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LISTED ENTERPRISES' FEMALE EXECUTIVES AND M&A ACTIVITIES - EVIDENCE FROM CHINA

Abstract:

As a major strategic investment activity, M&A has great impact on the business development of enterprises. Using the data from 2008 to 2021, this paper empirically tests the influence of the proportion of female executives in the whole process of M&A. The results show that: in contrary to the expected risk aversion, the greater the proportion of female executives in listed companies, the higher the possibility of initiating mergers and acquisitions; and both short-term and long-term performance are better. At the same time, further research shows that the proportion of female executives does not affect M&A premium. Based on the whole process of M&A, this paper studies the participation of female executives, providing suggestions for Chinese listed companies on the rational arrangement of enterprise personnel structure, and providing reference for investors to correctly identify the value of major strategic activities of enterprises.

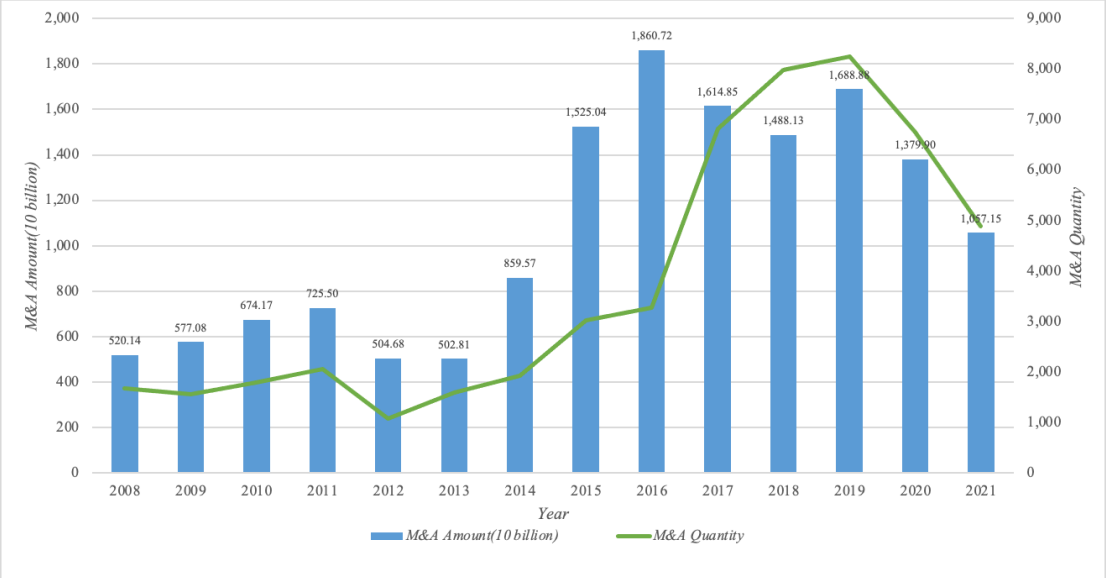
Keywords:

Female executives, Mergers & Acquisitions, M&A possibility, M&A performance

1 Introduction

As a strategic behavior of mergers and acquisitions (M&A) enterprises to pursue economies of scale, improve economic efficiency and rationally allocate resources, M&A activities are increasingly favored by enterprises in the economic transition period. After the share-splitting reform in 2008, the wave of M&A of Chinese enterprises gradually rose. The chart below shows the amount and quantity of M&A of listed companies in China's A-share market from 2008 to 2021. Only under the global financial crisis in 2012, China's M&A market slowed down when the domestic and international economic situation became more severe and complicated, and showed a steady growth trend for the rest of the time, especially after 2015. Even in 2020, when the COVID-19 epidemic broke out, international and domestic economic and political uncertainties were superimposed together, the total amount of M&A transactions in China still increased by more than 5% compared with the previous year, 278.47% compared with 2010, and the transaction amount increased by 295.05%. In the future, with the endogenous power of high-quality economic development, the M&A market of Chinese enterprises will surely grow further. However, according to the relevant M&A data of listed companies, the M&A of Chinese enterprises has not improved the performance, but damaged the value. Therefore, how to improve the performance of M&A through scientific and reasonable M&A decisions is not only a key research and continuous concern of domestic and foreign academic circles, but also a difficult problem to be solved in the practice of M&A.

Chart1 The amount and quantity of M&A activities of listed companies in China's A-share market from 2008 to 2021



Studies have shown that the diversification of top executive team is a necessary condition for enterprises to adapt to the dynamic environment and succeed in the global competition. This is because enterprise executives need to deal with a large amount of information and have a variety of skills when making and choosing strategic decisions, and the composition of female executives is an important embodiment of the diversity of executive teams (Cannella, 2001). In Chinese traditional culture, Chinese women mainly take the responsibility of taking care of their families, rather than taking the economic responsibility of social families. Therefore, in the long-term social development of our country, women are often ignored by business operators, and it is more difficult for them to participate in major strategic decisions of enterprises, to be promoted to the top of enterprises, and even difficult to obtain employment opportunities. Even if you get employment opportunities, you often encounter the problem of "glass ceiling" in the workplace. However, with the development of society, women's

consciousness in Chinese society has gradually awakened, gender equality has become an important topic in employment promotion, and women's social status has been gradually improved. A gratifying phenomenon is that Chinese women are gradually entering the top level of enterprises, and the gradual increase of female executives in global enterprises has become a significant trend and a common phenomenon. With their unique style and charm, female executives have shown their talents, played an important role and made remarkable achievements in business management activities.

Global researchers have done a lot of research on the relationship between gender diversity of senior executive team and corporate performance, and the results also show that female executives can indeed improve it. However, with the increasing number of female executives and the increasingly frequent use of M&A strategies by enterprises, the relationship between female executives and M&A performance has become a research hotspot. Based on the perspective of the whole process of M&A, this paper empirically tests the influence of female executives' participation on the initiation of M&A decision, the premium paid during M&A and the short-term and long-term performance after M&A. The conclusion has certain enlightenment to the configuration and construction of enterprise senior executive team, provides theoretical guidance for enterprise M&A, and further broadens the research scope of the existing senior executive team. At the same time, it is hoped that this research will break the invisible "glass ceiling" barrier and help the development of female senior management.

The research contribution of this paper mainly includes the following aspects: (1) It enriches the research on the literature about female executives and corporate M&A. Based on the perspective of the whole process of M&A, this paper studies the influence of female executives on M&A decision-making, M&A long/short-term performance and M&A premium, which is a useful supplement to the existing literature. (2) The conclusion of this paper shows that enterprises with more female executives will be inclined to make a M&A decision, but they will still have better short-term and long-term performance. This conclusion shows that female executives can also play an important role in major strategic decisions of enterprises, and bring positive influence, so it is possible for female executives to break the "glass ceiling" of the workplace. (3) It proves that there is no theoretical negative correlation between female executives and M&A premium, which makes it possible to break the gender prejudice of female executives in society.

2 Literature review

2.1 Motivation of M&A

The main motivation for the enterprise to initiate M&A activities is to reorganize the assets, integrate resources, improve the efficiency of resource allocation, achieve the company's strategic objectives, and improve its competitiveness and long-term development ability. At the same time, the transfer of control rights can alleviate the agency problem of listed companies, improve governance structure, operating performance, promote development, increase shareholder wealth and corporate value. In the external governance mechanism of listed companies, taking over the existence of the market is a good governance means. In the takeover market, the transfer of control rights is an important constraint mechanism for listed companies, which promotes them to improve their profitability (Manne, 1965). Fama and Jensen (1983) put forward that when the company's operation becomes worse and it is unable to solve the problem of wasted resources, it is necessary to change the company through M&A, which can restrain the manager's behavior and ease the agency problem. Dalton et al. (2007) proposed that corporate control market is a mechanism to restrain managers who use their agency advantages inappropriately, and managers who pursue self-interest may be under pressure from other enterprises to take over.

2.2 M&A Performance and Influencing Factors

The research on the impact of M&A on corporate performance is always a hot issue. The

fundamental reason is that scholars have not reached a consistent conclusion, and their interpretation for the conclusion are also different. According to the theory of economic synergy and efficiency, M&A helps to control and share superior resources, enhance the enterprise's value, improve the performance and shareholders' wealth. M&A enterprises have achieved an increase in sales, productivity, both tangible and intangible assets, and the stock return rate of listed companies has also improved (Healy et al., 1992; Nicholson and Salaber, 2013; Edamura et al., 2014). However, some scholars found that M&A not only did not significantly improve the performance of enterprises, but reduced the performance level and overall performance of enterprises (Sharma and Ho, 2002; Bhaumik and Selarka, 2012), that is, although the M&A transaction has been completed, due to the large increase of M&A events based on the self-interest of senior managers and the high risk of M&A itself, in the long run, M&A has not brought wealth to the shareholders of the acquirer, and even caused significant losses. Although the M&A enterprises have paid a huge price, they have not enjoyed the expected positive returns (Agrawal et al., 1992; Tichy, 2001). Liu and Woywode(2013) even proposed a novel post acquisition integration approach, namely light-touch integration. The influencing factors mainly come from both the inside and outside. External factors mainly focus on economic and political system (Du and Boateng, 2015), cultural distance (Datta and Puia, 1995; Dikova and Sahib, 2013) and organizational culture differences(Ahammad et al., 2016) tend to be macro-oriented, while the internal factors mainly include the enterprise scale of the acquirer (Moeller et al., 2004), M&A motivation (Seth et al., 2002) and other factors. Some scholars cautiously conclude that the performance of M&A is not only negative or positive, but influenced by many factors. Arikan and Stulz(2016) use IPO samples, and think that M&A performance is related to enterprise life cycle. Young companies are more inclined to relevant and diversified M&A, acquiring companies have better performance and growth opportunities, while the stock price of mature companies decreases after M&A of listed companies. Renneboog and Vansteenkiste(2019) found that managers' overconfidence would reduce the performance of M&A. More and more scholars have found that the M&A performance of enterprises that are beneficial to the synergy effect in the management, management and finance of enterprises is better.

2.3 Female executives and corporate M&A

The research of Huang and Kisgen(2012) shows that female executives tend to restrain M&A and debt financing. When they make a M&A decision, they usually go through more evaluations, rather than blind overconfidence. Therefore, the acquisition announcement effect of female managers is about 2% higher than that of men, and the proportion of female executives is positively related to the subsequent M&A performance. At present, the research focuses on the relationship between female executives and corporate over-investment. Compared with men, female executives are less overconfident. Based on this prudent and steady investment attitude, the increase of the proportion of women in the senior management team will further inhibit the blind mergers and acquisitions of enterprises (Gul et al., 2011).

2.4 Review of Prior Research

There are still controversies about the previous conclusions in terms of the influence of the proportion of women in the senior executive team on the enterprise's performance. Few literatures have studied the impact of the proportion of women in senior management team on the strategic action of M&A. Therefore, based on the perspective of the whole process of M&A, this paper studies the impact of the proportion of women in senior management team on the performance of M&A.

3 Hypothesis

Studies have shown that more and more women join the senior management team, which has a significant impact on the company's development and performance. Individual's own characteristics will have an effect on their decision-making behavior, leading to differences in

information collection and processing among different individuals (Daft and Weick, 1984). These differences often play a certain role in job and career choices. The characteristics of top management will have an impact on the company's M&A decision. According to the resource dependence theory, some characteristics of female executives, as their unique resources and abilities, can have a positive impact on the business development of enterprises. Their leadership style, which emphasizes interaction, can make the team have more comprehensive information and adapt to the dynamic changing environment in M&A activities (Wiersema and Bantel, 1993). From the physiological point of view, because women are more delicate and even sensitive in their feelings, they consider things more comprehensively and thoughtfully. It is these psychological and physiological characteristics that lay the foundation for women's development in the workplace. Firstly, when women managers make a M&A decision, they are more inclined to avoid and prevent risks, which is more comprehensive and detailed. This is because women's thinking mode is different from that of men's, and they can put forward different opinions and considerations for policy formulation, thus breaking the problems caused by only men's thinking mode and single information processing. Therefore, compared with men, they will make more cautious investment strategies to avoid unnecessary losses, thus making more cautious M&A decisions. Secondly, according to the higher-order theory, the difference of managers' gender will affect their risk preference, which will have different effects on business operations. According to the social role theory, the division of labor in society is based on gender. When women are matched with their gender roles, they pay more attention to the non-economic benefits of enterprises, so they will not blindly pursue the economic benefits of M&A activities, but pay more attention to the overall development. That is, female executives tend to make more cautious and better-performing M&A decisions, that is, the probability of initiating M&A decisions will be lower.

H1: Listed companies with a higher proportion of female executives initiate fewer M&A.

M&A activities will also increase the communication and exchange of employees in the senior executive team because of the participation of female executives, thus improving the management and work efficiency of the whole team. On the one hand, female's characteristics in language expression enable them to transmit and exchange information more effectively in the working team. Female's own gentle characteristics can bring others the feeling of relying on trust in team cooperation, which is an indispensable advantage in work, which can promote enterprises to achieve their goals efficiently and improve the company's M&A performance. At the same time, they can supervise and encourage male managers, set an example for subordinate employees, improve the overall quality and work efficiency of employees, and further improve the company's M&A performance. On the other hand, the female executives in the senior management team can provide different ways of dealing with problems and modes of thinking in teamwork from their own perspective, through different ways of thinking and social experiences from men, solving problems more comprehensively from different perspectives. In addition, female executives have mastered the consumption concept and demand of female in the market, so that they can better communicate with them, gain the trust of more female consumers, and discover or understand the future development direction of the market with their unique sense of touch. Therefore, the existence of female executives in the senior management team can improve the company's M&A performance, whether for the acquirer or external investors.

H2: Listed companies with higher proportion of female executives have better short-term M&A performance.

H3: Listed companies with higher proportion of female executives have better long-term M&A performance.

4 Research Design

4.1 Data and Sample

Taking the A-share listed companies that carried out M&A activities from 2008 to 2021 in CSMAR M&A database as the initial samples, according to the research demand, the following steps should be taken to deal with them: (1) Eliminate the samples that have not passed the examination and approval of CSRC or whose transactions have stopped; (2) Eliminate the samples whose trading purpose is backdoor listing; (3) Excluding the special samples such as finance, insurance industry and ST; (4) Eliminate the samples with missing transaction data. After the above treatment, a total of 6303 M&A events were obtained. To eliminate the influence of outliers on the research results, all continuous variables are winsorized at the level of 5%.

4.2 Variables Definition

4.2.1 Dependent Variables

(1)M&A decision (*Possibility*). This is a dummy variable, and it takes 1 when M&A occurs in the current year, otherwise it takes 0.

(2) Short-term M&A performance (*Car*): Using the event study method, based on the data that the event date is the first declare date, the event window is 210 to 10 days before the first declare date, and the event window is 10 and 15 days before and after the M&A, the cumulative abnormal return Car is calculated.

(3) Long-term M&A performance (*deltaROA*/ *deltaROE*): As the performance of M&A needs to be revealed after a period of time, considering its lag and the accuracy of the research, this paper adopts the performance difference between the three consecutive years after M&A and the year before M&A, including the return on total assets (*deltaROA*) and the return on net assets (*deltaROE*) to represent the M&A performance of the research sample, that is, to study the long-term performance of three years after M&A.

4.2.2 Independent Variables

This paper studies the definition of female executives of listed companies by using the 2010 Annual Report of Female Executives of Listed Companies in China. Female executives of listed companies refer to high-level women who enter the decision-making level and management level of the enterprise. Specifically, female directors who are clearly disclosed in the enterprise's annual report and female executives who are listed in the management level. According to international practice and national conditions, the statistics also don't include women who are in positions such as chairman and supervisor of the board of supervisors. Variables are measured in the following two ways:

(1) dummy variable of the number of female executives (*Fdum*). Reference to Gul et al. (2011), combined with the majority view, the idea that only when women reach a certain number can they have a substantial impact on the decision-making and efficiency of the board of directors. In this paper, if the number of female executives is greater than 3/4, take 1; otherwise, take 0. In the sample of this study, enterprises with female executives account for about 75%, with the median number of female executives being 2, the 3/4 quantile being 5, and the maximum being 19, showing obvious right deviation.

(2) Proportion of female executives (*Fpro*). It is calculated by using the number of female executives/total number of executives of listed companies.

4.2.3 Control Variables

This paper mainly reference to Wiersema and Bantel(1992), Jensen and Zajac(2004), and selects these variables: (1)*Size*: enterprise size; (2)*Lev*: Asset-liability ratio; (3) *Growth*: the rate of operating income; (4) *TOP1*: the shareholding ratio of the largest shareholder; (5)*Soe*: the enterprise property rights; (6)*Dturn*: average monthly turnover rate; (7)*Inst*: the institutional investor shareholding ratio; (8)*Analyst*: analysts's attention; (9)*Opacity*: transparency of enterprises and (10)*Cscore*: robustness of accounting information. When researching the

performance of short-term and long-term M&A, it also controls (11)*Sheng*: off-site M&A; (12)*Cash*: the payment method of M&A; (13)*Relate*: related M&A and (14)*Major*: major asset reorganization activities. Besides, this paper controls the fixed effects at the regional (*PROV*) and year(*YEAR*) levels. Specific variables are defined as follows:

Table 1 variable definition

Variable type	Variable symbol		Variable name	Variable declaration
Dependent variable	*Possibility*		Merger decision	For the dummy variable, if an enterprise has a merger in the year, the value is 1; otherwise, the value is 0
	Performance	*Car*	Short-term merger performance	Cumulative abnormal returns calculated using the event study method, 10 and 15 days before and after the first declare date of the merger
		deltaROA/ deltaROE	Long-term acquisition performance	The difference between the data(ROA and ROE) of 1, 2 and 3 years after the M&A and the data of the year before the M&A
Independent variable	*Female*	*Fdum*	Number of female executives	For the dummy variable, if the number of female executives in the enterprise is greater than 3/4 of the quantile (equal to 5), 1 is taken; otherwise, 0 is taken
		FPro	Percentage of female executives	The proportion of female executives in the total number of executives
Control variable	*Size*		Scale	Natural logarithm of total assets of an enterprise
	Lev		Asset-liability ratio	Average liabilities/average assets
	Growth		Operating income growth rate	(Current year's operating income/previous year's operating income)-1
	Top1		The largest shareholder's shareholding ratio	The shareholding ratio of the largest shareholder of the listed company
	Soe		Nature of the property right	Dummy variable, when the property right of the state-owned enterprise values 1, otherwise it is 0
	Dturn		Average monthly excess turnover rate	Average monthly turnover rate of current year's shares-average monthly turnover rate of last year's shares
	Inst		Institutional investors' shareholding ratio	Total institutional investor holdings/total circulating shares
	Analyst		Analyst attention	The number of companies that analysts focused on during the year
	Opacity		Corporate transparency	For the dummy variable, if the enterprise transparency rating is qualified and above, the value is 1; otherwise, the value is 0
	Cscore		Accounting information conservatism	Robustness of enterprise accounting information calculated by using Cscore Model
	Sheng		Off-site M&A	The value of the dummy variable is 1 when the M&A activity is cross-province M&A, otherwise it is 0
	Cash		Payment method for merger and acquisition	The dummy variable is 1 when the M&A activity is a full or preferred share-based payment, otherwise it is 0

	Relate	Related mergers and acquisitions	The value of the dummy variable is 1 when the M&A activity is related M&A; otherwise, it is 0
	Major	Material asset restructuring	The value of the dummy variable is 1 when the M&A activity is a material asset reorganization, otherwise it is 0
	PROV	Region	Regional dummy variables by Province
	YEAR	Year	Annual dummy variable

4.3 model design

To verify hypothesis 1, the following Probit model is established:

$$Possibility_{i.t} = \beta_0 + \beta_1 Female_{i.t} + \beta_2 Size_{i.t} + \beta_3 Lev_{i.t} + \beta_4 Growth_{i.t} + \beta_5 Top1_{i.t} + \beta_6 Soe_{i.t} + \beta_7 Dturn_{i.t} + \beta_8 Inst_{i.t} + \beta_9 Analyst_{i.t} + \beta_{10} Opacity_{i.t} + \beta_{11} Cscore_{i.t} + \sum PROV + \sum YEAR + \varepsilon_{i.t} \quad (1)$$

To test hypothesis 2, the following OLS regression model is established:

$$Performance_{i.t} = \beta_0 + \beta_1 Female_{i.t} + \beta_2 Size_{i.t} + \beta_3 Lev_{i.t} + \beta_4 Growth_{i.t} + \beta_5 Top1_{i.t} + \beta_6 Soe_{i.t} + \beta_7 Dturn_{i.t} + \beta_8 Inst_{i.t} + \beta_9 Analyst_{i.t} + \beta_{10} Opacity_{i.t} + \beta_{11} Cscore_{i.t} + \beta_{12} Sheng_{i.t} + \beta_{13} Cash_{i.t} + \beta_{14} Relate_{i.t} + \beta_{15} Major_{i.t} + \sum PROV + \sum YEAR + \varepsilon_{i.t} \quad (2)$$

5 Empirical Results

5.1 Descriptive Statistics

From the results of the descriptive statistics in Table 2, it sees that the average value of M&A decision-making (*Possibility*) is 0.165, the standard deviation is 0.371, and both the 25% quantile and 75% quantile are 0. The data shows an obvious left-leaning trend, and the probability of enterprises to make a M&A decision is generally low. The short-term performance (*Car*) of M&A has an average of 0.018 and 0.013 on the 10th and 15th day before and after the M&A, the minimum value is less than 0, the maximum value is above 0, and the standard deviation is also large. It proves that the market reaction of different enterprises in M&A is quite different, and the cumulative abnormal return rate is quite different. In the long-term M&A performance (*Return*), with the gradual deepening of M&A integration, the average value of long-term M&A performance decreases year by year and the standard deviation increases year by year, while the minimum value decreases and the maximum value increases. It can be seen that the long-term M&A performance of different enterprises is also very different, and even many enterprises have negative long-term performance. In addition, the average value of the female executive-related virtual variable (*Fdum*) is 0.259, the standard deviation is 0.438, and the median value is 0. The number of female executives in listed companies in China is relatively small, with a large gap between different enterprises. The data of the variable female executive proportion (*Fpro*) also proves this conclusion.

Table 2 Descriptive Statistical Tables

Var	Obs	Mean	SD	P25	Median	P75	Min	Max
Possibility	35027	0.165	0.371	0.000	0.000	0.000	0.000	1.000
Car(-10, 10)	5492	0.018	0.144	-0.067	0.000	0.092	-0.252	0.337
Car(-15, 15)	5492	0.013	0.175	-0.097	0.000	0.117	-0.315	0.387
deltaROA1	5268	-0.009	0.077	-0.046	-0.005	0.032	-0.185	0.148
deltaROA2	4786	-0.023	0.094	-0.061	-0.013	0.030	-0.269	0.146
deltaROA3	4221	-0.043	0.122	-0.079	-0.022	0.025	-0.379	0.155
deltaROE1	5268	-0.008	0.044	-0.031	-0.006	0.015	-0.110	0.083
deltaROE2	4786	-0.016	0.054	-0.041	-0.009	0.013	-0.155	0.083
deltaROE3	4221	-0.030	0.074	-0.052	-0.015	0.011	-0.238	0.088
Fdum	35027	0.259	0.438	0.000	0.000	1.000	0.000	1.000
Fpro	35027	0.374	0.179	0.250	0.375	0.500	0.048	0.700
Size	35027	22.044	1.174	21.129	21.882	22.800	20.281	24.539
Lev	35027	0.425	0.203	0.256	0.418	0.584	0.102	0.790

Growth	35027	0.150	0.276	-0.025	0.109	0.276	-0.292	0.849
Top1	35027	0.347	0.141	0.231	0.330	0.451	0.135	0.623
SOE	35027	0.370	0.483	0.000	0.000	1.000	0.000	1.000
Dturn	35027	-0.122	0.395	-0.313	-0.062	0.110	-1.065	0.557
INST	35027	0.367	0.233	0.157	0.371	0.559	0.012	0.764
Analyst	35027	9.711	8.845	3.000	7.000	14.000	1.000	31.000
Opacity	35027	0.110	0.313	0.000	0.000	0.000	0.000	1.000
Cscore	35027	0.052	0.154	-0.009	0.018	0.062	-0.171	0.556
Sheng	5492	0.327	0.469	0.000	0.000	1.000	0.000	1.000
Cash	5492	0.157	0.363	0.000	0.000	0.000	0.000	1.000
Relate	5492	0.365	0.481	0.000	0.000	1.000	0.000	1.000
Major	5492	0.232	0.422	0.000	0.000	0.000	0.000	1.000

5.2 Regression Results

5.2.1 Female Executives and M&A Decision

Table 3 shows the regression results of the H1. The coefficients of female senior management of explanatory variables are *Fdum*=0.0644 and *Fpro*=0.136 respectively, which are positively and significantly correlated with the Possibility of M&A of the dependent variables at the level of 5% and 10%, respectively. The regression results show that female executives are larger than three-quarters of the sample companies, means that enterprises with 5 or more female executives are more likely to make M&A decisions; Similarly, companies with a higher proportion of female executives will even be more aggressive in their M&A decisions. Contrary to expectations, this paper assumes that the H1 is opposed. This may be because companies with more female executives are more cautious and comprehensive in making decisions, but they are more likely to find suitable merger targets and are bolder in making merger decisions, which results in a tendency of M&A in the data.

Table 3 Female Executives and M&A Decision

Var	（1）	（2）
	Possibility	
Fdum	0.0644**	
	(2.26)	
Fpro		0.136*
		(1.89)
Size	-0.0550***	-0.0528***
	(-3.14)	(-3.00)
Lev	0.151*	0.151*
	(1.80)	(1.80)
Growth	0.740***	0.740***
	(15.67)	(15.66)
Top1	-0.0526	-0.0540
	(-0.63)	(-0.64)
Soe	0.156*	0.148
	(1.65)	(1.57)
Dturn	-0.202***	-0.197***
	(-6.10)	(-5.96)
Inst	-0.122***	-0.124***
	(-3.27)	(-3.32)
Analyst	-0.198***	-0.200***
	(-2.76)	(-2.79)
Opacity	-0.00209	-0.00196

	(-1.28)	(-1.20)
Cscore	0.0916 (1.10)	0.0943 (1.13)
PROV	YES	YES
YEAR	YES	YES
_cons	-0.145 (-0.40)	-0.232 (-0.63)
N	16474	16474
R^2	0.087	0.068

Note： *** p≤0.01、** p≤0.05、* p≤0.10

5.2.2 Female Executives and Short-term M&A Performance

Table 4 shows the regression results between female executives and enterprises' short-term M&A performance. The regression results show that enterprises with more female executives, no matter they have more than 5 employees or have a higher proportion in the senior management team, will obtain better short-term performance and better cumulative abnormal return rate within 10 days and 15 days before and after the first announcement of M&A activity. This relationship is generally significant at the level of 5%, at least at the level of 10%. The hypothesis H2 in this paper is supported. From this, it can be concluded that the external market has a higher recognition of mergers and acquisitions implemented by enterprises with more female executives, and the short-term performance is better.

Table 4 Female Executives and Short-term M&A Performance

Var	（1）	（2）	（3）	（4）
	Car（-10，10）		*Car*（-15，15）	
Fdum	0.0248** (2.46)		0.0249** (2.08)	
Fpro		0.0778** (2.35)		0.0691* (1.66)
Size	-0.00528 (-0.62)	-0.00278 (-0.32)	0.00117 (0.11)	0.00346 (0.31)
Lev	-0.0157 (-0.45)	-0.0157 (-0.44)	-0.0144 (-0.33)	-0.0141 (-0.33)
Growth	0.0120 (1.14)	0.0121 (1.15)	0.0102 (0.76)	0.0104 (0.77)
Top1	0.0136 (0.24)	0.0110 (0.19)	0.0547 (0.82)	0.0519 (0.78)
Soe	-0.00617 (-0.26)	-0.00456 (-0.19)	-0.00459 (-0.16)	-0.00305 (-0.11)
Dturn	0.00897 (1.01)	0.00923 (1.04)	0.0209* (1.89)	0.0211* (1.91)
Inst	0.122*** (4.78)	0.123*** (4.85)	0.143*** (4.50)	0.144*** (4.56)
Analyst	-0.00110 (-1.53)	-0.00114 (-1.57)	-0.00128 (-1.52)	-0.00132 (-1.57)
Opacity	-0.0198* (-1.70)	-0.0188 (-1.60)	-0.0191 (-1.53)	-0.0182 (-1.45)
Cscore	-0.00393 (-0.60)	-0.00382 (-0.58)	-0.00838 (-1.02)	-0.00827 (-1.01)
Sheng	0.0346*** (3.48)	0.0342*** (3.46)	0.0436*** (3.50)	0.0433*** (3.48)

Cash	0.00342 (0.49)	0.00341 (0.49)	0.0143 (1.61)	0.0143 (1.61)
Relate	0.0332*** (3.46)	0.0329*** (3.43)	0.0393*** (3.08)	0.0389*** (3.05)
Major	-0.00528 (-0.62)	-0.00278 (-0.32)	0.00117 (0.11)	0.00346 (0.31)
PROV	YES	YES	YES	YES
YEAR	YES	YES	YES	YES
_cons	0.0908 (0.47)	0.00393 (0.02)	-0.0575 (-0.22)	-0.136 (-0.51)
N	5492	5492	5492	5492
R^2	0.105	0.104	0.106	0.105

Note： *** p≤0.01、** p≤0.05、* p≤0.10

5.2.3 Female Executives and Long-term M&A Performance

Tables 5-1 and 5-2 show the regression results of the enterprises' long-term M&A performance and female executives. It can be seen from that in the first year after the merger, the enterprises with more female executives performed better in the long-term performance (*Fdum*, *Fpro* were generally significant at 1% when regression was performed by using the *deltaROA* and *deltaROE*); In the second year after M&A, the M&A performance of enterprises with more female executives is ordinary, but there is also a better phenomenon (*Fdum* and *Fpro* and the explained variable are significant or insignificant at the level of 10% when regression is performed using *deltaROA* and *deltaROE*); However, in the third year after the merger, enterprises with more female executives performed better in the merger, which was significantly higher than in the second year (both *Fdum* and *Fpro* and the explained variable were significant at 5% when using the *deltaROA* and *deltaROE* for regression). From this, we can see that the performance of long-term performance of M&A in enterprises with more female executives presents a U-shaped trend of first decline and then rise, but the overall performance is good, that is, the assumption H3 in this paper is supported.

Table 5-1 Female Executives and Long-term M&A Performance(*deltaROA*)

Var	（1）	（2）	（3）	（4）	（5）	（6）
	DeltaROA1		*DeltaROA2*		*DeltaROA3*	
Fdum	0.00279** (1.99)		0.000812 (0.45)		0.00568** (2.16)	
Fpro		0.0107*** (2.85)		0.00690 (1.41)		0.0175** (2.50)
Size	-0.00571*** (-7.01)	-0.00547*** (-6.72)	-0.00791*** (-7.68)	-0.00777*** (-7.52)	-0.00719*** (-4.90)	-0.00679*** (-4.63)
Lev	0.0226*** (5.44)	0.0226*** (5.43)	0.0332*** (6.35)	0.0331*** (6.34)	0.0423*** (5.59)	0.0421*** (5.56)
Growth	0.0129*** (6.74)	0.0129*** (6.73)	0.00374 (1.56)	0.00373 (1.56)	-0.00962*** (-2.85)	-0.00969*** (-2.87)
Top1	-0.0119*** (-2.71)	-0.0121*** (-2.77)	-0.000196 (-0.03)	-0.000265 (-0.05)	0.00438 (0.56)	0.00405 (0.52)
Soe	0.00776*** (4.77)	0.00815*** (4.96)	0.0115*** (5.89)	0.0119*** (6.01)	0.0203*** (7.48)	0.0208*** (7.63)
Dturn	0.0102*** (6.27)	0.0101*** (6.23)	0.0154*** (7.28)	0.0154*** (7.24)	0.0116*** (3.57)	0.0115*** (3.56)
Inst	0.0156*** (5.09)	0.0155*** (5.05)	0.0242*** (6.22)	0.0240*** (6.18)	0.0179*** (3.30)	0.0176*** (3.25)

Analyst	-0.000476***	-0.000471***	-0.000600***	-0.000594***	-0.000773***	-0.000767***
	(-5.33)	(-5.29)	(-5.31)	(-5.25)	(-4.82)	(-4.79)
Opacity	0.00192	0.00199	0.00298	0.00299	0.00490*	0.00505*
	(1.25)	(1.30)	(1.47)	(1.48)	(1.72)	(1.77)
Cscore	0.00404	0.00317	-0.135	-0.136	-0.450*	-0.0449*
	(0.03)	(0.02)	(-0.72)	(-0.73)	(-1.68)	(-1.68)
Sheng	0.000612	0.000573	0.00142	0.00138	0.00131	0.00128
	(0.48)	(0.45)	(0.88)	(0.85)	(0.55)	(0.54)
Cash	0.00762***	0.00752***	0.0133***	0.0133***	0.0239***	0.0236***
	(4.08)	(4.04)	(5.75)	(5.75)	(7.24)	(7.19)
Relate	0.00543***	0.00536***	0.00645***	0.00643***	0.00971***	0.00960***
	(3.67)	(3.63)	(3.37)	(3.36)	(3.49)	(3.45)
Major	0.00601***	0.00597***	0.000269	0.000258	-0.0157***	-0.0157***
	(3.55)	(3.53)	(0.12)	(0.11)	(-4.62)	(-4.65)
PROV	YES	YES	YES	YES	YES	YES
YEAR	YES	YES	YES	YES	YES	YES
_cons	0.0749***	0.0657***	0.106***	0.100***	0.0697**	0.0551*
	(4.42)	(3.85)	(4.97)	(4.63)	(2.35)	(1.84)
N	5268	5268	4786	4786	4221	4221
R^2	0.109	0.109	0.105	0.105	0.122	0.123

Note： *** p≤0.01、** p≤0.05、* p≤0.10

Table 5-2 Female Executives and Long-term M&A Performance(*deltaROE*)

Var	（1）	（2）	（3）	（4）	（5）	（6）
	DeltaROE1		*DeltaROE2*		*DeltaROE3*	
Fdum	0.00746***		0.00482		0.0101**	
	(3.04)		(1.50)		(2.26)	
Fpro		0.0219***		0.0169**		0.0300**
		(3.37)		(1.96)		(2.53)
Size	-0.0114***	-0.0109***	-0.0150***	-0.0146***	-0.0147***	-0.0140***
	(-7.38)	(-7.02)	(-7.44)	(-7.19)	(-5.55)	(-5.27)
Lev	0.0384***	0.0383***	0.0227**	0.0225**	0.0250*	0.0246*
	(4.97)	(4.95)	(2.21)	(2.20)	(1.90)	(1.87)
Growth	0.0312***	0.0311***	0.0123***	0.0122***	-0.00742	-0.00758
	(9.07)	(9.04)	(2.80)	(2.78)	(-1.29)	(-1.32)
Mshare	-0.0166**	-0.0174**	0.00761	0.00718	0.00746	0.00667
	(-2.13)	(-2.23)	(0.74)	(0.70)	(0.55)	(0.49)
Top1	0.01000***	0.0107***	0.0163***	0.0169***	0.0277***	0.0287***
	(3.36)	(3.54)	(4.49)	(4.61)	(5.80)	(5.95)
Soe	0.0110***	0.0108***	0.0178***	0.0176***	0.0113**	0.0112**
	(4.00)	(3.94)	(4.80)	(4.76)	(2.12)	(2.11)
Dturn	0.0266***	0.0264***	0.0362***	0.0360***	0.0387***	0.0384***
	(4.98)	(4.93)	(5.17)	(5.14)	(4.15)	(4.10)
Inst	-0.000661***	-0.000655***	-0.000752***	-0.000744***	-0.00117***	-0.00116***
	(-4.16)	(-4.14)	(-3.66)	(-3.62)	(-4.21)	(-4.19)
Analyst	0.00509*	0.00528**	0.00592*	0.00603*	0.00933*	0.00961**
	(1.95)	(2.03)	(1.68)	(1.71)	(1.92)	(1.97)
Opacity	0.00161	0.00157	0.00741***	0.00740***	0.00188	0.00192
	(0.85)	(0.83)	(2.89)	(2.89)	(0.55)	(0.57)

Cscore	0.000212 (0.80)	0.000213 (0.81)	-0.000197 (-0.59)	-0.000198 (-0.59)	-0.000400 (-0.90)	-0.000395 (-0.88)
Sheng	0.000546 (0.24)	0.000483 (0.22)	0.00285 (0.99)	0.00278 (0.97)	0.000779 (0.19)	0.000709 (0.18)
Cash	0.0130*** (3.87)	0.0127*** (3.79)	0.0224*** (5.45)	0.0222*** (5.41)	0.0444*** (8.05)	0.0440*** (8.00)
Relate	0.00648** (2.47)	0.00630** (2.40)	0.0115*** (3.36)	0.0114*** (3.32)	0.0144*** (3.08)	0.0141*** (3.03)
Major	0.00842*** (2.87)	0.00839*** (2.86)	-0.00155 (-0.39)	-0.00155 (-0.39)	-0.0294*** (-5.20)	-0.0294*** (-5.21)
PROV	YES	YES	YES	YES	YES	YES
YEAR	YES	YES	YES	YES	YES	YES
_cons	0.170*** (5.27)	0.152*** (4.64)	0.242*** (5.74)	0.227*** (5.30)	0.214*** (3.92)	0.189*** (3.41)
N	5268	5268	4786	4786	4221	4221
R^2	0.102	0.102	0.081	0.082	0.098	0.099

Note： *** p≤0.01、** p≤0.05、* p≤0.10

6 Further Research

To explore the impact of female executives in the whole process of M&A, this section further examines the impact of female executives on the merger premium. According to the analysis in the third part, female executives are generally more conservative and cautious. Therefore, it is inferred that the merger premium will be lower for enterprises where female executives are more common. The M&A premium herein is calculated using ln ((acquirer enterprise's expenditure-acquire enterprise's book value)/ acquire enterprise's book value).

Table 6 Female executives and M&A premium

Var	（1）	（2）
	Premium	
Fdum	0.0168 (0.32)	
Fpro		0.0424 (0.29)
Size	-0.0785** (-2.42)	-0.0775** (-2.38)
Lev	-0.405*** (-2.59)	-0.405*** (-2.59)
Growth	0.116* (1.85)	0.115* (1.84)
Mshare	-0.782*** (-4.45)	-0.783*** (-4.45)
Top1	-0.635*** (-9.74)	-0.634*** (-9.68)
Soe	0.0152 (0.24)	0.0150 (0.23)
Dturn	0.305** (2.55)	0.305** (2.55)
Inst	0.00548 (1.48)	0.00548 (1.48)
Analyst	-0.0281 (-0.39)	-0.0274 (-0.38)

Opacity	0.0270***	0.0270***
	(4.91)	(4.91)
Cscore	0.291***	0.291***
	(6.32)	(6.32)
Sheng	-0.103	-0.103
	(-1.57)	(-1.57)
Cash	-0.365***	-0.366***
	(-6.49)	(-6.50)
Relate	0.353***	0.353***
	(6.27)	(6.27)
Major	-0.0785**	-0.0775**
	(-2.42)	(-2.38)
PROV	YES	YES
YEAR	YES	YES
_cons	1.667**	1.633**
	(2.35)	(2.27)
N	3746	3746
R^2	0.195	0.195

Note： *** p≤0.01、** p≤0.05、* p≤0.10

Contrary to the expected conclusion, there is no significant impact on the M&A premium (independent variables *Fdum* and *Fpro* are not significant) when the enterprises with more female executives (the number of female executives is larger than the 3/4 quantile of the sample companies of 5 and the proportion is higher) carry out M&A activity. This may because, although female executives have a more cautious and conservative decision-making tendency, once the M&A decision is conducive to the long-term development of the enterprise, they will not blindly conservative and can also support reasonable or higher M&A premium, thus promoting the growth of the enterprise.

7 Conclusions and Recommendations

This paper takes the M&A events from 2008 to 2021 as the object, and empirically tests the impact of female executives on the whole process of corporate M&A. The results show that: (1) Although female executives have the characteristics of caution and conservatism, enterprises with more female executives are more likely to make a M&A decision; (2) More female executives have better long-term and short-term performance in M&A; (3) At the same time, female executives have no significant impact on the M&A premium. Based on the above conclusions, even if more female executives of listed companies are more inclined to make a M&A decision, the long-term and short-term performance of M&A activity are better. Thus, female executives play an indispensable and active role in this major strategic activity of M&A.

The research results in this paper have the following implications: (1) For enterprises, gender prejudice should be abandon and female should be fully admitted into the core management department. According to the characteristics of female executives, more female executives can be promoted and introduced, and the dynamic balance of gender ratio in the senior management team can be maintained, giving full play to the decision-making and management advantages of female executives, and promoting their own long-term development. (2) For female executives, they should play a more active role in making strategic decisions and become an indispensable part of the business development. Through its natural advantages, that is, it is easier to establish a good social network and social relationship with the outside of the organization, to obtain more abundant professional knowledge, to improve its own quality level, and thus to produce higher quality decisions. (3) For the government, it can put emphasis on the positive role of female executives into practice

by formulating government policies to ensure gender diversity, such as stipulating the proportion of female executives in listed enterprises to safeguard the gender diversity of China's corporate executive teams, so as to break the "glass ceiling" of female through external "visible hands" and attach more importance to the positive role of female workers.

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