

## The influence of female leadership on the cash holdings of listed companies in Vietnam



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### ABSTRACT

This study examines the relationship between female leadership factors and the cash holdings of Vietnamese companies. The random effects regression model (REM) is used with panel data from the financial statements of 174 companies listed on the Ho Chi Minh Stock Exchange in the period 2013-2020. Besides control variables, factors related to female leadership including the female CEO, the percentage of women on the board of executives, the female chairman, the percentage of women on the board of directors, and duality are included in the research model with the expectation of having a positive effect on cash holdings. The estimation results show that companies with female executives hold more cash and maintain lower levels of financial leverage than companies with male executives. Female executives will increase profitability and reduce the risk to the company. The influence level of the female on the Board of Directors on the company's cash holdings depends on the characteristics of each company. Besides, the results also show that net working capital, cash flow, ROA, and dividend payment have a positive correlation with the cash holdings of the company. Listed companies should pay attention to two factors: the proportion of women on the Board of Directors and female executives in order to diversify gender in the leadership and improve the ability to decide on financial strategies.

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### 1. Introduction

Savings policy has become a common problem for companies, as corporate managers must weigh the trade-offs between holding cash and financing future investment opportunities (Whited and Riddick, 2009). Cash helps companies cope with current difficulties or financial shocks, and finance debts to avoid the high costs of raising capital from outside (Bao et al., 2012; Opler et al., 1999; Ozkan and Ozkan, 2004; Dittmar and Mahrt-Smith, 2007; Denis and Sibilkov, 2010). However, increasing cash holdings also have consequences such as pushing cash flows into a risky situation, and missing out on good investment projects (Kaplan and Zingales,

1997). The excess cash also poses a big question about corporate governance capabilities.

Companies run by women will have many better benefits than men. Female executives have different experiences in life, work, and outside work (Smith et al., 2006). They understand more market segments of the company than men, thus increasing the quality and breakthrough in decision making (Singh and Vinnicombe, 2004). In addition, research by Sah (2021) argued that female-led companies will hold higher cash holdings than male-led companies, and a dollar of cash held by women-led will yield more value. Women are said to be more intuitive in making decisions, able to multitask, and better at building relationships (Mishra and Jhunjhunwala, 2013). However, some views believe that companies run by women will be less effective. Because female executives often have few human and financial resources, women's experience is often limited to the family business model (Fairlie and Robb, 2009).

Overall, the results of several empirical studies show diverse effects. Gender diversity in corporate

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leadership should be considered as an influencing factor for cash holdings. As managers and owners understand more about these relationships, they can better decide on financial strategies. Currently, there are very few empirical studies on the relationship between female leadership and corporate cash holdings in Vietnam. Therefore, this study examines the effect of the female factor in leadership on the cash holdings of companies listed on the Ho Chi Minh City Stock Exchange. From there, as a basis for proposing gender diversity solutions in the leadership, and improve the ability to decide on financial strategies.

## 2. Literature and hypotheses development

### 2.1. Literature review

The research model is based on agent theory and cash preference theory. The cash preference theory holds that the companies' main motives to decide to hold cash are to maintain liquidity, to be proactive in paying interest, expenses, and capital expenditures, and handle emergencies. The agent theory holds that there is a conflict of interest between managers and shareholders. While management wants to hold more cash to make investment decisions easier, shareholders want more dividend payments. Therefore, the presence of women in the leadership team will help neutralize the interests between shareholders and managers. In addition, when appointing women to senior positions of the company, they can multitask, better manage finances and connect many relationships in society.

Pinkowitz et al. (2006) revealed that one of the essential determinants of firm value is the level of cash holding. Furthermore, The decision to hold cash plays an important role in business operations, especially for the health of companies and their value (Lee and Powell, 2011). Gill and Shah (2012) argued that holding cash at a higher level will help companies reduce risk. Specifically, these studies show that firms' cash holdings have a positive relationship with performance. Similarly, Bates et al. (2009), and Frésard and Salva (2010) suggested that cash holdings have a positive effect on company value. This is consistent with the hedging motive; companies should keep more cash to prevent situations arising in the growing period. Furthermore, there is a difference in the level of cash reserves in developing and developed countries to maximize company value (Gill and Shah, 2012).

Jensen and Meckling (1976) argued that it is necessary to establish a company's management structure through the separation of management decisions and supervisory decisions to reduce agency costs. If the Chairman of the Board of Directors is also an executive, it will be difficult to separate the right of supervision and the right to operate. At that time, the Chairman of the Board of Directors will have more opportunities to maximize his interests than the interests of shareholders, increasing agency costs. In addition, the duality will

reduce the supervision of the Board of Directors over the Executive Board, leading to acts of lack of transparency. The duality also helps to increase mutual understanding and knowledge in the company's operating environment, which will have a positive impact on the quality of the company's operations. The agent theory supports the view that the roles of CEO and chairman should be separated because the concurrent CEO has too much power and can weaken the Board's supervision of the management team, thereby giving rise to agency problems that negatively affect the company's operations. Drobetz and Grüninger (2007) found a positive correlation between CEO concurrently (Chairman of the Board of Directors concurrently serving as a chief executive officer) and company's cash holdings, and an insignificant relationship between board size and company's cash holdings. The CEO concurrently tends to hold significantly higher cash holdings and the size of the Board of Directors does not affect the company's cash holdings.

According to Faccio et al. (2016), female CEOs make less risky choices for the company than male CEOs. On the contrary, some argue that companies run by women will be less effective (Inmyxai and Takahashi, 2010; Hsu et al., 2013). Fairlie and Robb (2009) argued that companies run by women are less financially successful than companies run by men. Because female founders or executives are often limited in human resources, capital, finances, and their experience is often limited to the family business model. Female CEOs make more conservative financial and investment decisions than male CEOs, leading to lower performance than male CEOs (Adhikari, 2012).

Besides, Faulkender and Wang (2006) showed that efficient companies with high cash holdings tend to build equity capital structures and implement a low dividend payment policy. Pinkowitz et al. (2006) provided additional empirical evidence for the existence of an optimal level of cash at which companies can finance investment decisions with internal funding instead of increasing external funding with high transaction costs. However, companies that hold a lot of money will incur agency costs, opportunity cost leads some companies to shift to using more debt and increasing dividend payout ratios.

Working capital is a crucial component, playing a vital role in the company's business. A profitable company can still face financial trouble if it doesn't effectively manage cash flows from its operations. Profitable companies can still become insolvent if most of their resources are backlogged in the form of inventory or not collected on-time cash from credit sales. Afrifa and Padachi (2016) revealed that working capital management is especially important to small companies. Small companies, which tend to increase the components of working capital in the short term and have a high investment in inventory and accounts receivable, have low profits. Capital markets greatly influence the cash holdings of

companies during a financial crisis. Financially constrained companies hold more valuable cash than unconstrained companies (Chang et al., 2017). Besides, excessive cash holding is positively correlated with company value.

Gender diversity in corporate leadership should be considered as a factor affecting cash holdings. Atif et al. (2019) studied the influence of gender diversity on the Board of Directors on cash holdings. The results showed that more than one female on the Board of Directors will have a negative impact on cash holding decisions. In addition, research results also show that the presence of women on the Board of Directors is negatively related to cash holdings in the Consumer, Healthcare, Industrial, Real Estate, and Utilities sectors. Moreover, the research of Sah (2021) examined the relationship between female leaders and corporate cash policy in the US. Cash holdings also depend on the stage of the company's life cycle; young companies will tend to hold more cash than older companies. At the same time, female CEOs adjust their cash holdings to target levels at a much faster rate than men; women-led companies will pay higher dividends than male-led companies when they have excess cash. Companies with more women in senior executives tend to hold more money, partly due to a hedging motive (Adhikari, 2018). More experimental evidence has shown that females tend to be more active in controlling activities (Gul et al., 2008). Companies run by female CEOs tend to make less risky investment and financing choices than similar firms run by male CEOs (Faccio et al., 2016). In addition, expanding the talent pool by recruiting female directors will help the councils have highly skilled and competent members with diverse perspectives and leadership styles. As a result, it can contribute significantly to the board's performance (Mishra and Jhunjhunwala, 2013). Through the comprehensive review of prior studies related to the research topic, many of them employed a panel data regression model to investigate the determinant factors of cash holdings. Overall, prior studies have suggested eleven factors influencing the company's cash holdings such as female CEO, female Chairman of the Board of Directors, percentage of women on the executive board, percentage of women on the Board of Directors, duality, company size, cash flow, leverage, cash dividend payment, net working capital and return on total assets. It is important to address that the proposed research model in this study expands the current literature in two aspects: (a) it identifies the factors that affect the cash holdings of listed companies in Vietnam, and (b) it measures the influence of women on the board of directors on the decision to hold cash companies by industry.

## 2.2. Hypotheses development

### 2.2.1. The CEO is a woman

Female CEOs tend to be more active in controlling activities (Gul et al., 2008) and make less risky

investment and financing choices (Faccio et al., 2016). Money held by female leaders will yield more value than money held by male leaders (Sah, 2021). These results support the following hypothesis:

**H1:** Women\_CEO has a positive impact on the cash holdings of the company.

### 2.2.2. Percentage of women on the board of executives

According to the research results of Mishra and Jhunjhunwala (2013), the executive board with female members can increase performance by increasing diversity in opinion and leadership style. Companies with more women in the top executives tend to hold more money (Adhikari, 2018). Therefore, this study put forward the second hypothesis as follows:

**H2:** High percentage of women on the Board of Directors positively affect the company's cash holdings.

### 2.2.3. The chairman of the board of directors is a woman

When women are the Chairman of the Board of Directors, they build a better community image for the company and bring more benefits. In addition, the increase in the number of women on the Board of Directors and the female Chairperson will make the decision-making of the Board of Directors not to be dominated by an individual, thereby reducing agency costs (Hampel, 1998). Female Chairman of the Board of Directors tends to reduce cash holdings. These results support the following hypothesis:

**H3:** The Chairman of the board of directors is a woman negatively affects the company's cash holdings.

### 2.2.4. Percentage of females on the board of directors

The presence of female members increases the diversity of the Board of Directors (Singh and Vinnicombe, 2004). Female members of the Board of Directors have diverse experiences in work life and outside of work. Boards with more than one female will have a negative impact on cash holding decisions (Atif et al., 2019). The fourth hypothesis is proposed as follows:

**H4:** High percentage of female on the Board of Directors negatively affect the company's cash holdings.

### 2.2.5. Duality

The studies of Gill and Biger (2013) and Mansour et al. (2015) have demonstrated a negative correlation between CEO concurrently and cash

holdings. The fact that the CEO and the chairman of the Board of Directors are the same people leads to creating unity between the manager and the owner on the purpose and method of operation. In this case, the concurrent CEO will have the motivation to complete the tasks, and minimize acts detrimental to the company. In contrast, [Drobotz and Grüniger \(2007\)](#) showed a positive correlation between the chairman of the Board of Directors holding the position of CEO and the firm's cash holdings. It is difficult to separate the supervisory authority from the executive authority. The duality will reduce the supervisory activities of the Board of Directors over the Executive Board, leading to acts of lack of transparency. The fifth hypothesis is proposed as follows:

**H5:** Duality negatively affects the company's cash holdings.

### 2.2.6. Company size

If company size is the cause of information asymmetry, reflecting the cost of external financing, then a negative relationship between company size and cash holdings is acceptable ([Ozkan and Ozkan, 2004](#)). Growing companies hold higher cash levels than mature companies ([Gill and Shah, 2012](#)). For growing companies, there is a negative relationship between cash holdings and company size. These results support the following hypothesis:

**H6:** Size has a negative impact on a company's cash holdings.

### 2.2.7. Cash flow

Cash flow is understood as the amount of cash from business activities of the company after covering all necessary operating expenses, as well as paying enough for investments in fixed assets and working capital. Research by [Almeida et al. \(2004\)](#) suggested that cash holdings and cash flows are positively related, meaning that the cash flow sensitivity of cash has a positive value. In the same direction of research development, the results of [Whited and Riddick \(2009\)](#) showed a negative relationship between change in cash and cash flow. A sixth hypothesis is proposed as follows:

**H7:** Cash flow has a positive impact on the cash holdings of the company.

### 2.2.8. Financial leverage

Research by [Ozkan and Ozkan \(2004\)](#) on the impact of ownership structure on cash holdings has shown that there is a negative relationship between financial leverage and cash holdings. The trade-off theory and pecking order theory argue that cash holdings decrease when companies are highly leveraged ([Gill and Shah, 2012](#)). These results support the following hypothesis:

**H8:** Financial leverage has a negative impact on the company's cash holdings.

### 2.2.9. Cash dividend payment

Companies with a lot of cash due to excess reserves tend to pay high cash dividends to control agency costs ([Rozeff, 1982](#)). Research by [Ozkan and Ozkan \(2004\)](#) indicated that for companies with limited internal financial resources, the costs of holding cash can be eliminated by issuing shares or reducing pay dividends. The ninth hypothesis is proposed as follows:

**H9:** The cash dividend payment method has a positive effect on the cash holdings of the company.

### 2.2.10. Net working capital

Net working capital is defined as current assets less current liabilities, including current liabilities and short-term expenses ([Van Horne and Wachowicz, 2001](#)). The study by [Atif et al. \(2019\)](#) and [Sah \(2021\)](#) showed that net working capital has a negative impact on the cash holdings of listed companies. Financial solutions to improve working capital efficiency are to reduce cash holdings. The final hypothesis is proposed as follows:

**H10:** Net working capital has a positive impact on the cash holdings of the company.

### 2.2.11. Returns on assets

Holding a large amount of cash will help the company make good investments without raising costs from external funding ([Gill and Shah, 2012](#)). Therefore, the company holds cash as a buffer between retained earnings and investment needs. The tenth hypothesis is presented as follows:

**H11:** ROA has a positive effect on the cash holdings of the company.

## 3. Research methodology

### 3.1. Sample selection

Data and information are collected from audited management reports and consolidated financial statements of 174 non-financial companies listed on the Ho Chi Minh Stock Exchange in the period 2013-2020.

### 3.2. Definition and measurement of variables

#### 3.2.1. Dependent variable

Cash holdings are expressed as a ratio of cash and cash equivalents to Total Assets ([Bates et al., 2009](#); [Ozkan and Ozkan, 2004](#)).

### 3.2.2. Independent variables

Women\_CEO is represented by a dummy variable that has a value of 1 if the company has a female CEO and 0 when the company has a male CEO. The percentage of women on the board of executives is measured by the ratio of the number of women on the board to the total number of boards. The women\_chairman of the Board of Directors is represented by a dummy variable with a value of 1 if the company has a female chairman and 0 when the company has a male chairman. The percentage of women on the Board of Directors is measured by the ratio of the number of women on the Board of Directors to the total number of members on the Board of Directors. Duality is represented by a dummy variable with a value of 1 if the company has a woman who is concurrently the chairman of the board of directors and the CEO and 0 otherwise.

### 3.2.3. Control variables

Firm size is measured as the logarithm of a company's total operating assets. Cash flow is measured as the ratio of total cash flows from operating activities, purchase of fixed assets, and liquidation of fixed assets to net sales from operating activities.

Financial leverage is measured as the ratio of long-term liabilities to total assets. Cash dividend payments are represented by a dummy variable whose value is 1 if the company pays cash dividends and 0 otherwise. Net working capital is measured by current assets minus current liabilities. ROA is measured as the ratio of net profit to total assets.

### 3.3. Estimation method

This paper uses the random effects regression model (REM) (Viechtbauer, 2010) to analyze the impact of female leadership on the cash holdings of companies listed on the Ho Chi Minh City Stock Exchange.

$$Cash_{it} = \alpha_0 + \beta_1 Women\_CEO_{it} + \beta_2 Women\_exboard_{it} + \beta_3 Women\_COB_{it} + \beta_4 Women\_BOD_{it} + \beta_5 Duality_{it} + \beta_6 Size_{it} + \beta_7 FCF_{it}/A_{it-1} + \beta_8 LEV_{it} + \beta_9 DV_{it} + \beta_{10} NWC_{it}/A_{it} + \beta_{11} ROA_{it} + \epsilon_i + u_{it} \tag{1}$$

where, i represents companies, t represents time; Cash<sub>it</sub> is cash holdings of company i at time t; Women\_CEO<sub>it</sub>: The variable representing the CEO is female; Women\_executive board<sub>it</sub>: Percentage of women on the executive board; Women\_COB<sub>it</sub>: The variable representing the Chairman of the Board of Directors is female; Women\_BOD<sub>it</sub>: Percentage of women on the Board of Directors; Duality<sub>it</sub>: Variable representing women on the Board of Directors cum executive; SIZE<sub>it</sub>: Company size; FCF<sub>it</sub>: Cash Flow; LEV<sub>it</sub>: Financial leverage; DV<sub>it</sub>: Cash dividend payment; NWC<sub>it</sub>: Net Working Capital; ROA<sub>it</sub>: Return on total assets; ε<sub>i</sub>: Error of composition of different objects (different characteristics of each enterprise) and u<sub>it</sub>: error of other combined components of both individual characteristics by object and over time.

Table 1 summarizes the characteristics of the variables in the research model and the expected signs about the impact of the independent and control variables on the dependent variable.

## 4. Results and discussions

### 4.1. Empirical results

Table 2 illustrates the descriptive statistics of the variables used in the regression model.

Based on the results of the correlation matrix in Table 3, it can be seen that all the pairs of correlation coefficients among the variables in the model are less than 0.8 (Farrar and Glauber, 1967). Hence, it can be concluded that there is no serious multicollinearity phenomenon. Table 3 shows the correlation matrix among the variables in the model (Obs=1,392).

**Table 1:** Summary of variables in the research model

Variables	Measurement Method	Expected Signs
Cash holdings (CASH)	Cash and cash equivalents/Total Assets	
Female CEO (Women_CEO)	Dummy variable, 1 = the company has a female CEO and 0 = the company has a male CEO	(+)
Percentage of women on the Board of Directors (Women_exboard)	Number of women on the executive board/total number of executive boards	(+)
The Chairman of the Board is female (Women_COB)	Dummy variable, 1 = the company has a female chairman and 0 = the company has a male chairman	(-)
Percentage of female members on the Board of Directors (Women_BOD)	Number of women on the Board of Directors/ total members on the Board of Directors	(-)
The company has a female on the Board of Directors and CEO (Duality)	Dummy variable, 1 = the company has a female who is concurrently the chairman of the board of directors and the CEO, and 0 = otherwise	(-)
Company size (Size)	SIZE=Ln (total assets)	(-)
Cash Flow (FCF)	(Total cash flow from operating activities + purchase of fixed assets + liquidation of fixed assets)/net revenue from operating activities	(+)
Financial leverage (LEV)	Long-term liabilities/Total Assets	(+)
Cash dividend (DV)	Dummy variable, 1 = Pay in cash and 0 = pay in other methods	(+)
Net Working Capital (NWC)	Current assets - Current liabilities	(+)
Return on Assets (ROA)	Net profit/total assets	(+)

**Table 2:** Descriptive statistics of variables used in the model (Obs=1,392)

Variables	Mean	Standard Deviation	Minimum	Maximum
CASH	-2.80	1.39	-9.55	1.86
Women_CEO	0.96	0.29	0.00	1.00
Women_exboard	13.36	19.94	0.00	100.00
Women_COB	0.12	0.33	0.00	1.00
Women_BOD	15.57	17.17	0.00	80.00
Duality	0.04	0.20	0.00	1.00
SIZE	20.94	1.19	18.58	25.48
FCF	68.45	40.28	1.00	160.00
LEV	0.11	0.15	0.00	0.90
DV	0.65	0.48	0.00	1.00
NWC	51.49	25.05	1.00	125.00
ROA	6.66	8.70	-54.36	78.37

**Table 3:** Correlation matrix among the variables in the model (Obs=1,392)

	CASH	Women_CEO	Women_exboard	Women_COB	Women_BOD	Duality	SIZE	FCF	LEV	DV	NWC	ROA
CASH	1.00											
Women_CEO	0.01	1.00										
Women_exboard	-0.04	0.51	1.00									
Women_COB	0.01	0.31	0.33	1.00								
Women_BOD	-0.11	0.40	0.50	0.47	1.00							
Duality	0.00	0.64	0.43	0.56	0.38	1.00						
SIZE	-0.04	0.06	0.01	0.02	0.06	0.07	1.00					
FCF	0.11	-0.01	-0.04	-0.00	-0.04	0.02	0.01	1.00				
LEV	-0.10	-0.05	0.14	-0.17	-0.12	-0.11	0.26	0.07	1.00			
DV	0.30	-0.01	-0.00	0.49	-0.06	0.08	-0.01	0.03	0.00	1.00		
NWC	0.21	0.03	0.01	0.07	0.07	0.04	-0.25	0.09	-0.31	0.10	1.00	
ROA	0.26	0.06	0.04	0.08	-0.01	0.11	-0.05	0.19	-0.15	0.38	0.39	1.00

According to variance inflation factor (VIF) results in Table 4, the VIF values for all independent variables noted in the model are below 10.0, so there is no multicollinearity in the research model. Then, in the analytical model for panel data regression, there are only two models that are likely to be selected for analysis: The fixed effects regression model (FEM) and the random effects regression model (REM). According to the results of the Hausman test, p-value=0.1786>5%, which means that hypothesis H0 is accepted: There are unobserved random factors, that vary across companies, and changes over time affect the independent variables in the model. For the proposed model in the study, using REM will be more suitable than FEM. Moreover, Breusch and

Pagan Lagrangian multiplier test results show that prob>chi2=0.000<5%, and Wooldridge test results show prob>F=0.6406>5%. Therefore, heteroskedasticity is a serious issue but autocorrelation is considered insignificant when these variables are included in our research models.

To resolve the problem of heteroskedasticity, the study uses the Robust standard errors method which is extremely useful to ensure a consistent and efficient estimation of results (White, 1980). Table 5 presents the estimation results by using the Robust standard errors method. More specifically, the estimated results of the influence of female leadership on the company's cash holdings by industry are presented in Table 6.

**Table 4:** Results of VIF test, Hausman test, Breusch and Pagan Lagrangian multiplier test, and Wooldridge test

Variable	VIF	Hausman test	Breusch and Pagan Lagrangian multiplier test	Wooldridge test
Women_CEO	1.98			
Women_exboard	1.62			
Women_COB	1.69			
Women_BOD	1.62			
Duality	2.27			
SIZE	1.13	chi2(11)= 15.09	chi2(1)= 17.70	F(1,7)= 0.238
FCF	1.06			
LEV	1.21			
DV	1.19			
NWC	1.34			
ROA	1.43			
Mean VIF	1.51	Prob>chi2= 0.1786	Prob>chi2= 0.0000	Prob>F= 0.6406

#### 4.2. Discussion

The estimated results in Table 5 show that female directors (Women\_CEO), cash flow (FCF), equity

payment in cash (DV), Net Working Capital (NWC), and Return on Total Assets (ROA) have a positive impact on cash holdings; the proportion of women on the Board of Directors (Women\_BOD) and Female

on the Board of Directors and Executives (Duality) and Financial leverage (LEV) have a negative impact on cash holdings. The impacts of these eight

independent variables on cash holdings can be explained as follows.

**Table 5:** Estimated results of the REM using Robust standard errors method (Obs=1,392)

Variable	Estimated Coefficients
Women_CEO	0.3847*** (7.17)
Women_exboard	-0.0008 (-0.38)
Women_COB	0.0424 (0.51)
Women_BOD	-0.0099*** (-5.95)
Duality	-0.3266*** (-2.98)
SIZE	0.0310 (1.04)
FCF	0.0025*** (2.76)
LEV	-0.7309*** (-3.19)
DV	0.7329*** (7.98)
NWC	0.0074*** (3.02)
ROA	0.0142*** (3.03)
Constant	-4.3619 (-6.24)
R <sup>2</sup>	0, 1590

Note: The values in parentheses () are Robust standard errors, \*\*\*, \*\*, \* Statistical significance at 1%

**Table 6:** Estimated results of the REM by industry

Variable	Agriculture and manufacturing industry	Wholesale and retail industry	Technology, utilities, arts and services industry	Mining industry, real estate construction and warehousing
Women_CEO	0.7461*** (5.04)	-0.3074 (-1.21)	0.3006 (1.06)	-0.0273 (-0.18)
Women_exboard	-0.0083*** (-4.65)	0.02*** (3.30)	0.0024 (0.76)	0.0073*** (2.13)
Women_COB	0.0203 (0.19)	-0.341*** (-3.57)	0.8856* (1.96)	0.9167*** (2.57)
Women_BOD	-0.0067*** (-2.05)	-0.008*** (-2.64)	-0.0057 (-0.84)	-0.0189*** (-4.15)
Duality	-0.5147*** (-2.66)	-0.3080 (-1.01)	-1.5601*** (-3.67)	-0.305 (-1.08)
SIZE	0.0451 (1.12)	-0.1941* (-1.93)	-0.0394 (-0.32)	0.1402*** (2.65)
LEV	-1.2640*** (-2.77)	-0.8722** (-2.07)	-3.6104*** (-9.27)	-0.1909 (-0.49)
DV	0.6515*** (3.85)	0.6587*** (3.51)	0.4619*** (1.97)	0.8986*** (7.60)
ROA	0.0264*** (5.24)	0.0304 (1.38)	0.0467*** (2.96)	0.0164*** (2.68)
Constant	-4.131 (-4.62)	0.743 (0.36)	-1.869 (-0.67)	-6.229 (-5.63)
R <sup>2</sup>	0.1466	0.2485	0.3428	0.1634
Number of observations	616	224	168	368

Note: The values in parentheses () are Robust standard errors, \*\*\*, \*\*, \* Statistical significance at 1%, 5%, 10% respectively

According to the research results shown in Table 5, the company's cash holdings are positively affected by female executives, with the estimated coefficient  $\beta_1=0.3847$  at the 1% significance level. This result is consistent with the study of Adhikari (2012; 2018), Zeng and Wang (2015), and Sah (2021). Companies run by female CEOs are less risky in their operations and tend to hold more cash to maintain low leverage and lower capital expenditure. On the other hand, this result is also consistent with the agency theory, managers will tend to hold cash to increase the number of assets under their control of managers so that managers can make business decisions without resorting to external funding.

From the results in Table 5, it is clearly shown that the percentage of women on the Board of Directors has negatively correlated with the company's cash holdings with the estimated coefficient ( $\beta_4=-0.0099$ ) at the significance level of 1 percent. This result is consistent with the results of Atif et al. (2019). Women often tend to take their roles on the Board of Directors seriously, which leads to more civilized behavior and thereby improves the quality of corporate governance (Singh and Vinnicombe, 2004) and females tend to be more active in controlling activities (Gul et al., 2008).

Similar to the initial expectation, female Chairman and CEO are negatively correlated with

cash holdings, negative estimate coefficient ( $\beta_5=-0.3266$ ). Research by Gill and Biger (2013) and Mansour et al. (2015) also found a similar negative relationship with statistical significance. The fact that the CEO and the chairman of the Board of Directors are the same people will create unity between the manager and the owner about the purpose and method of operation. In this case, the concurrent CEO will be motivated to complete the work and minimize the behaviors that are detrimental to the company. For companies in Vietnam in the start-up (growth) stage, which are usually owned and managed by the founders, it is necessary for the right direction and decision-making. Therefore, the duality has a positive impact on the company's operations, especially helping the Board of Directors to quickly grasp information.

Based on the results in Table 5, cash flow is positively correlated with company cash holdings. This relationship is shown by a positive coefficient ( $\beta_7=0.0024$ ) which is statistically significant at the 1% level. This result is similar to the study of Almeida et al. (2004) which cash holdings and cash flow have a positive relationship. The company will increase its cash holding when the company has positive cash flow.

As resulted in Table 5, financial leverage is negatively related to cash holdings. The negative estimator  $\beta_8=-0.7309$  at the 1% significance level

means that when firms use less financial leverage, they tend to increase their cash holdings. This result is similar to the trade-off theory and pecking order theory. These two theories predict a negative correlation between leverage and cash holdings. According to research by Adhikari (2012), companies with female CEOs maintain less leverage than male CEOs and make capital expenditures lower.

It can be seen from the results in Table 5 that the dividend payout has a positive effect on cash holdings with the coefficient  $\beta_9=0.7329$  at the 1% significance level. This result is consistent with the results of Drobotz and Grüninger (2007). Firms with a lot of cash due to excess reserves will adopt a dividend policy that favors high dividend payouts to control agency costs (Rozeff, 1982). At the same time, the probability of companies with excess cash-paying dividends is higher for companies with female CEOs than for companies with male CEOs (Sah, 2021).

In Table 5, it is shown that Net working capital has a positive relationship with cash holdings, with a positive estimator ( $\beta_{10}=0.0074$ ) at the 1% significance level. Isshaq and Bokpin (2009) also showed a positive correlation between net working capital and cash holdings. They explained that companies holding a lot of cash will have better liquidity, positive net working capital, and be able to rotate capital in a shorter time.

The positive estimator  $\beta_{11}=0.0142$  at the 1% significance level in the model estimation in Table 5 shows that return on assets (ROA) is positively correlated with cash holdings. This result is consistent with the study by Gill and Shah (2012), holding a large amount of cash will help the company make good investments without having to mobilize from external funding at a high cost. Therefore, the company holds cash as a buffer between retained earnings and investment needs.

However, according to the analysis results in Table 5, the study has not found the impact of the percentage of women on the Board of Directors (Women\_exboard), The Chairman of the Board is female (Women\_COB), Company size (SIZE) on the quantity cash holdings of companies listed on the Ho Chi Minh Stock Exchange.

Besides, the study carried out regression by industry to see the difference in the relationship between variables by industry, the results are shown in Table 6. The companies in the observed data are divided into 04 main industries including Manufacturing and agricultural production; Wholesale and retail; Technology, gadgets, art and services; Mining, real estate construction and warehousing. According to the research results in Table 6, the female being an executive director has a positive impact on the amount of cash held at companies in the manufacturing and agricultural sectors, but this correlation has not been found in other companies in the other sectors. This result is consistent with the sample studied in Vietnam. The proportion of female executives in these industries is

quite low, so their impact on cash holdings is not clear. Furthermore, the percentage of women in the executive board variable is negatively correlated with the cash holdings in the manufacturing and agricultural sectors but positively correlated for the wholesale and retail sectors; mining, real estate construction and warehousing sectors. Besides, a female Chairman of the Board of Directors has a negative impact on the amount of cash held in the company in the wholesale and retail industry and a positive effect on the amount of cash held in the technology, utilities, arts and services industry; mining, real estate construction and transportation industries. Then, the regression results show that when increasing the percentage of women on the Board of Directors at companies in the manufacturing and agricultural sectors; wholesale and retail industry; mining, real estate construction and warehousing industries, the amount of cash tends to decrease. It is reasonable because the increase in the number of women on the Board of Directors means improved performance monitoring and better decision-making. For the duality variable, when companies have a female chairperson and director, the company's cash holdings will tend to increase in the manufacturing and agricultural sectors; technology, utilities, arts, and services industries.

In addition, Table 6 also shows the results of estimating control variables, the negative impact of financial leverage on cash holdings is not found in companies in the mining, real estate construction and warehousing industries. The regression results of the cash dividend payment variable have a positive estimator in all industries. However, the return on total assets variable has a positive effect on the company's cash holdings, except for companies in the wholesale and retail industry. Overall, the factors that affect the number of cash holdings depend on the characteristics of the company's business lines.

## 5. Conclusion

The study used a regression model of random effects (REM) to analyze the influence of female factors in the company (female is the CEO, female is the Chairman of the Board of Directors, female is the Chairman of the Board of Directors and the CEO, percentage of women on the Board of executives and percentage of women on the Board of Directors), size, financial leverage, cash flow, networking capital, return on assets, cash dividend payments on the cash holdings of companies listed on the Ho Chi Minh City Stock Exchange in the period from 2013 to 2020.

The results show that female CEOs tend to hold a higher amount of cash than male CEOs. Female CEOs tend to hold more cash to maintain low leverage and lower capital expenditure. Women with their life experiences and perspectives, they can do better in connecting their companies with female customers, female workers, and society in general and increase



company performance. On the other hand, investors are always looking for companies with abundant cash, because they believe that a lot of cash will help the company to handle easily if business plans are going bad and it also gives the company more choices in finding investment opportunities in the future. Therefore, having a female CEO with large cash reserves will help the company gain market share in the future compared to its competitors in the same industry (Haushalter et al., 2007; Frésard and Salva, 2010). This result is also consistent with the agency theory because managers have an incentive to hoard cash to increase the number of assets under their control and thereby make it easier to decide on investment projects. In addition, the study also shows that when the proportion of women on the Board of Directors increases and a woman is the Chairman of the Board of Directors concurrently the CEO, the company tends to reduce the amount of cash held. Female duality leads to an increase in internal ownership. The higher the inside ownership, the lower the company's cash holdings (Kusnadi, 2011). Moreover, when there is an increase in the number of women on the Board of Directors, it will make the board's decision-making not be dominated by a single individual, thereby reducing the amount of cash holding and representation costs. The Board of Directors is key to neutralizing the interests of shareholders and managers. Female members of the Board of Directors have various experiences in work life and outside work. They understand more of the company's market segments than men, thus increasing the quality and innovation in decision-making (Singh and Vinnicombe, 2004). On the other hand, the research results also show that when companies have a large number of women on the Board of Directors and female CEOs, it will bring about operational efficiency for the company. Specifically, the company will have a higher rate of return on total assets, use less financial leverage, and tend to pay higher cash dividends to shareholders than companies run by men. Besides, according to the regression results by industry, duality will have a positive or negative impact on the cash holdings depending on the business industry of the company. In addition, the research results also prove that other factors affecting the cash holdings of the company are: Financial leverage, size, rate of return on total assets, and cash dividend payment.

With the research results, there are some recommendations for the leaders of companies on the Vietnamese stock market based on two factors: The proportion of women on the Board of Directors and female CEO. Companies should: (a) be fair in terms of recruitment, compensation and rewards for employees of both sexes; (b) transparency in the appointment of senior positions so that women are guaranteed their rights to participate in the management and operation of the company; (c) enforce gender-balanced and appropriate resource use policies.

The study is expected to help people have a more accurate and objective view when assessing the role of women in the process of economic development and the country. To do this, society needs to create favorable conditions for women to play their full positive roles. The article is expected to help people have a more correct and objective view when assessing the role of women in the economic development process. To do this, society needs to create favorable conditions for women to play to their full potential.

Research topic on the influence of female leadership on cash holdings has not been done much in Vietnam, leading to difficulties in comparing and contrasting research results. In the next study, the authors can collect and expand the number of surveyed companies in both Ho Chi Minh City and Hanoi stock exchanges, to understand the impact of variables and to make the results more convincing.

## Compliance with ethical standards

## Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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