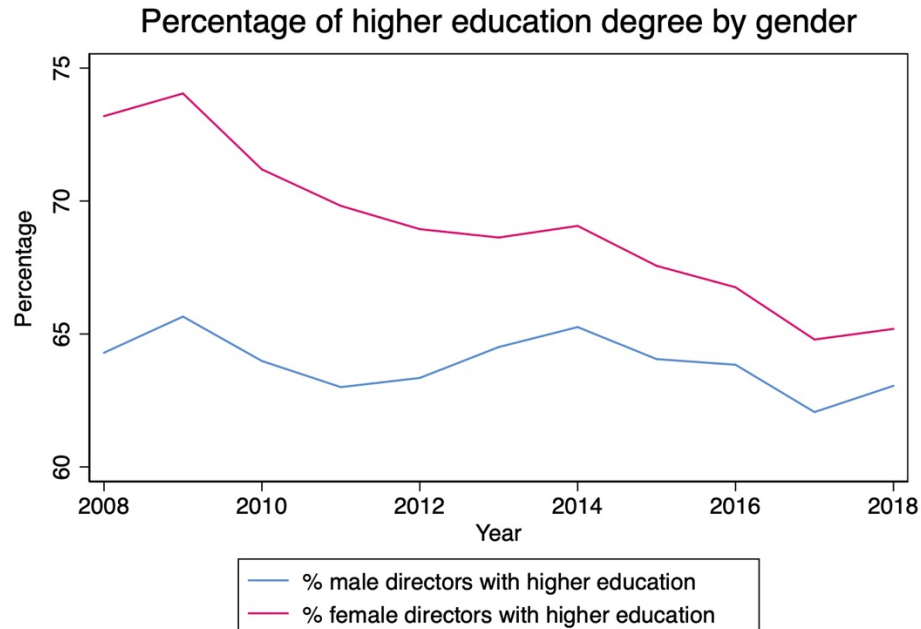


Figure 2: High education degree percentage by gender over the year



5. Conclusion

Originating from the scathing satire of the all-male board of directors in the Barbie film, our research leverages the power of data to explore the circumstances and experiences of female directors in the real world through a socialist feminist lens. Empirical evidence from China demonstrates that appointing female directors has a significantly positive impact on company

performance, which strongly counters questions about women's ability to work and perform competently in senior management positions. Meanwhile, we also uncover the implicit gender discrimination that female directors face higher education requirements for board membership, despite the fact that such stringent standards are proven not to meaningfully influence corporate results.

In recent years, the proportion of female directors in China has increased. However, without policy supports such as *EU Directive on Gender-Balanced Boards*, women in China and many other counties and regions likely confront more latent and systemic gender biases. Through this study, we aim to further reveal women's positive contributions and great potential to business success. And we also hope future research will continue investigating female leadership issues and provide theoretical and empirical support to advocate for women's rights and interests.

Appendices

A. Variables Descriptions and Correlations

Table 1: Variable description

Variable	Definition	Source
ROA	Return on average asset each year. It be calculated as: total profit / total asset.	CSMAR
Tobin Q	Indicates how valuable the assets of a firm are relative to their replacement cost. It is calculated as the market value of assets divided by the replacement value of assets.	CSMAR
Percentage Females	The percentage of females on the corporate board of directors. Used to measure gender diversity.	CSMAR
Females in High Education	The percentage of females on the board that have a postgraduate degree like a Master's or PhD. Measures the educational qualifications of directors	CSMAR
Males in high Education	The percentage of females on the board that have a postgraduate degree like a Master's or PhD. Measures the educational qualifications of directors	CSMAR
Net income	The profit earned by the company after subtracting all expenses and costs from revenues. A key indicator of financial performance.	CSMAR
Employment	Total number of employees in the company. Can indicate company size.	CSMAR
Board size	Total number of directors on the company's board of directors. Impacts board processes and decision making.	CSMAR
Firm age	Number of years since the company was established.	CSMAR
Total independent directors	The total number of independent directors on the board.	CSMAR

Table 2: Correlation for the Hypothesis 1

Regressor	1	2	3	4	5	6	7	8
1. ROA	1.0000							
2. Tobin Q	-0.3728*	1.0000						
3. Percentage Females	0.0053	-0.0027	1.0000					
4. Net income	0.0054	-0.0020	-0.0462*	1.0000				
5. Employment	0.0005	-0.0041	-0.1075*	0.7676*	1.0000			
6. Board size	0.0051	-0.0185*	-0.1708*	0.1950*	0.1940*	1.0000		
7. Firm age	-0.0055	-0.0022	0.0703*	0.0506*	0.0015	0.0237*	1.0000	
8. Independent directors	0.0064	-0.0168*	-0.1472*	0.2133*	0.2444*	0.7926*	0.0246*	1.0000

* $p < 0.05$ was used as the significance level.

Table 3: Correlation for the Hypothesis 2

Regressor	1	2	3	4	5	6	7	8
1. ROA	1.0000							
2. Tobin Q	-0.3728*	1.0000						
3. Females in High Education	-0.0141*	0.0100	1.0000					
4. Net income	0.0054	-0.0020	0.0391*	1.0000				
5. Employment	0.0005	-0.0041	0.0669*	0.7676*	1.0000			
6. Board size	0.0051	-0.0185*	0.1106*	0.1950*	0.1940*	1.0000		
7. Firm age	-0.0055	-0.0022	0.1887*	0.0506*	0.0015	0.0237*	1.0000	
8. Independent directors	0.0064	-0.0168*	0.0999*	0.2133*	0.2444*	0.7926*	0.0246*	1.0000

* $p < 0.05$ was used as the significance level.

Table 4: Correlation for the Hypothesis 3

Regressor	1	2	3	4	5	6	7	8
1. ROA	1.0000							
2. Tobin Q	-0.3728*	1.0000						
3. Males in High Education	-0.0175*	0.0140*	1.0000					
4. Net income	0.0054	-0.0020	0.0566*	1.0000				
5. Employment	0.0005	-0.0041	0.0802*	0.7676*	1.0000			
6. Board size	0.0051	-0.0185*	0.1145*	0.1950*	0.1940*	1.0000		
7. Firm age	-0.0055	-0.0022	0.2529*	0.0506*	0.0015	0.0237*	1.0000	
8. Independent directors	0.0064	-0.0168*	0.1336*	0.2133*	0.2444*	0.7926*	0.0246*	1.0000

* $p < 0.05$ was used as the significance level.

B. Supplementary Regression Results

This table reports additional regression results with the dependent variable mentioned in the main text. The results include the detailed coefficients for all control variables, which were omitted in the main analysis for brevity. Year-fixed effects continue to be included in all specifications; however, the coefficients are omitted here for the same reason as above.

Table 5: Full Regression Output with Control Variables for Hypothesis 1

Hypothesis 1				
Regressor	(1) ROA	(2) ROA	(3) Tobin Q	(4) Tobin Q
Percentage Females	.0029719** (.0014742)	.0029791** (.0014691)	.0026955*** (.0010102)	.0024274** (.000997)
Net income		5.62e-12*** (2.11e-12)		3.98e-12*** (1.02e-12)
Employment		-1.39e-06** (6.28e-07)		-5.98e-06*** (1.06e-06)
Board size		.0071627* (.0042693)		-.021425*** (.0052887)
Firm age		-.0022816 (.0017284)		.0065645*** (.001335)
Independent directors		.0041043 (.0115559)		.0090908 (.0110426)
Year Fixed Effect	Yes	Yes	Yes	Yes
Entity Fixed Effect	Yes	Yes	Yes	Yes
Constants	-.034066 (.0353556)	-.0887485 (.0792466)	.2561161*** (.0180266)	.3826021*** (.0484991)
No. of observation	27,184	27,072	27,184	27,072
No. of firms	3,608	3,606	3,608	3,606
R-squared	0.0015	0.0019	0.2828	0.2902

Note: *, **, and *** indicate significance at the 10%, 5%, and 1% levels respectively. The robust standard error is present in parentheses.

Table 6: Full Regression Output with Control Variables for Hypothesis 2

Hypothesis 2				
Regressor	(1) ROA	(2) ROA	(3) Tobin Q	(4) Tobin Q
Females in High Education	.0000321 (.0002479)	9.14e-06 (.0002479)	-.0000691 (.0001907)	-.0000453 (.0001888)
Net income		5.40e-12 (2.16e-12)		3.57e-12 (9.95e-13)
Employment		-1.44e-06 (6.92e-07)		-5.83e-06 (1.10e-06)
Board size		.0088798 (.0043175)		-.0211987 (.0054137)
Firm age		-.0005806 (.0021974)		.0073645 (.0013474)
Independent directors		.0019311 (.0120264)		.0063156 (.0113176)
Year Fixed Effect	Yes	Yes	Yes	Yes
Entity Fixed Effect	Yes	Yes	Yes	Yes
Constants	.0051965 (.0190754)	-.074182 (.084395)	.3057544*** (.014215)	.4248578*** (.050939)
No. of observation	25,672	25,577	25,672	25,577
No. of firms	3,560	3,558	3,560	3,558
R-squared	0.0013	0.0016	0.2857	0.2929

Note: *, **, and *** indicate significance at the 10%, 5%, and 1% levels respectively. The robust standard error is present in parentheses.

Table 7: Full Regression Output with Control Variables for Hypothesis 3

Hypothesis 3				
Regressor	(1) ROA	(2) ROA	(3) Tobin Q	(4) Tobin Q
Males in High Education	-.0004714 (.0007231)	-.0004593 (.0007268)	.0006093 (.0004067)	.0006066 (.0004064)
Net income		5.56e-12*** (2.10e-12)		3.99e-12*** (1.05e-12)
Employment		-1.49e-06** (6.59e-07)		-6.08e-06*** (1.09e-06)
Board size		.00638 (.004295)		-.0219058*** (.0053426)
Firm age		-.0004135 (.0023652)		.0067976*** (.0013792)
Independent directors		.0049766 (.0114117)		.0093887 (.0110728)
Year Fixed Effect	Yes	Yes	Yes	Yes
Entity Fixed Effect	Yes	Yes	Yes	Yes
Constants	.0359593 (.0324463)	-.0334525 (.0825622)	.2663033*** (.0235211)	.390331*** (.052042)
No. of observation	27,184	27,072	27,184	27,072
No. of firms	3,608	3,606	3,608	3,606
R-squared	0.0012	0.0016	0.2815	0.2892

Note: *, **, and *** indicate significance at the 10%, 5%, and 1% levels respectively. The robust standard error is present in parentheses.

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