



Original Article

Female directors and cash holdings: The case of Vietnam

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Abstract: This study investigates the impact of gender equality on corporate cash reserves, focusing on the roles women occupy on corporate boards. Using data from 325 publicly listed companies in Vietnam between 2020 and 2022, the research employs various statistical models, including ordinary least squares (OLS), fixed-effect model (FEM), random-effect model (REM), and Feasible Generalized Least Squares (FGLS), to address heteroscedasticity. The findings reveal that the presence of female directors on corporate boards is significantly associated with lower cash reserves, suggesting that gender diversity influences cash management practices. This study contributes to the literature by highlighting the role of female directors in enhancing a firm's financial flexibility. It underscores the importance of creating an equitable workplace for female employees and provides insights into the benefits of gender diversity in corporate governance. The research specifically examines the Vietnamese context, reflecting the global trend towards gender diversity in corporate leadership. Regression analysis shows a significant negative relationship between the proportion of female CFOs and cash holdings, indicating that firms with more female CFOs tend to hold less cash. These findings have important implications for policymakers, investors, and corporate leaders by demonstrating the potential of female directors to shape financial policies and reduce risks associated with representative issues.

Keywords: Female directors, cash holdings, gender diversity.

1. Introduction

The issue of optimizing cash holdings and effective corporate governance is attracting widespread attention and research, especially after the collapse of large corporations such as Enron (2001) or Worldcom (2002), which are considered the financial cradle of the world.

Because there was not enough cash left, Enron convinced workers to receive salaries and bonuses in stocks. Thereby, Enron's value was seriously reduced. As for WorldCom, the company's CEO used company money to pursue personal investments, along with generous acquisitions that led to the company holding \$41 billion in debt. It can be seen that the ineffective management of cash in the company contributed

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to the collapse of Enron and WorldCom. In Vietnam, it is impossible not to mention the major financial scandal that left serious consequences: the financial scandal of Viet Nhat Medical Equipment Joint Stock Company (JVC) in 2015. This company misused money for its original purpose leading to insufficient cash holdings to solve the company's liquidity problems. Thus, holding too little cash can lead to the company facing many liquidity risks and easily losing future investment opportunities.

Cash plays a key role in the operations of a business. To ensure cost-profit cash flow and cash flow to business, investment and development activities, a company needs to maintain a certain amount of cash. However, cash is highly liquid, which creates the potential risk of personal self-interest within the company (Jensen, 1986; Kim et al., 1998; Dittmar et al., 2003). Studies by Jensen and Meckling (1976) and Ross (1973) have shown that, when a company has a large amount of cash, managers can easily use the company's cash for the wrong purposes or for personal gain. Therefore, companies need to have a plan to ensure that their cash resources are always at a reasonable level.

The literature on cash holdings has been expanding to explore the influence of various managerial traits and behavioral biases on different aspects of cash management. Some of these studies investigate the effects of these factors on the level, value, and speed of adjustment of cash holdings (Huang-Meier et al., 2016; Aktas et al. 2019; El Kalak et al. 2020). However, a relatively limited amount of research specifically focuses on the direct impact of female directors on cash holdings. In addition, the results are mixed. Zeng and Wang (2015) find that when considering gender, female CEOs of Chinese-listed firms are associated with higher cash holdings than male CEOs. This suggests that female CEOs may be more conservative, prioritizing the precautionary motive of holding cash over concerns about the opportunity cost of cash. According to Borghans et al. (2009), Booth and Nolen (2012), Arano, Parker and Terry (2010), and La Rocca et al. (2019), female directors may be more likely than their male counterparts to adopt a cautious attitude toward risk-taking. Hence, companies with a higher proportion of female directors may

demonstrate a tendency to uphold increased cash holdings to manage risk. The conservative approach aims to achieve financial stability and resilience in the face of uncertain market conditions, thereby providing a buffer against potential economic downturns or unforeseen events. On the other hand, Ozkan and Ozkan (2004) examined 12,960 observation samples from 1,029 publicly traded UK firms from 1984 to 1999. They found that a rise in the number of independent female directors could potentially reduce cash reserves. This has the potential to mitigate the possibility of managers abusing their authority for personal gain. Atif et al. (2019) also found a negative relationship between female directors and cash holdings, suggesting that female directors influence the firm's corporate cash levels.

Currently, Vietnam is classified as a developing nation and is considered an emerging market. It possesses the potential for information asymmetry. Dang (2018) suggests that domestic entities lack transparency in their information dissemination, thereby enabling specific audiences to gain an advantage in accessing information more expeditiously than others. The recent volatility of the global economy has had an impact on the Vietnamese economy. Particularly amidst the COVID-19 pandemic, the financial outlook for numerous individuals is not optimistic. Companies are currently in a state of heightened vigilance as they face the imminent threat of insolvency. This is primarily attributed to inadequate corporate governance practices and insufficient cash reserves, which have significantly strained organizations' financial resources. Inadequate cash reserves render an enterprise incapable of financing investments or meeting the expenses associated with its production operations. The repercussions of the situation may include downsizing of the workforce, financial insolvency of the business, and disruption of the supply chain. Because of this, an enterprise's cash reserve greatly impacts various business activities. Studies have been carried out on cash retention in business enterprises. Scholars like Pham (2014), Nguyen (2014), and Pham (2015) are the authors of these investigations. However, most of these studies primarily examine the factors that impact cash retention, including cash

expenses, financial leverage, and circulating capital. Limited research has been conducted on female executives' influence on cash retention within a company.

As gender diversity acts as a corporate governance tool (Adams & Ferreira, 2009; Tosun et al., 2022), our study seeks to investigate the influence of female representation on corporate liquidity, to fill the existing gap in the literature. In this research, we delineate the distinctions among the various positions women occupied by: Chief Executive Officers (CEOs), Chief Financial Officers (CFOs), and other female directors (OD) roles. We employ the data of 325 Vietnamese non-financial listed firms for 2020-2022 and utilize OLS, FEM, REM, and FGLS methodology to explore the impact of female directors on the magnitude of cash reserves. According to the research findings, companies that possess a greater representation of both women CEOs and CFOs have observed a reduction in their cash reserves.

The study explores the relationship between gender diversity in corporate executive boards and cash resource management, providing new and unique insight on this subject in the Vietnamese context. Including women in corporate governance not only brings benefits in terms of diversity and gender equity but can also create significant economic and financial benefits for businesses. By shedding light on the impact of women on corporate boards on cash resource management, this study helps increase understanding and awareness of the important role of gender diversity in corporate governance. In addition, this study also provides practical value by suggesting specific strategies and policies to create a fair working environment and demonstrating the value of investing in gender diversity on executive boards. Running a business is not only a social task but also a smart strategic decision to optimize business performance and improve business competitiveness in the market. Therefore, this research makes an important contribution to promoting the sustainable development and prosperity of both the business community and Vietnamese society. This can reduce agency problems within the firm and keep cash holdings within the firm from exceeding a reasonable threshold, thereby reducing the self-interest of the board of directors in the company.

2. Literature review and hypotheses development

Female CEOs and cash holdings

A board of directors may consist of multiple executive directors, but the Chief Executive Officer (CEO) bears the crucial strategic responsibility for overseeing the company's operations. Martín-Ugedo et al. (2018) posit that the CEO's responsibilities in decision-making and the daily operations of the organization may endow them with a higher level of significance in comparison to other executive directors who concurrently hold positions on the board. On the other hand, the agency theory posits that in situations where substantial free cash flows are present, chief executive officers (CEOs) possess an enhanced capacity to exert their influence. The present scenario has the potential to give rise to conflicts of interest between shareholders and managers, as highlighted by Jensen (1986). However, a large number of researches show that female CEOs positively impact firm cash holding. For example, Conyon and He (2017) provide evidence that the presence of female members on the board of directors positively affects the firm's performance. Amore et al. (2014) posit that cooperation between female chief executive officers and directors on boards can improve efficiency in managerial decision-making procedures. According to Post and Byron (2015), empirical research on the connection between women and performance has produced mixed results. However, studies examining the participation of women in critical decisions related to debt and growth rates have consistently produced similar outcomes. According to Huang and Kisgen's (2013) study, which examined a sample of 19 female CEOs and 97 female CFOs, businesses run by female executives exhibit a lower likelihood of debt issuance and a slower growth rate. Besides, the empirical studies conducted by Kang et al. (2007), Ozkan and Ozkan (2004), Srinidhi et al. (2011), and Cambrea et al. (2020) consistently support the assertion that the inclusion of gender diversity in corporate boards positively impacts monitoring effectiveness. The studies mentioned above collectively offer evidence that female directors exhibit greater autonomy and are less prone to engaging in opportunistic managerial behavior, thereby promoting increased

transparency in financial information. Therefore, it is anticipated that boards that exhibit a diverse gender composition will exhibit higher levels of rigor and effectiveness in their capacity to oversee and exert control, as opposed to boards that are predominantly comprised of males. Building upon the discussion, the hypothesis put forth is as follows:

H1: Firms with female CEOs hold less cash.

Female CFOs and cash holdings

The Chief Financial Officer (CFO) role has undergone significant growth in recent years, moving beyond traditional control and compliance duties. Despite the variety of responsibilities, liquidity management consistently ranks as a top priority on the CFO's agenda. A global survey involving chief financial officers from 29 countries indicates that three of the four most valuable functions that contribute to company value are related to corporate liquidity management (Lins et al., 2010). CFOs have ultimate responsibility for a company's finance and treasury functions, allowing them to have significant influence over the company's cash holdings (Campello et al., 2010, Aier et al., 2005). Additionally, with responsibility for the financial reporting process and financial strategy, CFOs have a deep understanding of the company's financial situation and performance, perhaps even more than the CEOs (Wang et al., 2012). For companies covered by the Sarbanes-Oxley Act of 2002, the act requires the chief financial officer to certify the company's financial statements along with the chief executive officer. Therefore, the CFO position of a company has the ability to influence the financial policy in general and the cash reserve level in particular of that business.

In addition, some previous studies have shown that female CFOs have an impact on corporate cash holdings, but there are inconsistencies in the results due to differences in scores. Research by Xu et al. (2019) suggests that women's conservatism and avoidance of risk are the underlying causes leading to gender differences in corporate cash holdings, which leads to the female CFO performance positively affects corporate cash holdings. However, based on a survey of 3,000 undergraduate business students from 58 universities regarding certain

general ethics-related attitudes, Albaum and Peterson (2006) document that female students are slightly but significantly more ethically motivated than male students. When this is applied to business, it makes sense that female executives demonstrate higher ethical standards and show reduced tolerance for opportunistic behavior. The attribute is considered by many to be a factor that has a positive influence on improving corporate governance and reducing agency costs (Adams & Ferreira, 2009; Jurkus et al., 2011; Liu et al., 2014). This supports the research results of Doan et al. (2020). The study, based on a sample of 1,500 companies over the period 1994-2016, demonstrated that female CFOs implement policies differently than men. Furthermore, female CFOs tend to reduce cash levels at higher-cash businesses, which are then used to make changes to dividend policies. Therefore, this study makes the following hypothesis:

H2: Companies with female CFOs maintain less cash.

Other female directors and cash holdings

Besides the two main positions of CEO and CFO, other directors on the board could be independent directors or non-independent directors. Independent directors, in their capacity as non-executive representatives, are appointed to boards with the principal objectives of overseeing top management and safeguarding the interests of shareholders and non-shareholder stakeholders. Existing literature has suggested that augmenting the number of women on corporate boards can improve the efficiency of corporate governance mechanisms by enabling more efficient monitoring functions. Among other academics, Rhode and Packel (2014) and Gul et al. (2011) conducted studies that supported this. The fact that female directors are better equipped to manage corporate cash reserves and carry out other supervisory duties makes the aforementioned result possible. Kang et al. (2007) reported that female directors are perceived to demonstrate higher levels of independence than their male counterparts. According to this point of view, Adams and Ferreira's (2009) research found that increasing gender diversity increases the board's effectiveness because it results in a higher level of board monitoring. Anderson et al. (2011)

stated that a diversity board has considerable skills that can improve oversight processes. Furthermore, it has been observed that women tend to place a higher emphasis on the transparency of information (Srinidhi et al., 2011). According to Boubaker et al. (2015), increasing the presence of women on corporate boards may constrain the availability of cash, which is frequently employed as a convenient mechanism for extracting private benefits for shareholders. Consequently, this could ensure the uninterrupted functioning of corporations.

By analyzing the benefits derived from the careful supervision of a chairperson and the unique characteristics of a female chair, it is argued that designating a female chairperson holds promise for significantly improving the reliability of a board through effective oversight of a company’s management. To tackle this matter, the potential appointment of a female chairperson may serve as a means to alleviate the buildup of surplus cash reserves among the board. According to Ferreira and Vilela (2004), the issue of entrenched CEOs investing in unsuccessful ventures is pertinent because it can exacerbate the agency problem within the organization. Based on previous research that found a link between independent women directors and better monitoring (Carter et al., 2003) and the idea that having a female board chair is linked to better monitoring (Wang & Kelan, 2013), this study makes the following hypothesis:

H3: Corporations managed by other female directors have lower cash reserve levels.

3. Research methodology

3.1. Research model

The current research utilizes the framework introduced by Opler et al. (1999) and Xu et al. (2019) to explore the influence of female representation in high-level leadership roles, such as chief executive officer, chief financial officer and other directors, on the level of cash reserves.

$$\text{Cash}_{i,t} = \beta_0 + \beta_1 \text{CEO}_{i,t} + \beta_2 \text{LEV}_{i,t} + \beta_3 \text{CF}_{i,t} + \beta_4 \text{NWC}_{i,t} + \beta_5 \text{CAPEX}_{i,t} + \beta_6 \text{GROWTH}_{i,t} + \beta_7 \text{DIV}_{i,t} + \varepsilon_{i,t} \text{ (Model 1)}$$

$$\text{Cash}_{i,t} = \beta_0 + \beta_1 \text{CFO}_{i,t} + \beta_2 \text{LEV}_{i,t} + \beta_3 \text{CF}_{i,t} + \beta_4 \text{NWC}_{i,t} + \beta_5 \text{CAPEX}_{i,t} + \beta_6 \text{GROWTH}_{i,t} + \beta_7 \text{DIV}_{i,t} + \varepsilon_{i,t} \text{ (Model 2)}$$

$$\text{Cash}_{i,t} = \beta_0 + \beta_1 \text{OD}_{i,t} + \beta_2 \text{LEV}_{i,t} + \beta_3 \text{CF}_{i,t} + \beta_4 \text{NWC}_{i,t} + \beta_5 \text{CAPEX}_{i,t} + \beta_6 \text{GROWTH}_{i,t} + \beta_7 \text{DIV}_{i,t} + \varepsilon_{i,t} \text{ (Model 3)}$$

where *i* denotes the firm, and *y* represents the year.

The variables LEV, CF, NWC, GROWTH, DIV in the model have been proven by previous research to affect the company’s cash policy and the business’s cash reserve level is added to increase reliability of the model, contributing to explaining the relationship between female directors and cash holding. Details of the research are mentioned in Table 1.

Table 1 presents how to measure and the expected signs of the regression coefficients of the variables in the research on female directors and cash holdings.

Table 1: Variables measurements

Variables	Calculation	Source
CASH	$\frac{\text{Cash and cash equivalents}}{\text{Total assets}}$	Alghadi et al (2021), Shabbir et al. (2016)
CEO (Female CEO)	1 if the role of CEO is performed by a female and 0 otherwise	Cambrea (2020), Huang and Kisgen (2013), Xu et al. (2019)
CFO (Female CFO)	1 if the role of CFO is performed by a woman and 0 otherwise	Cambrea (2020), Huang and Kisgen (2013), Xu et al. (2019)
OD (Other female directors)	1 if the role of other directors besides CEO and CFO is performed by a female and 0 otherwise	Cambrea (2020), Huang and Kisgen (2013), Xu et al. (2019)
LEV (Financial leverage)	$\frac{\text{Total debt}}{\text{Total assets}}$	Ferreira and Vilela (2004), Al-Najjar et al. (2013)
CF (Cash flow ratio)	$\frac{\text{Net operating cash flow}}{\text{Total assets}}$	Dittmar et al. (2003), Maheshwari and Rao (2017)

NWC (Net working capital)	$\frac{\text{Current assets} - \text{Current liabilities}}{\text{Total assets}}$	Xu et al. (2019)
CAPEX (Capital expenditures)	$\frac{\text{Capital expenditures}}{\text{Total assets}}$	Iskandar-Datta (2013), Opler et al. (2001), Guney, Ozkan and Ozkan (2007)
GROWTH (Sale growth)	$\frac{\text{Sales} - \text{Lagged sales}}{\text{Lagged sales}}$	Dechow et al. (1996)
DIV (Dividend payout)	$\frac{\text{Dividends paid}}{\text{Net profit}}$	Limanta and Malelak (2017)

Source: The authors.

3.2. Data sample and data analysis

The sample data employed in this research was extracted from the FiiPro platform and contained listed firms on the Hanoi Stock Exchange from 2020 to 2022. The FiiPro Platform which launched in 2008 is the most comprehensive and in-depth database for the Vietnam market and provides up-to-date and reliable financial statements together with company profiles of both Vietnamese non-listed and listed firms. As to minimize the influence of outlier observations, non-financial listed firms on the Vietnamese stock exchange were chosen. The final sample consists of 975 firm-year observations and 325 companies.

To analyze the data, ordinary least squares (OLS), fixed-effect model (FEM), and random-effect model (REM) are employed. In addition, we have a look at heteroscedasticity phenomena with the Wald test and test autocorrelation phenomena with the Wooldridge test. Then, the study makes use of the feasible generalized least

squares (FGLS) method to deal with any limitations in the model.

4. Research results and discussions

4.1. Descriptive statistics

The variation in cash holdings (CASH) with an average value of 2.66 during the period of 2020-2022 indicates that companies listed on the Hanoi Stock Exchange (HNX) have a relatively high balance of cash-held assets.

The mean proportion of women occupying the positions of CFO, CEO, and other managerial roles was 0.07, 0.10, and 0.72, respectively. The findings indicate that the representation of female CEOs in publicly traded firms in Vietnam remains comparatively inadequate, with a greater proportion of women serving in other director positions than as CEOs or CFOs.

Table 2: Descriptive statistics of variables

Variables	Obs	Mean	Std. Dev.	Min	Max
CASH	975	2.6638	5.5502	0.3031	123.7715
CEO	975	0.1046	0.3062	0.0000	1.0000
CFO	975	0.0738	0.2617	0.0000	1.0000
OD	975	0.7262	0.4462	0.0000	1.0000
LEV	975	0.4666	0.2422	0.0006	0.9919
CF	975	0.0384	0.1744	-0.6906	1.8485
NWC	975	0.2577	0.2575	-0.3828	0.9581
CAPEX	975	-0.0290	0.0582	-0.6869	0.0150
GROWTH	975	-0.1276	2.1432	-1.0000	42.1518
DIV	975	-0.9765	6.5127	-131.1684	1.4851

Source: STATA 16.

The mean leverage ratio (LEV) among firms in Vietnam has been found to be 0.46, indicating considerable employment of leverage on the

overall assets of these firms. The computed average cash flow (CF) ratio of publicly traded firms in Vietnam, expressed as a proportion of

total assets is roughly 0.03 percent. The observed figure is significantly below the expected value, thereby prompting apprehensions regarding the sufficiency of the cash flow for the concerned enterprises. The NWC ratio, which represents the difference between a company’s current assets and current liabilities, had an average value of 0.25. The observed values range from -0.38 to 0.95, suggesting that the business operations were stable. This stability can be attributed to the regular circulation of capital sources that supplement the current assets. According to the report, the CAPEX ratio has been recorded as -0.02, with the lowest ratio being -0.68 and the highest being 0.01. The average annual revenue growth rate (GROWTH) of the companies listed in Vietnam is suboptimal, with a value of -0.13. The average dividend sharing rate (DIV) among publicly traded companies in Vietnam is -0.98, indicating a relatively diminished dividend distribution rate.

4.2. Correlation matrix

The Correlation matrix between variables in Table 3 suggests that the variables with the strongest correlation are the net current capital (NWC) ratio and leverage (LEV), which exhibit a coefficient of -0.6614. Additionally, a coefficient of 0.211 showed that there is a positive correlation between the proportion of female CEOs and female CFOs. Conversely, a negative correlation was detected between the ratio of capital expenditure (CAPEX) and cash flow (CF), exhibiting a coefficient of -0.1677. A coefficient of -0.1266 showed that there was a negative correlation between the leverage rate (LEV) and the presence of other female executives (OD). Finally, a coefficient of -0.0481 and -0.0379 showed that there was a negative correlation between the leverage rate (LEV), the presence of female CEOs (CEO), and female CFOs (CFO). Additionally, it is important to note that a strong correlation between two variables that are not dependent on each other is rare, suggesting a lower probability of encountering multiple linear phenomena while conducting regression analysis.

Table 3: Correlation matrix between variables

	CFO	CEO	OD	LEV	CF	NWC	CAPEX	GROWTH	DIV
CFO	1.0000								
CEO	0.2110*	1.0000							
OD	0.0679*	0.0972*	1.0000						
LEV	-0.0379	-0.0481	-0.1266*	1.0000					
CF	-0.0211	-0.0851*	-0.0234	-0.0833*	1.0000				
NWC	0.1272*	0.0921*	0.0664*	-0.6614*	-0.0907*	1.0000			
CAPEX	0.0542	-0.0538	-0.0116	0.0078	-0.1677*	0.1700*	1.0000		
GROWTH	0.0017	-0.0091	-0.0020	0.0086	-0.0926*	0.0221	0.0277	1.0000	
DIV	0.0246	0.0210	0.0144	0.0377	-0.0520	-0.0128	0.0015	0.0061	1.0000

Note: ***, **, and * are used to indicate significance levels of 1%, 5%, and 10%, respectively.

Source: The authors.

4.3. Multivariate regression results

We tested three models by utilizing OLS, FEM, and REM. The multivariate regression results, F-test, Breusch and Pagan test, and Hausman test have shown that FEM is the most suitable model in all three models.

Table 5 shows that there are no multicollinearity phenomena in all three models. However, these models show heteroskedasticity. To solve this problem, we use the Feasible Generalized Least Squares (FGLS) model. Then, we explain the research results based on the FGLS model.

Table 4: OLS, FEM, and REM results

	Model 1			Model 2			Model 3		
	OLS	FEM	REM	OLS	FEM	REM	OLS	FEM	REM
CEO	-0.00652 (0.5128)	0 (.)	-0.00669 (0.6555)						
CFO				-0.0237* (0.0430)	0 (.)	-0.547 (0.5525)			
OD							0.00881 (0.1996)	0 (.)	0.00931 (0.3660)
LEV	-0.0130 (0.4074)	0.0125 (0.7103)	-0.0115 (0.5837)	-0.0111 (0.5174)	0.0125 (0.7103)	9.256*** (0.0000)	-0.0106 (0.5410)	0.0125 (0.7103)	-0.00965 (0.6458)
CF	0.130*** (0.0000)	0.0864*** (0.0000)	0.0951*** (0.0000)	0.131*** (0.0000)	0.0864*** (0.0000)	-0.231 (0.7693)	0.132*** (0.0000)	0.0864*** (0.0000)	0.0957*** (0.0000)
NWC	0.128*** (0.0000)	0.0868** (0.0011)	0.109*** (0.0000)	0.131*** (0.0000)	0.0868** (0.0011)	1.262 (0.2317)	0.128*** (0.0000)	0.0868** (0.0011)	0.109*** (0.0000)
CAPEX	0.0237 (0.5592)	-0.00506 (0.9172)	-0.00555 (0.9005)	0.0294 (0.5868)	-0.00506 (0.9172)	1.244 (0.6345)	0.0274 (0.6122)	-0.00506 (0.9172)	-0.00419 (0.9248)
GROWTH	-0.00163** (0.0082)	0.000787 (0.4492)	0.000445 (0.6583)	-0.00162 (0.2595)	0.000787 (0.4492)	-0.0169 (0.7797)	-0.00161 (0.2647)	0.000787 (0.4492)	0.000443 (0.6599)
DIV	0.000277 (0.3209)	-0.000229 (0.5892)	-0.000121 (0.7674)	0.000299 (0.6028)	-0.000229 (0.5892)	-0.000146 (0.9953)	0.000257 (0.6545)	-0.000229 (0.5892)	-0.000125 (0.7601)
_cons	0.0531*** (0.0000)	0.0520* (0.0123)	0.0578*** (0.0001)	0.0526*** (0.0000)	0.0520* (0.0123)	-1.897* (0.0180)	0.0450*** (0.0010)	0.0520* (0.0123)	0.0496** (0.0031)
F-test	0.0022			0.0022			0.0022		
Breusch and Pagan test	0.0000			0.0000			0.0000		
Hausman test	0.0014			0.0008			0.0013		
N	975	975	975	975	975	975	975	975	975
R ²	0.1558	0.0756		0.1590	0.0756		0.1568	0.0756	

Note: ***, **, and * are used to indicate significance levels of 1%, 5%, and 10%, respectively

Source: The authors.

Table 5: Modified Wald test and Wooldridge test

	Model 1	Model 2	Model 3
Modified Wald test	0.0000	0.0000	0.0000
Wooldridge test	0.9752	0.9752	0.9752

Source: The authors.

The results in Table 6 confirm the significant relationship between female directors (female CFOs) and the decreased cash holdings. In Model 2, the coefficient values ($\alpha = -0.0154$, $p = 0.0000$) reveal a significant and negative correlation between the presence of female chief financial officers (CFOs) and the magnitude of corporate cash reserves. It can be explained by the fact that the accumulation of experience and expertise can instill greater confidence in female directors to undertake diverse responsibilities while emphasizing long-term investments and making financial decisions. Consequently, they may seek to minimize the retention of surplus cash. The study's findings also suggest that women in monitoring roles, such as CFOs, are more likely to implement stringent controls and use liquidity to mitigate agency costs,

informational asymmetry, and managerial opportunism. This finding aligns with the results put forward by Harford (1999), Zeng and Wang (2015), and Lim and Lee (2019). However, this study does not support a positive correlation between the number of cash reserves held by the firm and female executives, in contrast to the research by Suherman (2017) and La Rocca et al. (2019). Therefore, H2 is accepted.

However, the impact of female directors measured by female CEOs (Model 1) and other female directors (Model 3) on cash holdings lacks statistical significance. Thus, we reject H1 and H3. The acceptance of H2 and the rejection of H1 and H3 can be explained based on the specific roles and responsibilities of each senior management position in the enterprise, as well as their priorities and financial management style.

CFOs often take on the role of financial management and financial strategy of the business. This role typically includes cash flow management, risk assessment, and consideration of the company’s use of financial capital. The main task of the CFO is to ensure that the company has sufficient financial resources to meet its financial commitments and challenges, while optimizing its capital structure and cash flow. Therefore, a CFO can decide to reduce cash reserves to optimize capital usage, while ensuring that the company still has enough financial resources to deal with emergency situations and investment opportunities. On the other hand, CEOs and other directors are typically responsible for the overall management

of the business and often focus on shaping business strategy and managing day-to-day operations. Their decisions may be driven by strategic, technological, market and competitive factors, rather than focusing specifically on financial management and capital strategy. Therefore, the presence of female CEOs or other directors may not have a major influence on decisions about cash reserves, as they can focus on other aspects of management that are not necessarily intrusive into the field of financial management. In both cases, the differences in cash reserve decisions may reflect the special professionalism and management style of each senior management position, as well as the business priorities and goals of the individual company.

Table 6: Feasible generalized least squares (FGLS) result

	Model 1	Model 2	Model 3
CEO	-0.00434 (0.2905)		
CFO		-0.0154*** (0.0000)	
OD			0.00367 (0.0986)
LEV	-0.0214*** (0.0005)	-0.0218*** (0.0003)	-0.0179** (0.0052)
CF	0.121*** (0.0000)	0.121*** (0.0000)	0.122*** (0.0000)
NWC	0.113*** (0.0000)	0.116*** (0.0000)	0.114*** (0.0000)
CAPEX	0.00768 (0.7311)	0.00872 (0.6954)	0.0142 (0.5528)
GROWTH	-0.00148 (0.0673)	-0.00171* (0.0374)	-0.00154 (0.0659)
DIV	0.000186 (0.5805)	0.000207 (0.5386)	0.000226 (0.5137)
_cons	0.0496*** (0.0000)	0.0505*** (0.0000)	0.0442*** (0.0000)
N	975	975	975

Note: ***, **, and * are used to indicate significance levels of 1%, 5%, and 10%, respectively

Source: The authors.

Regarding control variables, LEV displays a negative and significant impact on the cash reserve in all three models, implying that the higher debt ratio could lead to less money. The results of CF and NWC variables are consistent in all three models with positive and significant coefficient values. The variable GROWTH represents statistical significance at a significant level of 10% in Model 2.

5. Conclusions

The main aim of this research is to examine the impact of female directors on the decision-making process related to liquidity management. In other words, this research seeks to examine the impact of female directors on the accumulation of cash reserves within organizations. To do that, our research is conducted on a sample of Vietnamese

companies listed on HNX during 2020-2022. Building upon previous scholarly research that has examined the psychological tendencies of women towards reduced levels of opportunism, confidence, and risk aversion (Faccio et al., 2016; Martín-Ugedo et al., 2018), the current study explores the impact of female directors on cash reserves. The study's findings suggest that female CFOs' participation in firms is associated with negative impacts on liquidity. This study's findings support the hypothesis that women in monitoring, such as in CFO roles, tend to implement stricter controls and utilize liquidity to reduce agency costs, informational asymmetry, and managerial opportunism (Harford, 1999).

The study results highlight the impact of gender diversity, especially in senior management positions such as the CFO, on cash management practices. Businesses therefore need to increase gender diversity in their corporate governance frameworks to ensure effective and diverse financial management and representation. Furthermore, companies should prioritize cash flow optimization and risk management strategies. Thereby, they can improve the efficiency of capital use and reduce their dependence on significant cash reserves. Regularly reassessing financial strategies is also vital to ensure alignment with key factors such as growth, liquidity and cost of capital. Strengthening internal control and monitoring mechanisms is also indispensable, as it ensures effective implementation of financial policies and minimizes risks related to cash management. Finally, businesses need to consider their specific business context, including size, stage of development and industry, to adjust financial decisions in the most appropriate direction. These recommendations can be tailored to each business's specific circumstances and goals.

We acknowledge the presence of constraints and restrictions within the scope of our study. Firstly, it is crucial to acknowledge that this research specifically concentrated on publicly traded corporations, which inherently exhibit more advantageous financial circumstances and benefit from the increased availability of external funding sources in comparison to unlisted businesses. Hence, considering the pertinent disparities in cash-holding regulations, forthcoming research endeavors may delve into

the impact of female directors within both state-owned and privately-owned enterprises. Moreover, to achieve a more comprehensive understanding of the impact of female executives on corporate cash reserves, it is essential to broaden the scope of research to include stock exchanges. Specifically, it is important to investigate corporations listed on the Ho Chi Minh Stock Exchange (HOSE) and firms listed on the Hanoi Stock Exchange.

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