Effect of Companies' Senior Personnel Gender Differences on Company Capital Structure

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Abstract: Previous researches have analyzed the effect of gender diversity toward financial performance toward the companies. This article aims to analyze the effect of gender situation toward capital structure on the whole A shares companies. The data mainly contain gender ratio of senior executives, gender of board of directors, firm size, industries classification, number of people on board, and of total remuneration of the top three directors. The previous two variables are the core explaining variable. The period is from 2010 to 2019 and the frequency is yearly. The OLS pooled regression and fixed effect model are chosen to analyzed. The results are not totally consistent with previous research suggesting the increase of female on the board, that is, increase gender diversity would definitely improve capital structure. The female board of directors will indeed make less debt financing compared with male board of directors. However, the female ratio in the senior executives is usually positively related with the D/E ratio. The possible reason is the overall conservative attitude of female can help them avoid overconfidence bias when using debt financing, and thus loan less debt and make the D/E be lower. However, on the other hands, it also makes female be too afraid of the lack of cash flow and may make more loan. Other parts of the results focusing on the control variable are consistent with previous researches and can be explained by classical financial theory.

Keywords: Capital structure, D/E, gender ratio, senior executive, board of directors

1. Introduction

Gender diversity in corporate leadership has become a focal point of discussion in recent years, driven by a growing recognition of its potential impact on organizational performance and governance. The gender diversity concern on cooperation management focus on the female ratio on company executives, including Board of Directors, Supervisory Board, Board of Directors, Senior Management, which may have some effect on the cooperation management. Previous scholars have extensively researched the relationship between gender diversity in corporate leadership and various organizational outcomes. Research by Herring and Nielsen emphasized the importance of cognitive diversity within boards of directors, arguing that diverse perspectives stemming from gender, ethnicity, and professional backgrounds can lead to more robust deliberations and better outcomes [1,2]. By considering a broader range of viewpoints, gender-diverse boards may be better equipped to identify opportunities, anticipate challenges, and adapt to changing market conditions. Besides, Research by Adams and Ferreira found a positive correlation between board gender diversity and

firm financial performance in a global context [3]. They argued that diverse boards are better equipped to consider a wide range of perspectives and make more informed decisions, leading to improved financial outcomes. Similarly, studies by Campbell revealed a positive association between gender diversity in corporate leadership and corporate social responsibility (CSR) initiatives, suggesting that diverse boards may prioritize stakeholder interests and long-term sustainability goals [4].

However, conflicting findings exist regarding the relationship between gender diversity and financial decision-making, particularly in the context of capital structure. While some studies, such as those by Ismail and Huang, suggest that gender-diverse boards may exhibit a preference for conservative financial policies and lower leverage, others, such as the research by Erhardt propose that gender diversity may lead to more aggressive risk-taking behavior and higher leverage levels [5-7].

Despite significant progress in recent years, the representation of women in leadership positions remains low in many industries and regions, including China, who continue to face barriers to advancement, including gender bias, stereotyping, and work-life balance issues [8]. Addressing these systemic challenges requires concerted efforts from policymakers, corporate leaders, and other stakeholders to promote gender equality, diversity, and inclusion in the workplace.

Moreover, the cultural and institutional context of gender diversity in corporate leadership may vary across different regions and economies. Prior research has highlighted the unique challenges and opportunities faced by women in accessing leadership positions within Chinese companies, where traditional gender norms and institutional barriers may influence the composition of corporate boards and management teams [9].

Besides, the relationship between gender diversity and organizational outcomes is not without its complexities and challenges. Studies by Ahern and Matsa raised questions about the causal mechanisms underlying the observed correlations between board diversity and firm performance, suggesting that other factors, such as firm size, industry characteristics, and regulatory environment, may confound the relationship [10,11].

In summary, while existing literature provides valuable insights into the potential benefits of gender diversity in corporate leadership, the relationship between gender ratios within boards of directors, supervisory boards, and senior management teams and capital structure decisions in Chinese A-share companies remains understudied. This study aims to address this gap by examining the impact of gender diversity on capital structure metrics, thereby contributing to the understanding of corporate governance practices and financial decision-making in the Chinese context.

The article has five parts. The first part is the introduction of this essay, containing the topic introduction, literature review and essay structure introduction. The second part is the research design. Firstly, it mainly discusses the process of data gathering and selecting. Then, it introduces the model basic meanings and variable definition. The third part is the result analysis, which shows the regression results, and the relevant explanations are given. Finally, the conclusion about the research will be made.

2. Research Design

2.1. Data Source

First of all, the research objects selected are all listed companies belonging to A shares. The precise outcome of research is benefit from the large amount of objects. Secondly, before selecting the variable, the time period determined is 10-year, which is from 2010-2019 and the frequency of data is yearly. For dependent variable, the Debt-to-equity ratio (D/E) is selected since it can directly reflect the capital structure of the company.

For independent variables, there are two parts. The first part are the main core variable, and the second part is the control variable.

For core variable, the data of gender ratio among board of director, board of supervisors and senior executives is calculated from the raw data on CSMAR containing male and female amount in these three segments. Furthermore, the gender of chairman of the board, general manager and chief supervisor are also got from the raw data in CSMAR. It should be noticed that these three factors are employed as dummy variable in the model (variable equals to 0 if the gender is female, otherwise equals to 1).

Since there are some serious omissions of particular factors in the collected data, the gender ratio (female to male) of senior executive and gender of chairman of the board are selected as core variable. The first variable is named as femaler and the second is named as head_female in the regression.

The second part of data are control variables. The control variables contain the executive compensation, firm size, directorate size, Return on assets (ROA) and industry. For the executive compensation, the data of total remuneration of the top three directors are used. For firm size, the data of firm's market value is used. For measuring directorate size, the data of directorate people amount are used. The ROA data can be directly got. Lastly, each company's industry is also documented with the Industry code of China Securities Regulatory Commission, which will be employed as dummy variable in the model. The data period and frequencies are the same and the data source are from WIND.

2.2. Model Settings and Variable Definition

Generally speaking, since the panel data are used in the research, which are complex and are in large amount, the methods chose to deal with the panel data are pooled ordinary least squares (OLS) and fixed effect model.

Here, the dependent variable is Y_{it}, which represents the D/E ratio in different i company on different time point t. The α is the intercept of the equation, which is the constant variable. The X'_{it} is the vector contains a series of core explaining variables and control variable in the equation for different individual companies i on different time point t, and the β is the coefficient of core variable. The core variables contained in the research are femaler and head_female, which represents the female ratio of senior executive and gender of chairman of the board. The variable is 1 if the gender is male. The control variables in the research are ln_assets, ln_salary and board_num, which represent the logarithm of the firm's market value and total remuneration of the top three directors, and the directorate people amount. The adoption of logarithm help improving robustness of variable. For the ε, it represents the disturbance term of the equation. λ_t represents the time fixed effect for different years, and U_i is the individual fixed effect for different companies.

$$Y_{it} = \alpha + \beta * X'_{it} + U_i + \lambda_t + \varepsilon_{it} \qquad (1)$$

3. Empirical Results Analysis

3.1. Baseline Regression Results

Table 1 shows the pooled OLS regression result of several parameters chose and dependent variable (D/E) with the fixed effect of year and industry. The column 1 shows the regression result of head_female and dependent variable. The coefficient of head_female is -0.2839, suggesting that if other variables did not change, the D/E of companies with female chairman will be lower 0.28 compared with that of companies with male chairman. The p value also suggest that the regression

results are significant under the 99% confidence level. The second column shows the regression result of femaler and the dependent vairable. The results show that if the ratio increase 1 unit, the D/E ratio will decrease 0.0787 unit. However, the p value suggest that this result is not significant even under 90% confidence level. The third column shows the regression result of all independent variables except femaler and dependent variable. The results suggest that the relationship between head_female, ln_salary and dependent vairable is negative, while other variables exhibit positive relations. Besides, the p value suggests that all variable are significant under 99% confidence level, expect for board-number, which is significant if the confidence level is not higher than 95%. The column 4 show the relations between all independent variables except for head_female and dependent variable. The result shows that only the ln_salary exhibit negative relations with dependent variable. However, the p value suggests that only the ln_assets and ln_salary and constant are significant under 99% confidence level, and other variable are all insignificant even under 90% confidence level.

Table 1: OLS regression results

VARIABLES	(1) Pooled OLS D/E	(2) Pooled OLS D/E	(3) Pooled OLS D/E	(4) Pooled OLS D/E
head_female	-0.2839*** (0.0708)		-0.2226*** (0.0657)	
femaler		-0.0787 (0.0584)		0.0230 (0.0595)
ln_asset			0.3203*** (0.0860)	0.4470*** (0.0414)
ln_salary			-0.4067*** (0.0621)	-0.3534*** (0.0514)
board_num			0.0598** (0.0293)	0.0057 (0.0168)
Constant	1.6680*** (0.3907)	-0.1416 (0.1247)	0.0909 (2.5480)	-6.4425*** (0.7363)
Observations	17,460	10,561	17,460	10,561
R-squared	0.0135	0.0445	0.0176	0.0670
Year	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes

Note: Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

3.2. Panel FE

Table 2 shows the pooled Panel fixed effect regression result of several parameters chose and dependent variable (D/E) with the fixed effect of year and individual company. The column 1 shows the regression result of head_female and dependent variable. The coefficient of head_female is -0.0366, suggesting that if other vairables did not change, the D/E of companies with female chairman will be lower 0.28 compared with that of companies with male chairman (???). However, the p value suggests that the head_female variable are insignificant even under the 90% confidence level. The second column shows the regression result of femaler and the dependent vairable. The results show that if the ratio increase 1 unit, the D/E ratio will increase 0.0616 unit. However, the p value also suggest that this result is not significant even under 90% confidence level. The third column shows

the regression result of all independent variables except femaler and dependent variable. The results suggest that the relationship between head_female, ln_salary, ln_assets and dependent vairable is negative, while other variables exhibits positive relations. Unfortunately, the p value also suggests that all variable are insignificant even under 90% confidence level, expect for ln_salary. The coulmn 4 show the relations between all independent variables except for head_female and dependent variable. The result shows that only the ln_salary and constant exhibit negative relations with dependent variable. Furthermore, the p value suggests that only the ln_salary, ln_assets and constant are significant under 95% confidence level, and other variable are all insignificant even under 90% confidence level. The insignificant of the data result of this table might because the variation of the data is too small. It should be noticed that the fixed effect of individual company is took there and for each company, its senior executive and chairman of the board are usually fixed for several years.

Table 2: Panel FE regression results

VARIABLES	(1) Panel FE D/E	(2) Panel FE D/E	(3) Panel FE D/E	(4) Panel FE D/E
head_female	-0.0366 (0.1396)		-0.0443 (0.1467)	
femaler		0.0616 (0.1152)		0.0989 (0.1225)
ln_asset			-0.3266 (0.8923)	0.6709*** (0.2146)
ln_salary			-0.2565* (0.1338)	-0.2648*** (0.0862)
board_num			0.0443 (0.0942)	0.0017 (0.0408)
Constant	1.6518*** (0.3616)	1.0615*** (0.0744)	11.8456 (19.1217)	-9.7906** (4.1322)
Observations	17,460	10,561	17,460	10,561
R-squared	0.0005	0.0031	0.0017	0.0140
Number of id_num	1,746	1,470	1,746	1,470
Year	Yes	Yes	Yes	Yes
Individual FE	Yes	Yes	Yes	Yes

Note: Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

3.3. Statistic results analysis

Both results have the following similar point: 1. If the chairman of board is female, then its D/E ratio will be lower. 2.Only one regression suggests that the increase of female ratio in senior executive would decrease the D/E ratio when the fixed effect of time and individual company. 3. The increase of the total remuneration of the top three directors always decrease the D/E ratio. 4. The increase of directorate people amount always increase D/E ratio 5. The increase of total market value always increases the D/E ratio.

The chairman of board has the right to decide the capital structure of the company in each year. Thus, the regression result suggests that, compared with the male chairman, female chairman may be more reluctant to increase the debt in the capital structure. In other word, female chairman may be

more risk-averse and care more about the capital safety of the company, compared with the payoff. Previous articles propose similar results, which suggests that the board diversity has positive relationship with the financial outcome since the decision can be more rational if the female can engage the discussion with the male [3]. It also points out that the overconfidence bias more usually happened on the male, which may make male more easily make over investment and underestimates the risk [6].

The always positive relations between female ratio in senior executive and D/E ratio in the regression results seems contradicts to the previous researches since previous researches always show that the increase gender diversity help make a better financial decision [4]. One possible reason to reconcile this contradiction is that the female senior executives are indeed more risk-averse and more care about the capital safety, however, if they must loan the debt, they would always choose to loan more debts compare with the male senior executives. This might be because female senior executives are more afraid of the failure of investment and lack of money, and thus will make more loan than actually needed, compared with male senior executives [3]. It shows the overall conservative attitude of female in the investment field. Mildly conservative can prevent over-confidence bias, but may also make irrational choices.

The increase of the total remuneration of the top three directors always decrease the D/E ratio, which is normal for the following reasons. Initially, the increase wages of the tope three directors can stimulate their motivation to better consider when making the decision. The higher the wages, the more they are willing to consider the company's operation. Furthermore, the increase of wages also decreases the cash flow of the companies. In that case, the directors may be more careful when making the financial decision. It is possible that, if the companies have large amount of cash flow, then the directors may be more likely to borrow more debts and tend to underestimates the debt risk. They may view the current cash flow as the protection of risk, which may make them over-confidence when deciding the capital structure.

The positive relations between directorate people and D/E ratio are wired since if more people's opinions are considered, usually the better choice is made. One possible reason is that the directorate people of all A'shares companies prefer debt financing than equity financing. It is true that, compared with the equity financing, debt financing faces less regulation and have less trouble. Moreover, most directorate people in the listed companies have some proportion of share, using the equity financing may dilute their shares and thus reduce both their shares' benefit and shareholder' control, while debt financing would not have such problems. In that case, more people in directorate would need to higher D/E ratio. Besides, the positive relations between firm value and D/E ratio is understandable since the larger the companies, the more needed on debt financing. Furthermore, as mentioned above, the equity financing has a set of limitations while debt financing is more convenient as long as the company can pay back the coupon and face value on time.

4. Conclusion

This article exams the relations between the capital structure and gender situation of all A shares companies during 2010-2019. The empirical evidence suggest that the female board of directors would be more cautious when using debt financing while the increase of female ratio in senior executives does not necessarily decrease the D/E ratio, which is not totally consistent with the results of previous articles suggesting that the better gender diversity would make the financial decision better. Possible reasons might be both side effect of conservative attitudes of female toward capital structure decision. Furthermore, the results also show that, firm size and board number is positively correlated with D/E ratio while total remuneration of the top three directors exhibits negative relationship, which are normal and can be explained by the classical financial theory.

The limitation of articles is the data scope. Initially, the data of gender ratio of directorate, senior executives and board of supervisor, and gender of senior executives, board of directors and chief supervisor is considered to be employed as core explaining variables in the model. Due to the data omission and difficulty of dealing, only two of them are took as core variable in the end. Besides, not all firms in the A shares market are suitable for analysis since some firm may face special situation. For example, some companies may currently face the warning from Securities Supervision Commission due to the abnormal or fake financial situation. Further research can collect more data about the gender situation of company executives and exclude unsuitable companies to further analyze this topic.

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