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Cash Holdings Decisions and Firm Size: Liquidity As A Moderator

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Abstract

This study delves into the influence of company size on cash reserves, leveraging liquidity as a moderating factor, particularly focusing on firms within the LQ45 index on the Indonesia Stock Exchange. The research employs a purposive sampling method, selecting companies meeting specific criteria such as continuous listing in the LQ45 index from 2021 to 2023 and consistent publication of comprehensive financial statements during this timeframe. The study encompasses 78 data points, aiming to shed light on the correlation between company size and cash reserves while emphasizing the moderating impact of liquidity within Indonesia's financial market landscape. The results are expected to provide valuable insights into the connection between firm size and cash holdings, while highlighting the moderating role of liquidity within Indonesia's capital market context. This study contributes to the general knowledge of corporate finance by offering an empirical foundation for decision-making among stakeholders in the LQ45-listed firms.

Keywords: cash holding, firm size, liquidity.

1. INTRODUCTION

Cash holdings, or the retention of cash, is a crucial element for companies as it reflects their liquidity level and their ability to meet short-term obligations. It is essential for companies to maintain cash reserves to prepare for market uncertainties. Additionally, cash reserves can be utilized for investment opportunities that generate profits (Lins et al., 2010; Opler et al., 1999). The company's decision in holding cash is one of the important aspects in financial management that can affect the company's financial stability and investment strategy. High cash holdings can provide financial flexibility in the face of economic uncertainty, but can also indicate problems in optimal capital allocation (Almeida et al., 2004). Firm size is one of the factors that influences cash holdings decisions. Large companies tend to have easier access to external funding sources, either through capital markets or bank credit, so their need to hold large amounts of cash is lower than small companies (Akben-Selcuk & Altiok-Yilmaz, 2017). In contrast, small companies rely more on internal funds to support their operations, so they tend to maintain higher levels of cash holdings to anticipate financial uncertainty.

LQ45 is one of the main stock indexes on the Indonesia Stock Exchange (IDX). LQ45 companies are selected by the Indonesia Stock Exchange (IDX) based on their high liquidity, large market capitalization, and strong financial performance. However, during the 2021–2023 period, there were variations in cash holdings among

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LQ45 companies. The highest cash holdings reached 92.80% of total assets, while the lowest were 0.47% of total assets. This highlights a stark contrast in the amount of cash retained by each LQ45 company, suggesting the presence of potential factors, such as firm size, that influence differing liquidity policy decisions among companies. Different firm sizes result in varying policies. Although many studies have examined firm size and its impact on cash holdings, the moderating effect of liquidity which could strengthen or weaken the connection between the company size and cash holdings remains underexplored, particularly in the context of companies listed in the LQ45 index. Therefore, this study aims to address and stimulate further investigation into the effect of firm size on cash holdings, with liquidity as a moderating variable, focusing on LQ45 companies during the 2021–2023 period.

This study provides new insights into the role of liquidity as a moderating variable between firm size and cash holdings. Since there has been limited research about this topic in LQ45 companies, an updated study on this topic is necessary. Meanwhile most existing research has focused on other sectors, as seen in studies by (Chandra & Dewi, 2021; Choriana & Rudy, 2021; Yilmaz & Samour, 2024; Zulyani & Hardiyanto, 2019). Therefore, this research addresses a gap in these studies by exploring the relationship within the context of companies listed in the LQ45 index. By analyzing firms in this index, the study offers a specific contribution to understanding the financial dynamics of companies with high liquidity, large market capitalization, and strong financial performance in LQ45 companies.

2. LITERATURE REVIEW

Cash Holdings

Cash can be easily converted in a short period of time, making it available for use at any moment. It can also be quickly converted into other types of assets (Weygandt, J. J., Kimmel, P. D., & Kieso, 2016). Cash holdings refer to the cash held by a company, used to finance its operations, invested in liquid assets, or distributed to investors (Gill & Shah, 2011). According to the theory of (Schumpeter & Keynes, 1936), a company may keep cash on hand for several reasons, namely: income motive, business motive, precautionary motive, and speculative motive. All of these motives aim to prepare the company for potential costs and risks of liquidity shortages that may arise in the future. Cash holdings are considered as the company's financial reserves to prevent the risk of cash shortfalls caused by uncertainty in cash flows and funding needs (Opler et al., 1999). The trade-off theory suggests that a company needs to allocate a certain amount of cash at a specific level to achieve financial flexibility and maximize shareholder value (Mahrt-smith et al., 2003). Having cash reserves can reduce the company's risk since cash provides financial flexibility to face uncertainties. With reduced risk, the company's value is likely to increase (Yilmaz & Samour, 2024).

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Firm Size and Cash Holdings

One of the factors suspected to influence cash holdings is firm size. It refers to the scale of a company, which can be observed from the amount of equity, sales value, or total assets of the company (Riyanto, 2013). Firm size can be measured by classifying the size of a company through the calculation of the total assets owned by the company, sales volume, and stock value (Widiastari & Yasa, 2018).

David Durand (1988) suggested that the calculation of company value can be done with three approaches namely income approach, market approach and asset approach. Income approach, this approach assesses the company based on its ability to generate profits in the future. One method often used in this approach is Discounted Cash Flow (DCF), which calculates the company's value based on future cash flows discounted to the current value. The relationship with the potential amount of cash holdings that a company has is If a company has strong operating cash flow, they may not need much cash because they can fund their operations from the revenue they generate. Companies with unstable cash flow tend to hold more cash as a reserve to anticipate the uncertainty of future revenue.

Market approach, this approach determines a company's value by comparing the market price of similar companies that are already traded. Methods often used include Price to Earnings Ratio (P/E Ratio) and Market Capitalization. In the market approach, cash holdings can be calculated by comparing a company to other companies in the same industry. Investors and analysts often use financial ratios to evaluate the extent to which a company is holding cash relative to its size and valuation in the market. The Price-to-Cash Flow (P/CF) Ratio can be used to assess how much cash a company has relative to its market value.

Asset approach, this approach evaluates a company's value based on the total value of assets owned minus its liabilities. Methods often used are Book Value or Liquidation Value, which calculates the net value of assets if the company is liquidated. The relationship between the firm size calculation approach using the asset approach and cash holdings is that companies with larger assets may have less need to hold cash because their assets can be used as collateral to obtain loans. Conversely, companies with smaller assets may need to hold more cash to ensure liquidity.

Several studies explain the connection between cash holdings policies and firm size. Research by Opler et al. (1999), Bates et al. (2009), and Magerakis et al. (2020) shows that larger companies typically hold less cash compared to smaller companies. On the other hand, smaller companies are more likely to adopt cash holdings policies as cash reserves to anticipate market uncertainties and limitations in external financing. Rompas et al. (2024) states that Larger firms in the property and real estate sector hold more cash, aligning with theories that suggest they maintain higher liquidity as a buffer against operational and financial uncertainties. Research by Yilmaz & Samour (2024) found that firm size is a significant control variable in determining cash holdings. Larger companies have greater financial capacity, making them more able to retain cash for operational and investment needs. Studies by (Elnatahan, N. L., & Susanto, 2020; Gill & Shah, 2011; Liadi, C. C., Suryanawa & 2018; Prasetiono, & Afif, 2016), show that firm size has a positive effect on cash

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holdings. Meanwhile, research by (Chandra & Dewi, 2021; Chireka & Fakoya, 2017; Zulyani & Hardiyanto, 2019) indicates that firm size does not have a positive effect on cash holdings.

Liquidity and Cash Holdings

Liquidity indicates the extent to which a company can manage its current assets to meet its current liabilities. If a company has a good liquidity level, it will gain trust from creditors and investors (Hery, 2021). Liquidity ratios evaluate a company's capacity to meet short-term obligations, both to external and internal parties (Kasmir, 2019). Firms balance the benefits of holding liquid assets, such as reduced financial distress costs and increased flexibility, against the opportunity costs of holding low-return assets (Opler et al., 1999) Firms' cash holdings are sensitive to cash flow variations, indicating the importance of liquidity in managing operational and investment uncertainties (Almeida, H., Campello, M., & Weisbach, 2004).

Research conducted by Bates et al. (2009) highlight that cash holdings increase a firm's ability to compete in financial markets. Their study shows the firms with higher cash reserves tend to perform better, especially after the financial crisis. Cash provides a buffer against financial distress, enabling firms to take advantage of growth opportunities without being constrained by external financing. In the other study**,** Martinez-Sola et al. (2011) argue that post-financial crisis, companies that maintain higher levels of cash holdings have been able to secure a better competitive position in the market. They found a direct positive relationship between cash holdings and firm value, emphasizing the role of liquidity in hedging against market volatility**.** Fresard (2010) examines how firms use cash holdings as a strategic tool to defend against aggressive market competitors. He found that firms with higher liquidity are better positioned to absorb shocks in competitive industries and maintain growth, even during market disruptions. Magerakis et al. (2020) states that both sizeable companies facing intricate liquidity challenges and smaller businesses dealing with greater financial constraints must determine the ideal cash ratio for their balance sheets. Further, studies by Choriana & Rudy (2021) and Zulyani & Hardiyanto (2019) show that liquidity has a positive but insignificant effect on cash holdings. Meanwhile, Basheer (2013) and Uyar & Kuzey (2014) found that liquidity has a negative and significant effect on cash holdings. Based on the above explanation, the hypotheses of this study are formulated as follows:

H1: Firm size has a positive effect on cash holdings.
H2: Liquidity strengthens the positive effect of firm size on cash holdings.

3. RESEARCH METHOD

The research utilized secondary data from financial reports of LQ45 companies spanning from 2021 to 2023, sourced from the official Indonesia Stock Exchange website: www.idx.co.id. Furthermore, the researchers gathered additional secondary data from theoretical references such as books, journals, and relevant

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articles. The evaluation of the data will involve the application of the moderated regression analysis technique.

All of the firms that are part of the LQ45 index make up the study's population. Purposive sampling was the sampling technique used, with specific criteria: selected companies must maintain a consistent presence in the LQ45 index from 2021 to 2023 and provide financial reports for the same period. Meeting these criteria, 31 companies were eligible, resulting in 93 observations for analysis. Subsequent to data collection, an initial descriptive analysis was carried out to detect outliers using the Stata application. Following the removal of outliers, 26 companies remained, with a total of 78 observations available for the study.

Cash Holdings

Opler et al. (1999) define cash holdings as the cash balance maintained by a company to finance its operational activities and to anticipate unexpected costs. To measure the amount of cash holdings in this study, the following formula will be used is following Opler et al. (1999) and Arfan & Fahlevi (2016):

$$Cash\ Holdings = \frac{cash\ and\ cash\ equivalents}{Total\ Assets}$$

Firm Size

The concept of firm size pertains to the magnitude of a company, indicating whether it is substantial or compact, which is discernible from the total assets held by the company. As outlined by Febriani (2020), the natural logarithm (Ln) of the total assets is used to calculate the size of the company. This method allows for a standardized measure of firm size across different companies. The measurement of firm size will be conducted using the formula proposed by Akben-Selcuk & Altiok-Yilmaz (2017) and Chandra & Dewi (2021):

$$Size = ln\ (Total\ Asset)$$

Liquidity

The liquidity ratio represents a company's ability to meet its current liabilities in a timely manner (Fahmi, 2020). According to Kasmir (2019), liquidity measured using the cash ratio is as follows:

$$Cash\ Ratio = \frac{cash\ and\ cash\ e\text{quivalents}}{\text{Current Liabilities}}$$

4. DATA ANALYSIS AND DISCUSSION

Table 1. Descriptive Statistic

Variable	N	Mean	Median	SD	Min	Max
CASH_HOLDINGS	78	0.147	0.145	0.085	0.005	0.377
SIZE	78	0.178	0.176	0.025	0.123	0.227
LIQ	78	0.649	0.434	0.590	0.001	2.310

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Table 1 reveal that all variables have standard deviations lower than their respective means, indicating that the data exhibits relatively low variability and reflects the general characteristics of the companies within the sample. The CASH_HOLDINGS variable has a mean of 0.147 and a median of 0.145, with a range from 0.005 to 0.377. This suggests that most companies maintain a consistent proportion of cash relative to their total assets, although there are differences in cash management policies across companies. The SIZE variable, with a mean of 0.178 and a median of 0.176, and a range from 0.123 to 0.227, reflects a uniformity in company sizes within the sample, highlighting the stability of market capitalization among large companies listed in the LQ45 index. Meanwhile, LIQUIDITY (LIQ), measured by the cash ratio, has a mean of 0.649 and a median of 0.434, with a range from 0.001 to 2.310. This indicates significant variation in liquidity strategies across companies, with some opting for very high liquidity levels, while others rely more on the use of current assets to support operations and business expansion. Additionally, firms with higher liquidity levels tend to hold more cash, reinforcing the relationship between liquidity management and cash-holding decisions. These interactions suggest that corporate financial strategies, including cash and liquidity management, are influenced by firm size and access to funding sources, leading to variations in financial decision making across the sample.

This study align with the theory presented by Opler et al. (1999) the theory explain that corporations weigh the advantages of maintaining liquid assets, such as lower financial distress costs and greater flexibility, against the costs of holding low-return assets. In the context of this research, the relatively consistent mean and median of the cash holdings variable indicate that the companies in the sample actively maintain a balance between the benefits of liquidity and the opportunity costs associated with holding liquid assets. The cash levels maintained by the companies reflect their efforts to mitigate financial distress risks and provide greater flexibility in addressing operational uncertainties, without sacrificing opportunities to maximize returns from other assets.

In this study, regression analysis validity and reliability were confirmed using classical assumption tests. These tests are crucial for checking whether the data meets the necessary assumptions for regression models, including normality, multicollinearity, and heteroscedasticity. The results of these tests are summarized in Table 2 below.

Tabel 2. Summary of Clasical Assumption Test Result

Classical Assumption Test	Test Method	Statistic / Test Value	Test Criteria	Conclusion
Normality Test	Skewness Test	p-value = 0.0707	p > 0.05	Data is normally distributed
Multicollinearity Test	VIF (Variance Inflation Factor)	VIF = 1.01	VIF < 10	No multicollinearity

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Heteroscedasticity Test	Breusch-Pagan Test	p-value = 0.2511	p > 0.05 No heteroscedasticity

According to Table 2, the normality test was conducted using the skewness test, yielding a p-value of 0.0707, which is greater than the 0.05 threshold. This result indicates that the data follows a normal distribution, a key assumption for reliable regression analysis. For the multicollinearity test, the Variance Inflation Factor (VIF) was used, and the result of 1.01 is well below the threshold of 10, suggesting that there is no significant multicollinearity among the independent variables. This ensures that the independent variables are not highly correlated, which is important for the stability of the regression coefficients. The heteroscedasticity test, conducted using the Breusch-Pagan test, produced a p-value of 0.2511. Since this value is greater than 0.05, it confirms the absence of heteroscedasticity, meaning the residuals exhibit constant variance across all levels of the independent variables. These results indicate that the regression model meets the necessary assumptions, suggesting that the findings from the analysis can be considered robust and reliable.

Before proceeding with the regression analysis, a model selection was conducted to determine the most appropriate estimation model. Selecting the correct model is essential to ensure valid and accurate estimates, as well as to choose a model that fits the data characteristics. To achieve this, a Chow test was conducted to choose between OLS and FEM, and a Hausman test was used to select between FEM and REM. The results of these tests are summarized in Table 3 below.

Tabel 3. Summary of Model Selection Test

Classical Assumption Test	Statistic / Test Value	Test Criteria	Decision
Chow Test	p-value = 0.0000	p < 0.05: Reject H0	Reject H0
Hausman Test	p-value = 0.0306	p < 0.05: Reject H0	Reject H0
Conclusion: Fixed Effects Model (FEM) is preferred			

The Chow test results show a p-value of 0.0000, which is less than the 0.05 threshold. This indicates that the null hypothesis (which suggests that the OLS model is appropriate) should be rejected. Therefore, the OLS model is not suitable for this data, and the Fixed Effects Model (FEM) is more appropriate. Next, the Hausman test produces a p-value of 0.0306, which is also less than 0.05. This result indicates that the null hypothesis (which suggests that the Random Effects Model (REM) is more suitable) should be rejected. Therefore, the Fixed Effects Model (FEM) is chosen as the most appropriate estimation model, as it accounts for individual differences across companies and provides more valid estimates. Thus, there is no need to proceed with the Lagrange Multiplier test to choose between the Random Effects Model (REM) and the OLS model, since the Hausman test has already indicated that the Fixed Effects Model (FEM) is the best choice for this analysis.

This study applies the Fixed Effect Model (FEM) estimation to analyze the relationship between firm size (SIZE), liquidity (LIQ), and cash holdings

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(CASH_HOLDINGS), as well as to examine the moderating role of liquidity on the relationship between firm size and cash holdings. The selection of FEM is based on its ability to control for unobservable firm-specific effects, such as internal policies or organizational structures, which remain constant over time. As a result, this method provides more accurate estimates by addressing potential biases arising from unmeasured, firm-specific factors. The regression results from this analysis can be found in Table 4 below.

Table 4: Regression Results

	(1) Model 1	(2) Model 2
Intercept	0.862***	0.210
	(3.420)	(1.571)
SIZE	-4.045***	-1.151*
	(-2.855)	(-1.721)
LIQ		0.678***
		(4.137)
SIZE#LIQ		-2.728***
		(-3.213)
Adj.R2	0.10	0.47
N	78	78
F-Stat	8.154	15.780

t statistics in parentheses
* p<0.10, ** p<0.05, *** p<0.01

Table 4 presents the main regression results of this study. Model 1 tests the first hypothesis (H1), which investigates whether firm size (SIZE) affects cash holdings (CASH_HOLDINGS). According to the results shown in Table 4, the regression coefficient for SIZE is -4.045, with a t-value of -2.855, significant at the 1% level ($p < 0.01$). This indicates that for every unit increase in firm size, the amount of cash held decreases by 4.045 units. This finding supports the first hypothesis (H1) and suggests that larger businesses typically have less cash. The rationale behind this finding is that larger firms have easier access to external funding sources, such as credit or bonds, which reduces their reliance on internal cash reserves. Therefore, larger firms can operate with lower cash levels compared to smaller firms, which may be more dependent on internal cash to meet their operational needs.

The research aligns with studies by Opler et al. (1999), Bates et al. (2009), and Magerakis et al. (2020), illustrating that larger corporations generally maintain lower cash reserves than smaller firms. This practice stems from their enhanced ability to secure external funding. In contrast, smaller enterprises tend to hold more cash as a protective strategy, safeguarding against market volatility and potential hurdles in acquiring external financing. This also corresponds to the findings of the study done by Yilmaz and Samour (2024), which highlighted firm size as a crucial control variable in influencing cash reserves. Larger companies typically have more extensive financial resources, allowing them to maintain cash reserves for operational and investment needs. These findings are further corroborated by the

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research conducted by Gill and Shah (2011), Prasetiono and Afif (2016), Liadi and Suryanawa (2018), and Elnatahan, N. L., and Susanto (2020).

These findings align with David Durand (1988) firm value of firm theory, which emphasizes that company valuation can be approached through income, market, and asset perspectives. The negative relationship between firm size and cash holdings observed in this study is particularly consistent with the asset approach, which suggests that firms with substantial assets have greater access to external financing and therefore require lower cash reserves. Larger firms, with their established creditworthiness and asset-backed financing options, can rely on external funding rather than holding excessive internal cash. Conversely, smaller firms, which may face financing constraints, tend to accumulate more cash as a precautionary measure. This supports the notion that firm valuation methods influence corporate financial strategies, particularly in liquidity management (Durand, 1988).

Model 2 is used to evaluate the second hypothesis (H2), which examines whether liquidity (LIQ) moderates the connection between firm size and cash holdings. The regression results in Table 4 show that the interaction term between SIZE and LIQ (SIZE#LIQ) has a coefficient of -2.728 with a t-value of -3.213, significant at the 1% level ($p < 0.01$). This indicates that the negative impact of SIZE on CASH_HOLDINGS becomes weaker when firms have higher liquidity levels. In other words, liquidity plays a moderating role, where the influence of firm size on cash holdings diminishes as a firm's liquidity increases. Larger firms with high liquidity tend to be more flexible in managing their cash. The high liquidity suggests that these firms already have sufficient cash available to finance their operations without needing to rely on their large size to seek additional external funding. This means that such firms do not have to depend on their large capacity (such as obtaining loans or issuing shares) to raise capital, as they already have adequate cash reserves to cover daily operational needs.

Furthermore, the LIQ (liquidity) variable directly shows a significant positive effect on cash holdings, with a coefficient of 0.678 and a t-value of 4.137, significant at the 1% level ($p < 0.01$). This suggests that firms possessing greater liquidity are inclined to retain higher levels of cash. An increase in liquidity by one unit will lead to an increase in cash holdings by 0.678 units. These findings highlight the importance of liquidity in cash management decisions, consistent with the theory that firms with higher liquidity are better able to meet urgent funding needs without relying on external funding sources.

The regression results in Model 2 also show that, although the SIZE variable remains significant with a coefficient of -1.151 and a t-value of -1.721 at the 10% level ($p < 0.10$), the negative effect of firm size on CASH_HOLDINGS becomes smaller compared to Model 1. This suggests that although firm size continues to influence cash holdings, the impact is weaker once liquidity's role in moderating this relationship is considered.

The increase in Adjusted R^2 (Adj.R^2) from 0.10 in Model 1 to 0.47 in Model 2 demonstrates that the addition of the LIQ variable and its interaction with SIZE significantly improves the model's explanatory power in accounting for variations in cash holdings. Model 2, which is more complex, provides a better knowledge of

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how liquidity moderates the connection between business size and cash management. This finding indicates that, besides firm size, liquidity should also be considered when formulating cash management policies, particularly for larger firms with higher liquidity.

The results from this study behaved similarly to the literature on liquidity and cash, As pointed out by Hery (2021), liquidity reflected a firm ability to fund their current asset to face its short-term obligations. Having good liquidity boosts confidence between creditors and investors. These are in consonance with the results of this study which show that more liquid firms are less flexible when controlling cash. This finding implies that, as firms with higher liquidity have already gained the trust of the market, they do not need to depend too much on their liquid assets in order to fulfill their cash needs; more specifically the interaction term between SIZE and LIQ in Model 2 shows a less negative relationship. The findings from Model 2 also reinforce this view, that the liquidity variable (LIQ) has a significant positive effect on cash holdings. This is consistent with the view that more liquid firms hold cash as a cushion for expected operational and investment shocks (Almeida et al. 2004), which assert that liquidity risk is one of only several aspects that need to be managed in relation to risks.

Research conducted by Bates et al. (2009), Martinez-Sola et al. (2011), and Fresard (2010) underscores the significance of liquidity in furnishing companies with a competitive edge, allowing them to endure market fluctuations and financial challenges. The outcomes in Model 2 further emphasize this idea, indicating that when SIZE interacts with LIQ, larger enterprises with ample liquidity are more adept at managing unforeseen events and market instabilities without solely depending on their size to obtain external financing. This discovery reinforces the idea that cash reserves function as a tactical resource for shielding against market disturbances and sustaining progress.

These findings support David Durand (1988) value of firm theory, particularly regarding liquidity's moderating role in cash management. The asset approach suggests that firms with higher liquidity rely less on external financing, weakening the negative relationship between firm size and cash holdings. Additionally, the positive effect of liquidity on cash reserves reinforces its role in sustaining financial stability, highlighting that liquidity is a key factor in firm valuation and cash management strategies (David Durand, 1988).

5. CONCLUSIONS

The results reveal that larger firms typically maintain lower cash reserves. The underlying reason is that larger firms benefit from easier access to external financing options, such as credit lines or bond issuance, minimizing their dependence on internal cash reserves. Consequently, unlike smaller firms that rely more heavily on internal cash to sustain operations, larger firms can manage with reduced cash levels.

This study shows that liquidity increases the magnitude on firm size-cash holdings relationship whereby firms with higher liquidity tend to have a weaker negative effect of firm size on cash holdings Similarly, liquidity has a positive effect

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on cash holdings highlighting the importance of liquidity for cash management. Results also suggest the need to considers liquidity and firm size in developing cash management policies, especially at high corporative sizes.

Future research should use broader sample of industries to identify the equality between firm size, cash holdings and liquidity across different sectors in order to achieve a fuller picture. In addition, more research could be conducted to examine the effects of other variables like macroeconomic environment, interest rates or government policies on the link between firm size and liquidity as well as cash reserves.

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