The Moderating Role of Anti-Corruption in the Link Between Cash Holdings and Firm Performance in Thai Listed Firms

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ABSTRACT

Background and Objectives: The anti-corruption campaign in Thailand promotes transparency and accountability. Although firm participation is voluntary, those who join can receive official certification confirming they are unlikely to engage in corrupt activities in any form. This participation may serve as an indicator of a strong corporate governance mechanism within a firm. However, prior research has largely overlooked the role and implications of anti-corruption efforts in the Thai private sector. Thailand provides a unique institutional setting in which anti-corruption certification is formally announced and monitored by the market regulator. This study explores the moderating effect of anti-corruption on the relationship between cash holdings and firm performance in the Thai context. The objective of this study is to gain insights into cash holdings and anti-corruption performance in emerging market countries.

Methodology: The analysis is twofold. First, it investigates the role of anti-corruption in firm value. Second, it examines anti-corruption information from a capital market perspective. This study uses a direct measurement of firms' anti-corruption performance based on regulator-recognized certification, enhancing measurement reliability. This study employs the Generalized Method of Moments estimator for robust standard errors in a two-stage least squares estimation.

Main Results: Both cash holdings and anti-corruption performance have a significant positive influence on firm performance. This indicates that firms retaining financial flexibility through adequate cash reserves, combined with a commitment to strong ethical practices, are more likely to achieve superior operational and financial outcomes. The results show that anti-corruption enhances the positive impact of cash holdings on firm performance, highlighting its role as a governance mechanism that shapes the value of liquidity. This suggests that the benefits of holding cash are greater in firms that demonstrate robust anti-corruption practices.

Discussions: An anti-corruption strategy can serve as a mechanism to mitigate the principal-agent conflict of interest. Additionally, anti-corruption can reduce information asymmetry

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within the firm. Firms with strong ethical governance derive greater value from their cash reserves, possibly because effective governance reduces the risk of misuse of funds. This interaction suggests that the combination of financial resources and ethical governance improves overall firm value beyond the individual contributions of each factor. The results can be applied not only to Thailand but also to other countries, as anti-corruption activities must be promoted among businesses around the world. This should help businesses in each country to operate more smoothly and improve its performance.

Conclusions: Effective governance enhances the productive use of cash by reducing risks like mismanagement or agency conflicts. This study advances the existing literature in that it empirically investigates the moderating effect of anti-corruption on the cash management of the firm. This study provides novel evidence on how formal governance mechanisms interact with corporate liquidity decisions. Although this study uses anti-corruption scores from the stock market authority, these may not fully reflect actual anti-corruption performance. Future research may explore more accurate measurement methods and examine the impact of anti-corruption on outcomes like bankruptcy, debt covenants, and optimal cash holdings within broader corporate governance frameworks.

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Introduction

Research on corporate governance has a long tradition. The different areas of study for the corporate governance mechanism in a firm have been widely explored. Most of the research in this field is aimed at examining the impact of corporate governance on various scenarios. Corporate governance practices have long been examined to explain the balancing power of agents and principals. For years, one of the most popular ideas in corporate governance literature is the idea that free cash flow is one potential resource utilized by the agent and thereby potentially increasing agency conflicts, i.e. overinvestment (Jensen, 1986). Thus, various prior studies have been extensively exploring the free cash flow effect (i.e. Dittmar & Mahrt-Smith, 2007; Yilmaz & Samour, 2024). However, the empirical evidence about the impact of cash flows in emerging markets is still in question. This research attempts to fill the gaps left by prior research studies in Thai contexts.

Anti-corruption campaign participation enhances transparency and accountability that are expected outcomes from the corporate governance mechanism utilized by the firm. For decades, the Thai stock market authority has attempted to encourage private firms to join the anti-corruption campaign. Firms participating in the anti-corruption program have opportunities to receive a certification endorsed by the Thai authority that they do not engage in all types of

corrupt activities. However, firm participation in the anti-corruption campaign in the Thai stock market is voluntary. Thus, the presence of firms' participation in the anti-corruption program may be an indicator of the firms' corporate governance quality. Nonetheless, the implications of anti-corruptionin the private sector remain underexplored in prior research, particularly in the Thai context. In recent years, anti-corruption initiatives have become increasingly prominent among Thai listed firms, supported by regulatory encouragement and public disclosure mechanisms. The availability of regulator-announced certification provides a unique institutional setting in which anti-corruption engagement is observable and verifiable. This feature strengthens the practical relevance of examining anti-corruption as a governance mechanism in Thailand.

This study investigates the impact of cash flows and anti-corruption activities on firm performance. Despite the extensive evidence on the free cash flow and anti-corruption performance, cash flows and anti-corruption in the private sector have yet to be fully explored. Additionally, other studies have failed to examine the moderating effect of anti-corruption performance in the relationship between cash flows and firm performance. Moreover, unlike prior studies, we employ the direct measure of firms' anti-corruption performance. Participation in anti-corruption campaign by Thai listed firms will be announced by the Thailand Securities and Exchange Commission (SEC), allowing us to use the announcement as the direct measure for the anti-corruption in Thai settings. Since the anti-corruption is considered part of the corporate governance mechanism, this mechanism is complex. As suggested by the existing studies, the complexity raises the endogeneity bias in research studies. Thus, we perform the analysis to mitigate the endogeneity problem in this study. To the best of our knowledge there is no prior research studying the moderating effect of anti-corruption on cash holdings and firm performance in Thai settings. We view that it is likely that the cash holding strategy and anti-corruption performance in a firm are connected and they can influence firm performance. Hence, this is particularly important to investigate the moderating role of anti-corruption performance on corporate cash holdings in an emerging stock market. More specifically, while prior studies have examined cash holdings and firm performance or anti-corruption and firm value separately, very few have explicitly tested anti-corruption as a moderating governance mechanism that shapes the value of corporate liquidity. This research gap is particularly evident in the Thai context, where institutional characteristics and regulatory initiatives may alter the effectiveness of internal governance mechanisms. By explicitly positioning anti-corruption as a moderator, this study extends the corporate governance literature beyond direct effects and provides a more integrated perspective.

This study reports several findings. Cash holdings play a significant role in firm performance. In addition, we find the moderating effect of anti-corruption activities on the association between cash holdings and firm performance, suggesting that anti-corruption also plays a significant role in determining firm performance. In addition, we find that anti-corruption information is value-relevant and captures information incorporated into stock prices. Our results suggest that stock market participants react to anti-corruption information after controlling for debt and firm size.

This research provides several significant contributions with broad applicability. First, it enriches the existing literature by expanding our understanding of the role of cash holdings and anti-corruption in emerging markets. Second, it contributes to advancing theoretical understanding of the moderating effect of anti-corruption performance on cash holdings and firm performance –an area that has rarely been directly examined. This helps clarify mixed findings in

the prior research and provides a more nuanced understanding of the varying relationships involved. Furthermore, the study proposes the interaction between anti-corruption and cash holdings as a key factor influencing firm performance, thereby adding depth to the understanding of their joint impact. From a practical perspective, the findings offer valuable implications for corporate governance by highlighting the importance of managing cash holdings and anti-corruption practices in enhancing firm performance. This study also supports strategic planning by demonstrating the potential effects of cash flows and corruption on firm performance, which eventually supports long-term sustainability. Policymakers also benefit from these findings, as they provide insightful information on cash flow and anti-corruption issues that have long been at the center of private-sector reform campaigns. Ultimately, this study is expected to contribute to promoting sustainable economic growth. Overall, by connecting corporate governance, cash holding decisions, and regulator-supported anti-corruption initiatives in Thailand, this study provides a motivation that bridges theory and practice in an emerging market context.

We organize the remainder of the article as follows. The next section presents the literature review and hypothesis development, followed by the data and methodology and the findings. The final section presents the conclusions.

Literature Review and Hypothesis Development

Cash Holdings

A firm's ability to maintain cash reserves can be explained by the principal-agent theory (Jensen & Meckling, 1976). The principal-agent conflict can shape the magnitude of cash reserves retained in the firm. The management may exploit surplus free cash flows by engaging in irrational investment decisions or excessive expenditures. This behavior harms firm performance. Information asymmetry between the manager and external parties can influence decision making about cash holdings in the firm. The presence of amplified information asymmetry can lead a firm to have constraints on external finance sources. Thus, internal cash reserve is more important for such a firm in using cash reserve to sustain its daily operations and cover financial uncertainty (Almustafa & Kalash, 2022). The reservation of cash amount is also related to the cost-benefit notion. If the marginal benefits are greater than marginal costs, the firm has capability to pursue investment opportunities especially when the firm's external financing is more restricted. Economic theory can also be used to explain cash retention in a firm. Cash reserves are a paramount issue pertaining to the financial coverage during uncertain periods, operations for future transactions, i.e. investment and opportunities, unforeseen events, i.e. financial crisis, or the asset liquidation. Interest rates, the government fiscal policy and business fluctuations can influence the amount of cash reserve.

The relationship between cash holdings and financial performance have been well documented in different contexts. However, prior research reveals inconsistent findings. Yilmaz and Samour (2024) using Middle Eastern and North African settings and Ali et al. (2024) studying cash holdings in Egypt find a positive relation between firm performance and cash holdings. The negative relation is also found in the Taiwanese context (Ni et al., 2019) and the U.S. (Rompotis, 2024). Al-Najjar and Sarhan (2024) document the positive relation between firm value, measured by Tobin's Q and cash holdings while Abdulrazzaq et al. (2024) find that firm value measured by firm's market value has a negative relationship with cash holdings. Johan et al. (2024) study the

association between cash cycle and firm performance and find a negative relation, suggesting that a high performance firm is more likely to have a high cash holding level.

Overall, prior studies provide mixed evidence regarding whether cash holdings enhance or reduce firm performance. This inconsistency suggests that the value of cash may depend on contextual factors, including the quality of corporate governance mechanisms. Therefore, it is necessary to re-examine the association between cash holdings and firm performance in the Thai setting, where institutional characteristics may influence this relationship.

In sum, the existing literature suggests that results regarding the impact of cash holdings and anti-corruption on firm performance remain inconclusive. To illuminate this uncharted area, we posit our hypothesis as follows.

H_1: Firm performance is associated with cash holdings.

Anti-Corruption in Thai Settings

Based on the information provided by the Thailand Securities and Exchange Commission (SEC), Thailand's Private Sector Collective Action Coalition against Corruption (CAC) has been supported by the Thai government and the National Anti-Corruption Commission (NACC). Since 2013, the project has operated with the cooperation of eight leading organizations, with the aim of promoting widespread anti-corruption efforts. Thailand SEC has continuously implemented measures to support listed companies and business operators who act as intermediaries in providing services in the capital market to have policies and give importance to seriously preventing involvement in corruption by promoting listed companies and business operators to join Thailand's Private Sector Collective Action Coalition against Corruption operated by the Thai Institute of Directors. Thailand SEC also encourages listed companies to establish and implement anti-corruption measures and requires them to disclose such policy and performance in the annual report, the One Report, and the registration statement for offering of securities. Such disclosed information not only benefits investors but also helps listed companies self-assess their own progress and make necessary improvements. To join the anti-corruption program, there are two stages. The first stage is to join the anti-corruption campaign by submitting a self-declaration about no involvement in corruption. The second stage is that anti-corruption practices of listed firms are assessed and approved. A certification will be endorsed after the assessment by the CAC Council is successful. Thus, Thai anti-corruption can be divided into three levels of anti-corruption activities: no participation, declaration (the first stage), and certification (the second stage). Anti-corruption is considered part of the corporate governance mechanism. It encourages transparency and accountability in firms that engage in the anti-corruption campaign. The agency problem, again, plays a major role in this regard, suggesting that firms can use anti-corruption activities to balance interests among related parties.

Prior literature documents that firm performance and corruption have a negative relationship (Benyasrisawat, 2019; Zeume, 2017). Nguyen (2023) finds that anti-corruption has a positive impact on firm profitability. Al-Najjar and Sarhan (2024), Chen et al. (2024) and Farinha and López-de-Foronda (2024) find a negative coefficient between cash holdings and corruption, suggesting that firms with high levels of corruption are more likely to have low cash holdings. Cai et al. (2022) reveal a positive relation between cash holdings and corruption that firms with more corruption tend to have higher cash holdings. Tran et al. (2024) suggest that political connections have a partial impact on a firm's cash holdings. Dittmar and Mahrt-Smith (2007) and Harford et

al. (2008) suggest that firms with strong corporate governance are more likely to have higher cash holdings relative to those with weak corporate governance. Xie and Zhang (2020) find that firms with weak anti-corruption tend to hold larger cash reserves.

Although prior studies examine corruption, governance, and cash holdings separately, very limited research has explicitly examined anti-corruption as a moderating mechanism that influences how cash holdings affect firm performance. From an agency theory perspective, anti-corruption initiatives may strengthen monitoring and reduce managerial opportunism, thereby mitigating the potential misuse of free cash flow. In firms with strong anti-corruption practices, cash reserves are more likely to be allocated efficiently rather than diverted for private benefits. Conversely, in firms with weak anti-corruption mechanisms, excess cash may intensify agency problems. Therefore, anti-corruption is expected to condition the strength and direction of the relationship between cash holdings and firm performance.

H_2: Anti-corruption performance moderates the relationship between firm performance and cash holdings.

Beyond operating performance, capital market participants may also evaluate cash holdings and anti-corruption information when forming expectations about firm value. Prior research suggests that governance quality and transparency are incorporated into stock prices. If investors perceive anti-corruption certification as a credible governance signal, it may enhance the valuation of firms holding substantial cash reserves. Likewise, the level of cash holdings itself may carry informational content regarding financial flexibility and risk management. Therefore, both cash holdings and anti-corruption performance are expected to be value-relevant in the capital market.

H_3: Cash holdings and anti-corruption are value-relevant.

Methodology and Data

We have adopted descriptive and inferential statistical techniques using a sample of data of 1,552 firm-year observations in Thai settings. The sample period from 2018 to 2023 is chosen because it captures a dynamic timeframe marked by both pre- and post-COVID-19 economic conditions. In addition, these years provide a recent and relevant window to observe how firms have managed financial performance and governance under varying economic pressures. Data have been retrieved from the SETSMART information database system developed by the Stock Exchange of Thailand. A series of analyses including correlation matrix and two-stage least squares regression are employed to identify important insights and potential endogeneity issues between independent variables and firm performance. Based on prior research, variables that effectively capture firm performance and profitability for this analysis are selected. Table 1 presents a description of variables employed in this study.

Table 1

Variable Definitions Used in the Study

Variable	Definition
VALUE	Return on assets (ROA) or return on equity (ROE)
ACR	Anti-corruption levels from 0-2 announced by the Thailand SEC in June 2024
OCF	Net operating cash flow scaled by total assets
OCF*ACR	Interaction between net operating cash flow and anti-corruption level
LEV	The fraction of Total liability/Total asset
DIV	Dividend yield
SCANDAL	Indicator of whether the firm's committee is reported for involvement in scandals
AGD	Number of days scince the firm joined the anti-corruption program
SPREAD	The difference between bid and ask share prices
AGM	The 0-5 level of annual general meeting quality of the firm
R	Stock return for the 12-month period ending 5 months after the end of fiscal year
EPS	Earnings per share scaled by stock price
BV	Book value per share divided by stock price
ACOR	Indicator if the firm decides on joining the anti-corruption program
EPS*ACOR	Interaction between EPS and ACOR
BV*ACOR	Interaction between BV and ACOR
SIZE	The natural logarithm of total asset

Empirical Model

The model to examine H_1 and H_2 in this study is as follows:

$$VALUE_{it} = f(ACR_{it}, OCF_{it}, OCF*ACR_{it}, LEV_{it}, DIV_{it}, Controls) + \varepsilon_{it} \quad (1)$$

VALUE is a firm performance measure. The coefficients of *OCF* and *OCF*ACR* are our primary interest for testing H_1 and H_2, respectively. However, the expected sign of the coefficient is not predetermined. Following prior studies, we add control variables, including leverage (*LEV*). Among others, M N et al. (2024) observe the relationship between firm performance and company debt and dividend yield (*DIV*). Njoku and Lee (2024) find that firm dividend policy influences firm performance and it should be related to information asymmetry in a firm in terms of that firms may use dividend policy to manage their limited financial resources (Joshi & Joshi, 2024). We also include firm size and year indicators as control factors. The anti-corruption activity can be viewed as a part of the corporate governance mechanism. The literature has highlighted endogeneity as a common problem in research on corporate governance (Nguyen et a., 2024). Unobserved heterogeneity, simultaneity or sample selection bias are major sources of endogeneity. We regress firm performance on cash holdings and anti-corruption performance with ordinary least squares (OLS) estimation and compare untabulated coefficients obtained from fixed effect and random effect models by using Hausman test. The comparison result suggests the absence of different sources of endogeneity issue, thus the fixed effect model should be applied. However, prior studies (Saleh et al., 2020; Ullah et al., 2018) document that

the fixed effect model partly mitigates the endogeneity problem, suggesting that the endogeneity may mislead conclusions and interpretation of the results. In this setting, the possible reverse causality may be that firms participating in anti-corruption activities expect to increase firm value. On the other hand, a high-value firm may voluntarily join the anti-corruption activities probably to strengthen their governance mechanism quality or the firm has sufficient resources to contribute to the anti-corruption campaign. A number of studies have shown that the potential reverse causation can be overcome by estimating equation (1) with two-stage least squares (2SLS). We, then, employ GMM estimator for robust standard errors in the 2SLS estimation. We perform the regression of the endogenous variable (*ACR*) on several instrument variables. First, when there is scandal (*SCANDAL*) against a firm's executive committee, this issue should be correlated with the firm's anti-corruption activity but not the firm performance. Second, we view that the longer time period the firm intends to engage in anti-corruption (*AGD*), the stronger intention of the firm is to perform activities against corruption. This intent should be correlated with the anti-corruption but not firm performance. Third, the more information disclosure is publicized, the less information asymmetry (*SPREAD*) should be observed. A firm releasing information about corruption through the participation in anti-corruption program should be correlated with the corruption action but not firm performance. Last, the quality of annual general meeting process (*AGM*) of a firm should suggest the firm quality in terms of transparency and accountability of the firm's management. Such quality should be correlated with the endogenous regressor but not correlated with the firm performance of those firms. Thus, we operationalize the instrument variables regression as follows.

$$ACR_{it} = f(SCANDAL_{it}, AGD_{it}, SPREAD_{it}, AGM_{it}) + \varepsilon_{it} \quad (2)$$

Stock Market Participation in Cash Holdings and Anti-Corruption Valuation Model

Given the increasing interest in anti-corruption within firms and to address the second research question in this study, we employ the Ohlson's return-specification valuation model (Ohlson, 1995) to examine whether cash holdings and anti-corruption provide shareholders with value-relevant information. In this context, the empirical study examines whether market participants incorporate cash holdings and anti-corruption when assessing firm performance. We operationalize Ohlson's model to test our H_3 as follows.

$$R_{it} = f(OCF_{it}, OCF*ACOR_{it}, Controls) + \varepsilon_{it} \quad (3)$$

Coefficient of *OCF*ACOR* is of our interest. However, the sign of those coefficients are not fixed.

Results

Descriptive Statistics

Table 2 depicts summary statistics for the variables used in our empirical models in the primary specification. The median score of anti-corruption is 1. The average firm performance measured by *ROA* and *ROE* for the sample is about 8 and 10, respectively. For the cash holding factor, we report that firms have, on average, net operating cash flow scaled by total assets of

around 0.08. When interacting net operating cash flow and the corruption score, the mean interacted variable is around 0.60.

Table 2

Descriptive Statistics

Variable	Mean	Median	*SD*	Min	Max	Obs.
ACR	0.738	1	0.563	0	2	1552
ROA	8.078	6.960	7.674	-51.970	64.170	1552
ROE	10.610	9.54	12.054	-116.08	102.78	1552
OCF	0.080	0.077	0.092	-0.299	0.513	1552
OCF*ACR	0.059	0.032	0.095	-0.489	0.759	1552
LEV	0.428	0.440	0.196	0.002	0.950	1552
DIV	4.367	3.570	4.054	0.010	54	1552
SIZE	16.153	15.826	1.641	12.950	21.965	1552
SCANDAL	0.981	1	0.138	0	1	1552
AGE	163.678	185.333	130.333	-14.833	400	1552
SPREAD	0.437	0.05	3.193	0.01	57	1552
AGM	4.347	4	0.709	0	5	1552

Correlation Analysis

Table 3 tabulates two correlation matrices for our variables. Both Spearman and Pearson correlation results are qualitatively similar. The correlation coefficients are low and we would expect a low liklihood of multicollinearity in the regression model.

Table 3

Correlation: Spearman (Pearson) Correlations are Presented in Above (Below) the Diagonal.

Var.	ROA	ROE	ACR	OCF	OCF*ACR	LEV	DIV	SIZE
ROA			0.064***	0.467***	0.247***	-0.243***	0.037	-0.086***
ROE			0.127***	0.371***	0.222***	0.022	0.014	0.076***
ACR	0.038	0.09***		-0.014	0.539***	0.176***	0.035	0.285***
OCF	0.475***	0.374***	-0.029		0.582***	-0.281***	0.080***	-0.151***
OCF*ACR	0.290***	0.239***	0.383***	0.632***		-0.074***	0.040	0.094***
LEV	-0.234***	-0.023	0.170***	-0.26***	-0.136***		-0.074***	0.505***
DIV	-0.009	-0.032	0.025	0.073***	0.036	-0.021		-0.046
SIZE	-0.082***	0.054	0.249***	-0.128***	-0.011	0.530***	-0.023	

*** $p < 0.01$

Regression Analysis

Table 4 shows the two-stage least squares regression with a GMM estimator. In these analyses, the variable *ACR* is the endogenous regressor. After controlling for other variables, the findings reveal that the relationship between firm performance, and anti-corruption performance, and cash holdings is positive and statistically significant. This suggests that firms with strong anti-corruption activities have a positive impact on firm performance. Consistent

with a prior study (Ali et al., 2024), firm performance in firms with a high level of cash holdings is also higher relative to that in the firm with low cash holding level. To gain more insight into this context, we also estimate the moderating effect of the interaction of cash holdings and anti-corruption performance (*OCF*ACR*) ranging from weak to strong anti-corruption performance (levels 0-2), respectively. Our results show that the coefficient of this moderating effect is negative and statistically significant, which is consistent with the prior study (Al-Najjar & Sarhan, 2024). This means that a higher cash holding level tends to reduce the increase in firm value arising from strong anti-corruption performance, or that firms with strong anti-corruption performance take greater advantage of the beneficial effect of cash holdings. The *GMM C* statistic is statistically significant, confirming the existence of endogenous *ACR*. *Hansen's J* statistic is not rejected, and the *p-value* is around 0.20 for both firm value measures, suggesting that overidentifying restrictions hold. In this setting, the moderating effect is evident.

Table 4

Two-Stage Least Squares Regression with GMM Estimator

$VALUE_{it} = f(ACR_{it}, OCF_{it}, OCF*ACR_{it}, LEV_{it}, DIV_{it}, Controls) + \varepsilon_{it}$

	ROA		ROE	
	Coef.	z	Coef.	z
Constant	6.919	(3.55)***	2.499	(-0.75)
ACR	3.898	(4.00)***	7.843	(4.34)***
OCF	49.087	(8.72)***	73.14	(7.94)***
OCF*ACR	-13.666	(-2.00)**	-27.224	(-2.54)**
LEV	-6.019	(-6.15)***	1.324	(-0.70)
DY	-0.04	(-0.90)	-0.15	(-1.54)
SIZE	-0.116	(-0.92)	-0.159	(-0.72)
Industry and Year Included				
Wald Chi²	355.80***		225.27***	
N	1552		1552	
Endogenous variable: ACR Instrument Variables: SCANDAL AGE SPREAD AGM				
First-stage regression: Robust *F*	34.339***		34.339***	
GMM C statistic Chi²	4.362**		4.630*	
Hansen's J Chi²	7.589 (p = 0.180)		8.678 (p = 0.123)	

*** $p < 0.01$, ** $p < 0.05$, and * $p < 0.10$

Table 5 presents how stock market participants value cash holdings and anti-corruption information. Panel A shows that the average 12-month return of the sample is around 0.17. Stock returns among sample firms are relatively dispersed. In Panel B, Spearman and Pearson correlations show a low liklihood of multicollinearity in the return-specification valuation model. The results of the multivariate statistical analysis employing the return valuation model are presented in Panel C. The model is estimated using OLS regressions with robust standard errors clustered by firm-specific factors (Petersen, 2009). After controlling for firm-specific factors and time, shareholders rely on cash holdings, indicating that shareholders perceive cash holding

information as an important factor in the determination of firms' market value. The negative result of *OCF*'s coefficient suggests that firms with high stock returns corresponds to a lower level of cash holdings. Prior evidence of the negative relation between firm value and cash holdings is also found (Abdulrazzaq et al., 2024). To gain more insight into the value relevance of cash holdings, the moderating effect of anti-corruption performance is estimated by using the interaction of cash holdings with anti-corruption assessment –a dummy variabletaking the value of one if the firm's anti-corruption activities have been assessed, and zero otherwise. The product of this moderate effect shows that the coefficient of the interaction of cash holdings with anti-corruption level (*OCF*ACOR*) is positive and statistically significant. This suggests that firms with a higher level of cash holdings and stronger anti-corruption performance benefit more by achieving higher stock returns than their counterparts. The moderating effect of anti-corruption performance is evident.

Table 5

Stock Market Participants Valuing Cash Holdings and Anti-Corruption Information

$R_{it} = f(OCF_{it}, OCF*ACOR_{it}, Controls) + \varepsilon_{it}$

Panel A *Descriptive Statistics*

Variable	Mean	Median	*SD*	Min	Max	*N*
R	0.168	-0.069	1.825	-0.958	73	2470
OCF	0.069	0.064	0.093	-0.811	0.513	2470
OCF*ACOR	0.038	0	0.073	-0.344	0.511	2470
SIZE	22.317	22.004	1.669	18.668	27.862	2470

Panel B *Correlation: Spearman (Pearson) Correlations are Presented in Above (Below) Diagonal.*

Variable	R	OCF	OCF*ACOR	SIZE
R		0.004	0.041	0.200***
OCF	-0.014		0.473***	0.133***
OCF*ACOR	0.009	0.574***		0.410***
SIZE	0.068***	0.113***	0.331***	

Panel C *Regression*

	Coef.	*t*
Constant	-23.183	(-4.84)***
OCF	-0.497	(-1.81)*
OCF*ACOR	2.063	(1.90)*
Size and year indicator included		
Adjusted R^2		0.102
N		2470

*** $p < 0.01$, and * $p < 0.10$

Discussion

The results from Tables 4 and 5 offer consistent evidence for H_1, H_2, and H_3, and emphasize the complementary role of liquidity and governance in determining firm value. Regarding H_1, the positive relationship between cash holdings (*OCF*) and firm performance presented in Table 4 confirms that liquidity is valuable for firms in the Thai setting. This result is consistent with the financial flexibility and precautionary motive views, suggesting that cash holdings facilitate firms in taking advantage of investment opportunities, coping with uncertainty, and alleviating financing constraint. In the emerging market setting, where access to external funds might be limited or more expensive, internal liquidity sources appear to positively affect operating and market performance. More significantly from Table 4, the positive interaction between cash holdings and anti-corruption performance (*OCF*ACR*) confirms H_2 and emphasizes the governance-contingent value of liquidity. The findings suggest that the relationship between cash holdings and firm performance is contingent on the quality of anti-corruption practices. From the agency theory viewpoint, anti-corruption practices can mitigate managerial opportunism and the danger of free cash flow misuse. When governance is of high quality, cash holdings are more likely to be used for their value-creating purposes, thereby increasing firm value. Thus, anti-corruption functions as a disciplining mechanism that shapes how liquidity translates into performance outcomes.

Table 5 supports H_3 by showing that both cash holdings and anti-corruption information are incorporated into stock prices. The positive interaction between cash holdings and anti-corruption assessment indicates that investors value firms with strong liquidity performance and sound governance practices even more. This further suggests that the market values cash holdings more when effective anti-corruption mechanisms are implemented.

In conclusion, the results provide strong support that cash holdings enhance firm performance (H_1), that anti-corruption has a moderating effect on this relationship (H_2), and that both variables are value-relevant in the capital market (H_3). These results strongly support the conclusion that in emerging markets, the economic implications of liquidity policies cannot be distinguished from corporate governance quality.

Additional Analyses

We perform several analyses to complement our main results. First, we attempt to include a growth variable measured by the proportion of firm's share price and book value as an additional variable since we expect that firm growth should have an impact on firm value. As expected, untabulated results show a positive and statistically significant relationship between firm value and growth at $p < 0.01$. The additional results are qualitatively similar to our main findings.

Second, we use the cash cycle as an alternative measure of cash holdings, with the results are tabulated in Table 6. The two-stage least squares regression with a GMM estimator and instrumental variables reveals that the coefficient of anti-corruption performance (*ACR*) is positive and statistically significant, suggesting that firm value is higher for firms with strong anti-corruption performance. The relationship between firm value and cash cycle (*CC*) is negative and statistically significant, suggesting that the shorter the cash cycle, the higher the firm value.This finding is consistent with a prior study (Johan et al., 2024). This result confirms that firms with a

high level of cash holdings are more likely to have high firm performance relative to firms with a low level of cash holdings. Again, we estimate the moderating effect of anti-corruption performance with the interaction of cash cycle with anti-corruption. The coefficient of the interaction term (*CC*ACR*) is positive and statistically significant. The endogeneity test estimated by *GMM C* statistic is statistically significant, suggesting that endogeneity is present. Additionally, *Hansen's J* statistic is not rejected, suggesting that the instrument is valid. These additional results confirm that cash holdings and anti-corruption performance have substantial impacts on firm performance, and the moderating effect of anti-corruption performance has been observed.

Next, we estimate the value-relevance of anti-corruption and cash holdings. We regress the 12-month stock return on the interaction between a firm's cash holdings, measured by cash cycle with anti-corruption assessment –a dummy variableof 1 if firms are voluntarily assessed in terms of anti-corruption activities, and zero otherwise. Table 7 shows results estimated by OLS regressions with robust standard errors. In Panel A, consistent with the main findings, results show that the negative coefficient of cash cycle is statistically significant. That means firms with a short cash cycle tend to have higher stock returns. The positive coefficient of the interaction of anti-corruption with cash cycle is not statistically significant, suggesting that the impact of the cash cycle on stock returns does not differ between firms participating and those not participating in anti-corruption activities. As presented in Table 7, Panel B, the results suggest that earnings and book value information can be used to explain stock returns. The coefficients of the moderating effect for both earnings and book value information are positive and statistically significant. The implication is that firms with higher earnings and book value are more likely to attract higher stock market participation. This relation is clearer especially for firms being assessed in terms of corruption issues. In addition, the magnitude of earnings is greater than that of book value, implying that stock market participants rely on earnings information more than book value. These findings confirm that cash holdings are value-relevant to stock market participants, and the moderating effect of anti-corruption is evident.

Finally, we estimate the relationship between a firm's average abnormal return, cumulative abnormal returns, and anti-corruption assessment (see Appendix A). Panel A of Table 8 shows that the means of average abnormal returns and cumulative abnormal returns are both negative. The average abnormal return and cumulative abnormal return among sample firms are relatively different. The Spearman and Pearson correlation matrix in Panel B shows qualitatively similar results and suggests that the multicollinearity is potentially low. Results estimated by OLS regressions with robust standard errors clustered by the firm's industry are presented in Panel C. For both measures of abnormal returns, the coefficient of anti-corruption is negative and statistically significant, consistent with prior studies (Cao et al., 2018; Fu, 2019; Zeume, 2017). This means that when a firm voluntarily is subject to anti-corruption assessment examined by a third-party organization, its abnormal return tends to be lower. The results indicate that anti-corruption information has a moderating impact on stock returns.

Table 6

2SLS Regression with GMM Estimator

	ROA		ROE	
	Coef.	*z*	Coef.	*z*
Constant	11.835	(3.82)***	8.469	(-1.52)
ACR	4.627	(4.12)***	9.242	(4.14)***
CC	-0.03	(-1.74)*	-0.066	(-1.93)*
CC*ACR	0.029	(1.67)*	0.065	(1.86)*
LEV	-10.343	(-5.66)***	-4.292	(-1.31)
DY	0.039	(-0.61)	-0.006	(-0.04)
SIZE	-0.15	(-0.72)	-0.208	(-0.54)
	Industry and Year Included			
Wald Chi^2	101.85***		58.75***	
N	1550		1550	
Endogenous variable: ACR Instrument Variables: SCANDAL AGE SPREAD AGM				
First-stage regression: Robust *F*	28.626***		28.626***	
GMM *C statistic Chi*^{2}	6.667***		7.100***	
Hansen's J Chi^2	4.328 (p = 0.503)		2.991 (p = 0.701)	

*** $p < 0.01$, and *$p < 0.10$

Table 7

Value Relevance and Anti-Corruption: Response Variable is Stock Returns.

Panel A	Coef.	*t*	Panel B	Coef.	*t*
Constant	0.015	(0.03)	Constant	-16.364	(4.80)***
CC	-0.00001	(-3.46)***	EPS*ACOR	2.592	(2.23)**
CC*ACOR	0.001	(1.06)	BV*ACOR	0.33	(2.44)**
Size and year indicator included					
Adjusted R^2	0.0698			0.623	
N	2467			2474	

*** $p < 0.01$, and ** $p < 0.05$

Table 8

Stock Returns and Anti-Corruption

Panel A *Descriptive Statistics*

Variable	Mean	Median	*SD*	Min	Max	*N*
AAR	-0.900	-0.823	1.605	-9.174	57.852	2212
CAR	-10.790	-9.870	19.259	-110.082	694.229	2212
ACOR	0.437	0.000	0.496	0.000	1	2212
DE	1.122	0.810	1.181	0.000	19.130	2212

Table 8
(Cont.)

Panel B *Correlation: Spearman (Pearson) Correlations Are Presented in Above (Below) Diagonal.*

Variable	AAR	CAR	ACOR	DE
AAR			-0.129***	-0.114***
CAR			-0.130***	-0.114***
ACOR	-0.060***	-0.060***		0.172***
DE	-0.057***	-0.057***	0.158***	

Panel C *Regression*

	AAR		CAR	
	Coef.	*t*	Coef.	*t*
Constant	-1.334	(-4.29)***	-15.919	(-4.27)***
ACOR	-0.258	(-4.28)***	-3.100	(-4.30)***
DE	-0.096	(-3.06)***	-1.157	(-3.07)***
SIZE	0.033	(1.18)	0.388	(1.17)
Adjusted R^2		0.0251		0.0251
N		2212		2212
F		19.11***		19.12**

*** $p < 0.01$, and ** $p < 0.05$

Conclusions

According to the main interest of this study, our results support the first hypothesis, and demonstrate a significant positive association between firm performance and cash holdings. This suggests that firms holding more cash are more likely to have better performance. This also implies that cash management can reflect firm performance. Nonetheless, to gain a better understanding of the role of cash holdings in a firm, we examine the moderating effect of anti-corruption performance. Our findings confirm that anti-corruption performance has a moderate effect on shaping the association between firm performance and cash holdings.

The practical implication of this finding is that firms with strong anti-corruption performance are less likely to hold large amounts of cash, suggesting that cash management practices in firms with strong anti-corruption performance is potentially designed to balance interests between the principal and the agent and thereby enhance firm performance. In other words, anti-corruption is a potential factor in reducing the level of cash holdings.

These results demonstrate that using only one factor in the analysis may lead to a misleading conclusion. This is an important finding for understanthding the moderating effect in this relationship. These results provide a potential mechanism for encouraging anti-corruption activities within firms.

In terms of value relevance, we summarize that cash holdings and anti-corruption information are value-relevant, and that cash holdings and anti-corruption can be used to explain stock prices. Stock market participants respond significantly to such information. We also find

that when a firm discloses anti-corruption information, the disclosure is more likely to reduce information asymmetry that influences abnormal returns. Policymakers should strengthen anti-corruption certification programs and enhance disclosure requirements, as anti-corruption engagement improves cash management efficiency and reduces information asymmetry. Given that investors respond positively to credible governance signals, regulators may integrate anti-corruption assessments into broader corporate governance frameworks to promote transparency, investor confidence, and sustainable firm performance.

Regarding the theoretical implications, this study has yielded insights into the role of anti-corruption and cash holdings in firm performance. This study documents key contributions to the field of corporate governance. First, we add to the existing literature on the relationship between firm performance and cash holdings and anti-corruption activities in emerging markets. Second, we use multiple instrumental variables to mitigate endogeneity bias. The study uses 2SLS with a GMM estimator to conduct the analysis and examine the moderating effect of anti-corruption performance, and we find interesting results regarding the moderating role of anti-corruption in firm performance analysis. In this study, we employ a direct measure of anti-corruption performance in Thai listed firms. The results of this study are beneficial to policymakers in that they promote participation in anti-corruption campaigns within the private sector. Also, the private sector can use anti-corruption plans as one of their strategies to improve business performance.

One limitation is that the present evidence relies on the Thai context as an emerging market. The different analysis scenarios and environments may lead to different results. Another limitation of this study concerns the application of instrumental variables which should be chosen properly, and where endogeneity should be sufficiently strong to justify instrumental variable analysis. Even though this study uses the anti-corruption score announced by the stock market authority, it does not indicate that anti-corruption performance is directly observed. The variable is based on certification or recognition by the capital-market regulatory authority, which may primarily reflect formal or policy-level compliance rather than actual organizational behavior. Certification does not necessarily guarantee the full effectiveness of internal anti-corruption implementation. This may constitute a focus for future studies in terms of the measurement of anti-corruption performance. Future research may employ alternative measures, such as internal governance assessments or enforcement-based indicators, to better capture the substantive dimension of anti-corruption practices. In addition, future studies could explore this issue further by studying the potential effects of anti-corruption performance on other scenarios, for example, bankruptcy or debt covenants. Additionally, it will be important that future research investigates the appropriate level of cash holdings when other factors of corporate governance mechanisms are included.

Author Contributions

PB: Conceptualization, Methodology, Software, Validation, Formal Analysis, Investigation, Resources, Data Curation, Writing - Original Draft Preparation, Writing - Review and Editing, Visualization, Supervision, and Project Administration.

Declaration of the Use of Generatve AI

During the preparation of this manuscript, the authors used Chatgpt version 5.3 to assist with language editing and polishing of the draft. The tool was used solely to improve clarity, grammar,

and overall readability. The author reviewed and revised the output as necessary and take full responsibility for the content of the manuscript.

Ethics

No human or animal subjects were involved in this study.

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Appendix A

The Analysis of Long-Run Abnormal Returns

For the additional analysis presented in Table 8, we complement the return model by using firms' abnormal returns over 12-month period. The abnormal return is obtained from the market model for each of *i* firms, which is estimated by OLS, using monthly data in the estimation period. Abnormal returns are estimated as follows.

$$R_{it} = f(R_{mt},) + \varepsilon_{it} \quad (1)$$

where R_i is return on security *i* and R_{mt} is the market return of 12-month.

$$R_{it} = (P_{it} - P_{it\_1})/ P_{it\_1} \quad (2)$$

P_{it} and P_{it_1} are the closing price of stock *i* at month t and the closing price of stock *i* at month *t-1*. Monthly stock return of each firm is determined. The market return using the monthly stock index (R_{mt}) is estimated by the following mode:

$$R_{mt} = (S_{it} - S_{it\_1})/ S_{it\_1} \quad (3)$$

where S_{it} and S_{it_1} are the stock index at month t and *t -1*. Monthly abnormal returns (AR_i) for security *i* are obtained from the difference between the actual and expected returns as follows:

$$AR_{it} = R_{it} - E[R_{it}|X] = R_{it} - a_i - b_i R_{mt} \quad (4)$$

Average abnormal returns (*AAR*) and cumulative abnormal returns (*CAR*) are calculated as follows.

$$AAR_{it} = \frac{1}{N}\sum_{i=1}^{N} AR_{it} \quad (5)$$

$$CAR_{it} = \sum_{i=t1}^{t12} AR_{it} \quad (6)$$

To determine market participants' assessment of firms with different anti-corruption accomplishments and their stock returns, the following model specification is applied:

$$Y_{it} = f(ACOR_{it}, DE_{it}, Controls) + \varepsilon_{it} \quad (7)$$

where *Y* is average abnormal returns (*AAR*), cumulative abnormal returns (*CAR*), or simple stock return (*R*), *ACOR* is an indicator of whether a firm voluntarily participates in the anti-corruption program and its anti-corruption performance is assessed, *DE* is debt to equity, and *Controls* include firm size and year indicators.