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The Impact of Stock Liquidity on Corporate Cash Holding: The Role of Ownership Concentration in Indonesia

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ABSTRACT

This study aims to examine the influence of stock liquidity and ownership concentration on corporate cash holdings, including how ownership concentration moderates the relationship between liquidity and cash holdings in the context of an emerging market. The study employs a panel data approach using fixed-effects regression to analyze firms listed on the Indonesia Stock Exchange from 2019 to 2023. The sample is selected through purposive sampling for firms included in the Kompas100 Index. The dataset comprises 281 observations. The findings show that higher stock liquidity, particularly turnover ratio, is significantly associated with lower corporate cash holdings, supporting the liquidity discipline hypothesis. Ownership concentration, measured by dominant shareholders' equity stakes, positively and significantly affects cash holdings, consistent with principal–principal agency problems. However, the interaction term between stock liquidity and ownership concentration is negative and statistically significant, indicating that ownership concentration moderates the relationship by strengthening the negative association between stock liquidity and corporate cash holdings. This study provides empirical evidence that, in the context of an emerging market like Indonesia, ownership concentration may play a role in reinforcing the disciplinary effect of stock liquidity on corporate cash holdings.

KEYWORDS Stock liquidity, ownership concentration, cash holdings, agency conflict, emerging markets

INTRODUCTION

Stock liquidity and the relationship between stock liquidity and corporate cash holdings has drawn scholarly attention, particularly in developed markets (Fujitani et al., 2024; Nyborg & Wang, 2021). Traditional financial theory suggests that firms hold large cash reserves as a buffer against uncertainty, particularly external financing frictions and refinancing risk (Acharya et al., 2020; Opler et al., 1999). Improved stock liquidity enhances firms' access to external financing by lowering their cost of capital, boosting valuation, and attracting active investors (Amihud & Levi, 2023).

While early studies generally posited a negative relationship between stock liquidity and cash holdings, recent evidence has shown that in more liquid markets, firms may accumulate more cash to hedge against stock price crash risk (Fujitani et al., 2024) or to implement strategic share repurchase programs (Nyborg & Wang, 2021). This suggests a non-linear relationship, dependent on factors like global uncertainty, strategic corporate behavior, ownership structures, and broader institutional environments.

However, most of the extant literature is concentrated in developed markets, and the dynamics between stock liquidity and corporate cash holdings remain underexplored in emerging markets (Dridi et al., 2025; Khatib et al., 2022). Emerging economies differ from developed ones due to institutions marked by less liquid capital markets, weaker corporate governance (Bekaert et al., 2023), poor investor protection, and high ownership concentration, often dominated by families or the state (Duygun et al., 2018).

Indonesia is a large emerging market that exemplifies these institutional particularities. According to the Indonesia Stock Exchange (Bursa Efek Indonesia, 2022), over 60% of listed firms are controlled by dominant shareholders, typically family groups or the state. These firms operate within a legal environment characterized by relatively weak minority shareholder protections (Claessens & Fan, 2002; La Porta et al., 1999). While dominant shareholders are theoretically believed to reduce agency costs and thus lessen the need for firms to hold excess cash by better monitoring management (Jensen, 1986), the situation is more complex in such institutional contexts.

The principal–principal (PP) conflict framework, introduced by Young et al. (2008), offers a more suitable lens for analysing corporate governance issues in emerging markets than the traditional principal-agent model. This framework highlights tensions between controlling and minority shareholders, which arise from ownership concentration, family control, and weak legal protection. Despite its relevance, research applying the PP conflict perspective remains limited. In emerging markets, dominant shareholders may use corporate cash to pursue private interests, especially when legal protections are weak (Purkayastha et al., 2019; Young et al., 2008).

This study builds on the premise that stock liquidity can act as an effective market-based governance mechanism by enabling large shareholders to discipline management through the threat of 'exit' when firm performance deteriorates (Edmans, 2014). We draw on the PP conflict framework to highlight how low stock liquidity and high ownership concentration may jointly erode external governance mechanisms.

Rubin (2007) emphasizes that ownership structure significantly impacts liquidity, where dispersed institutional ownership tends to enhance liquidity through increased trading activity, whereas concentrated ownership reduces it due to lower free float and limited trading by block holders. Furthermore, liquidity providers tend to avoid trading against dominant shareholders with superior information, who are aware of information asymmetry, leading to lower market liquidity (Glosten & Milgrom, 1985). This diminished liquidity increases agency risks among shareholders and encourages firms to hold higher levels of cash as a precautionary buffer against uncertainty (Young et al., 2008).

Conversely, high liquidity can strengthen market discipline and reduce the risk of managerial expropriation, thereby enabling investors to penalize underperforming managers through share price pressure (Edmans, 2014). This mechanism lessens the firm's reliance on excessive cash holdings as a self-insurance tool. Firms facing greater scrutiny through price signals are more likely to adjust their cash policies in response to active market oversight. Dittmar & Mahrt-Smith (2007) argue that firms with weak governance structures tend to dissipate excess cash on unprofitable projects, thereby destroying shareholder value. In contrast, well-governed firms are more effective in protecting and allocating their cash reserves toward value-enhancing uses. Supporting this, Ferreira & Vilela (2004) found that firms operating in environments with stronger investor protection and concentrated ownership hold less cash, supporting the agency cost perspective. Therefore, ownership concentration can either weaken or enhance the impact of liquidity on cash holdings, depending on the quality of corporate governance, the objectives of dominant shareholders, and the institutional context.

Despite growing interest in this triangulated relationship, few researchers have focused on emerging markets. Limited studies exist concerning how ownership concentration interacts

with stock liquidity to influence cash policies. Recent studies by Hu et al. (2019) and Fujitani et al. (2024) have examined liquidity-cash relationships in developed markets, but their findings may not generalize to contexts with weak institutions and concentrated ownership. Chen et al. (2012) and Prommin et al. (2016) investigated ownership effects on cash holdings in Asian markets, yet did not explicitly test the moderating role of ownership on liquidity's effect. Boubaker et al. (2015) examined board governance and cash holdings in France, while Vo et al. (2021) studied institutional ownership and liquidity commonality, but neither directly addressed the interaction mechanism in emerging market settings dominated by family control.

Therefore, this research intends to empirically investigate how stock liquidity and ownership concentration interact in influencing corporate cash holdings decisions within the unique institutional setting of Indonesia. The objectives of this research are threefold: first, to test whether stock liquidity negatively affects cash holdings in Indonesia's emerging market context; second, to examine whether ownership concentration positively affects cash holdings due to principal-principal agency conflicts; and third, to investigate whether ownership concentration moderates the relationship between stock liquidity and cash holdings, either strengthening or weakening the effect.

The study contributes to agency theory by extending its application to contexts dominated by principal-principal conflicts, while also integrating liquidity literature to offer a deeper understanding of financial behavior in environments with weak investor protection and concentrated ownership. By demonstrating that ownership concentration can amplify the disciplinary effect of liquidity, this research challenges the simplistic view that concentrated ownership solely facilitates expropriation. Instead, it reveals that dominant shareholders may act as strategic, adaptive agents who respond to market signals when external scrutiny increases. This has important implications for policymakers seeking to strengthen corporate governance in emerging markets, suggesting that improvements in stock market liquidity can serve as effective complements to formal legal protections.

METHOD

This study adopted a quantitative research design using secondary data in an unbalanced panel. The population comprised all non-financial firms listed on the Indonesia Stock Exchange (IDX). The sample included firms in the Kompas100 index over the 2019–2023 period, chosen to exclude inactive firms and outliers. To mitigate the impact of extreme values and improve robustness, winsorization was applied at the 2.5th and 97.5th percentiles across continuous variables.

Sample selection used purposive sampling, based on the following criteria: first, financial firms were excluded due to distinct regulations and reporting; second, only firms with complete, consistent data for key variables throughout the period were retained; and third, to ensure consistent liquidity dynamics, only firms listed in the Kompas100 during both annual rebalancing periods each year were included. The final sample comprised 63 firms with 281 firm-year observations. All data were from secondary sources. Financial data were retrieved from Capital IQ, and market data (daily prices and volumes) from the IDX.

Stock Liquidity is measured using three indicators: Amihud illiquidity ratio (ILLIQ), turnover ratio (TURN), and liquidity ratio (LR), following Prommin et al. (2016).

ILLIQ measures price impact and is calculated as:

$$\mathrm{ILLIQ}_{i,t} = \frac{|\mathrm{R}_{i,t}|}{\mathrm{VOL}_{i,t}} \quad (1)$$

where$|\mathrm{R}_{i,t}|$ is the absolute daily return and $\mathrm{VOL}_{i,t}$ is daily trading volume (in monetary units) for firm *i* on day *t*.

TURN is the monthly trading volume over shares outstanding:

$$\mathrm{TURN}_{i,t} = \frac{\mathrm{VOL}_{\mathrm{monthly},i,t}}{\mathrm{N}_{i,t}} \quad (2)$$

where $\mathrm{Vol}_{\mathrm{monthly}i,t}$ is total monthly volume and $\mathrm{N}_{i,t}$ is shares outstanding for firm *i* in month *t*.

LR is a the ratio of total daily trading volume to absolute returns:

$$\mathrm{LR}_{i,t} = \frac{\sum \mathrm{VOL}_{\mathrm{daily},i,t}}{\sum |\mathrm{R}_{i,t}|} \quad (3)$$

where $\mathrm{VOL}_{\mathrm{daily}i,t}$ is total daily trading volume and$|\mathrm{R}_{i,t}|$ is the absolute daily return for firm *i* on day *t*.

Ownership concentration is proxied by TOP1 and TOP2. TOP1 is the ratio of the largest shareholders to total shares outstanding at year-end. TOP2 is the combined shareholding of the two largest shareholders relative to total shares outstanding at year-end.

Following Nyborg & Wang (2021), several control variables are included: firm size, market-to-book ratio, leverage, capital expenditures, operating cash flow, net working capital, analyst coverage, and a dividend dummy. A Covid-19 dummy added to capture systemic uncertainty during the pandemic, based on Guan et al. (2020).

Empirical analysis uses panel regression, with the Fixed Effects Model (FEM) as the primary estimation method. Model selection is guided by the Chow test, Breusch-Pagan Lagrange Multiplier (LM) test, and Hausman test. Results are available upon request.

Quantitative analyses are conducted using STATA 18. To ensure robustness and validity, classical diagnostic tests are applied, including multicollinearity, heteroskedasticity, and autocorrelation tests. Results are available upon request. A correlation matrix is also presented to visually assess the strength of associations among independent variables.

The main regression model is specified as follows:

$$CASH = \beta_0 + \beta_1 LIQUIDITY + \beta_2 OWNERSHIP + \beta_3 LIQUIDITY\ x\ OWNERSHIP + \boldsymbol{\Gamma} CONTROL + \varepsilon \quad (4)$$

Description:

a. CASH: Corporate cash holdings, measured by the ratio of cash and equivalents to total assets
b. LIQUIDITY: Stock liquidity, measured by ILLIQ, TURN, and LR
c. OWNERSHIP: Ownership concentration, measured by TOP1 and TOP2
d. **Γ**CONTROL: Vector of control variables

e. LIQUIDITY x OWNERSHIP: Interaction term testing moderation of liquidity's effect by ownership on cash holdings.
f. ε: Error term

Hypothesis testing is conducted at a 10% significance level ($\alpha = 0.10$), commonly used in emerging markets studies where volatility, complex ownership structures, and limited data prevail.

One-tailed tests are used for the main effects of liquidity and ownership on cash holdings, consistent with theoretical predictions. The interaction effect (LIQUIDITY × OWNERSHIP) is tested using a two-tailed test, as its direction may vary. A positive coefficient suggests ownership amplifies liquidity's effect on cash holdings; a negative coefficient implies it weakens it.

RESULT AND DISCUSSION

Descriptive Statistics

Table 1 presents descriptive statistics for corporate cash holdings (CASH), stock liquidity proxies (ILLIQ, TURN, and LR), and ownership concentration (Top 1 or Top 2 shareholders). Statistics for control variables are omitted but available upon request

Table 1. Descriptive Statistics

Variable	Unit	Mean	Median	Std. Dev	Min	Max	N
CASH		0,154	0,132	0,106	0,004	0,542	281
ILLIQ	10^{-11}	0,281	0,088	0,891	0,003	10,443	281
TURN		0,050	0,328	0,049	0,003	0,272	281
LR	10^{9}	3.324	2,284	3,221	0,107	17,487	281
TOP1		0,552	0,558	0,163	0,091	0,925	281
TOP2		0,623	0,629	0,139	0,171	0,956	281

Source: Processed Using Stata 18

Table 1 shows average cash holding (CASH) at 15.4% of total assets. Regarding liquidity, the three proxies used (ILLIQ, TURN, LR) reveal varying patterns. An average ILLIQ of $0,281 \times 10^{-11}$ implies that IDR 1 billion in trading volume causes an average price impact of 0,281%. Lower ILLIQ values indicate greater liquidity. TURN, the ratio of traded volume to shares outstanding, averages 4,99%. LR (Liquidity Ratio), averages approximately IDR 3,32 billion, indicating each unit change in price corresponds to about 3,32 billion in trading volume.

Ownership concentration is notably high. The largest shareholder (TOP1) holds an average of 55,17% equity, while the top two shareholders (TOP2) collectively control 62,33%. The small gap between Top 1 and Top 2 indicates that control is typically centralized in one dominant shareholder, with the second playing a limited governance role.

Correlation Matrix

To explore the relationships among these variables, Table 2 presents the correlation matrix for the main variables. Preliminary results indicate multicollinearity is not a concern, as most coefficients fall below the 0.70 threshold. However, a strong correlation between TOP1 and TOP2 ownership ($r = 0,866$, $p < 0,01$) suggest they should not be included simultaneously in the same model. While the explanation includes insights from the full matrix, only key results are shown. The complete matrix is available upon request.

Table 2. Correlations Matrix

	CASH	ILLIQ	TURN	LR	TOP1	TOP2
CASH	1					
ILLIQ	-0,189***	1				
TURN	-0,062	0,054	1			
LR	-0,027	-0,164***	0,424***	1		
TOP1	-0,002	-0,156***	-0,124**	-0,044	1	
TOP2	-0,001	0,062	-0,183***	-0,092	0,866***	1

* p < 0,1; ** p<0,05; *** p<0,01.
Source: Processed Using Stata 18

The analysis reveals several meaningful relationships among key variables. Among liquidity proxies, TURN and LR exhibit a strong positive correlation (r = 0,424, p < 0,01), suggesting both capture related trading activity. In contrast, ILLIQ is negatively correlated with LR (r = –0,164, p < 0,01) and has a weak, insignificant relationship with TURN, reflecting a different liquidity dimension. The COVID-19 dummy is positively associated with TURN (r = 0,251, p < 0,01) and LR (r = 0,103, p < 0,10), implying intensified trading during the pandemic.

Ownership concentration, measured by TOP1 and TOP2, shows high consistency (r = 0,866, p < 0,01) and is negatively correlated with liquidity (TURN & LR) and DIVD. This suggests concentrated ownership may be associated to lower market liquidity and reduced dividend, aligning with agency theory.

Following the preliminary insights, the study proceeds to test the robustness and directionality of these relationships through panel regression models. While correlation matrix provides an initial overview of interdependencies, they do not control for confounding effects or unobserved heterogeneity. Therefore, panel regression using a fixed effects model is employed to investigate the causal influence of stock liquidity and ownership on cash holdings.

Panel Regressions

Tables 3 presents regression results for the main independent variables, stock liquidity and ownership concentration, on corporate cash holdings. The models differ based on the liquidity proxies used: ILLIQ, TURN, and LR, while separately testing the moderating role of the Top 1 and Top 2 shareholders.

Table 3. Panel Regression Results (Main Variables)

	Top 1 Shareholder			Top 2 Shareholders		
Variable	**ILLIQ**	**TURN**	**LR**	**ILLIQ**	**TURN**	**LR**
ILLIQ	-0,0007			-0,001		
	(-0,18)			(-0,31)		
TURN		-0,168*			-0,183*	
		(-1.69)			(-1.67)	
LR			-0,001			-0,001
			(-0,89)			(-0,72)
TOP	0,114**	0,094**	0,119***	0,123†	0,085	0,107†
	(2,21)	(2,15)	(2,77)	(1,56)	(1,22)	(1,43)
Observation	281	281	281	281	281	281
R^2						

* p < 0,1; ** p<0,05; *** p<0,01; t > † 1.28 (one-tailed)
Source: Processed Using Stata 18

Effect of Liquidity on Cash Holdings

Based on Table 3, stock liquidity, proxied by the turnover ratio (TURN), has a significant negative effect on cash holdings. Specifically, the TURN demonstrates a coefficient of -0.14 (p < 0.10) in the model using the Top 1 shareholder, and -0.15 (p < 0.10) with the Top 2 shareholders. These findings imply that firms with more actively traded shares retain less cash.

High liquidity lowers transaction costs and improves access to external capital (Amihud & Mendelson, 1986), theoretically reducing the need for precautionary cash (Acharya et al., 2020; Opler et al., 1999). The liquidity discipline hypothesis suggests that liquid markets enforce stronger discipline via the threat of investor 'exit', especially when such intervention is costly or limited (Edmans, 2014). This finding is in line with research conducted by Hu et al (2019), which in liquid markets 'exit' threats act as a substitute for direct intervention, deterring excessive cash retention to avoid shareholder dissatisfaction

However, stock liquidity measured using ILLIQ and LR, has no significant relationship with cash holdings. The ILLIQ ratio, which calculates illiquidity based on the price impact of trades relative to trading volume, is especially susceptible to distortion in markets characterized by infrequent trading and short-term volatility (Kang & Zhang, 2014), common in Indonesia.

Similarly, LR, calculated from trading volume relative to price movement, suffers from instability in markets where daily returns frequently approach zero, particularly for small and mid-cap firms. In thinly traded markets, price-based liquidity metrics are affected by market anomalies and non-fundamental price changes (Kang & Zhang, 2014), limiting their effectiveness in capturing long-term liquidity conditions relevant for financial decisions.

Effect of Ownership Concentration on Cash Holdings

Based on panel regressions results, ownership concentration has a significant positive effect on corporate cash holdings. When proxied by the Top 1 shareholder, the variable exhibits consistently positive and significant coefficients across all three models: +0.12 (p < 0.05) in the ILLIQ model, +0.10 (p < 0.10) in the TURN model, and +0.12 (p < 0.10) in the LR model. These findings suggest that firms with more concentrated ownership hold more cash.

Prior research indicates that in such firms, controlling shareholders may accumulate excess cash to avoid oversight, retain discretion, or enable tunnelling activities facilitate tunnelling activities (Moolchandani & Kar, 2022; Perdana & Minanurohman, 2024). This finding aligns with Type II agency conflicts, where dominant shareholders may pursue actions that are detrimental to minority interests, due to concentrated ownership structures (Purkayastha et al., 2019; Young et al., 2008)

However, when concentration includes the Top 2 shareholders, the evidence becomes less consistent. Although the variable remains positively associated with cash holdings in the ILLIQ model (+0.12; t = 1,56) and LR model (+0,10; t = 1,43), it loses significance in the TURN models. These findings are not as robust as those with TOP1. This suggests that the influence of ownership concentration on cash holdings is strongest when control is consolidated in a single dominant shareholder, rather than shared among multiple large shareholders.

The Moderating Role of Ownership Concentration

Table 4 presents the interaction models examining how ownership concentration moderates the relationship between stock liquidity and corporate cash holdings. Separate analyses are conducted using both the Top 1 and Top 2 shareholders as moderators, with liquidity proxied by ILLIQ, TURN, and LR. These models test whether concentrated ownership strengthens or weakens liquidity's impact on cash policy.

Table 4. Panel Regression Results (Interaction Variables)

	Top 1 Shareholder			Top 2 Shareholders		
Variable	**ILLIQ**	**TURN**	**LR**	**ILLIQ**	**TURN**	**LR**
ILLIQ x TOP	-0,007			-0,024		
	(-0,39)			(-0,85)		
TURN x TOP		-0,770*			-0,902	
		(-1,94)			(-1,57)	
LR x TOP			-0,005			0,002
			(-0,55)			(0,13)
Observation	281	281	281	281	281	281

* p < 0,1; ** p<0,05; *** p<0,01 (two-tailed)

Source: Processed Using Stata 18

Based on the panel regression results, interaction between stock liquidity, as measured by turnover (TURN), and ownership concentration (TOP1) significantly affects corporate cash holdings, with a coefficient of –0.77 at the 10% significance level. This suggests that the negative effect of stock liquidity on cash holdings becomes more pronounced with higher ownership concentration. In other words, in highly liquid, dominant shareholders are less inclined to support high cash accumulation.

Shleifer & Vishny (1997) emphasize that ownership concentration by block holders can foster market confidence, as these shareholders possess both the incentive and the capacity to monitor management effectively. The findings in Indonesia's institutional setting, regardless of environments marked by family business dominance, weak investor safeguards, and low transparency, ownership concentration can amplify the disciplining role of stock liquidity.

This may reflect a strategic shift in control mechanisms: when external funding becomes more accessible and cheaper, large shareholders may rely less on internal cash buffers, maintaining control without hoarding cash. Prior studies from Boubaker et al. (2015) and Vo et al. (2021), who emphasize that in highly concentrated ownership structures, dominant shareholders are not always opportunistic.

Vo et al. (2021) show that the firm's information environment moderates the ownership-liquidity relationship, where high institutional ownership improves governance, transparency, and investor participation. Under strong market discipline, dominant shareholders may act as efficiency agents, aligning financial decisions with market signals. Boubaker et al. (2015) further demonstrate that firms with strong boards tend to hold less cash, even when family-controlled, suggesting that effective governance mechanisms can counteract the cash-hoarding tendencies of controlling families.

Thus, the negative interaction between TURN and TOP1 in this study indicates a shift in dominant shareholders' role, from passive controllers to strategic, adaptive actors,

particularly in increasingly transparent and information-sensitive markets. This reflects Indonesia's unique institutional context: a market dominated by conglomerates, politically embedded ownership, and increasing institutional investor presence. Although controlling shareholders maintain substantial power, they also face reputational pressure. As stock liquidity increases, so does market transparency, prompting dominant shareholders to adjust financial policies in order to maintain professional credibility and investor appeal. Rather than acting solely to entrench control, they emerge as strategic agents who respond adaptively to external expectations.

However, the interaction terms involving other liquidity measures (ILLIQ and LR), with either TOP1 or TOP2, show no significant effect on cash holding. These interactions produce statistically insignificant coefficients with low t-values, suggesting that ownership concentration does not consistently moderate the liquidity–cash relationship across all metrics. This may due to the limited reliability of ILLIQ and LR in the Indonesian, where low trading volumes and price volatility undermine their effectiveness (Kang & Zhang, 2014). Price-based liquidity metrics risk capturing noise rather than fundamental liquidity conditions, weakening their suitability for studying strategic decisions like cash retention.

Additionally, panel regression results for control variables are available upon request. These are excluded from the main tables to focus on the primary hypotheses. However, the control variables behave as expected. Firm size, operating cash flow, net working capital, and analyst coverage are positively associated with cash holdings, consistent with prior literature. Market-to-book ratio, leverage, and capital expenditures show negative associations. The COVID-19 dummy shows a small positive effect, indicating a precautionary motive during the pandemic. The dividend indicator is not significantly related to cash holdings.

CONCLUSION

In conclusion, this study demonstrates that stock liquidity, as measured by the turnover ratio, negatively influences corporate cash holdings in Indonesia, supporting the liquidity discipline hypothesis, while ownership concentration, particularly by the largest shareholder, leads to higher cash reserves, consistent with principal-principal agency conflicts. Importantly, ownership concentration was found to moderate this relationship, strengthening the negative effect of liquidity on cash holdings, indicating that dominant shareholders act as adaptive strategic agents in more liquid and transparent markets. For future research, it is recommended to employ dynamic and high-frequency measures of ownership concentration and liquidity (such as bid-ask spreads and free-float-adjusted metrics) to better capture real-time market governance effects. Furthermore, comparative studies across different institutional settings (e.g., other ASEAN markets with varying levels of investor protection and family control) are needed to generalize these findings and develop a more comprehensive theoretical model of how market-based governance interacts with ownership structures in emerging economies.

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