

## Factors influencing the liquidity in Vietnamese listed companies



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### ABSTRACT

This study examines the factors that affect liquidity in companies listed on the Vietnam Stock Exchange. The factors are divided into two main groups: those related to corporate governance and other additional factors. To measure a company's liquidity, we use different indicators such as the cash ratio, quick ratio, and cash conversion cycle (CCC). To test the hypotheses and explain how these factors relate to liquidity measures, we develop three econometric models. Our dataset covers the period from 2017 to 2022 and includes companies listed on the Ho Chi Minh City Stock Exchange. The final sample consists of 359 companies, with 1,638 observations. The results show that in Vietnamese listed companies, both the cash ratio and quick ratio have positive relationships with board size, board independence, and company performance. On the other hand, the net operating cycle is negatively related to board size, company size, board independence, and profitability. This suggests that larger companies with bigger boards and more independent members are better at managing their capital efficiently. However, there is no clear evidence of a relationship between company age and liquidity or between CCC and profitability. These findings provide useful insights into the factors influencing liquidity in Vietnamese listed companies, with important implications for financial management strategies.

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### 1. Introduction

Assessing the effectiveness of a business involves examining various facets, and the solvency status serves as a prominent indicator of business operations' quality from specific perspectives. Solvency denotes a company's capability to meet its obligations within a specified timeframe (Horobet et al., 2023). A company with a strong solvency position possesses ample financial resources, encompassing cash, cash equivalents, and other assets, ensuring punctual payments to individuals and organizations involved in its production and business activities. Conversely, insufficient financial capacity poses a threat to solvency, potentially leading to bankruptcy. A significant challenge confronting businesses is the potential non-recovery of receivables and insolvency in accounts payable. Hence, maintaining an appropriate level of working capital is imperative for promptly addressing short-

term debts and facilitating favorable business operations (Muhammad et al., 2016). Upholding solvency empowers businesses to sustain their operational framework, fostering continuous investment and development, ultimately yielding future profits.

Studying firm liquidity determinants holds paramount importance for both academia and practitioners alike. Firstly, understanding factors influencing liquidity is essential for investors and financial analysts in making informed decisions regarding investment strategies and portfolio management. A thorough comprehension of liquidity dynamics enables investors to gauge the risk associated with investing in a particular firm, as well as its ability to meet short-term obligations. Additionally, for firms themselves, insights into liquidity determinants are indispensable for strategic decision-making and financial planning. By identifying and comprehending the drivers of liquidity, companies can optimize their working capital management, mitigate liquidity risks, and enhance their overall financial health. Moreover, policymakers and regulatory bodies can utilize findings from liquidity determinant studies to formulate effective regulatory frameworks that promote market stability and investor protection.

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Ultimately, delving into firm liquidity determinants fosters a deeper understanding of financial markets, facilitates better risk management practices, and contributes to the overall efficiency and resilience of the economy. In the context of Vietnam's integration into the global economy, marked by the signing and negotiation of numerous Free Trade Agreements (FTAs), the business landscape encounters both opportunities and challenges. This is particularly pertinent for Vietnamese enterprises, especially those listed on the stock market. Therefore, effective management of solvency and capital becomes crucial for bolstering competitiveness, attracting investment in an integrated environment, and solidifying a strong market presence.

The Ho Chi Minh City Stock Exchange (HOSE) distinguishes itself as a hub for major listed companies, constituting 80% of the HOSE's total capitalization and around 75% of the overall Vietnamese market capitalization. Against this backdrop, this study aims to pinpoint and analyze the factors influencing the solvency of enterprises listed on the HOSE. In doing so, the study aspires to provide valuable insights for enhancing cash flow control in businesses, thereby augmenting overall operational efficacy.

While existing literature has indeed explored the determinants of liquidity in listed Vietnamese companies, the focus has predominantly revolved around a limited number of factors, primarily within the realm of corporate governance, such as board size and board dependence. This study aims to break new ground by undertaking a comprehensive analysis of a diverse range of liquidity determinants. In addition to scrutinizing corporate governance variables, this research will also investigate other crucial factors, including firm performance, growth potential, and firm size. Moreover, previous studies often rely on singular or dual proxies for assessing firm liquidity, typically utilizing metrics like the cash ratio and current ratio. While these ratios offer valuable insights into a company's ability to meet short-term obligations using liquid assets, they may not provide a comprehensive depiction of overall liquidity. Hence, this paper seeks to augment traditional liquidity measures by incorporating the net operating cycle (NOC), also known as the cash conversion cycle (CCC). The NOC quantifies the duration between cash outflows for expenses like raw materials and cash inflows from sales, offering a more nuanced understanding of a company's liquidity position. By integrating these additional metrics, this study endeavors to provide a more robust and holistic evaluation of liquidity in the Vietnamese stock market context.

## 2. Literature review

### 2.1. Board size

The dimension of board size is a fundamental aspect extensively investigated in preceding research due to its potential influence on the extent

of working capital investment in companies. As per [Sathyamoorthi et al. \(2018\)](#), the board of directors holds a central role in ensuring the effectiveness of a company's liquidity management through the development and oversight of working capital policies. Their model aimed to examine the impact of the board index, encompassing board size, executive and non-executive members, as well as male and female members, on each component of CCCs and the metric.

Remarkably, the results were significant, revealing that the amalgamation of board variables could elucidate up to 62.5% of fluctuations in the CCC, with board size exerting the most pronounced negative impact on the cycle. This negative correlation aligns with the findings of [Al-Najjar and Clark \(2017\)](#) and [Zariyawati et al. \(2010\)](#) despite the latter's initial opposing prediction. Building upon these insights, our hypothesis can be stated as follows:

**H1:** Board size has a positive impact on the liquidity of the firm.

### 2.2. Board independence

In literature, the independence of the board is commonly assessed by the presence of non-executive directors on a company's board. According to [Baysinger and Bulter \(1985\)](#), these non-executive members are typically appointed to supervise management, ensuring that managerial decisions align with the best interests of shareholders. Therefore, the independence of the board has a vital role in mitigating conflicts of interest and is a fundamental aspect of corporate governance mechanisms ([Md. Musfiqur and Farjana, 2018](#); [Vu et al., 2020](#)). Examining data from 127 major Indian firms spanning a decade (from 2004 to 2013), [Goel et al. \(2015\)](#) discovered that enhanced board independence correlates with a shift towards a more risk-averse strategy in short-term capital management, potentially diminishing the efficacy of working capital management practices.

In contrast, another view suggests that an enhanced corporate governance mechanism can lead to more efficient working capital management, resulting in a shorter net operating cycle. According to [Dittmar and Mahrt-Smith \(2007\)](#), corporate governance practices significantly affect the use and value of cash holdings. They showed that well-governed firms hold nearly twice the value of cash compared to those with poor governance. Additionally, poorly governed firms tend to use cash more quickly and less efficiently. This is consistent with findings from [Sathyamoorthi et al. \(2018\)](#), who argued that the number of non-executive directors is significantly negatively correlated with the net operating cycle. Based on these observations, the expectation articulated in this research is as follows:

**H2:** Board independence positively impacts the firm's liquidity.

### 2.3. Profitability

While numerous papers have investigated the impact of firm liquidity on performance and profitability, there is limited exploration of the reverse influence. Conventional wisdom implies a trade-off for businesses between profitability (yielding a return) and liquidity (sustaining operations). Consequently, it's unsurprising if profitability adversely affects liquidity, with a lower level of liquidity correlating with a larger amount of profit made by companies. This finding is consistently observed in much of the research and aligns with the notion that firms with higher returns and greater working capital invested in more profitable projects wield more significant bargaining power. Petersen and Rajan (1997) contend that companies that have higher levels of profit are often offered a better credit policy from suppliers, anticipating a reverse impact of firm return on liquidity. Baños-Caballero et al. (2010) also provided more empirical evidence to support the above argument. Wasiuzzaman (2018) examined liquidity in Malaysian SMEs and concluded that "SMEs with high levels of liquidity do not rely on profitability to improve their liquidity; instead, increased profitability reduces liquidity."

**H3:** Profitability inversely affects a firm's liquidity.

### 2.4. Growth opportunity

Several studies have suggested that growth opportunity influences a firm's working capital management (Opler et al., 1999; Zariyawati et al., 2010). According to D'Mello et al. (2008) and Wasiuzzaman and Arumugam (2013), growth opportunities could significantly enhance a firm's liquidity by generating increased revenue streams, facilitating access to financing, improving creditworthiness, driving efficiency gains, and diversifying revenue sources. Expanding into new markets, introducing new products, or scaling operations can boost cash inflows, while a strong growth trajectory enhances the firm's attractiveness to lenders and investors. Efficiency gains from pursuing growth opportunities can lead to cost savings and faster cash turnover, further bolstering liquidity. Additionally, diversifying revenue sources reduces reliance on any single market or product, contributing to overall liquidity resilience. Opler et al. (1999) observed that firms with high growth levels tend to hold more cash and have a high cash ratio.

**H4:** Growth opportunity has a positive impact on a firm's liquidity.

### 2.5. Firm leverage

Leverage is known to influence the length of the CCC in various empirical studies. The pecking order

theory suggests that leverage should have a negative impact on the CCC, indicating that companies generally prefer internal financing over external sources. Debt is considered only when internal resources are depleted. Therefore, firms with high leverage are expected to reduce their cash operating cycle to secure sufficient capital for day-to-day operations and debt repayments (Al-Homaidi et al., 2020; Baños-Caballero et al., 2010; Wasiuzzaman and Arumugam, 2013).

**H5:** Firm leverage positively affects firm liquidity.

### 2.6. Firm age

Age, in the context of this research, is determined by the disparity between the years under examination and the establishment year of the company. Diverse findings emerge regarding the correlation between firm age and the effectiveness of working capital management. Berger and Udell (1998) have illustrated that older firms tend to allocate more resources to working capital and sustain longer CCCs, primarily because they can readily access external financing at lower costs. Baños-Caballero et al. (2010) and Al-Homaidi et al. (2020) came to a similar conclusion when they investigated the Spanish market and the Indian market, respectively.

Conversely, Fiador (2016) posited, in his examination of public firms in Ghana, that company age exerts a negative and significant impact on the CCC and accounts receivable while yielding a positive yet insignificant influence on inventory periods and payables. He elucidates that as firms mature, their cash operating cycles and receivable collection periods improve, although age bears no consequence on inventory and payables management. Hence, it can be deduced that older companies might exhibit greater efficiency in working capital management, attributed to accumulated experiences over the years, as elucidated by Wasiuzzaman and Arumugam (2013): "As a firm grows older, its relationship with customers and suppliers, and its experience in managing its inventory, would enable it to invest less in working capital."

**H6:** Firm size has a positive influence on a firm's liquidity

## 3. Test design

### 3.1. Liquidity measures

Research on firm liquidity or working capital often employs various measures, such as cash ratios, quick ratios, current ratios, and net operating cycle. However, many studies tend to focus on just one or two of these measures. In this paper, we utilize cash ratios, the quick ratio, and the CCC as indicators of a firm's solvency. We opt not to include the current

ratio due to its lack of specificity. The current ratio considers all a business's current assets, including those that aren't easily converted to cash. For example, two firms with the same current ratio might seem equally liquid at first glance. Conversely, a company possessing greater liquidity in assets such as cash and receivables would be deemed more financially secure, given its ability to swiftly convert receivables into cash, as opposed to the slower conversion process associated with inventories.

### 3.1.1. Cash ratio

$$\text{Cash Ratio} = \frac{\text{Cash} + \text{Cash equivalents}}{\text{Total current liabilities}} \quad (1)$$

This metric represents the extent of cash and cash equivalents available to fulfill the company's short-term liabilities. Essentially, it assesses whether a company possesses adequate resources, in the form of existing cash and cash-equivalent holdings, to promptly settle its debts. Widely used as an indicator of solvency, this ratio is regarded as the most cautious liquidity measure, as it exclusively focuses on the company's most liquid assets—comprising cash and near-cash equivalents—while disregarding other assets such as receivables and inventories.

### 3.1.2. Quick ratio (Acid test ratio)

$$\text{Quick Ratio} = \frac{\text{Current Assets} - \text{Inventory}}{\text{Total current liabilities}} \quad (2)$$

The quick ratio serves as another indicator of a firm's short-term liquidity. It evaluates a company's ability to settle imminent debts using its liquid assets without liquidating all its operational inventories. This ratio holds significant utility for both companies and creditors in assessing a company's financial stability. A higher quick ratio signifies stronger financial health, while a lower ratio indicates otherwise.

### 3.1.3. Net operating cycle (Cash conversion cycle)

The net operating cycle, often referred to as the CCC, quantifies the duration necessary for a company to transform cash utilized for materials and expenses into cash acquired from the sale of goods or services. It delineates the span from the initial outlay in inventory and resources to the point at which the company recovers this investment through asset turnover. This metric encompasses three primary components: the timeframe for inventory retention, the period for receivables collection, and the duration for settling payments with suppliers.

$$\text{CCC} = \text{IP} + \text{RP} + \text{PP} \text{ (days)} \quad (3)$$

where,

$$\text{IP(Inventory Period)} = \frac{\text{Inventory} \times 365}{\text{Cost of sales}} \quad (4)$$

$$\text{RP(Period of Receivable Collection)} = \frac{\text{Receivables} \times 365}{\text{Annual sales}} \quad (5)$$

$$\text{PP(Period of Payable Payment)} = \frac{\text{IPayables} \times 365}{\text{Annual Purchases}} \quad (6)$$

Businesses typically favor a shorter inventory holding period, a brief receivables collection period, and an extended payable payment period. This preference arises from its ability to shorten the cash cycle and enhance cash flow. While metrics such as the cash ratio, quick ratio, and current ratio are commonly utilized, they may not offer comprehensive views of a company's liquidity position since they provide only a static snapshot. Therefore, integrating the CCC can offer more insightful perspectives for managing working capital. Richards and Laughlin (1980) introduced the CCC and advocated for its incorporation into solvency analysis, proposing a correlation between the current ratio, quick ratio, and the CCC.

## 3.2. Research model

To assess these hypotheses, the study employs a pooled regression model. In addition to the dependent and explanatory variables, control variables are incorporated into the model, including firm size (SIZE), and audit firm (AUDIT). The formulated model is presented as follows:

$$\text{LIQUIDit} = \beta_0 + \beta_1 \text{ROAit} + \beta_2 \text{BOARDit} + \beta_3 \text{INDEPit} + \beta_4 \text{AGEit} + \beta_5 \text{SIZEit} + \beta_6 \text{DEBTit} + \beta_7 \text{TOBINQit} + \beta_8 \text{AUDITit} + \text{eit} \quad (7)$$

where, "i" signifies the firm and "t" represents the year.

Codes and descriptions for all variables are presented in Table 1.

## 4. Empirical results

### 4.1. Statistic description

The study employed a dataset of public firms on the HOSE from 2017 to 2022, obtained from Vietstock Company, a prominent financial information service provider in Vietnam. Financial indexes needed for the research are extracted from annual audited financial statements and corporate governance reports. These data were utilized to calculate key financial indicators. Invalid or inaccessible observations were excluded. The final dataset comprises 359 firms, totaling 1638 observations.

Table 2 and Table 3 present the statistical descriptions of all research variables. The CCC exhibits a range from -1,793 days to 3,198 days, with an average of 2,225 days. It is noteworthy that a negative net operating cycle generally signifies effective working capital management in firms, while a positive value indicates the opposite. Fig. 1 illustrates the descriptive statistics for the cash ratio and the quick ratio.

**Table 1: Variable description**

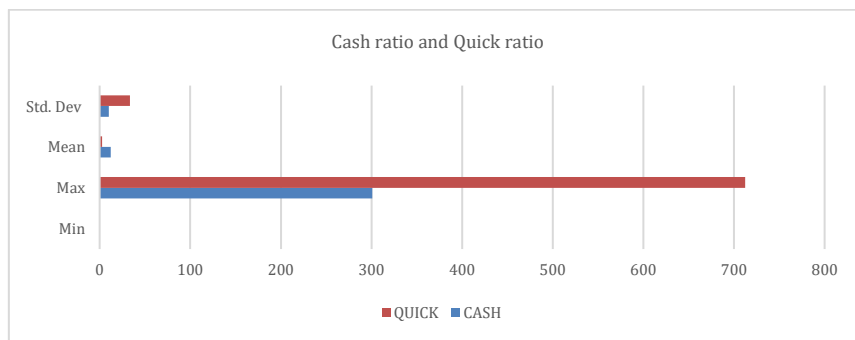
No.	Code	Variable	Description
1	LIQUID	Firm's liquidity	There are three proxies for firm liquidity: the cash ratio, the quick ratio, and the CCC
2	CASH	Cash ratio	The cash ratio is derived by dividing cash and cash equivalents by total current assets
3	QUICK	Quick ratio	The quick ratio is computed by excluding inventories from total current assets and then dividing by the total current assets
4	CYCLE	CCC	The net operating cycle is determined as the sum of the inventory holding period and receivables collection period, subtracted by the payable payment period
5	ROA	Return on assets	Return on assets is a metric that measures the profitability of a company by dividing its net income after taxes by the total value of assets
6	INDEP	Board independence	INDEP signifies board independence and refers to the count of non-executive members on the board
7	BOARD	The board's size	The term BOARD indicates the size of the board, representing the number of members serving on it
8	AGE	Firm age	AGE represents the age of the firm, calculated as the difference between the current year and the year the company was founded
9	SIZE	Firm size	SIZE stands for firm size, indicating the total value of the firm's assets
10	TOBINQ	The growth opportunities of the firm	TOBINQ represents the growth opportunities of the firm, expressed as the market-to-book ratio, which is calculated by dividing the market value of the company by its total assets
11	DEBT	Firm leverage	DEBT represents firm leverage, calculated as the ratio of long-term debts to total assets
12	AUDIT	Audit firm	AUDIT represents the audit firm, assigned a value of 1 if the company is audited by a Big 4 firm and 0 if audited by other auditing companies

**Table 2: Descriptive statistics (N=1638)**

	Range	Min	Max	Mean	Standard deviation
CASH	0.001 - 300.72	0.001	300.72	12.08	10.21
QUICK	0.064 - 712.39	0.064	712.39	2.55	33.60
CYCLE	-1,793 - 3,198	-1,793	3,198	2,225	1,125

**Table 3: Descriptive statistics (N=1638)**

	Range	Min	Max	Mean	Standard deviation
BOARD	2 - 14	2.00	14.00	6.09	3.51
SIZE	126 - 108,240	126	108,240	14,115	10,853
INDEP	0 - 10	0.00	10.00	4.36	2.07
AGE	1 - 189	1.00	189	32	20
ROA	-0.25 - 2.172	-0.25	2.172	0.108	0.104
TOBINQ	0.135 - 12.04	0.135	12.04	1.49	1.25
DEBT	0 - 28.3	0.00	28.3	1.443	6.12
AUDIT	0 - 1	0.00	1.00	0.25	0.54



**Fig. 1:** The clustered bar for the cash ratio and the quick ratio

Table 4 presents the Variance Inflation Factor (VIF) values and correlation matrix of all dependent and control variables in the study. The findings

suggest that the dataset obtained from the sampled firms does not display significant issues of severe multicollinearity.

**Table 4: Correlation matrix**

	Board	Size	INDEP	Age	ROA	TOBINQ	Debt	Audit	VIF
BOARD	1								2.57
SIZE	.186**	1							1.09
INDEP	.300**	.214**	1						1.17
AGE	.114*	.028**	.309**	1					2.29
ROA	.135**	-.075	.006**	.107*	1				1.46
TOBINQ	.209**	-.120	.274**	.175**	.113**	1			2.08
DEBT	-.052	.305	-.007	-.062	-.221**	-.029	1		2.06
AUDIT	.238**	.166**	.241**	.117*	.149**	.351**	.004	1	1.88

\*, \*\*: Correlation is significant at the 0.01 and 0.05 level, respectively

## 4.2. Results and discussions

### 4.2.1. Liquidity determinants related to corporate governance

Table 5 shows the outcome of the estimation under OLS regression. The comprehensive analysis

of the data yields insightful findings regarding the impact of organizational and financial factors on liquidity metrics. Notably, the study underscores that board size plays a crucial role in influencing financial liquidity, with a discernible positive effect on both the cash ratio and quick ratio coupled with a statistically significant negative impact on the CCC.

This pattern implies that larger firms, particularly those with more extensive board composition, tend to exhibit heightened efficiency in managing capital. Our first hypothesis, H1, is accepted.

This finding is consistent with studies in the past on the relationship between board size and firm liquidity (Sathyamoorthi et al., 2018). Board size often exerts a positive impact on firm liquidity due to several interconnected factors. Firstly, a larger board typically brings together a diverse array of expertise, skills, and perspectives, which can enhance the quality of decision-making within the company. With a broader range of knowledge and experience at the board level, firms are better equipped to navigate complex financial situations, identify liquidity risks,

and devise effective strategies to maintain optimal liquidity levels. Additionally, a larger board may lead to more robust oversight and governance mechanisms, reducing the likelihood of managerial entrenchment or agency conflicts that could undermine liquidity management efforts. Moreover, a larger board can facilitate more effective monitoring of management actions, ensuring greater transparency and accountability in financial operations. Overall, the presence of a larger board is often associated with enhanced corporate governance practices, improved strategic planning, and, ultimately, a stronger liquidity position for the firm.

**Table 5:** Regression results

	CASH		QUICK		CYCLE	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
BOARD	0.034**	0.018	0.064***	0.072	-15.860**	6.414
SIZE	-3.24E-05	1.07E-06	-2.09E-06	5.42E-07	-0.011*	0.021
INDEP	0.783***	0.014	0.091***	0.033	-17.075**	3.526
AGE	0.046	0.012	0.008	0.001	0.604	0.228
ROA	1.073**	0.609	1.005**	0.609	-209.19	52.304
TOBINQ	-0.043	0.016	-0.857	0.402	-1.372	0.368
DEBT	-0.115*	0.048	-0.052*	0.009	1.648***	0.729
AUDIT	1.008	0.049	-1.037	0.400	-2.209	1.753
R-square		0.279		0.262		0.196
F-test		1.507		1.264		10.049
Observations		1,638		1,638		1,638

\*, \*\*, \*\*\*: Significance at 1%, 5%, and 10%, respectively

Continuously, our analysis also delves into the realm of corporate governance, unveiling noteworthy associations between liquidity metrics and board independence. The positive correlations observed between board independence with the cash ratio and quick ratio, along with the negative association with the CCC, highlight the pivotal role of independent board members in fostering a shorter cash cycle, ultimately elevating the overall liquidity status of the business. This discovery provides robust support for the assertion that firms instilling robust corporate governance practices exhibit a positive impact on liquidity management. Our finding confirms the second hypothesis, H2. The observed positive correlations between the cash ratio and quick ratio with board independence can be attributed to the role of strong corporate governance in enhancing financial prudence and risk management within a company. Board independence, which refers to the proportion of independent directors on a company's board, is often associated with greater oversight, accountability, and transparency in decision-making processes. Companies with a higher degree of board independence tend to have more rigorous financial controls and a stronger focus on shareholder interests. As a result, they are more likely to prioritize liquidity management and maintain higher levels of cash and liquid assets relative to their short-term liabilities, leading to higher cash and quick ratios.

The negative correlation observed between board independence and the CCC can be explained by the role of strong corporate governance in

promoting operational efficiency and effective working capital management within a company. A higher level of board independence typically implies that the board is more capable of providing objective scrutiny and guidance to management, particularly in matters related to operational efficiency and financial management. Independent directors are less likely to be influenced by management biases and more inclined to prioritize shareholder interests, including the efficient utilization of resources and the optimization of working capital. As a result, companies with a higher degree of board independence are more likely to implement effective policies and practices aimed at streamlining the CCC. This may involve initiatives to reduce inventory holding periods, expedite accounts receivable collection, and optimize accounts payable processes. By improving the efficiency of these operational activities, companies can shorten the time it takes to convert raw materials into cash from sales, leading to a shorter CCC.

Overall, the negative correlation between board independence and the CCC underscores the importance of strong corporate governance in driving operational excellence and enhancing liquidity management within a company.

#### 4.2.2. Other liquidity determinants

Examining the influence of profitability, as measured by Return on Assets, the study uncovers a positive effect on the cash ratio and quick ratio. However, no discernible impact is noted on the firm's working capital cycle, suggesting that more

profitable firms are strategically positioned with enhanced cash holdings relative to their current debts. We reject our hypothesis H3 on the negative impact of profitability on a firm's liquidity. This outcome, however, is also relevant as it indicates that profitable firms typically exhibit higher cash ratios and quick ratios due to their ability to generate greater cash flows from operations. This profitability enables them to build up larger cash reserves, reducing their reliance on short-term debt and enhancing their liquidity position. Additionally, stable earnings and improved creditworthiness allow profitable firms to anticipate cash needs more accurately and access financing on favorable terms. As a result, they can maintain higher levels of cash relative to short-term liabilities, reflecting sound financial management and bolstering their ability to meet obligations promptly.

Table 5 also shows that while firm leverage significantly and negatively affects the cash ratio and quick ratio, it positively impacts the net operating cycle. Hence, overall, we can conclude that firm leverage has a negative impact on a firm's liquidity. Our hypothesis H5 is rejected. This finding can be explained by several key reasons. Firstly, increased debt obligations, including interest payments and principal repayments, diminish the amount of available cash for other purposes, such as maintaining cash reserves or settling short-term liabilities, thereby reducing both ratios. Secondly, elevated leverage heightens the risk of financial distress or default, prompting firms to prioritize debt servicing over cash retention, further lowering cash and quick ratios. Lastly, liquidity constraints often accompany high leverage, constraining firms' ability to uphold sufficient cash reserves for immediate needs. Consequently, these liquidity ratios decline as leverage increases, signifying the adverse effect of firm leverage on a company's liquidity position and financial flexibility.

Despite the wealth of insights gained, it is noteworthy that the study does not unearth evidence substantiating a relationship between firm age, firm growth, and liquidity measurements, leaving room for further exploration in this dimension. The hypotheses H4 and H6 are rejected.

Also, when exploring the influence of firm size on liquidity metrics, a consistent negative trend emerges, achieving statistical significance specifically in the context of the net operating cycle. Larger companies tend to have more extensive and longer net operating cycles. There are several interconnected factors that explain this finding. Firstly, larger firms tend to have more complex operations and larger asset bases, which can result in higher working capital requirements. Managing liquidity becomes more challenging as firms grow, as they may need to allocate a larger portion of their resources to fund ongoing operations, invest in expansion opportunities, and service debt obligations. Additionally, larger firms may face difficulties in quickly converting their assets into

cash in times of need, as they may have more illiquid or long-term investments compared to smaller firms. Moreover, the sheer scale of operations in larger firms can lead to slower decision-making processes and increased bureaucratic hurdles, hindering the agility required to respond swiftly to changing liquidity demands. Furthermore, larger firms may be more susceptible to market shocks and systemic risks, which can further exacerbate liquidity challenges. Overall, while firm size often brings advantages such as economies of scale and market dominance, it can also impose constraints on liquidity management, making it a significant factor in determining a firm's liquidity position.

Insights from liquidity trends play a crucial role in risk management. Recognizing periods of high illiquidity and volatility enables portfolio managers to develop more robust risk mitigation strategies. Diversifying portfolios across more stable assets or employing hedging techniques can protect against market downturns. This proactive approach helps safeguard investments during economic stress, ensuring more stable returns and preserving capital. By integrating these findings into their risk management frameworks, practitioners can improve their resilience to market fluctuations and better manage potential losses.

The findings highlight the importance of effective regulatory responses in maintaining market liquidity during crises. Policymakers in Vietnam can use this evidence to enhance their regulatory frameworks, ensuring they are well-prepared for future shocks. Implementing measures such as liquidity support programs and enhanced market surveillance can help stabilize the market during turbulent times. Additionally, fostering transparency and efficient information dissemination can reduce uncertainty and improve market confidence. By strengthening these aspects of market regulation, policymakers can create a more resilient financial system capable of withstanding economic disruptions.

### 4.3. Robust checks

We conduct additional tests, including Fixed Effects and Random Effects, for the main models (see Eq. 7). To determine the most appropriate regression method, we evaluate the results of F-tests and Hausman tests, as presented in Table 6. For the CASH model, the F-test values are 74.11 and 105.90, with P values = 0.000, indicating that the Fixed Effects model is more suitable than pooled OLS for this model. The Hausman test is then conducted to choose between Fixed Effects and Random Effects regression. In the ASYM model, the Chi-square value is 201.58 with a p-value = 0.000, leading us to reject the null hypothesis H0 and accept hypothesis H1 of the Hausman test, showing that Fixed Effects is the best fit for our study's dataset. The results of the F-tests and Hausman tests for the QUICK and CYCLE models yield similar conclusions.

**Table 6:** Results for the F-test and Hausman test

	CASH	QUICK	CYCLE
F-test	F-test = 74.11***	F-test = 44.37***	F-test 83.69***
Hausman test	Chi-square = 105.90***	Chi-square = 117.23***	Chi-square =159.04***
Heteroscedasticity	256.12***	136.09***	244.34***
Autocorrelation	18.336	11.50	28.37

\*\*\*: Significance at 10%, respectively

We proceed to test for heteroscedasticity and autocorrelation issues. According to Table 6, the p-values for heteroscedasticity are 0.000 for all three models, indicating that the hypotheses of heteroscedasticity are accepted. However, there is no evidence suggesting the presence of autocorrelation issues. To address heteroscedasticity, we employ the GLS model and perform the robust test for the Fixed Effects. The

results for the GLS models are shown in Table 7 for all three models.

We continue to check for the endogeneity problem. We perform 2SLS regression and Durbin Wu Hausman Tests. Table 8 shows the results of the Durbin Wu Hausman Tests for the endogeneity problem. We can see that all the Wu Hausman tests have P-value > 0.05, showing no problem of endogeneity across all three models.

**Table 7:** GLS results

	CASH		QUICK		CYCLE	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
BOARD	0.0264**	0.018	0.061***	0.069	-11.009**	4.012
SIZE	-2.11E-05	1.00E-06	-2.09E-06	5.42E-07	-0.018*	0.023
INDEP	0.653***	0.094	0.090***	0.035	-14.164**	5.003
AGE	0.100	0.025	0.008	0.001	0.604	0.228
ROA	1.138**	0.502	1.005**	0.609	-189.56	42.097
TOBINQ	-0.045	0.012	-0.904	0.511	-1.088	0.200
DEBT	-0.115*	0.049	-0.051*	0.012	1.658***	0.629
AUDIT	1.000	0.051	-1.266	0.324	-2.417	1.638
R-square	0.2569		0.2600		0.2628	
F-test	12.03		6.94		11.17	
Observations	1,638		1,638		1,638	

\*, \*\*, \*\*\*: Significance at 1%, 5%, and 10%, respectively

From Table 7, it is evident that under the GLS model, both board size and board independence are positively correlated with the cash and quick ratios while negatively affecting the CCC. All the coefficients are significant, supporting our hypotheses and main results. A larger board with a high level of independence enhances decision-making quality within the company, thereby improving the firm's liquidity position.

Regarding other liquidity determinants, profitability has a positive and significant effect on

the firm's liquidity. Although it shows a negative effect on the CCC, this effect is insignificant, leading to the rejection of Hypothesis H3 under GLS results. Similarly, the GLS model confirms the OLS results, rejecting Hypotheses H4, H5, and H6. Firm leverage negatively impacts the firm's liquidity, significantly and negatively affecting the cash and quick ratios while positively impacting the net operating cycle. The robust tests do not find evidence for the impact of firm age and firm growth on liquidity measurements.

**Table 8:** Endogeneity checks

No.	Instrumented variables	CASH	QUICK	CCC
1	Board size	Durbin (Chi2) =1.384 Wu-Hausman = 1.399	Durbin (Chi2) =1.505 Wu-Hausman = 1.499	Durbin (Chi2) =3.068 Wu-Hausman = 3.066
2	SIZE	Durbin (Chi2) =0.183 Wu-Hausman = 0.190	Durbin (Chi2) =0.193 Wu-Hausman = 0.188	Durbin (Chi2) =1.811 Wu-Hausman = 1.753
3	INDEP	Durbin (Chi2) =10.386 Wu-Hausman =10.115	Durbin (Chi2) =8.337 Wu-Hausman = 8.209	Durbin (Chi2) =22.562 Wu-Hausman = 22.191
4	ROA	Durbin (Chi2) =2.833 Wu-Hausman = 2.731	Durbin (Chi2) =1.556 Wu-Hausman = 1.490	Durbin (Chi2) =4.317 Wu-Hausman = 4.300
5	MTB	Durbin (Chi2) =1.009 Wu-Hausman = 1.000	Durbin (Chi2) =6.004 Wu-Hausman = 5.939	Durbin (Chi2) =11.006 Wu-Hausman = 10.835
6	LEV	Durbin (Chi2) =9.037 Wu-Hausman = 8.992	Durbin (Chi2) =11.260 Wu-Hausman = 11.249	Durbin (Chi2) =25.060 Wu-Hausman = 25.009
7	AGE	Durbin (Chi2) =5.617 Wu-Hausman = 5.558	Durbin (Chi2) =2.077 Wu-Hausman = 2.003	Durbin (Chi2) =6.641 Wu-Hausman = 6.636

## 5. Conclusion

In conclusion, the study provides valuable insights into the impact of organizational and financial factors on liquidity metrics. The findings highlight the crucial role of board size and independence in shaping a firm's liquidity position.

Overall, we found that larger board sizes are associated with improved efficiency in capital

management, reflected in higher cash and quick ratios and a shorter CCC. Likewise, greater board independence correlates positively with liquidity metrics, indicating enhanced financial prudence and risk management. Additionally, profitability positively influences cash and quick ratios, underlining the importance of generating strong cash flows from operations. However, firm leverage exerts a negative impact on liquidity ratios,



underscoring the constraints imposed by high debt levels on a firm's liquidity position. Notably, firm age and growth do not show significant relationships with liquidity measurements, suggesting avenues for further research. Furthermore, larger firms tend to face challenges in liquidity management due to their complex operations and longer net operating cycles. Overall, the study underscores the multifaceted nature of liquidity management, influenced by various internal and external factors, necessitating careful consideration for firms seeking to optimize their liquidity position. Overall, these relationships underscore the importance of both corporate governance practices and operational efficiency in influencing a company's liquidity position. Stronger corporate governance, as indicated by board independence, promotes prudent financial management and higher liquidity ratios, while efficient working capital management, reflected in a shorter CCC, enhances liquidity and strengthens liquidity ratios.

The research holds significant implications for both academic understanding and practical application in the realm of corporate finance and governance. By elucidating the intricate relationships between organizational and financial factors and liquidity metrics, the study provides valuable insights into the mechanisms driving liquidity management within firms. These findings offer academics a deeper understanding of the complex dynamics at play in corporate liquidity, enriching scholarly discourse on topics such as corporate governance, financial decision-making, and risk management. Moreover, the practical implications of the research are equally profound, as it furnishes practitioners with actionable insights to enhance liquidity management practices within their organizations. By recognizing the pivotal roles of board size, independence, profitability, and leverage in shaping liquidity metrics, firms can adopt more informed strategies to optimize their liquidity position, mitigate financial risks, and bolster overall financial resilience. Ultimately, the research contributes to a more holistic understanding of liquidity dynamics in firms, offering valuable guidance for stakeholders navigating the intricate landscape of corporate finance and governance.

One limitation of the research is the reliance on a limited set of liquidity measures, specifically the cash ratio, quick ratio, and CCC. While these metrics provide valuable insights into a firm's liquidity position, they do not capture the full spectrum of liquidity aspects. By focusing solely on these measures, the study may not fully represent the complexities of a firm's liquidity. Other important liquidity measures, such as the current ratio, operating cash flow ratio, and net working capital, are not considered. These additional metrics could provide a more comprehensive view of a firm's liquidity.

The chosen liquidity measures might also fail to capture sector-specific liquidity dynamics. Different industries have unique liquidity requirements and

behaviors, and the selected measures may not fully reflect these nuances. For instance, inventory turnover and receivables turnover ratios can be critical for sectors with significant inventory or receivables components. By not including these measures, the study may overlook important aspects of liquidity in certain industries.

Additionally, the focus on short-term liquidity metrics such as the cash ratio, quick ratio, and CCC may not provide a balanced perspective on a firm's overall liquidity. Incorporating long-term liquidity measures, such as the liquidity coverage ratio (LCR) and net stable funding ratio (NSFR), could offer a more comprehensive view of a firm's ability to meet both immediate and future obligations. The study emphasizes operational liquidity but does not account for financial liquidity aspects, such as the firm's access to capital markets and credit facilities. Including measures like the debt-to-equity ratio and interest coverage ratio could provide additional insights into financial liquidity.

The research also does not consider market liquidity, which refers to the ease with which assets can be bought or sold in the market without affecting their price. This is particularly relevant for firms with significant investment portfolios or those operating in volatile markets. Including market liquidity considerations would further enhance the comprehensiveness of the analysis.

Future research could address these limitations by incorporating a broader range of liquidity measures. This would provide a more holistic understanding of a firm's liquidity position and its ability to manage financial risks. Additionally, exploring sector-specific liquidity measures and differentiating between short-term and long-term liquidity could yield more nuanced insights. Including market liquidity considerations would further enhance the comprehensiveness of the analysis. By acknowledging and addressing these limitations, future studies can offer richer insights into corporate liquidity, benefiting both academics and practitioners.

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## **Compliance with ethical standards**

## **Conflict of interest**

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## References

- Al-Homaidi EA, Tabash MI, Al-Ahdal WM, Farhan NHS, and Khan SH (2020). The liquidity of Indian firms: Empirical evidence of 2154 firms. *The Journal of Asian Finance, Economics, and Business*, 7(1): 19-27. <https://doi.org/10.13106/jafeb.2020.vol7.no1.19>
- Al-Najjar B and Clark E (2017). Corporate governance and cash holdings in MENA: Evidence from internal and external governance practices. *Research in International Business and Finance*, 39: 1-12. <https://doi.org/10.1016/j.ribaf.2016.07.030>
- Baños-Caballero S, García-Teruel PJ, and Martínez-Solano P (2010). Working capital management in SMEs. *Accounting and Finance*, 50(3): 511-527. <https://doi.org/10.1111/j.1467-629X.2009.00331.x>
- Baysinger BD and Butler HN (1985). Corporate governance and the board of directors: Performance effects of changes in board composition. *Journal of Law, Economics and Organization*, 1(1): 101-125.
- Berger AN and Udell GF (1998). The economics of small business finance: The roles of private equity and debt markets in the financial growth cycle. *Journal of Banking and Finance*, 22(6-8): 613-673. [https://doi.org/10.1016/S0378-4266\(98\)00038-7](https://doi.org/10.1016/S0378-4266(98)00038-7)
- Dittmar A and Mahrt-Smith J (2007). Corporate governance and the value of cash holdings. *Journal of Financial Economics*, 83(3): 599-634. <https://doi.org/10.1016/j.jfineco.2005.12.006>
- D'Mello R, Krishnaswami S, and Larkin PJ (2008). Determinants of corporate cash holdings: Evidence from spin-offs. *Journal of Banking and Finance*, 32(7): 1209-1220. <https://doi.org/10.1016/j.jbankfin.2007.10.005>
- Fiador V (2016). Does corporate governance influence the efficiency of working capital management of listed firms: Evidence from Ghana. *African Journal of Economic and Management Studies*, 7(4): 482-496. <https://doi.org/10.1108/AJEMS-08-2015-0096>
- Goel U, Bansal N, and Sharma A (2015). Impact of corporate governance practices on working capital management efficiency: A structural equation modelling approach. *Indian Journal of Finance*, 9(1): 38-48. <https://doi.org/10.17010/ijf/2015/v9i1/71534>
- Horobet A, Curea SC, Smedoiu Popoviciu A, Botoroga CA, Belascu L, and Dumitrescu DG (2021). Solvency risk and corporate performance: A case study on European retailers. *Journal of Risk and Financial Management*, 14(11): 536. <https://doi.org/10.3390/jrfm14110536>
- Md. Musfiqur R and Farjana NS (2018). Efficiency of board composition on firm performance: Empirical evidence from listed manufacturing firms of Bangladesh. *Journal of Asian Finance, Economics and Business*, 5(2): 53-61. <https://doi.org/10.13106/jafeb.2018.vol5.no2.53>
- Muhammad H, Rehman AU, and Waqas M (2016). The relationship between working capital management and profitability: A case study of tobacco industry of Pakistan. *The Journal of Asian Finance, Economics, and Business*, 3(2): 13-20. <https://doi.org/10.13106/jafeb.2016.vol3.no2.13>
- Opler T, Pinkowitz L, Stulz R, and Williamson R (1999). The determinants and implications of corporate cash holdings. *Journal of Financial Economics*, 52(1): 3-46. [https://doi.org/10.1016/S0304-405X\(99\)00003-3](https://doi.org/10.1016/S0304-405X(99)00003-3)
- Petersen MA and Rajan RG (1997). Trade credit: Theories and evidence. *The Review of Financial Studies*, 10(3): 661-691. <https://doi.org/10.1093/rfs/10.3.661>
- Richards DV and Laughlin JE (1980). A cash conversion cycle approach to liquidity analysis. *Financial Management*, 9(1): 32-38. <https://doi.org/10.2307/3665310>
- Sathyamoorthi CR, Mbekomize CJ, Mapharing M, and Selinkie P (2018). The impact of corporate governance on working capital management efficiency: Evidence from the listed companies in the consumer services sector in Botswana. *International Journal of Economics and Finance*, 10(2): 135-149. <https://doi.org/10.5539/ijef.v10n12p135>
- Vu TMT, Tran CQ, Doan DT, and Le TN (2020). Determinants of capital structure: The case in Vietnam. *The Journal of Asian Finance, Economics, and Business*, 7(9): 159-168. <https://doi.org/10.13106/jafeb.2020.vol7.no9.159>
- Wasiuzzaman S (2018). Determinants of liquidity in Malaysian SMEs: A quantile regression approach. *International Journal of Productivity and Performance Management*, 67(9): 1566-1584. <https://doi.org/10.1108/IJPPM-12-2017-0354>
- Wasiuzzaman S and Arumugam VC (2013). Determinants of working capital investment: A study of Malaysian public listed firms. *Australasian Accounting, Business and Finance Journal*, 7(2): 63-83. <https://doi.org/10.14453/aabfj.v7i2.5>
- Zariyawati MA, Taufiq H, Anuar MN, and Sazali A (2010). Determinants of working capital management: evidence from Malaysia. *Financial Theory and Engineering: Proceedings of the 2010 International Conference, IEEE Computer Society Press, Dubai, UAE: 190-194.* <https://doi.org/10.1109/ICFTE.2010.5499399>