

“Does CEO ownership reduce corporate cash holdings? The moderating role of firm characteristics in an emerging market”

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ARTICLE INFO	Phan Tran Minh Hung (2026). Does CEO ownership reduce corporate cash holdings? The moderating role of firm characteristics in an emerging market. <i>Investment Management and Financial Innovations</i> , 23(3), 302–318. doi: 10.21511/imfi.23(3).2026.22
DOI	http://dx.doi.org/10.21511/imfi.23(3).2026.22
RELEASED ON	Thursday, 20 August 2026
RECEIVED ON	Monday, 09 March 2026
ACCEPTED ON	Monday, 10 August 2026
LICENSE	 This work is licensed under a Creative Commons Attribution 4.0 International License
JOURNAL	"Investment Management and Financial Innovations"
ISSN PRINT	1810-4967
ISSN ONLINE	1812-9358
PUBLISHER	LLC “Consulting Publishing Company “Business Perspectives”
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”



NUMBER OF REFERENCES

53



NUMBER OF FIGURES

0



NUMBER OF TABLES

6

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BUSINESS PERSPECTIVES



LLC "CPC "Business Perspectives"
Hryhorii Skovoroda lane, 10,
Sumy, 40022, Ukraine
www.businessperspectives.org

Type of the article: Research Article

Received on: 9th of March, 2026

Accepted on: 10th of August, 2026

Published on: 20th of August, 2026

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DOES CEO OWNERSHIP REDUCE CORPORATE CASH HOLDINGS? THE MODERATING ROLE OF FIRM CHARACTERISTICS IN AN EMERGING MARKET

Abstract

The worldwide rise in corporate cash reserves, particularly across emerging markets with weak investor protection and concentrated ownership, has made the governance of corporate liquidity an increasingly important research question. This study examines whether CEO ownership influences corporate cash holdings among Vietnamese listed firms, and whether this relationship is moderated by market power and state ownership. Using a panel of 580 non-financial listed firms and 7,929 firm-year observations over 2008–2024, the analysis employs Feasible Generalized Least Squares (FGLS) and two-step System Generalized Method of Moments (System GMM) estimators. The results reveal a consistent negative association between CEO ownership and corporate cash holdings: the CEO-ownership coefficient is negative and statistically significant in the baseline model and remains so across all six baseline and robustness specifications, two alternative cash measures, a one-period-forward model, and the dynamic System GMM estimator. Further checks using alternative trimming and winsorizing thresholds, three ownership subgroups, and a quadratic specification confirm that the relationship is monotonic rather than U-shaped and is not driven by a small number of high-ownership firms. The cash-reducing effect is conditional on firm characteristics: the interactions of CEO ownership with market power and with state ownership are both positive and statistically significant, indicating that competitive dominance and government backing each attenuate this effect. These findings support the alignment hypothesis of agency theory, while showing that the disciplinary role of CEO ownership is bounded by market structure and the ownership environment.

Keywords

CEO ownership, cash holdings, corporate governance, agency theory, market power, state ownership, emerging markets, Vietnam

JEL Classification

G32, G30, G34

INTRODUCTION

Corporate cash holdings have attracted significant scholarly and practical attention because of their dual role as a strategic resource and a potential source of agency conflict. On one hand, cash reserves provide firms with financial flexibility, allowing them to meet unexpected obligations, finance investments without relying on costly external capital, and withstand periods of economic uncertainty (Bates et al., 2009; Opler et al., 1999). On the other hand, excessive cash accumulation can raise investor concerns when managerial discretion leads to inefficient capital allocation or entrenchment behaviors (Dittmar & Mahrt-Smith, 2007; Harford, 1999).

The steady increase in corporate cash balances worldwide, particularly after the 2008 global financial crisis, underscores the importance of understanding the determinants of cash policy. In developed markets,



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Conflict of interest statement:

Author(s) reported no conflict of interest

precautionary motives, credit market frictions, and tax considerations have all been linked to high cash reserves. Yet, agency theory highlights that entrenched managers may hoard cash to serve personal objectives such as empire building or reducing exposure to external monitoring (Martins, 2019).

In emerging markets, the costs and benefits of cash holdings take on additional complexity. Weaker investor protections, underdeveloped capital markets, and greater macroeconomic volatility alter the traditional trade-offs of liquidity management (Guney et al., 2007; Pinkowitz et al., 2006). Firms in such contexts often rely heavily on internal funds due to limited external financing options, making cash an essential buffer. At the same time, weaker governance frameworks increase the likelihood that entrenched managers will retain cash for private benefits, exacerbating agency costs.

Vietnam provides a compelling setting to examine these dynamics. As a fast-growing transitional economy, Vietnam is characterized by concentrated ownership structures, evolving governance systems, and restricted capital market access. Ownership composition also shapes market outcomes for Vietnamese listed firms; for example, Nguyen et al. (2026) show that investment-fund ownership dampens stock price volatility. These conditions make cash holdings simultaneously more valuable as a financing tool and more susceptible to agency problems. In particular, overlapping managerial roles such as CEOs who also serve on boards can intensify the risk of entrenchment and misaligned financial policies.

Against this backdrop, CEO ownership emerges as a crucial governance mechanism influencing corporate cash policy. Higher ownership stakes are theorized to align CEOs' interests with those of shareholders, thereby discouraging the hoarding of excess cash and promoting efficient capital use (Aktas et al., 2019; Owusu & Weir, 2018). However, empirical evidence remains mixed. Some studies document a negative relationship between CEO ownership and cash holdings, consistent with the alignment hypothesis (Diaw, 2021; Florackis, 2008). Others suggest that beyond certain thresholds, ownership may entrench managers and lead to higher cash reserves (Abdioğlu, 2016; Martins, 2019). This tension highlights the importance of investigating the ownership-cash nexus in institutional settings where governance and financial frictions are pronounced.

Although the ownership-cash relationship has been studied extensively in developed markets, evidence from emerging economies is limited and inconclusive. Most prior research has been conducted in environments characterized by strong investor protections, deep capital markets, and relatively transparent governance frameworks, features that may not apply in transitional economies such as Vietnam. Furthermore, many earlier studies employ static models that fail to adequately account for endogeneity and the dynamic nature of cash holding decisions. The objective of this study is to examine the effect of CEO ownership on corporate cash holdings among Vietnamese listed firms, and to test whether this effect is moderated by two firm-level characteristics, market power and state ownership. It thereby extends the governance-liquidity literature by showing that CEO ownership plays a critical alignment role in an emerging market characterized by weaker investor protections and tighter financial constraints, while also contributing evidence on how market power and state ownership shape this relationship.

1. LITERATURE REVIEW AND HYPOTHESES

From a financial policy perspective, cash enables firms to meet short-term obligations, absorb external shocks, and preserve investment capacity when access to external finance is costly or uncertain. These functions are particularly important in environments characterized by financing

frictions, macroeconomic volatility and incomplete capital markets. At the same time, however, cash also gives managers considerable discretion because it is the most liquid and easily deployable corporate asset. When monitoring is weak, managers may prefer to retain excessive cash to avoid the scrutiny associated with external financing, protect their private control benefits, or pursue investments that do not maximize shareholder

value. This dual nature of cash explains why the determinants of cash holdings cannot be understood solely through traditional liquidity motives; they must also be examined through the lens of corporate governance and managerial incentives.

Agency theory provides the main conceptual foundation for this argument. Jensen and Meckling (1976) suggest that when managers do not bear the full wealth consequences of their decisions, they may act in ways that diverge from shareholder interests. Applied to cash policy, this implies that managers may retain more liquidity than is economically optimal because cash enhances flexibility and discretion while reducing dependence on outside capital providers. The governance literature offers strong support for this view. Dittmar and Mahrt-Smith (2007) show that the value investors assign to corporate cash depends heavily on governance quality: cash is discounted more severely in poorly governed firms, which indicates that markets expect a higher likelihood of inefficient or self-serving use of retained liquidity. Similarly, Chen et al. (2020) find that stronger governance reforms are associated with reductions in cash holdings and with a more productive allocation of internal funds. Together, these studies indicate that cash policy is not merely a financing choice but also a governance outcome shaped by the quality of managerial oversight and incentive alignment.

Within this broader governance framework, CEO ownership occupies a particularly important position because it directly links the chief executive's personal wealth to firm value. Unlike broader measures of ownership concentration or institutional ownership, CEO ownership captures the incentives of the executive who is most directly involved in daily operating and financial decisions. When CEOs hold a meaningful equity stake, they internalize a larger share of the gains and losses associated with corporate policies. Under the alignment view, this should reduce the incentive to hoard cash for private purposes and encourage liquidity policies that better reflect shareholder interests. Higher CEO ownership therefore has the potential to function as an internal governance mechanism that restrains agency-driven cash accumulation and promotes more efficient capital allocation.

Several studies support this alignment argument. Abdioğlu (2016) finds that managerial ownership is negatively associated with excess cash holdings, suggesting that ownership helps curb the retention of liquidity beyond what is justified by operational needs. Florackis (2008) also provides evidence consistent with the idea that governance mechanisms tied to managerial incentives can mitigate agency-related distortions in financial policy. In a broader governance context, Fahlenbrach and Stulz (2009) show that managerial equity incentives can improve the alignment between executives and shareholders, thereby enhancing firm value. These findings imply that when CEOs become owners rather than merely hired managers, they may be less willing to keep idle cash inside the firm if such a policy reduces firm value or increases the scope for inefficient resource use.

Nevertheless, the effect of CEO ownership on cash holdings is not theoretically uniform. A competing line of reasoning emphasizes that ownership may also strengthen managerial power and lead to entrenchment. As CEOs accumulate larger stakes, they may become more influential, face weaker disciplinary pressure, and gain greater control over financial policy. In that setting, ownership does not necessarily discipline managerial behavior; instead, it may protect managerial discretion. Martins (2019) highlights that entrenched managers may hoard cash to reduce exposure to external monitoring or to preserve flexibility for empire-building decisions. In emerging markets, ownership structure shapes the scope for such discretion; Chemmaa et al. (2026) find that managerial and family ownership are associated with greater earnings management among listed firms. Abdioğlu (2016) likewise suggests that the direction of the ownership effect may vary across governance contexts and ownership levels. Under this entrenchment logic, higher CEO ownership may be associated with higher, not lower, cash balances.

Recent empirical evidence further complicates the picture by suggesting that higher cash holdings under stronger CEO ownership are not always a sign of agency problems. Sun et al. (2023) report a positive and monotonic association between CEO ownership and corporate cash holdings. Importantly, they interpret this finding through a precautionary and investment-based channel rather

er than through managerial hoarding. In their study, firms with higher CEO ownership tend to retain more cash when they face greater firm-specific risk and more costly external financing, and the retained cash is linked to higher capital expenditures and R&D rather than to wasteful payouts or unproductive slack. Shareholders also place greater value on cash when CEO ownership is higher, suggesting that ownership can, under some conditions, support precautionary liquidity management that is consistent with long-term value creation. Akhtar et al. (2021) reach a similarly nuanced conclusion in ASEAN firms by showing that the governance-cash relationship is context-dependent and shaped by institutional protections and ownership structures. These studies imply that CEO ownership may either reduce or increase cash holdings depending on whether the dominant mechanism is incentive alignment, managerial entrenchment, or precautionary saving.

The present study departs from Sun et al. (2023) in both institutional setting and predicted direction of effect. Sun et al. (2023) document a positive and monotonic association between CEO ownership and cash holdings in their sample, which they interpret through a precautionary and investment-based channel rather than managerial hoarding. By contrast, this study argues that in Vietnam, an emerging market characterized by concentrated ownership, weaker minority-investor protection, and less developed capital markets, the alignment mechanism is expected to dominate the precautionary mechanism, such that higher CEO ownership is associated with lower, rather than higher, cash holdings. This contrast in predicted sign, together with the examination of market power and state ownership as moderating mechanisms not considered in Sun et al. (2023), constitutes the primary theoretical contribution of this study.

This ambiguity is especially salient in emerging markets, where weaker investor protection, concentrated ownership, and higher external financing frictions make cash simultaneously more valuable and more vulnerable to misuse (La Porta et al., 1998). Diaw (2021) finds that emerging-market firms adjust slowly toward target cash levels, Thai and Hoang (2024) show that ownership structure shapes cash holdings in Vietnam, and Zhou et al. (2021) link CEO characteristics to cash policy through investment behavior. More broadly, institutional context conditions how

governance shapes corporate liquidity: Iskandrani et al. (2026) show that investor protection laws moderate the relationship between board diversity and corporate cash hoarding in Europe. Accordingly, this study proposes the following hypotheses:

H1: CEO ownership is negatively associated with corporate cash holdings.

Firms with stronger market positions typically experience more stable demand and greater pricing flexibility, reducing competitive pressure and allowing them to maintain higher financial slack (Haushalter et al., 2007; Guney et al., 2007). While CEO ownership generally aligns managerial incentives and discourages excessive cash accumulation, this governance effect may weaken when firms possess substantial market power, as reduced product-market discipline and greater strategic flexibility enable CEO-owners to retain cash for precautionary or investment purposes (Elyasiani & Zhang, 2015). This logic draws on resource dependence theory: firms with greater market power face less resource uncertainty from competitors and customers, which relaxes the external monitoring that would otherwise reinforce CEO ownership's alignment effect, so that the disciplining role of ownership is partially substituted by the firm's own competitive slack. Accordingly:

H2: Market power attenuates the negative relationship between CEO ownership and corporate cash holdings.

In state-influenced firms, corporate financial decisions may be shaped not only by profit-maximization objectives but also by political and policy considerations. Thai & Hoang (2024) show that state ownership can weaken market-based governance by providing implicit support and reducing financial distress risk, thereby softening budget constraints and altering managerial incentives. In firms with substantial state ownership, implicit government backing and reduced financing constraints may substitute for market discipline, increasing managerial discretion and lowering incentives to minimize liquidity holdings (Hussain et al., 2023; Sun et al., 2023). This reasoning is consistent with the soft-budget-constraint literature, under which implicit state guarantees relax the financial discipline that would otherwise comple-

ment CEO ownership as a governance mechanism, and with political-cost considerations that lead state-linked CEOs to prioritize policy or employment objectives over strict liquidity minimization. Accordingly:

H3: State ownership attenuates the negative relationship between CEO ownership and corporate cash holdings.

2. METHODOLOGY

The sample consists of all firms listed on the Vietnamese stock market over the period 2008–2024. Firm-level financial and governance data were obtained from FiinPro and Vietstock, two leading data providers in Vietnam specializing in corporate finance and governance information. Consistent with prior studies (Opler et al., 1999; Bates et al., 2009; Sun et al., 2023), financial institutions are excluded due to their unique capital structure requirements, and utility firms are removed because of their heavily regulated nature. Observations with missing or incomplete information were also eliminated. After applying these filters, the final sample comprises 7,929 firm-year observations from 580 non-financial listed firms. To mitigate the influence of extreme outliers, all continuous variables were winsorized at the 1st and 99th percentiles.

My empirical model is built upon Sun et al. (2023). However, I also follow Anand et al. (2018) to employ GDP growth and CPI to control macroeconomic shocks. Accordingly, I adopt the following baseline regression model:

$$\begin{aligned} CASH_{i,t} = & \alpha_0 + \beta_1 CEOO_{i,t} \\ & + \beta_2 CEOChar_{i,t} + \beta_3 FirmControls_{i,t} \\ & + \beta_4 Mac_t + \mu_c + \varepsilon_{i,t}, \end{aligned} \quad (1)$$

where i indexes firms; t indexes years; $CASH$ is Cash holdings; $CEOO$ denotes CEO ownership; $CEOChar$ includes CEO age, gender, and duality; $FirmControls$ include the market-to-book ratio, capital expenditure, dividend policy, leverage, firm size, and firm age; Mac represents macroeconomic controls (GDP growth and CPI); μ_c denotes industry-fixed effects; $\varepsilon_{i,t}$ is the idiosyncratic error term.

Table A1 (Appendix) defines the variables employed in the analysis.

Although panel estimators such as POLS, FEM and REM are widely used in corporate finance research, firm-level panel datasets frequently exhibit heteroskedasticity, serial correlation and cross-sectional heterogeneity, which reduce the efficiency of conventional estimators. This study therefore employs the FGLS estimator, which explicitly models the error variance-covariance structure and relaxes the assumptions of constant variance and independent disturbances; consistent with Baltagi (2021) and recent corporate-finance applications of FGLS (e.g., Socol & Iuga, 2025; Nguyen & Truong, 2026; Thai et al., 2026), this estimator yields more efficient and reliable coefficient estimates in panel datasets characterized by cross-sectional and temporal dependence.

3. RESULTS

3.1. Summary statistics

Table 1 presents descriptive statistics for the key variables. The average value of CASH1 is 0.1179 (SD = 0.126), with a median of 0.0751, indicating a right-skewed distribution of corporate cash holdings across the sample: while most firms hold moderate cash balances, a subset of firms maintain substantially higher reserves.

Table 1. Descriptive statistics

Source: Analytical data from STATA.

STATS	CASH1	CEO	CEOAGE	CEOFFE	DUALITY	MB	CAPEX	DIV	LEV	SIZE	AGE
N	7929	7929	7929	7929	7929	7929	7929	7929	7929	7929	7929
MEAN	0.1179	0.0323	48.4587	0.0853	0.1989	1.3419	0.0485	0.7826	0.2189	27.2289	3.1126
MEDIAN	0.0751	0.0026	49	0	0	1.0035	0.0221	1	0.1892	27.1272	3.1781
SD	0.126	0.0717	9.672	0.2793	0.3992	1.0426	0.0665	0.4125	0.1895	1.5714	0.6383
MIN	0.0011	0	0	0	0	0.2354	0	0	0	23.7895	1.3863
MAX	0.6301	0.4461	69	1	1	5.5915	0.343	1	0.6737	31.6394	4.1744

The average CEO ownership (CEO₀) is 3.23%, and the distribution is highly skewed (median = 0.26%), indicating that most CEOs hold relatively small equity stakes while a limited number maintain substantial ownership positions. The mean CEO age is 48.8 years, female CEOs account for 8.53% of the sample, and approximately 20.35% of CEOs simultaneously serve as board chair, suggesting a notable degree of leadership concentration.

3.2. Correlation analysis

Pairwise Pearson correlation coefficients are reported in Table 2. All correlation coefficients among independent variables are below the commonly cited 0.8 threshold, suggesting that multicollinearity is unlikely to pose a serious concern in my analysis (Klein, 1962).

3.3. Baseline estimation results

Table 3 presents the baseline regression estimates examining the relationship between CEO ownership (CEO₀) and corporate cash holdings, using the FGLS estimator. With respect to the Hypothesis that CEO ownership negatively affects corporate cash holdings, we focus on and expect a negative and statistically significant coefficient on CEO ownership.

Regarding the control variables, CEO age, gender, and duality are not statistically significant. Market-to-book is positively and significantly associated with cash holdings, while capital expenditure is negatively and significantly related to cash holdings. Dividend policy is positively associated with cash holdings at the 1% level. In con-

Table 2. Correlation matrix

Source: Analytical data from STATA.

	CASH1	CEO0	CEOAGE	CEOFE	DUAL	MB	CAPEX	DIV	LEV	SIZE	AGE
CASH1	1										
CEO0	-0.0819***	1									
CEOAGE	0.0266*	0.0905***	1								
CEOFE	-0.0181	0.0578***	-0.00607	1							
DUAL	0.0327**	0.270***	0.157***	0.0380***	1						
MB	0.123***	-0.0411***	0.131***	0.0657***	0.00184	1					
CAPEX	-0.0659***	-0.0000596	0.0234*	0.0278*	0.0489***	0.0575***	1				
DIV	0.157***	-0.0594***	0.201***	-0.0537***	-0.000853	0.143***	0.0617***	1			
LEV	-0.353***	0.0724***	-0.0553***	-0.00152	0.00757	-0.0731***	0.168***	-0.0952***	1		
SIZE	-0.167***	-0.0157	0.0139	0.0420***	-0.139***	0.127***	0.0650***	0.0843***	0.417***	1	
AGE	-0.0680***	-0.0134	0.197***	-0.0138	-0.0334**	0.0673***	-0.0519***	0.144***	0.00865	0.126***	1

Note: ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 3. Baseline results and robustness checks

Source: Analytical data from STATA.

Variables	Model					
	(1)	(2)	(3)	(4)	(5)	(6)
	CASH1 _{i,t}	CASH2 _{i,t}	CASH3 _{i,t}	CASH1 _{i,t+1}	CASH1 _{i,t}	CASH1 _{i,t}
CEO ₀ _{i,t}	-0.0337*** (0.0104)	-0.0228*** (0.0084)	-0.0407*** (0.0156)	-0.0271** (0.0135)	-0.0289*** (0.0111)	-0.0345** (0.0169)
CEOAGE _{i,t}	0.0000 (0.0001)	0.0001 (0.0001)	0.0000 (0.0001)	0.0000 (0.0001)	0.0001 (0.0001)	0.0001 (0.0002)
CEOFE _{i,t}	0.0013 (0.0034)	0.0017 (0.0029)	0.0019 (0.0050)	0.0013 (0.0034)	0.0024 (0.0033)	-0.0047 (0.0041)
DUAL _{i,t}	0.0034 (0.0023)	0.0039** (0.0020)	0.0035 (0.0033)	0.0034 (0.0023)	-0.0020 (0.0024)	0.0029 (0.0030)
MB _{i,t}	0.0071*** (0.0011)	0.0063*** (0.0009)	0.0083*** (0.0016)	0.0071*** (0.0011)	0.0064*** (0.0011)	0.0058** (0.0025)
CAPEX _{i,t}	-0.0489*** (0.0099)	-0.0359*** (0.0089)	-0.0747*** (0.0141)	-0.0489*** (0.0099)	-0.0679*** (0.0101)	-0.2037*** (0.0225)

Table 3 (cont.). Baseline results and robustness checks

Variables	Model					
	(1)	(2)	(3)	(4)	(5)	(6)
	CASH1 _{i,t}	CASH2 _{i,t}	CASH3 _{i,t}	CASH1 _{i,t+1}	CASH1 _{i,t}	CASH1 _{i,t}
DIV _{i,t}	0.0094*** (0.0017)	0.0108*** (0.0015)	0.0105*** (0.0024)	0.0094*** (0.0017)	0.0071*** (0.0017)	0.0096* (0.0050)
LEV _{i,t}	−0.1338*** (0.0058)	−0.1141*** (0.0049)	−0.1578*** (0.0085)	−0.1338*** (0.0058)	−0.1432*** (0.0059)	−0.0714*** (0.0214)
SIZE _{i,t}	0.0005 (0.0008)	0.0008 (0.0007)	0.0000 (0.0012)	0.0005 (0.0008)	0.0027*** (0.0009)	−0.0033 (0.0028)
AGE _{i,t}	−0.0080*** (0.0019)	−0.0034** (0.0016)	−0.0111*** (0.0028)	−0.0080*** (0.0019)	−0.0019 (0.0020)	−0.0053*** (0.0019)
GDPG _t	−0.0000 (0.0003)	−0.0000 (0.0003)	−0.0000 (0.0004)	−0.0000 (0.0003)		−0.0018*** (0.0006)
CPI _t	−0.0001 (0.0001)	−0.0004*** (0.0001)	−0.0000 (0.0002)	−0.0001 (0.0001)		−0.0005 (0.0003)
CASH1 _{i,t-1}						0.6257*** (0.0685)
CONTROL	C	C	C	C	CY	C
CONSTANT	0.1014*** (0.0234)	0.0633*** (0.0193)	0.1405*** (0.0344)	0.1014*** (0.0234)	0.0489** (0.0237)	0.1807* (0.0981)
AR1P						0.000
AR2P						0.224
HANSEN P						0.227
NUMBER OF INSTRUMENTS						24
OBSERVATIONS	7,923	7,923	7,923	7,923	7,923	7,836
NUMBER OF FIRMS	580	580	580	580	580	571

Note: ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively; standard errors are reported in parentheses; C and Y denote industry and year-fixed effects, respectively. The estimated coefficient on CEO ownership in the baseline specification (column 1) is negative and statistically significant, indicating that higher CEO ownership is associated with lower levels of corporate cash holdings. This finding suggests a consistent inverse relationship between managerial ownership and firms' cash retention decisions.

trast, leverage is negatively and significantly related to cash holdings. Firm age is negatively and significantly associated with cash holdings, while firm size shows no significant effect.

Macroeconomic variables show limited explanatory power in the baseline specification: GDP growth is not statistically significant, while inflation (CPI) is also not statistically significant at conventional levels in column (1).

3.4. Robustness tests

Robustness is evaluated through four complementary approaches:

- (i) Alternative Measures of Cash Holdings;
- (ii) Controlling year-fixed effects;

(iii) An alternative model;

(iv) The dynamic model.

3.4.1. Using alternative cash holdings measures

To ensure the robustness of my findings, this section re-examines the CEO ownership–cash holdings relationship using two alternative measures of cash holdings that are widely employed in prior studies. Specifically, I define the alternative measures as follows:

CASH2 = Cash and cash equivalents / Total assets (Cambrea et al., 2022; Nnadi et al., 2022; Gounopoulos & Zhang, 2024).

CASH3 = (Cash and cash equivalents + marketable securities) / (Total assets – cash and cash

equivalents – marketable securities) (Bishal & Simpson, 2023; Phan et al., 2022; Ananzeh, 2024).

Columns (2) and (3) of Table 3 report the results of robustness tests using the alternative cash measures CASH2 and CASH3, respectively. Consistent with the baseline result in column (1), CEO ownership remains negatively and significantly associated with cash holdings under both alternative measures. These consistent patterns across multiple cash definitions confirm the robustness of the primary findings.

3.4.2. Controlling for year-fixed effects

To check whether the baseline results depend on the choice of macroeconomic controls, GDP growth and CPI are replaced with year dummies, capturing unobserved macro shocks common to all firms. We employed the empirical model as follows:

$$\begin{aligned} CASH_{i,t} = & \alpha_0 + \beta_1 CEOO_{i,t} \\ & + \beta_2 CEOChar_{i,t} + \beta_3 FirmControls_{i,t} \quad (2) \\ & + \gamma_t + \mu_c + \varepsilon_{i,t}, \end{aligned}$$

where γ_t is year fixed effects and all variables in the specification are defined in Table A1.

Column (5) of Table 3 presents this robustness test, in which macroeconomic variables (GDP growth and inflation) are excluded and replaced with year-fixed effects to control for time-specific effects that may not be fully captured by observable macro-level indicators. The coefficient on CEO ownership in column (5) remains negative and significant, consistent with the baseline result in column (1). These results confirm the robustness of the baseline findings.

3.4.3. Alternative model

To mitigate concerns of reverse causality and simultaneity bias, all dependent variables are lagged by one period, following the approach of Harford et al. (2009). This specification reduces the risk that contemporaneous cash holdings could influence CEO ownership or other control variables. Building on this framework, my empirical model is specified as follows:

$$\begin{aligned} CASH_{i,t+1} = & \alpha_0 + \beta_1 CEOO_{i,t} \\ & + \beta_2 CEOChar_{i,t} + \beta_3 FirmControls_{i,t} \quad (3) \\ & + \beta_4 Mac_t + \mu_c + \varepsilon_{i,t}. \end{aligned}$$

All variables in the specification are defined in Table A1 of the Appendix.

Column (4) of Table 3 presents the regression results using the dependent variable at t+1 to address concerns of potential reverse causality and endogeneity between CEO characteristics and firm cash holdings. CEO ownership (CEO) in column (4) remains negatively and significantly associated with future cash holdings. These results are consistent with the baseline findings in column (1) and further support their robustness.

3.4.4. Using a dynamic panel model

As emphasized by A. Ozkan and N. Ozkan (2004) and Phan et al. (2022), corporate cash holdings exhibit a dynamic nature. Relying solely on static models may therefore lead to biased or misleading inferences, particularly due to the omission of lagged cash holdings. To address potential endogeneity and capture the persistence in firms' liquidity behavior, I incorporate the first lag of cash holdings as an explanatory variable. This approach helps mitigate serial correlation concerns while serving as a proxy for the status quo of cash policies. Accordingly, I specify the following dynamic panel data model:

$$\begin{aligned} CASH_{i,t} = & \alpha_0 + \beta_1 CASH_{i,t-1} \\ & + \beta_2 CEOO_{i,t} + \beta_3 CEOChar_{i,t} \quad (4) \\ & + \beta_4 FirmControls_{i,t} + \beta_5 Mac_t + \mu_c + \varepsilon_{i,t}. \end{aligned}$$

All variables in the specification are defined in Table A1.

Following Guariglia and Yang (2018), Phan et al. (2022) and Sun et al. (2023) as well as Pham and Nguyen (2026), I employ the two-step System GMM estimator (Blundell & Bond, 1998) with Windmeijer (2005) finite-sample corrected standard errors. CEO ownership, CEO characteristics, and the firm-level controls are treated as predetermined and instrumented with their own lagged values (lags 2-3), collapsed following Roodman

(2009) to limit instrument proliferation; firm age, industry fixed effects, and the macroeconomic controls are treated as strictly exogenous instruments.

Column (6) of Table 3 presents the results of the dynamic-panel specification, estimated using the System GMM estimator. Consistent with differencing-induced first-order correlation, the Arellano-Bond test for AR(1) is significant ($p = 0.000$), while AR(2) in differences shows no evidence of second-order serial correlation ($p = 0.224$) and the Hansen test of over identifying restrictions ($p = 0.227$) does not reject the valid-

ity of the instruments, indicating that the model is well-specified and the instruments are appropriate. The number of instruments (24) remains well below the number of cross-sectional units (571 firms), mitigating concerns of instrument proliferation. The coefficient on CEO ownership in column (6) remains negative and significant. These results reaffirm the prior conclusion: CEO ownership discourages the accumulation of excess cash, consistent with the baseline results.

Because CEO ownership is highly right-skewed, Table 4 re-estimates the baseline model to examine whether the result is driven by a small number

Table 4. Sensitivity to high CEO ownership and tests for non-linearity

Source: Analytical data from STATA.

Variables	Model							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	CASH1 _{i,t}	CASH1 _{i,t}	CASH1 _{i,t}	CASH1 _{i,t}	CASH1 _{i,t}	CASH1 _{i,t}	CASH1 _{i,t}	CASH1 _{i,t}
CEO _{i,t}	-0.0436 (0.0381)	-0.0699*** (0.0257)	-0.0375** (0.0160)	-0.0544** (0.0224)	-0.5266*** (0.1744)	-0.2306*** (0.0714)	-0.0412* (0.0235)	-0.0153 (0.0262)
CEOOS _{i,t}								-0.0516 (0.0713)
CEOAGE _{i,t}	-0.0000 (0.0001)	0.0001 (0.0001)	0.0000 (0.0001)	0.0000 (0.0001)	-0.0000 (0.0001)	0.0003 (0.0002)	-0.0010*** (0.0003)	0.0000 (0.0001)
CEOFE _{i,t}	0.0041 (0.0032)	0.0017 (0.0034)	0.0017 (0.0034)	0.0020 (0.0034)	0.0054 (0.0039)	-0.0038 (0.0060)	0.0196** (0.0087)	0.0012 (0.0034)
DUAL _{i,t}	0.0091*** (0.0024)	0.0049** (0.0024)	0.0032 (0.0023)	0.0032 (0.0023)	0.0074*** (0.0028)	0.0071* (0.0040)	0.0095** (0.0048)	0.0035 (0.0023)
MB _{i,t}	0.0075*** (0.0012)	0.0072*** (0.0011)	0.0071*** (0.0011)	0.0070*** (0.0011)	0.0075*** (0.0013)	0.0093*** (0.0023)	0.0022 (0.0029)	0.0072*** (0.0011)
CAPEX _{i,t}	-0.0534*** (0.0104)	-0.0514*** (0.0103)	-0.0484*** (0.0099)	-0.0484*** (0.0099)	-0.0634*** (0.0113)	-0.0044 (0.0243)	-0.0521** (0.0239)	-0.0489*** (0.0099)
DIV _{i,t}	0.0093*** (0.0018)	0.0099*** (0.0018)	0.0094*** (0.0017)	0.0094*** (0.0017)	0.0096*** (0.0021)	0.0230*** (0.0035)	0.0029 (0.0037)	0.0094*** (0.0017)
LEV _{i,t}	-0.1395*** (0.0060)	-0.1382*** (0.0059)	-0.1337*** (0.0058)	-0.1335*** (0.0058)	-0.1396*** (0.0065)	-0.1299*** (0.0112)	-0.1029*** (0.0155)	-0.1332*** (0.0058)
SIZE _{i,t}	0.0003 (0.0009)	0.0004 (0.0008)	0.0004 (0.0009)	0.0004 (0.0009)	-0.0007 (0.0009)	0.0016 (0.0015)	-0.0011 (0.0027)	0.0005 (0.0008)
AGE _{i,t}	-0.0122*** (0.0019)	-0.0100*** (0.0019)	-0.0079*** (0.0019)	-0.0079*** (0.0019)	-0.0106*** (0.0021)	-0.0045 (0.0035)	0.0173*** (0.0057)	-0.0080*** (0.0019)
GDPG _t	-0.0001 (0.0003)	-0.0001 (0.0003)	-0.0000 (0.0003)	-0.0000 (0.0003)	-0.0002 (0.0003)	0.0003 (0.0008)	0.0001 (0.0008)	-0.0000 (0.0003)
CPI _t	-0.0001 (0.0001)	-0.0000 (0.0001)	-0.0001 (0.0001)	-0.0001 (0.0001)	0.0001 (0.0002)	0.0005 (0.0003)	0.0001 (0.0005)	-0.0001 (0.0001)
CONTROL	C	C	C	C	C	C	C	C
CONSTANT	0.1305*** (0.0241)	0.1115*** (0.0236)	0.1032*** (0.0236)	0.1042*** (0.0237)	0.1499*** (0.0261)	0.0433 (0.0442)	0.1068 (0.0712)	0.1022*** (0.0236)
OBSERVATIONS	7,012	7,348	7,923	7,923	5,910	1,141	686	7,923
NUMBER OF FIRMS	565	572	580	580	534	202	118	580

Note: ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively; standard errors are reported in parentheses; C denotes industry-fixed effects.

of high-ownership observations and whether the CEOO-cash relationship is non-linear. Panel A (columns 1-4) applies alternative trimming and winsorizing thresholds to CEOO (see column headings for the specific thresholds used), while Panel B (columns 5-8) splits the sample into ownership subgroups and adds a quadratic term (CEOOS, the square of CEOO) to the full sample to test directly for non-monotonicity.

The coefficient on CEO ownership remains negative in all eight specifications in Table 4. It loses statistical significance in column (1), the sample trimmed to exclude firm-years with CEOO above 10%, but remains negative and significant in column (2) (trimmed at CEOO above 15%), column (3) (winsorized at the 5th/95th percentiles), and column (4) (winsorized at the 10th/90th percentiles). This indicates that the baseline result is not driven by the small number of very high-ownership observations at the extreme tail of the distribution, although the effect is sensitive to the most restrictive trimming choice.

Comparing the three ownership subgroups in Panel B, the CEOO coefficient is considerably larger in column (5), the Low-ownership group with CEOO at or below the 75th percentile, than in column (6), the Medium-ownership group between the 75th and 90th percentiles and column (7), the High-ownership group above the 90th percentile, where the coefficient is significant only at the 10% level, reflecting the small subsample size. This pattern indicates a diminishing marginal effect: the cash-reducing effect of CEO ownership is strongest among firms with low ownership and weakens as ownership rises.

Consistent with this pattern, the linear CEOO term in column (8), a quadratic specification that adds CEOOS, the square of CEOO, to the full sample, is not statistically significant, and a formal slope test following Lind and Mehlum (2010) does not support the presence of a U-shaped or inverted-U-shaped relationship. Taken together, these results indicate that the negative CEOO-cash holdings relationship is monotonic rather than non-linear and that it is not an artefact of a small number of high-ownership firms.

3.5. Moderating mechanisms

3.5.1. Market power

Market power reflects a firm's competitive position and bargaining strength in product markets and may influence corporate liquidity decisions. Firms with stronger market positions typically experience more stable demand and greater pricing flexibility, reducing competitive pressure and allowing them to maintain higher financial slack (Haushalter et al., 2007; Guney et al., 2007). While CEO ownership generally aligns managerial incentives and discourages excessive cash accumulation, its governance effect may weaken when firms possess substantial market power, as reduced product-market discipline and greater strategic flexibility enable CEO-owners to retain cash for precautionary or investment purposes (Elyasiani & Zhang, 2015). Accordingly, market power may moderate the relationship between CEO ownership and corporate cash holdings by attenuating the cash-reducing effect of ownership. Market power (MP) is measured as the ratio of a firm's sales revenue to total industry sales, capturing relative market dominance (Haushalter et al., 2007; Guney et al., 2007; Sun et al., 2023). Accordingly, I focus on the interaction term between CEO ownership and market power (CEOO $\times$ MP) to assess the moderating role of competitive dominance in the CEO ownership and cash holdings relationship.

3.5.2. State ownership

State ownership shapes corporate financial policy through channels distinct from product-market competition. In state-influenced firms, implicit government backing softens budget constraints and reduces financial-distress risk, which substitutes for the market discipline that would otherwise reinforce CEO ownership's alignment effect (Thai & Hoang, 2024; Hussain et al., 2023). Under this soft-budget-constraint logic, state ownership is expected to attenuate the negative association between CEO ownership and cash holdings identified in H1. State ownership (STATEOWN) is measured as the proportion of shares held by government entities. I therefore examine the interaction term CEOO*STATEOWN to test H3.

Table 5. Moderating effect

Source: Analytical data from STATA.

Variables	Model	
	(1)	(2)
	CASH1 _{i,t}	CASH1 _{i,t}
CEO _{i,t}	−0.0579*** (0.0144)	−0.0481*** (0.0113)
CEO _{i,t} × MP _{i,t}	0.6042*** (0.2075)	
MP _{i,t}	0.0131** (0.0057)	
CEO _{i,t} × STATEOWN _{i,t}		0.0025*** (0.0007)
STATEOWN _{i,t}		−0.0002*** (0.0000)
CEOAGE _{i,t}	0.0000 (0.0001)	0.0000 (0.0001)
CEOFFE _{i,t}	0.0012 (0.0034)	0.0008 (0.0035)
DUAL _{i,t}	0.0036 (0.0023)	0.0032 (0.0023)
MB _{i,t}	0.0068*** (0.0011)	0.0070*** (0.0011)
CAPEX _{i,t}	−0.0478*** (0.0098)	−0.0544*** (0.0098)
DIV _{i,t}	0.0092*** (0.0017)	0.0092*** (0.0017)
LEV _{i,t}	−0.1315*** (0.0058)	−0.1326*** (0.0058)
SIZE _{i,t}	−0.0014 (0.0010)	0.0007 (0.0008)
AGE _{i,t}	−0.0080*** (0.0019)	−0.0068*** (0.0019)
GDPG _t	−0.0001 (0.0003)	−0.0001 (0.0003)
CPI _t	−0.0001 (0.0001)	−0.0001 (0.0001)
CONTROL	C	C
CONSTANT	0.1533*** (0.0278)	0.0953*** (0.0235)
OBSERVATIONS	7,920	7,851
NUMBER OF FIRMS	580	580

Note: ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively; standard errors are reported in parentheses; C denotes industry-fixed effects.

Table 5 examines whether market power and state ownership moderate the relationship between CEO ownership and corporate cash holdings. Consistent with *H2*, the interaction term between CEO ownership and market power (CEO*MP) is positive and significant at the 1% level, indicating that the cash-reducing effect of CEO ownership is weaker among firms with stronger market positions, consistent with the

resource-dependence reasoning outlined in the literature review (Sun et al., 2023). Consistent with *H3*, the interaction term between CEO ownership and state ownership (CEO × STATEOWN) is also positive and significant at the 1% level, indicating that the effect is likewise weaker in state-owned firms, consistent with the soft-budget-constraint reasoning outlined earlier (Thai & Hoang, 2024).

4. DISCUSSION

The empirical results consistently show that CEO ownership is negatively associated with corporate cash holdings. This evidence is consistent with *H1* and the agency theory framework, which suggests that higher CEO equity stakes enhance the alignment of managerial and shareholder interests, thereby reducing the incentive to retain excess liquidity for private discretion (Jensen & Meckling, 1976). In this context, CEOs with greater ownership appear less inclined to hoard cash and more likely to pursue efficient liquidity management, reflecting their increased personal financial exposure to firm value.

This finding is in line with prior evidence documenting the alignment effect of managerial ownership, which suggests that ownership incentives can mitigate agency problems and improve financial decision-making. At the same time, the results reinforce the view that CEO ownership plays a significant and stable role in shaping corporate cash policies, regardless of model specifications and alternative liquidity measures. The consistency of this result, even when controlling for annual fixed effects, demonstrates the robustness of CEO ownership's impact on cash policy. Furthermore, the dynamic model results suggest a predictive relationship, whereby increases in CEO ownership are associated with lower future cash balances, consistent with long-term incentive alignment and reduced precautionary cash accumulation.

Beyond CEO ownership, the control variables broadly match established determinants of cash holdings: the positive MB and negative CAPEX coefficients align with the precautionary and investment-substitution motives documented by Opler et al. (1999) and Bates et al. (2009) while the negative LEV coefficient is consistent with the substitution effect reported by A. Ozkan and N. Ozkan (2004) and at moderate leverage levels, by Guney et al. (2007); the positive DIV coefficient runs counter to some developed-market evidence but matches cross-country findings linking cash holdings and dividend policy (Ananzeh et al., 2024; Bigelli & Sánchez-Vidal, 2012) and the negative AGE coefficient

fits a lifecycle interpretation whereby older firms have more stable cash flows and easier access to external financing (Drobetz et al., 2015; Ki & Adhikari, 2023). CEO age, gender, duality, and firm size are not significant, suggesting a limited independent role once ownership and the other controls are accounted for.

The governance effect of CEO ownership is also not uniform across firms: market power weakens the negative relationship between CEO ownership and cash holdings. Firms with substantial market power face lower competitive pressure and greater operational stability, allowing CEO-owners to sustain higher liquidity without strong external discipline, retaining cash for strategic flexibility, investment, or precautionary rather than agency-driven purposes (Sun et al., 2023). This pattern is consistent with resource dependence theory: dominant firms face less resource uncertainty from competitors and customers, which relaxes the external monitoring that would otherwise reinforce CEO ownership's alignment effect, so that the disciplining role of ownership is partially substituted by the firm's own competitive slack. Market power thus functions as a boundary condition for governance effectiveness: it weakens product-market monitoring, so firms sustain higher liquidity buffers despite increased managerial ownership, underscoring the joint role of governance and market structure in shaping cash policy (Sun et al., 2023; Veerhoek, 2024).

Similarly, state ownership attenuates the negative impact of CEO ownership on cash holdings. This is consistent with the soft-budget-constraint literature, under which implicit state guarantees relax the financial discipline that would otherwise complement ownership-based governance, while political-cost considerations lead state-linked CEOs to prioritize policy or employment objectives over strict liquidity minimization. State participation appears to alter managerial incentives and reduce the effectiveness of ownership-based governance: firms with substantial state backing benefit from implicit government support and lower perceived bankruptcy risk, allowing managers to maintain higher liquidity buffers without strong market pressure. Political oversight and implicit guarantees thus appear to substitute for inter-

nal governance, so that liquidity policy reflects broader institutional considerations rather than incentive alignment alone (Hussain et al., 2023; Thai & Hoang, 2024).

Overall, these findings suggest that the effectiveness of CEO ownership as a governance mech-

anism depends on firm-specific characteristics and institutional conditions. While managerial ownership contributes to reducing agency-driven cash retention, its impact on corporate financial policy is shaped by both market structure and ownership environment.

CONCLUSION

This study examines the impact of CEO ownership on corporate cash holdings using a comprehensive panel dataset of Vietnamese firms over 2008–2024. Employing a variety of panel data estimators such as the FGLS and System GMM estimators, the analysis reveals a consistent and significant negative association between CEO ownership and corporate cash levels across multiple measures of cash holdings. The results remain robust across alternative measures of cash holdings and model specifications. These findings support the alignment hypothesis within agency theory, indicating that CEOs with higher equity stakes are less likely to accumulate excessive cash and are more effective in managing liquidity in alignment with shareholder interests.

This governance effect is not uniform across firms: market power and state ownership both weaken the negative impact of CEO ownership on cash holdings, underscoring the role of firm-specific characteristics and ownership structure in shaping corporate financial policy. Overall, the study highlights the importance of managerial ownership for capital-allocation efficiency while showing that its effectiveness is bounded by the broader institutional and competitive environment, with implications for governance practice, policy design, and investment decisions in emerging markets.

Despite these contributions, several limitations should be acknowledged. The study focuses on Vietnamese listed firms, which may limit the generalizability of the findings to other institutional contexts. Second, the analysis concentrates on key governance and ownership variables, while other factors influencing corporate cash policy may not be fully captured.

AUTHOR CONTRIBUTIONS

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APPENDIX A

Table A1. Variable descriptions

Source: Summary of the paper.

Variable	Descriptions	Related studies
CASH1	(Cash & equivalents + Marketable securities) / Total assets	Phan et al. (2022) and Veerhoek (2024)
CEOO	The percentage of the common shares outstanding held by a CEO	Schiehl and Bellavance (2009); Lilienfeld-Toal and Ruenzi (2014); Sun et al. (2023)
CEOAGE	The CEO age – Measured in years	Sun et al. (2023)
CEOFF	Dummy variable equal to 1 if the CEO is female, 0 otherwise	Sun et al. (2023)
DUAL	Dummy variable equal to 1 if the CEO also serves as board chair, 0 otherwise	Sun et al. (2023)
MB	Market value of equity over book value of equity	Usman (2022); Sun et al. (2023); Gounopoulos and Zhang (2024)
CAPEX	Capital expenditure/Total assets	Usman (2022); Sun et al. (2023); Gounopoulos and Zhang (2024)
DIV	Dummy variable equal to 1 if the firm pays dividends in the given year, 0 otherwise	Sun et al. (2023)
LEV	Total debt/Total assets	Phan et al. (2022); Sun et al. (2023)
SIZE	Ln(Total assets)	Phan et al. (2022); Sun et al. (2023)
AGE	Ln(firm's years in operation)	Sun et al. (2023)
GDPG	The gross domestic product growth rate	Anand et al. (2018)
CPI	The consumer price index	Anand et al. (2018)

Note: CEOO captures only direct common shares registered in the CEO's own name; it does not include indirect or beneficial ownership held through related parties or affiliated entities, nor stock options or other equity-based compensation instruments, as these are not separately disclosed in the Vietnamese regulatory filings underlying my data. In firm-years with a change in CEO, ownership is recorded for the CEO holding office at the fiscal year-end. Approximately 25% of CEO-year observations report zero ownership, reflecting the prevalence of professional, non-owner managers among Vietnamese listed firms; these observations are retained and coded as CEOO = 0, consistent with prior studies (e.g., Sun et al., 2023).