

Executives' Gender Diversification, Cash Holdings and Corporate Value

—Based on Panel Data Analysis of a Share Listed Companies

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Abstract: With the advancement of social and economic status, female members play an increasingly important role in modern business management, and the decision-making behavior and governance characteristics of female executives have attracted more and more attention in academic studies. This paper focuses on the impact of gender diversity on cash holdings and corporate value. The empirical test based on the panel data of A-share listed companies from 2008 to 2016 shows that: cash holdings and corporate value have an obvious inverted U-shaped relationship. The proportion of senior executive gender diversity has a significant positive impact on corporate value, but when the cash holdings are getting high, the role of senior executive gender diversity on corporate value will be significantly weakened. Further study shows that under the influence of different financing constraints, the relationship among gender diversity, cash holdings and firm value is different. This paper enriches the research on cash holding and enterprise value from the perspective of executive gender diversity and contributes new knowledge to improve management structure and performance.

1. Introduction

Under ideal condition, the cost for a company to conduct internal financing and external financing is the same. However, due to information asymmetry and agency issues, internal financing cost of enterprises is lower than external financing cost, and thus enterprises prefer to hold cash. As an asset with the highest liquidity and the lowest yield, cash makes different enterprises choose relatively appropriate cash holdings to maximize corporate value. Nowadays, with the continuous development of corporate finance, the economic consequences of cash holdings on enterprise value have become the focus of academic attention.

The possible contribution of this paper is listed as follows: firstly, it expands research perspective of the current executive background characteristics and the value of corporate cash holdings, and studies the excess cash holdings of enterprises from the perspective of executive gender diversity and draws a conclusion. Secondly, considering financing constraint of Chinese enterprises at present, it studies the impact of gender diversity on the relationship between cash holdings and enterprise value under different financing constraints, which may provide some reference for further optimization reform of Chinese companies in financing. Thirdly, it can support evidence for the selection of senior executives of listed companies, especially female executives to meet the needs of improving corporate governance structure and promoting women's socio-economic status.

2. Literature Review and Research Hypotheses

This part firstly reviews the impact of gender diversity on enterprise performance, then analyses the relationship between cash holdings and enterprise value based on four mainstream theories of cash holdings, and finally proposes research hypotheses.

2.1 Gender diversity

Executive diversity refers to the diversity of executive members, including those that are easy to identify and those that are not easy to identify. Executive diversity that is easy to identify includes gender, race, age and religion; executive diversity that is not easy to identify includes education, tenure, professional background and personal values etc. (Yan Yonghai, 2014). The gender diversity of senior executives measures the evenness of distribution of male and female among the total number of senior executives. When all of them are male or female, the diversity ratio reaches the lowest of 0. When the ratio of male to female is 1:1, gender diversity reaches the maximum.

2.2 Cash holdings

Cash holdings refer to the amount of cash held by an enterprise to meet the needs of production and operation. There are four main theories related to cash holdings, including pecking order theory, agent theory, static trade-off theory, free cash flow hypothesis.

2.3 Research hypothesis

Holding cash will reduce the company's dependence on external capital, reduce financing costs, and avoid financial difficulties in price wars or marketing strategies. At the same time, in terms of signal transmission effect, it can deliver a credible commitment to meet prevention motivation, thus enhancing enterprise value; the other view holds that excess cash holding will accelerate enterprise's asset liquidity and force them to give up some investment opportunities with high returns, which will bring costs difficult to offset the saving of external financing costs, fail to maximize enterprise value, or even cause the decline of enterprise value. Level of cash holdings for trading, prevention, speculation and other purposes, to a certain extent, is conducive to the improvement of enterprise value, can be supported with principal agent theory transduction theory etc., while management cost and agency cost due to excess cash holding as well as major shareholders encroachment will hinder the improvement of enterprise value, which indicates a non-linear relationship between cash holding level and enterprise value.

3. Research Design

In this paper, China's listed companies from 2008 to 2016 are selected as the initial research samples for the following processing: (1) Remove listed financial companies; (2) Remove ST companies; (3) Remove relevant data missing samples; (4) Remove companies with negative equity and total assets; (5) Remove companies that have been public for less than 5 years. (6) All continuous variables are subject to *Winsorize* treatment of approx. 5% to eliminate the impact of abnormal values on regression results. As the variables designed to study the impact of executive gender diversity on corporate cash holdings and that on enterprise value are not identical, the corresponding variables are processed in this paper. Sample data is obtained from *CSMAR* database. The final research sample is determined to be 2,033 listed companies and 11,704 companies' annual sample observations.

4. Variable declaration

The variable design in empirical analysis part of this paper is shown in the table below:

Table 1 Variable definition

	Variable designation	Symbol	Variable description
Dependent variable	Tobin Q	TQ	(Market value of stock right + market value of debt) / total assets at the end of period
	Profitability	ROA	(Total profit + interest exchange) / total average assets
Explanatory variable	Cash holdings	Cash	(Monetary fund + cash equivalent) / total assets
	Excess cash holding	Excash	The difference between actual cash holdings and expected normal cash holdings
	Executive gender diversity	GenderRatio	$1 - \sum_{i=1}^2 \left(\frac{gender_i}{total\ number\ of\ executives} \right)^2$
Control variable	Company size	Size	Natural logarithm of total assets
	Financial leverage	Lev	Total liabilities / total assets
	Current ratio	Cr	Current assets / current liabilities
	Operational cash flow	Cfo	Net cash flows generated from operating activities / total assets
	Dividend payout ratio	Div	Cash dividends / total assets
	Annual dummy variable	Year	Used to control annual effects for 2008~2016, expressed in 8 annual dummy variables and dummy variable for 2016 is 0
	Industry dummy variable	Industry	Used to control industry effects for 2008~2016, including 5 industries after removing financial industry, expressed in 4 industry dummy variables and the fifth variable for is 0

4.1 Explained variable

The explained variables are enterprise value (TQ and ROA). From the perspective of financial performance and market performance, this paper selects two proxy variables, ROA and Tobin Q, respectively, as indicators to measure enterprise value. Where, return on assets = (total profits + interest expense) / total average assets; Tobin Q value is defined as the ratio between market value of enterprise assets and replacement cost, and is expressed by existing financial indicators at the same time, consider the situation of tradable shares and non-tradable shares, market value of common shares = market value of tradable shares x market price of shares + market value of common shares = market value of non-tradable shares x net assets per share.

4.2 Explanatory variable

4.2.1 Executive gender diversity

In this paper, the Blau index used by Li Change (2017) in her research on the influence of board diversity on the growth of private enterprises is adopted to construct the index of executive gender diversity, $Blauindex = 1 - \sum P_i^2$, where P_i is the proportion of class I senior executives, Blau index ranges within $0 \sim \frac{k-1}{k}$ (where k is number of categories), and larger value indicates higher diversity of executives. With reference to this method, executive gender diversity is defined Where, $gender_i$ refers to the number of executives by sex; in theory, with equal distribution of the proportion of men and women, this value is getting closer and closer to 0.5; when the value is 0, it

means that all senior executives are male or female, which is getting closer to 0.5; the value of 0.5 indicates the maximum diversity of executives. In this paper, the Blau index is multiplied by 2 for the convenience of regression analysis, that is when executive gender diversity is optimal, GenderRatio is 1 and when all executives are of the same gender, GenderRatio is 0.

4.2.2 Cash holdings

The explanatory variable defined in this paper includes cash on hand, bank deposit and short-term loans. To eliminate the impact of enterprise size, the ratio of current cash holdings (cash) to current total assets (asset) is adopted as the indicator of cash holdings in a company.

$$Cash = \frac{cash}{asset}$$

4.2.3 Excess cash holding

Excess cash holding refers to the difference or deviation between actual cash holdings and normal cash holdings; David and Sibilkov(2007), Dittmar and Mahrt-Smith(2007) consider that excess cash holdings can solve endogeneity problem between cash holding and enterprise value. To calculate excess cash holding problem, this paper refers to Opler's cash holding evaluation model to firstly determine normal cash holding level, that is explainable part of a listed company's cash holdings (Cash), then subtract expected holding from actual holding to obtain residual using two-stage approach of Harford (1999), Mikkelsen and Partch (2013), that is excess cash holding (Excash):

$$Cash = \beta_0 + \beta_1 Size + \beta_2 Lev + \beta_3 Div + \beta_4 Cfo + \beta_5 Cr + \sum Industry + \sum Year + \varepsilon$$

Cash indicates cash holdings; Size indicates enterprise scale, expressed in Natural logarithm of total assets; Lev indicates financial leverage; Div indicates dividend payout ratio, that is the ratio of cash payment per share to total assets per share; Cfo indicates the ratio of net cash flows generated from operating activities to total assets; Cr indicates current ratio, that is the ratio of current assets to current liabilities.

4.3 Control variable

To reflect the influence of executive gender diversity on enterprise value, based on existing literature research results and enlightenment, this paper takes company size (Size), financial leverage (Lev), current ratio (Cr), operational cash flow (Cfo) and dividend payout ratio (Div) as control variable and adds them to the model to improve the goodness of fit of the model. To control time effect and industry effect, we take Industry dummy variable (Industry) and annual dummy variable (Year) as control variable.

4.4 Modelling

To test inverted u-shaped relationship between excess cash holdings and enterprise value, we introduce the variables of cash holdings (Cash) and the square term of cash holdings (Cash²) into the model. The following model (1) is built to analyse the impact of excess cash holdings on enterprise value through sample regression analysis:

$$Q(TQ_{i,t}, ROA_{i,t}) = \beta_0 + \beta_1 Cash_{i,t} + \beta_2 Cash_{i,t}^2 + \beta_3 Lev_{i,t} + \beta_4 Cr_{i,t} + \beta_5 Size_{i,t} + \beta_6 Cfo_{i,t} + \beta_7 Div_{i,t} + \sum Year + \sum Industry + \varepsilon \quad (1)$$

Combining theoretical analysis, this paper refers to Opler's method and etc. to build a model to verify the relationship between executive gender diversity and cash holdings. The model is built as follows:

$$Cash_{i,t} = \alpha_0 + \alpha_1 GenderRatio_{i,t} + \alpha_2 Lev_{i,t} + \alpha_3 Cr_{i,t} + \alpha_4 Size_{i,t} + \alpha_5 Cfo_{i,t}$$

$$+ \alpha_6 Div_{i,t} + \sum Year + \sum Industry + \varepsilon \quad (2)$$

To test mutual influence between independent variables, that is, mesomeric effect of excess cash in the process of the influence of executive gender diversity on enterprise value, we introduce cross term product $GenderRatio_{i,t} \times Excash_{i,t}$ on the basis of the above model and build model (3) to verify the impact of impact of gender diversity on the relationship between excess cash holdings and enterprise value.

$$Q(TQ_{i,t}, ROA_{i,t}) = \beta_0 + \beta_1 cash_{i,t} + \beta_2 GenderRatio_{i,t} + \beta_3 Excash_{i,t} + \beta_4 GenderRatio_{i,t} \times Excash_{i,t} \\ + \beta_5 Lev_{i,t} + \beta_6 Cr_{i,t} + \beta_7 Size_{i,t} + \beta_8 Cfo_{i,t} + \beta_9 Div_{i,t} + \sum Year + \sum Industry + \varepsilon \quad (3)$$

5. Empirical Result and Analysis

5.1 Cash holdings and enterprise value

Table 2 Cash holdings and enterprise value

	TQ		ROA	
	Coefficient	t value	Coefficient	t value
constant	12.171***	43.820	-0.044***	-5.988
cash	0.382***	17.518	0.478***	20.173
Cash2	-0.252***	-11.652	-0.353***	-15.008
lev	-0.016**	-2.192	-0.031***	-3.931
Cr	0.071***	8.702	0.012	1.320
Size	-0.370***	-42.881	0.073***	7.802
CFO	0.133***	17.806	0.363***	44.578
DIV	0.060***	6.902	0.229***	24.301
Industry/Year	Control		Control	
Observations	11704		11704	
R-squared	0.407		0.298	

Note: ***, ** and * indicate significant level at 1%, 5% and 10%, respectively.

Table 2 shows the regression results of model 1, coefficient of $cash^2$ is negative, coefficient of cash is positive, and both passes 1% significance test, and thus it can be seen that inverted u-shaped relationship exists between cash holdings and enterprise value, that is to some extent, the increase of cash holdings will increase enterprise value, while excess cash holdings will restrain enterprise value, which in turn proves hypothesis 1. According to test results of other control variables, except the Cr control variable in ROA model fails to pass the significance test, all the other variables are significant, indicating that the selection of control variable is relatively reasonable.

5.2 Executive gender diversity, cash holdings and enterprise value

Table 3 shows regression results of model 3, with reference to Opler's cash holding evaluation model, residual term is used to express excess cash holdings. To eliminate the interaction between independent variables, interaction item (GenderRatio*excash) of gender diversity and excess cash holdings is added into the model. The GenderRatio of executives is 0.042 in TQ model and 0.005 in ROA model, both of which are significantly positive at the level of 1%. This shows that in general, the increase of executive gender diversity has a promoting effect on the increase of enterprise value. The coefficient of interaction term GenderRatio*excash is significantly negative in TQ model, indicating that when corporate cash holdings are excessive, the positive influence of the increase of executive gender diversity on corporate value will weaken, which verifies the hypothesis 3.

The financial leverage coefficient is significantly negative in both models, indicating higher the asset-liability ratio leads to lower enterprise value. The regression coefficients of operating cash

flow are all positive, indicating higher operating cash flow leads to higher enterprise value; the regression coefficients of dividend payout ratio are all significantly positive, indicating higher dividend payout ratio leads to higher enterprise value.

Table 3 Executive gender diversity, cash holdings and enterprise value

	TQ		ROA	
	Coefficient	t value	Coefficient	t value
constant	12.692***	45.604	-0.026***	-3.555
cash	0.149***	16.912	0.151***	15.765
excash	0.025**	2.259	0.001	0.101
GenderRatio	0.042***	4.071	0.005***	3.893
GenderRatio*excash	-0.036***	-2.736	-0.005	-0.716
lev	-0.017**	-2.343	-0.032***	-4.103
Cr	0.054***	6.628	-0.013	-1.453
Size	-0.380***	-43.956	0.059***	6.275
CFO	0.136***	18.139	0.368***	44.782
DIV	0.056***	6.457	0.223***	23.512
Industry/Year	control		control	
Observations	11704		11704	
R-squared	0.401		0.286	

Note: ***, ** and * indicate significant level at 1%, 5% and 10%, respectively.

5.3 Robustness test

To allow the empirical results of this study to be more reliable, the following robustness tests are performed: (1) to overcome potential endogenous problem of panel data, difference method is also used to estimate on the basis of the original model, and main variables are replaced as the difference between the T year index and the t-1 year index; (2) the sample is divided into financing constraint group and non-financing constraint group from the perspective of financing constraints. After the above processing, the model is again subject to regression analysis, and the results are basically consistent with the above research conclusions, indicating that the research results of this paper are robust. Due to space limitations, robust results are not listed here.

6. Conclusion

The research in this paper enriches related researches on cash holdings and enterprise value, deepens the understanding of the impact of executive gender diversity on enterprise value, and also contributes to the improvement of management structure and performance of enterprises. The deficiency of this paper is that it only measures the gender diversity ratio from the perspective of proportion of population, instead of considering education background, wage level, political status and other factors that may affect the empirical research of this paper. At the same time, this paper measures excess cash holdings in a too simple manner. Therefore, this paper will make further corrections from these two aspects to improve empirical research on executive gender diversity, cash holdings and enterprise value, so as to better provide reference value for enterprises.

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