IJIEFER
INTERNATIONAL JOURNAL OF ISLAMIC ECONOMICS AND FINANCE RESEARCH
Vol. 7, No. 2, DEC 2024
e-ISSN: 2636 – 9419

DETERMINANTS OF CASH HOLDINGS: EVIDENCE FROM SHARIAH-COMPLIANT FIRMS IN MALAYSIA

Norlita Zainudin
Faculty of Economics, Accountancy and Management
Universiti Islam Selangor
Bandar Seri Putra, 43000 Kajang, Selangor
norlita@uis.edu.my

Norhuda Abdul Rahim
School of Business and Economics
Universiti Putra Malaysia
43400 UPM Serdang, Selangor
huda@upm.edu.my

Aslam Izah Selamat
School of Business and Economics
Universiti Putra Malaysia
43400 UPM Serdang, Selangor
aslamizah@upm.edu.my

Ruzita Abdul Rahim
Faculty of Economics and Management
Universiti Kebangsaan Malaysia
43600 UKM Bangi, Selangor
ruzitaar@ukm.edu.my

ABSTRACT

A firm that holds a higher level of cash may signify the presence of an agency conflict, as managers could use those resources based on their benefits and interests. Although previous studies discovered various factors that impact cash holdings, the literature on the findings for Shariah-Compliant Firms (SCFs) is still in its infancy. Hence, this study examines the determinants of cash holdings of SCFs listed in Bursa Malaysia to enrich the literature. The factors influencing corporate cash holdings are investigated using a static panel data regression. As the dataset has both firm fixed and time effects, this study further examines the robustness of the model by estimating standard errors clustered by firms while addressing the time effect. The results show that the significant determinants of cash holdings for SCFs are leverage, dividend, and cash flow. This result is robust using an alternative measurement of the dependent variable. Potential avenues for further research could involve investigating and contrasting the determinants of cash holdings between SCFs and Non-Shariah-Compliant Firms (NSCFs).

Keywords: Cash Holdings, Shariah Compliance, Determinants, Firm Characteristics

Submitted: 19/08/2024 *Accepted: 25/10/2024* *Published: 24/12/2024*

INTRODUCTION

Previous literature documents that cash holdings play a critical role in shaping a firm's financial structure, impacting its ability to withstand economic uncertainties and maintain liquidity (Kuan et al., 2011). Generally, a firm's financial manager must determine the ideal cash holding level based on the firm's needs. On one hand, holding insufficient cash may lead to an interruption in the firm's operation. On the other hand, excessive cash holdings may lead to agency conflicts between shareholders and managers, as managers may use the cash for their benefit at the expense of the shareholders (MengYun et al., 2021). Even though holding much cash may increase agency conflict, firms typically have more cash than they need, even if a firm's current cash position primarily depends on its working capital policy and represents only a tiny fraction of its total assets (Maheshwari & Rao, 2017). Therefore, examining the factors influencing corporate cash holdings becomes valuable since it will disentangle why managers hoard cash.

Earlier studies, including those by Alnori et al. (2022), Khan et al. (2019), Maheshwari and Rao (2017), and Weidemann (2017), have evidence that firms' cash holdings are affected by numerous firm characteristics. Previous studies also showed that firms' cash-holding practices differ. As such, Gao et al. (2013) observe that cash holdings policy differs between public firms and private firms, and Durán et al. (2016) remark that family-controlled firms' cash holdings differ from those of non-family firms. On this note, it is worth noting that most previous studies focusing on publicly listed firms presented the findings for the whole sample firms without considering their Shariah status. Alsharari and Alhmoud (2019) highlight that the differences in corporate ideologies between SCFs and NSCFs may significantly impact their corporate policies and practices. It may be because SCFs follow separate sets of philosophy and laws. SCFs are found to have lower leverage levels, more cash on hand, a higher dividend payment, and a higher likelihood of paying dividends (Farooq & Alahkam, 2016).

Parallel to the above justifications, this study aims to examine the effects of firms' characteristics on the cash holdings of SCFs in Malaysia. It is in line with Bugshan et al. (2021) remark that regardless of the abundance of studies on the determinants of cash holdings, the cash holdings policy amongst firms that adhere to Shariah is not well documented in the literature.

In this study, SCFs in Malaysia were chosen as the sample since Malaysia is well known as the world's leading Islamic finance hub. Malaysia practices dual financial systems, with the Islamic and conventional financial systems running side by side. Moreover, the Islamic finance industry in Malaysia is experiencing robust growth and is recognized as the fastest-expanding segment of the global financial industry, with the most prominent product being Shariah-compliant securities (Guizani & Ajmi, 2021). The stock issued by SCFs is said to be Shariah-compliant securities. Accordingly, publicly listed firms in Malaysia comprising both the SCFs and NSCFs with the SCFs subjected to the restriction of not having more than a 33% cash ratio (Securities Commission Malaysia, 2024).

The flow of this paper is as follows. Section 2 analyzes relevant literature and develops the research hypotheses. Section 3 discusses the study's sample, research variables, and model specifications. The study's findings are described in section 4, and the study's conclusion is provided in section 5.

LITERATURE REVIEW

Cash Holdings Determinants

Most previous literature remarked that Keynes (1936)'s transaction, precautionary, and speculative motives explain the reasons behind corporate cash holdings, for example in studies of Ahmed et al. (2018), Chen et al. (2020), Maheshwari and Rao (2017), and Thakur and Kannadhasan (2019). The transaction motive argues that firms keep cash to cover their ongoing costs, particularly in situations where accessibility to the capital market is costly or restricted. The precautionary motives recommend that firms hoard cash to withstand challenging financial difficulties arising from unexpected events and emergencies. Meanwhile, holding cash under speculative motive ensures that firms can grab the opportunity to engage in a profitable investment should it require immediate capital.

Apart from the above three motives, earlier studies show that the trade-off theory (TOT), pecking order theory (POT), and agency theory (AT) can also be applied to describe corporate cash holdings. Given that firms weigh the advantages and disadvantages of having cash, TOT suggests that there is an optimal level of cash (Bugshan et al., 2021). According to Guizani (2017), the reduced risk of financial distress, cheaper transaction costs, and the capacity to move forward with potential investments that would not have been feasible without these funds owing to financial limitations are some of the marginal benefits of retaining cash. Meanwhile, the main expense of retaining cash is the opportunity cost of money invested in liquid assets.

Another theory, POT, states that there is no optimal cash level; instead, the cash level is determined by fluctuations in internal funds (Opler et al., 1999). The POT contends that asymmetric information between shareholders and managers makes external funding expensive. Thus, in order to reduce finance costs, particularly asymmetric information costs, firms should fund investments with cash first, followed by safe and risky debt, and then equity (Guizani, 2017). Lastly, the AT also proposes an ideal cash level since agency costs are associated with retaining cash or free cash flow (Jensen, 1986). Based on the AT, firms' managers are motivated to hoard cash to obtain control over assets and unrestricted authority (Alnori et al., 2022).

The determinants of cash holdings have been constantly debated in the literature (Subramaniam et al., 2011), as cash holdings affect firms' performance (Yun et al., 2020) and firms' value (Chang et al., 2017). There is extensive research on corporations' motivations for holding cash. Most previous studies show that increased financial distress, profitability, and growth opportunities lead to a rise in cash levels, while increased leverage, firm size, capital expenditure, dividends, and net working capital lead to a fall in cash levels (Weidemann, 2017).

The cash holdings determinants examined in this study are based on Weidemann (2017) remark that firms' cash holdings are affected by various common factors. It includes capital expenditure, leverage, dividends, firm size, growth opportunities, profitability, net working capital, cash flow and cash flow volatility. Previous researchers, including Alnori et al. (2022), Guizani (2017), and Cindy et al. (2023), also examined these variables, known as firm characteristics.

Focusing on SCFs and NSCFs, the work by Alnori et al. (2022) provides evidence that SCFs' significant cash-holding determinants are profitability, cash flow, capital expenditure, net working capital, and leverage. Meanwhile, the significant determinants for NSCFs are cash flow, net working capital, and leverage. Their results imply that POT is the most relevant to explaining SCFs's cash-holding decisions. Due to Shariah laws, SCFs prioritize cash as their primary funding source.

Further support for the distinction of the significant variables that affect cash holdings of SCFs and NSCFs is provided by Cindy et al. (2023). Their findings demonstrate that cash holdings of SCFs are significantly affected by capital expenditure, cash flow volatility, leverage, firm age, profitability, cash flow, net working capital, dividend payment, firm size, and growth opportunities. Relevant determinants of cash holding for NSCFs include capital expenditure, net working capital, firm age, profitability, leverage, cash flow, and firm size.

Meanwhile, the findings of Guizani and Abdalkrim (2021) evidence that Shariah compliance status directly impacts firms' cash reserves. They discovered that SCFs adjust their cash holdings to a target level faster than NSCFs. They attached their findings to the limits Shariah laws placed on firms to maintain their compliance status. Additionally, their findings indicate that SCFs are more prone to hold capital out of their cash flows since firms operating under the Shariah ruling face limitations on their external financing.

The impact of Shariah-compliant status, profitability, capital expenditure, firm size, net working capital, cash flow, and leverage on cash holding has also been investigated by Febrianti et al. (2022). Their findings indicate that Shariah-compliant status, leverage, net working capital, profitability, capital expenditure, and cash flow significantly impact SCFs' cash holding decisions. However, they found that firm size has no significant impact on the cash holdings of SCFs.

The difference in the factors influencing cash holdings between SCFs and NSCFs might be due to the different financial decisions made by SCFs and NSCFs. Farooq and Tbeur (2013) observed that the SCFs in the MENA regions paid higher dividends to shareholders than the NSCFs. Meanwhile, using data from a sample of SCFs and NSCFs in Pakistan and the UK, Naz et al. (2017) found differences in financial policies between those firms, including their working capital management, capital structure, and dividends.

Compared to NSCFs, SCFs have fewer external funding channels. The reason for this is the limitations imposed by the Shariah compliance status, which are applicable to their financial choices, particularly those related to finance and investments (Alnori & Alqahtani, 2019). Shariah-compliant status affects the firm's cash holding level since firms that comply with Shariah face external funding constraints (Bugshan et al., 2021). Hence, SCFs are assumed to retain more cash to ensure the firm's daily operational activities run smoothly and efficiently.

Effect of Firm's Characteristics on Cash Holdings

Capital Expenditure

The TOT assumes a positive effect of capital expenditure (capex) on cash holdings, as adequate cash should be accessible as investment activity increases. This is due to a belief that reserving more significant internal capital avoids the need for costlier external capital (Chen & Yang, 2017; Opler et al., 1999). Instead, from the POT viewpoint, capex will reduce cash holdings since cash reserves are ideally used to finance investments (Opler et al., 1999). Bates et al. (2009) point out that if capex creates assets, they can serve as collateral, boosting a firm's loan capacity while lowering its demand for cash.

Numerous research has demonstrated the adverse effects of capex on cash holdings, such as Sun et al. (2012), Francis et al. (2014), Guizani (2017), and Alnori et al.(2022), while others, including Opler et al. (1999), Oler and Picconi (2014) and Megginson et al. (2014) evidenced a positive effect. Based on the stand of POT, the first hypothesis of this study is as follows:

H1: There is a negative relationship between capex and cash holdings of SCFs.

Leverage

Based on the transaction cost motive of TOT, highly leveraged firms tend to keep less cash owing to the opportunity costs of holding liquid assets (Ferreira & Vilela, 2004). It aligns with the POT, which postulates that cash holdings will be decreased as leverage increases because a lack of self-generated cash may lead firms to use their liquid assets before issuing debt; on the other hand, firms with more internal reserves can pay their debts more quickly (Guizani, 2017). Similarly, the AT asserts that disbursements such as payment of interest reduce the amount of cash accessible to the managers and diminish their power.

Lower-leveraged firms are less likely to be monitored, resulting in increased managerial discretion (Jensen, 1986). Numerous previous research (such as Alnori et al., 2022; Boubaker et al., 2015; Bugshan et al., 2021; Kadioglu & Yilmaz, 2017) demonstrate that leverage negatively impacts a firm's cash level. Given the preceding empirical findings, this study proposed the following hypothesis:

H2: There is a negative relationship between leverage and cash holdings of SCFs.

Dividends

According to TOT, firms that pay dividends can offset the cash retention costs by decreasing dividend payments, resulting in a negative relationship between the two variables (Al-Najjar & Belghitar, 2011; Alnori et al., 2022). Previous studies, such as Opler et al. (1999) and Drobetz and Gruninger (2007), contend that firms that pay dividends can raise capital with lesser cost by just lowering the dividend payments, reducing the need for significant cash holdings.

In contrast, firms that do not pay dividends must raise funds through external funding, which is more expensive. In other words, dividend-paying firms with limited internal resources can avoid costly external financing by issuing shares or just lowering their dividend payments (Ozkan & Ozkan, 2004). Among previous empirical evidence on the adverse effects of dividends on cash holdings are Boubaker et al. (2015), Bates et al. (2009), and Neamtiu et al. (2014). Accordingly, the following hypothesis has been proposed:

H3: There is a negative relationship between dividends and cash holdings of SCFs.

Firm Size

Small-size firms typically hold more cash than larger firms because external funding is more costly (Alnori et al., 2022). Large-size firms are less likely to hoard cash since they are less likely to experience bankruptcy-related costs and are more diverse in nature than smaller firms (Bugshan et al., 2021). However, according to Ozkan and Ozkan (2004), large-size firms are less likely to suffer from information asymmetry; as a result, they are more flexible regarding financial strategies, enabling them to accumulate more cash. If the size of a firm is used as a proxy for information asymmetry, the link between firm size and cash holdings tends to be negative. Conversely, if the size of a firm is used to indicate financial difficulties, small-size firms have a higher chance of being liquidated during financial crises.

Smaller firms hoard cash to avoid possible crises; thus, the relationship between firm size and cash level is postulated to be positive (Ozkan & Ozkan, 2004). Results in previous studies are mixed. As such, Ajanthan and Kumara (2017), Al-Najjar and Clark (2017), and

Guizani (2017) show a positive effect of a firm's size on its cash holdings; however, Boubaker et al. (2015) and Saxena and Sahoo (2023) discover a negative relationship. Although prior research suggests a mixed link between cash holdings and firm size, firm size plays a crucial role in determining cash holdings (Alnori et al., 2022). As a result, this study does not anticipate the direction of the association and instead put forth the following hypothesis:

H4: There is a positive/ negative relationship between firm size and cash holdings of SCFs.

Growth Opportunities

The TOT contends that cash holdings correlate positively with growth opportunities. Firms having high-quality investment proposals should face a more significant opportunity cost due to limited liquidity. Furthermore, these firms face higher financial distress costs, making external funding more expensive (Alnori & Bugshan, 2022). Hence, firms with superior investment initiatives tend to have more significant cash reserves to mitigate the risk of future underinvestment and the higher cost of borrowings.

According to Opler et al. (1999), firms' avoiding cash shortfalls aligns with the transaction motive for holding cash. Similarly, the precautionary motive of holding cash can also explain the motivation for avoiding financial difficulties (Bates et al., 2009; Lozano & Yaman, 2020). It follows that firms with greater growth opportunities are expected to hold onto more cash in order to prevent a cash shortage. This rationale gives rise to the subsequent hypothesis:

H5: There is a positive relationship between growth opportunities and cash holdings of SCFs.

Profitability

The POT suggests that cash results from financial decisions (Dittmar et al., 2003). Accordingly, profitable firms can accumulate cash and pay debts more than less profitable firms. Firms that make less profit commonly hoard less cash and rely on debt to fund their projects since they are reluctant to issue securities due to the high issuing costs (Al-Najjar & Belghitar, 2011; Ferreira & Vilela, 2004). On the same note, Dittmar et al.(2003) claim that firms with poor cash flows can drain down cash while issuing debt for investment activities since they are reluctant to issue equity due to the high issuing cost. Hence, cash holdings are assumed to correlate positively with a firm's profitability.

Previous literature that evidences a positive relationship between profitability and cash level includes Vuković et al. (2022), Wibowo and Wahyudi (2019), Rafinda (2018), and Magerakis et al. (2020). This study put forward the following hypothesis in accordance with the POT and based on previous empirical evidence:

H6: There is a positive relationship between profitability and cash holdings of SCFs.

Net Working Capital

It is less expensive to transform liquid assets into cash than other kinds of assets (Ozkan & Ozkan, 2004). As a result, firms with more liquid assets are less likely to hold significant amounts of cash and can convert them into cash more quickly. Businesses can use liquid assets to reduce their reliance on the financial markets for cash (Alnori et al., 2022). In the case of insufficient cash, firms can quickly liquidate their liquid assets and replace them with cash,

which parallels TOT's assumption (Ferreira & Vilela, 2004). Ozkan and Ozkan (2004), Ramezani (2011), Al-Najjar and Belghitar (2011), and Alnori et al.(2022) find that corporate cash holding adversely affects net working capital. Based on TOT, this study expresses the next hypothesis as follows:

H7: There is a negative relationship between net working capital and cash holdings of SCFs.

Cash Flows

Chireka and Fakoya (2017) note that when a firm's revenue declines, TOT suggests using cash flow as a backup source of liquidity because it can free management from the constraints placed on them by the capital markets. Cash flows can be employed during cash shortages, eliminating the requirement to store cash (Kim et al., 2011). Therefore, it is suggested that there is a negative link between cash flow and cash holdings. Conversely, based on POT, retained profits are the first financing option used by businesses to lower asymmetric information costs and other borrowing expenses (Ferreira & Vilela, 2004; Guizani, 2017). This implies that firms with higher cash flows tend to hoard cash. Opler et al. (1999) remark that firms are more likely to keep some earnings if they have higher cash flows, building up cash reserves that can be used to fund future investments or in times of difficulty. Consequently, based on the POT, this study tests the following hypothesis:

H8: There is a positive relationship between cash flows and cash holdings of SCFs.

Cash Flow Volatility

The precautionary motive for cash holdings claims that firms with good investment prospects and fluctuating cash flow should maintain cash reserves. If these firms face funding shortfalls, they may sacrifice profitable projects (McLean, 2011). Thus, it is said that cash flow volatility limits liquidity, forcing firms to pass up valuable investment opportunities involuntarily (Alnori et al., 2022). According to Bugshan et al. (2021) and Bates et al. (2009), firms with more volatile cash flows typically hoard more capital to improve their survival chances. This supports the TOT's prediction that cash flow volatility positively affects cash holding. Alnori and Bugshan (2022) and Cindy et al. (2023) provide evidence of the positive relationship between cash flow volatility and cash holdings. Based on the TOT, this study hypothesizes the following:

H9: There is a positive relationship between cash flow volatility and cash holdings of SCFs.

METHODOLOGY

Following earlier studies, such as Alnori et al. (2022), Bugshan et al. (2021), and Chireka and Fakoya (2017), panel data analysis was used in this study to investigate the factors influencing corporate cash holdings of SCFs.

Data

The sample data comprises non-financial and non-utility SCFs listed in Bursa Malaysia between 2012 and 2021. Following Chen et al. (2020), Rafinda (2018), Upadhyay and Zeng

(2017), and Al-Najjar and Clark (2017), this study excludes financial and utility firms because the role and value of cash in those industries differ from other industries. The data is filtered based on two criteria: first, the firms must have been continuously listed as SCF during the sample period to gain non-biased results (Ramli & Haron, 2017); second, the firms must have complete data on all variables. After deleting the missing data, there were 297 firms to represent the sample. The data is gathered from the Thomson Reuters Data Stream.

Variable Measurement

There are two common measurements for cash holdings in the previous literature, namely cash ratio (Alnori et al., 2022; Bugshan et al., 2021; Chireka & Fakoya, 2017; Cindy et al., 2023) and net cash ratio (Alnori et al., 2022; Bugshan et al., 2021; Cindy et al., 2023; Guizani, 2017). In this study, the dependent variable used to measure cash holdings is the cash ratio. Following Alnori et al.(2022), the net cash ratio is used for a robustness check. The independent variables of this study are firm characteristics. Table 1 depicts the variables, measurements, expected signs, and the corresponding theory.

Table 1: Variable definitions, measurements, expected signs, and the corresponding theory

Type of Variable Variable (Code)	Measurement	Expected Sign	Corresponding Theory
Dependent Variable			
Cash holdings (CashTA)	Cash and cash equivalent divided by total assets		
Cash holdings (CashNet)	Cash and cash equivalent divided by total assets minus cash and cash equivalent		
Independent Variables			
Capital expenditure (Capex)	Capital expenditure divided by total assets	(-)	POT
Leverage (Lev)	Total debts divided by total assets	(-)	TOT
		(-)	POT
		(-)	AT
Dividends (Div)	Cash dividends divided by total assets	(-)	TOT
Firm size (FS)	Natural logs of total assets	(-)	TOT
		(-)	POT
Growth opportunities (MTB)	Market price per share divided by book value per share	(+)	TOT
Profitability (Prof)	Net income divided by total assets	(+)	POT
Net working capital (NWC)	Total current assets minus cash and cash equivalent minus total current liabilities divided by total assets	(-)	TOT
Cash flows (CF)	Cash flows divided by total assets	(+)	POT
Cashflow volatility (CFVol)	Standard deviation of cash flow divided by total assets	(+)	TOT

Source: Alnori et al. (2022), Guizani (2017)

Model Specifications

The factors impacting cash holdings are examined in this study using static panel data models. The general form of the models used is as follows:

$$Cash_{i,t} = \beta_0 + \beta_1 X_{i,t} + \varepsilon_{i,t} \quad (1)$$

Where $Cash_{i,t}$ is the dependent variable representing the cash level for firm i and time t; β_0 is a constant term; $X_{i,t}$ is a vector of independent variables, and $\varepsilon_{i,t}$t is the error term that is presumed to be normally distributed as $\varepsilon_{i,t} \sim N(0,1)$.

For this study, the static panel regression models are shown in the following equations:

$$CashTA_{i,t} = \beta_0 + \beta_1 Capex_{i,t} + \beta_2 Lev_{i,t} + \beta_3 Div_{i,t} + \beta_4 FS_{i,t} + \beta_5 MTB_{i,t} + \beta_6 Prof_{i,t} + \beta_7 NWC_{i,t} + \beta_8 CF_{i,t} + \beta_9 CFVol_{i,t} + \varepsilon_{i,t} \quad (2)$$

$$CashNet_{i,t} = \beta_0 + \beta_1 Capex_{i,t} + \beta_2 Lev_{i,t} + \beta_3 Div_{i,t} + \beta_4 FS_{i,t} + \beta_5 MTB_{i,t} + \beta_6 Prof_{i,t} + \beta_7 NWC_{i,t} + \beta_8 CF_{i,t} + \beta_9 CFVol_{i,t} + \varepsilon_{i,t} \quad (3)$$

The analysis of this study starts with estimating equation (2) and equation (3) above using a static panel regression, including pooled ordinary least squares (pooled OLS), panel random effects (RE), and panel fixed effects (FE) regression. It is aligned with previous studies (such as Alnori et al., 2022; Guizani, 2017; Opler et al., 1999) that have used the static panel model to investigate the factors influencing corporate cash level.

In order to determine which static panel regression is the most effective and reliable, this study employs post-estimation tests, including the Breusch-Pagan Lagrange Multiplier (BP-LM) test and Hausman (1978) test. The BP-LM test will determine whether non-observed individual effects exist and consequently, using the pooled OLS regression to examine the determinants of cash holdings is appropriate. Meanwhile, the Hausman (1978) test will aid in deciding between the RE and the FE models (Shahar et al., 2020).

Next, this study conducts diagnostic tests, including variance inflation factor (VIF) for multicollinearity, Modified Wald Statistic for heteroskedasticity, and Wooldridge test for serial correlation. Then, this study tests whether the dataset has time effects. Lastly, following Petersen (2009), this study rectifies the model using a robust model cluster by firms while addressing the time effects to generate reliable estimation for the model.

FINDINGS AND DISCUSSIONS

Descriptive Statistics

Table 2 provides a statistical description of all the variables in the sample, which has 2970 observations. Based on the result of CashTA, on average, SCFs listed in Bursa Malaysia hold 13% of their assets in the form of cash and cash equivalents. This finding aligns with the Malaysian Shariah screening process, which requires SCFs to have a cash ratio of less than 33% (Securities Commission Malaysia, 2024). This is also consistent with Ashhari and Faizal (2018) and Guizani and Abdalkrim (2021), who found that firms in Malaysia hold 13% cash. Meanwhile, the mean value of the alternative measurement of cash holdings, CashNet, of 17% shows that the amount of cash hoarded by the sample firms is still within the allowed rate on the cash ratio based on the Malaysian Shariah ruling. It parallels the results for the primary measurement of cash holdings, CashTA.

For independent variables, on average, SCFs in this study have a large firm size with a mean value of 13.1, reflecting that they have better access to the capital market. Even so, a leverage of 17% indicates that these firms are not dependent too much on leverage for their

financing options. This result corresponds to the Malaysian Shariah screening process, which requires SCFs to have a lower debt ratio of below 33% (Securities Commission Malaysia, 2024). The sample firms also have a lower percentage dividend ratio of 2%, signifying that SCFs pay lower dividends out of their investments in total assets since they need to hoard more liquid assets as their internal capital.

It is noted that during the sample period, the SCFs generate lower profits from their investments in total assets, which is only 3%. Meanwhile, these firms generated 16% of net working capital from their investments in total assets. Capex, proxied for investment activities, shows a mean value of 4%, indicating that only 4% of total assets are being used to finance their capital expenditures.

Lastly, regarding growth opportunities (proxied by the MTB), the statistics show that, on average, the market price per share of SCFs is 1.37 times higher than their book value per share. The high standard deviation value for MTB indicates a higher variation of growth opportunities among SCFs. Similarly, the higher standard deviation for cash flow and cash flow volatility signifies higher variations. These results indicate that SCFs face high uncertainties as a high standard deviation implies more volatility of the variables.

Table 2: Descriptive statistics

Variable	Mean	Std. Dev.	Minimum	Maximum
CashTA	0.1272	0.1023	0.0001	0.7664
CashNet	0.1670	0.1944	0.0001	3.2813
Capex	0.0354	0.0425	0	0.3938
Lev	0.1729	0.1351	0	0.8157
Div	0.0200	0.0508	0	2.0192
FS	13.1459	1.5454	9.0159	18.0948
MTB	1.3754	3.1929	-42.9300	73.4400
Prof	0.0250	0.1209	-3.6712	0.8374
NWC	0.1645	0.2385	-3.4102	0.7833
CF	5.9092	9.6384	-232.3624	88.8830
CFVol	3.2023	7.8016	0.0017	211.3155

Regression Results

Table 3 provides the estimated results for the primary analysis, where the dependent variable is cash holdings (CashTA), and the firms' characteristics are the independent variables. This study performs several procedures to determine the optimal model for this study.

In the earlier stage, the results of Model 1 and Model 2 show that the panel model is most suitable for this study because the p-value of the BP-LM test is less than 0.01. This suggests rejecting the homogeneous hypothesis and implies that the firm-specific effect is present in the dataset. Accordingly, the RE model is preferable to the pooled OLS model (Shahar et al., 2020).

Further testing with the Hausman test yields a p-value of less than 0.05, rejecting the null hypothesis that firm-specific effects are similar and implying that each firm has a different intercept (Shahar et al., 2020). Hence, the FE model (Model 3) is more appropriate than the RE model (Model 2). Additionally, a diagnostic test used to assess the multicollinearity derived the VIF value of 1.59. The VIF value of less than 10 indicates that the dataset has no multicollinearity issue.

This study then includes additional tests to investigate the presence of heteroskedasticity. The results show that the p-value is less than 0.01, rejecting the null hypothesis and establishing that the data has a heteroscedasticity problem. Test on serial correlation also derives a p-value of less than 0.01, rejecting the null hypothesis and signifying

that the data indeed feature an autocorrelation problem. Hence, this study rectifies the FE model with heteroskedasticity and serial correlation clustered by firms (Model 4), as proposed by Hoechle (2014).

Lastly, this study performs a test to detect whether the dataset has time effects. The test on time dummies yields a p-value of less than 0.01, rejecting the null hypothesis and suggesting the presence of time effects (Model 5). In sum, the dataset of this study suggests the presence of both firm fixed and time effects. Consequently, following the suggestion by Petersen (2009), this study estimates the model using robust standard errors clustered by firms while addressing the time effect, and the result is shown in the final model, Model 6. It is done to generate a more accurate and reliable estimation for the model.

Based on the results in Model 6, the key explanatory variables for cash holdings of SCFs are leverage, dividend, and cash flow. Leverage has a significant negative impact on cash holdings at a 1% significant level. This result suggests that SCFs' cash holdings would decrease with increased leverage. This finding is consistent with the POT, AT, and TOT. The POT postulates that the firm's high leverage levels are simultaneous with the decreases in cash holdings (Ferreira & Vilela, 2004). Firms only opt for debts after their liquid asset has been drained out.

Table 3: Estimated results of the static panel data regression

	Model 1 (Pooled OLS)	Model 2 (Random Effect)	Model 3 (Fixed Effects)	Model 4 (Fixed Effects with heteroske-dasticity and serial correlation cluster (firm)	Model 5 (Time Effects)	Model 6 (Firm Fixed and Time Effects)
COEFFICIENT ESTIMATES/ VARIABLES	OLS	GLS	GLS	GLS	OLS	OLS
Capex	-0.0182	**-0.0381*** **	**-0.0424*** **	**-0.0424*** **	-0.00294	-0.00294
	(0.0150)	(0.0139)	(0.0148)	(0.0226)	(0.0152)	(0.0320)
Lev	**-0.139*** **	**0.0949*** **	**-0.0823*** **	**-0.0823*** **	**-0.134*** **	**-0.134*** **
	(0.0146)	(0.0158)	(0.0172)	(0.0274)	(0.0145)	(0.0283)
Div	**0.0841*** **	**0.0477** **	**0.0393** **	0.0393	**0.103*** **	**0.103** **
	(0.0257)	(0.0214)	(0.0226)	(0.0268)	(0.0258)	(0.0477)
FS	0.00139	**-0.0563** **	**-0.0778** **	-0.0778	-0.00520	-0.00520
	(0.0149)	(0.0270)	(0.0436)	(0.0928)	(0.0149)	(0.0315)
MTB	**-0.102** **	0.0389	0.0624	0.0624	**-0.121*** **	-0.121
	(0.0443)	(0.0479)	(0.0538)	(0.0706)	(0.0446)	(0.192)
Prof	0.611	**1.269*** **	**1.327*** **	**1.327** **	0.665	0.665
	(0.417)	(0.302)	(0.309)	(0.528)	(0.419)	(0.579)
NWC	-0.178	**-0.820*** **	**-1.017*** **	**-1.017** **	-0.142	-0.142
	(0.113)	(0.127)	(0.140)	(0.431)	(0.112)	(0.284)
CF	**0.128*** **	**0.0364** **	0.0271	0.0271	**0.119*** **	**0.119*** **
	(0.0217)	(0.0168)	(0.0175)	(0.0318)	(0.0218)	(0.0380)
CFVol	0.00781	**0.0380** **	**0.0373** **	0.0373	-0.00357	-0.00357
	(0.0213)	(0.0169)	(0.0174)	(0.0270)	(0.0214)	(0.0485)
Constant	-2.500***	-1.744***	-1.402**	-1.402	-2.406***	-2.406***
	(0.260)	(0.374)	(0.578)	(1.271)	(0.265)	(0.508)
Observations	1,797	1,797	1,797	1,797	1,797	1,797
R-squared	0.147	-	0.108	0.108	0.162	0.162
Number of firms	237	237	237	237	237	237
Post Estimation Tests:						

BP-LM test (p-value)	2301.53 **(0.000)*** **	-	-	-	-	-
Hausman test (p-value)	-	19.46 **(0.0216)** **	-	-	-	-
Multicollinearity: Mean VIF	-	-	**1.59**	-	-	-
Heteroskedasticity: Modified Wald test (p-value)	-	-	1.0e+32 **(0.0000)*** **	-	-	-
Serial Correlation: Wooldridge test (p-value)	-	-	96.241 **(0.0000)*** **	-	-	-
Time effect: F-test (p-value)	-	-	-	-	3.72 **(0.0000)*** **	-
Two-way effects	-	-	-	-	-	**YES**

Notes: The dependent variable is the cash ratio. ***, ** and * denote significant at 1%, 5% and 10% levels, respectively. The figures in parentheses for Models 1, 2, 3, and 5 are standard errors, while for Models 4 and 6 are robust standard errors. For the BP-LM test, Hausman test, Heteroskedasticity test, Serial Correlation test, and Time Effect test, the figures in parentheses are p-values. The time dummies are not reported to save space.

In a similar vein, the AT suggests that leveraged firms are more vulnerable to capital market oversight, which prohibits greater executive freedom; thus, they hold less cash (Guizani, 2017). Similarly, the TOT believes that highly leveraged firms hold fewer cash due to higher costs incurred by these firms when investing in liquid assets (Guizani, 2017). Previous researchers who also have evidence of the negative impact of leverage on cash holdings are Guizani and Abdalkrim (2021), Bugshan et al. (2021), and Alnori et al. (2022).

Meanwhile, even though this study hypothesized that dividends adversely impact cash holdings, the result in Model 6 reveals a positive relationship between dividends and cash holdings of SCFs. The result is significant at a 5% level. This finding aligns with those of Ozkan and Ozkan (2004), who argue that firms that pay dividends should hold onto more cash to avoid running out of cash before paying their dividends. This finding corresponds to the transaction motive of holding cash as firms hold cash to ensure that dividends will be distributed smoothly. It also aligns with the POT, which argues that firms utilize cash for transactions since it is cheaper than external financing.

Other studies that discovered that dividends and cash holdings are positively correlated include those by Megginson et al. (2014) and Yu et al (2015). Megginson et al. (2014) explain the positive link as dividend-paying firms hoard cash in anticipation of paying dividends for the upcoming period. Similarly, Yu et al (2015) elaborate on their findings as dividend-paying firms hold more cash to pay higher dividends.

As per the cash flow, the result in Model 6 shows a significant positive relationship between cash flow and cash holdings at a 1% significant level. It is in line with POT, which suggests that firms with high cash flow will hoard more cash. The POT assumed that cash is retained as the primary financing source to lower asymmetric information and other financing costs (Ferreira & Vilela, 2004; Guizani, 2017). The positive link between cash flow and cash holdings is in accordance with previous studies such as Alnori et al. (2022), Bugshan et al. (2021), and Cindy et al. (2023).

Other independent variables, including capital expenditure, firm size, growth opportunities, profitability, net working capital, and cash flow volatility, are found to have insignificant influences on the cash holdings decisions of SCFs. This result implies that cash holdings of SCFs are not dependent on these factors. Previous studies that find similar results

are Al-Najjar and Clark (2017) on profitability, Nur Hayati (2020) on capital expenditure and net working capital, and Alnori et al. (2022) on firm size, growth opportunities, and cash flow volatility,

In the earlier stage (based on results in Model 1 to Model 5), most of these variables are found to be significant. However, ignoring the heteroscedasticity and autocorrelation problems and addressing only the firm fixed effects while ignoring the time effects could derive biased estimates of coefficient and standard error. This is due to the fact that most finance data have two general forms of dependence: time-series dependence and cross-sectional dependence (Petersen, 2009). Hence, the most appropriate model for this study is Model 6.

Robustness

In numerous earlier research, the cash ratio net of cash has been used as a proxy for corporate cash holdings (for example in Alnori et al., 2022; Bugshan et al., 2021; Cindy et al., 2023; Guizani, 2017). Following their studies, this study performed another analysis using the cash ratio net of cash to confirm the robustness of the model. Based on Table 4, the results are similar; hence, the main regression results from Table 3 are validated. Leverage, dividends, and cash flow are the main factors that influence SCFs' cash-holding decisions.

Table 4: Estimated results of the static panel data regression using an alternative measure of cash holdings

	Model 1 (Pooled OLS)	Model 2 (Random Effect)	Model 3 (Fixed Effects)	Model 4 (Fixed Effects With heteroske-dasticity and serial correlation cluster (firm)	Model 5 (Time Effects)	Model 6 (Firm Fixed and Time Effects)
COEFFICIENT ESTIMATES/ VARIABLES	OLS	GLS	GLS	GLS	OLS	OLS
Capex	-0.0248	**-0.0480*** **	**-0.0518*** **	**-0.0518** **	-0.00735	-0.00735
	(0.0167)	(0.0154)	(0.0164)	(0.0248)	(0.0169)	(0.0365)
Lev	**-0.163*** **	**-0.110*** **	**-0.0955*** **	**-0.0955*** **	-0.156***	**-0.156*** **
	(0.0163)	(0.0175)	(0.0190)	(0.0305)	(0.0162)	(0.0333)
Div	**0.0941*** **	**0.0534** **	**0.0454***	0.0454	0.116***	**0.116** **
	(0.0287)	(0.0237)	(0.0250)	(0.0298)	(0.0288)	(0.0529)
FS	-0.00528	**-0.0650** **	-0.0714	-0.0714	-0.0129	-0.0129
	(0.0167)	(0.0299)	(0.0481)	(0.103)	(0.0166)	(0.0360)
MTB	**-0.0969***	0.0570	0.0814	0.0814	-0.118**	-0.118
	(0.0495)	(0.0531)	(0.0594)	(0.0783)	(0.0497)	(0.212)
Prof	**0.893***	**1.486*** **	**1.524*** **	**1.524** **	0.966**	0.966
	(0.466)	(0.334)	(0.341)	(0.607)	(0.467)	(0.665)
NWC	**-0.332*** **	**-1.178*** **	**-1.439*** **	**-1.439*** **	-0.289**	-0.289
	(0.126)	(0.140)	(0.155)	(0.428)	(0.125)	(0.336)
CF	**0.139*** **	**0.0389** **	0.0288	0.0288	0.129***	**0.129*** **
	(0.0243)	(0.0186)	(0.0193)	(0.0340)	(0.0243)	(0.0420)
CFVol	0.0153	**0.0460** **	**0.0447** **	0.0447	0.00187	0.00187
	(0.0238)	(0.0187)	(0.0192)	(0.0294)	(0.0239)	(0.0544)
Constant	-2.310***	-1.495***	-1.334**	-1.334	-2.192***	-2.192***
	(0.291)	(0.415)	(0.639)	(1.399)	(0.296)	(0.574)
Observations	1,797	1,797	1,797	1,797	1,797	1,797
R-squared	0.163	-	0.132	0.132	0.179	0.179
Number of firms	237	237	237	237	237	237

Post Estimation Tests:						
BP-LM test (p-value)	2381.87 **(0.0000)*** **	-	-	-	-	-
Hausman test (p-value)	-	24.20 **(0.0040)** **	-	-	-	-
Multicollinearity: Mean VIF	-	-	**1.59**	-	-	-
Heteroskedasticity: Modified Wald test (p-value)	-	-	6.7e+32 **(0.0000)*** **	-	-	-
Serial Correlation: Wooldridge test (p-value)	-	-	106.483 **(0.0000)*** **	-	-	-
Time effect: F-test (p-value)	-	-	-	-	3.94 **(0.0000)*** **	-
Two-way effects	-	-	-	-	-	**YES**

Notes: The dependent variable is the cash ratio net of cash. ***, ** and * denote significant at 1%, 5% and 10% levels, respectively. The figures in parentheses for Models 1, 2, 3, and 5 are standard errors, while for Models 4 and 6 are robust standard errors. For the BP-LM test, Hausman test, Heteroskedasticity test, Serial Correlation test, and Time Effect test, the figures in parentheses are p-values. The time dummies are not reported to save space.

CONCLUSION

This study aimed to examine the determinants of cash holdings for SCFs. The primary drive for this study is fewer research on the factors affecting corporate cash holding, focusing on SCFs. A static panel data estimator was utilized in the analysis. Based on the findings, the key factors influencing the cash level of SCFs are leverage, dividend, and cash flow. Nevertheless, this study evidenced that capital expenditure, net working capital, growth opportunities, firm size, profitability, and cash flow volatility have insignificant influences on SCFs' cash holdings.

The results of this study indicate that the POT better explains corporate cash holdings for SCFs than the TOT and AT. It demonstrates that SCFs hold cash as their primary financing source because, due to Shariah laws, they have limitations on external financing, making it more expensive for them than their counterparts.

This study's findings have significant implications for managers, financial providers, investors, and regulators. Understanding the critical determinants of cash holdings of SCFs may allow investors to comprehend better the rationale behind liquidity decisions and how they may affect corporate performance and firm value. Regulators and financial providers must collaborate to improve Shariah-compliant products and reduce the tightness of the requirements for external funding for SCFs.

REFERENCES

Ahmed, R., Qi, W., Ullah, S., & Kimani, D. (2018). Determinants of corporate cash holdings: An empirical study of Chinese listed firms. *Corporate Ownership and Control*, *15*(3), 57–65. https://doi.org/10.22495/cocv15i3art5

Ajanthan, A., & Kumara, K. U. (2017). Corporate governance and cash holdings: Empirical evidence from an emerging country, Sri Lanka. *International Journal of Accounting and Financial Reporting*, *7*(2), 112–128. https://doi.org/10.5296/ijafr.v7i2.12137

Al-Najjar, B., & Belghitar, Y. (2011). Corporate cash holdings and dividend payments:

Evidence from simultaneous analysis. *Managerial and Decision Economics*, *32*, 231–241. https://doi.org/10.1002/mde

Al-Najjar, B., & 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

Alnori, F., & Alqahtani, F. (2019). Capital structure and speed of adjustment in non-financial firms: Does sharia compliance matter? Evidence from Saudi Arabia. *Emerging Markets Review*, *39*(August 2018), 50–67. https://doi.org/10.1016/j.ememar.2019.03.008

Alnori, F., & Bugshan, A. (2022). Cash holdings and firm performance: Empirical analysis from Shariah-compliant and conventional corporations. *International Journal of Islamic and Middle Eastern Finance and Management*. https://doi.org/10.1108/IMEFM-01-2022-0005

Alnori, F., Bugshan, A., & Bakry, W. (2022). The determinants of corporate cash holdings: Evidence from Shariah-compliant and non- Shariah-compliant corporations. *Managerial Finance*, *48*(3), 429–450. https://doi.org/10.1108/MF-02-2021-0085

Alsharari, N. M., & Alhmoud, T. R. (2019). The determinants of profitability in Sharia-compliant corporations: Evidence from Jordan. *Journal of Islamic Accounting and Business Research*, *10*(4), 546–564. https://doi.org/10.1108/JIABR-05-2016-0055

Ashhari, Z. M., & Faizal, D. R. (2018). Determinants and performance of cash holding: Evidence from small business in Malaysia. *International Journal of Economics, Management and Accounting*, *26*(2), 457–473.

Bates, T. W., Kahle, K., & Stulz, R. M. (2009b). Why do U.S. firms hold so much than they used to? *Journal of Finance*, *64*(5), 1985–2021. https://doi.org/10.1111/j.1540-6261.2009.01492.x

Boubaker, S., Derouiche, I., & Nguyen, D. K. (2015). Does the board of directors affect cash holdings? A study of French listed firms. *Journal of Management and Governance*, *19*(2), 341–370. https://doi.org/10.1007/s10997-013-9261-x

Bugshan, A., Alnori, F., & Bakry, W. (2021). Shariah compliance and corporate cash holdings. *Research in International Business and Finance*, *56*(April 2020), 1–16. https://doi.org/10.1016/j.ribaf.2021.101383

Chang, Y., Benson, K., & Faff, R. (2017). Are excess cash holdings more valuable to firms in times of crisis? Financial constraints and governance matters. *Pacific Basin Finance Journal*, *45*, 157–173. https://doi.org/10.1016/j.pacfin.2016.05.007

Chen, N., & Yang, T. C. (2017). Democracy, rule of law, and corporate governance—a liquidity perspective. *Economics of Governance*, *18*(1), 35–70. https://doi.org/10.1007/s10101-016-0182-4

Chen, Y.-R., Ho, K.-Y., & Yeh, C.-W. (2020a). CEO overconfidence and corporate cash holdings. *Journal of Corporate Finance*, *62*, 1–26. https://doi.org/10.1016/j.jcorpfin.2020.101577

Chen, Y.-R., Ho, K.-Y., & Yeh, C.-W. (2020b). CEO overconfidence and corporate cash holdings. *Journal of Corporate Finance*, *62*. https://doi.org/10.1016/j.jcorpfin.2020.101577

Chireka, T., & Fakoya, M. B. (2017). The determinants of corporate cash holdings levels: Evidence from selected South African retail firms. *Investment Management and Financial Innovations*, *14*(2), 79–93. https://doi.org/10.21511/imfi.14(2).2017.08

Cindy, M., Leon, F. M., & Purba, Y. E. (2023). Determinants of cash holding of Shariah and Non-Shariah-Compliant firms at Indonesia Stock Exchange. *The International Journal of Business & Management*, *11*(1), 19–31. https://doi.org/10.24940/theijbm/2023/v11/i1/bm2301-009

Dittmar, A., Mahrt-Smith, J., & Servaes, H. (2003). International corporate governance and corporate cash holdings. *Journal of Financial and Quantitative Analysis*, *38*(1), 111–133.

Drobetz, W., & Gruninger, M. C. (2007). Corporate cash holdings: Evidence from Switzerland. *Financial Markets and Portfolio Management*, *21*(3), 293–324. https://doi.org/10.1007/s11408-007-0052-8

Durán, R. F., Lozano, M. B., & Yaman, S. (2016). Is family control relevant for corporate cash holding policy? *Journal of Business Finance and Accounting*, *43*(9–10), 1325–1360. https://doi.org/10.1111/jbfa.12222

Farooq, O., & Alahkam, A. (2016). Performance of shariah-compliant firms and non-shariah-compliant firms in the MENA region: Which is better? *Journal of Islamic Accounting and Business Research*, *7*(4), 268–281. https://doi.org/10.1108/JIABR-10-2013-0039

Farooq, O., & Tbeur, O. (2013). Dividend policies of shariah-compliant and non-shariah-compliant firms: Evidence from the MENA region. *International Journal of Economics and Business Research*, *6*(2), 158. https://doi.org/10.1504/ijebr.2013.055537

Febrianti, R. R., Sari, W., & Usman, B. (2022). Shariah compliance and corporate cash holdings. *International Conference on Entrepreneurship, Leadership and Business Innovation (ICELBI 2022)*, 710–719. https://doi.org/10.1016/j.ribaf.2021.101383

Ferreira, M. A., & Vilela, A. S. (2004). Why do firms hold cash? Evidence from EMU countries. *European Financial Management*, *10*(2), 295–319. https://doi.org/10.1111/j.1354-7798.2004.00251.x

Francis, B., Hasan, I., & Wang, H. (2014). Banking deregulation, consolidation, and corporate cash holdings: U.S. evidence. *Journal of Banking and Finance*, *41*(1), 45–56. https://doi.org/10.1016/j.jbankfin.2013.12.018

Gao, H., Harford, J., & Li, K. (2013). Determinants of corporate cash policy: Insights from private firms. *Journal of Financial Economics*, *109*(3), 623–639. https://doi.org/10.1016/j.jfineco.2013.04.008

Guizani, Moncef, & Abdalkrim, G. (2021). Does Shariah compliance affect corporate cash holdings and cash adjustment dynamics? Evidence from Malaysia. *Pacific Accounting Review*, *33*(4), 459–473. https://doi.org/10.1108/PAR-07-2020-0100

Guizani, Moncef, & Ajmi, A. N. (2021). The financial determinants of corporate cash holdings : Does Sharia-Compliance matter? *Montenegrin Journal of Economics*, *17*(3), 157–168. https://doi.org/10.14254/1800-5845/2021.17-3.13

Guizani, Muncef. (2017). The financial determinants of corporate cash holdings in an oil rich country: Evidence from Kingdom of Saudi Arabia. *Borsa Istanbul Review*, *17*(3), 133–143. https://doi.org/10.1016/j.bir.2017.05.003

Hausman, J. A. (1978). Specification Test in Econometrics. *Econometrica*, *46*(6), 1251–1271.

Hoechle, D. (2014). Robust standard errors for panel regressions with cross-sectional dependence. *Stata Journal*, 281–312. https://doi.org/10.1177/1536867x0700700301

Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *American Economic Review*, *76*(2), 323–329.

Kadioglu, E., & Yilmaz, E. A. (2017). Is the free cash flow hypothesis valid in Turkey? *Borsa Istanbul Review*, *17*(2), 111–116. https://doi.org/10.1016/j.bir.2016.12.001

Keynes, J. M. (1936). *The General Theory of Employment, Interest and Money*. Macmillan.

Khan, S., Peng, Z., Ahmad, S., Mahmood, S., & Ahmad, I. (2019). Effect of firm structure on corporate cash holding (Evidence from non-financial companies). *Journal of Financial Risk Management*, *8*, 1–14. https://doi.org/10.4236/jfrm.2019.81001

Kim, J., Kim, H., & Woods, D. (2011). Determinants of corporate cash-holding levels: An empirical examination of the restaurant industry. *International Journal of Hospitality Management*, *30*(3), 568–574. https://doi.org/10.1016/j.ijhm.2010.10.004

Kuan, T., Li, C., & Chu, S. (2011). Cash holdings and corporate governance in family-controlled firms. *Journal of Business Research*, *64*(7), 757–764. https://doi.org/10.1016/j.jbusres.2010.07.004

Lozano, M. B., & Yaman, S. (2020). The European financial crisis and firms' cash holding policy: An analysis of the precautionary motive. *Global Policy*, *11*(S1), 84–94. https://doi.org/10.1111/1758-5899.12768

Magerakis, E., Gkillas, K., Tsagkanos, A., & Siriopoulos, C. (2020). Firm size does matter: New evidence on the determinants of cash holdings. *Journal of Risk and Financial Management*, *13*(8), 163. https://doi.org/10.3390/jrfm13080163

Maheshwari, Y., & Rao, K. T. V. (2017). Determinants of corporate cash holdings. *Global Business Review*, *18*(2), 416–427. https://doi.org/10.1177/0972150916668610

McLean, D. R. (2011). Share issuance and cash savings. *Journal of Financial Economics*, *99*(3), 693–715. https://doi.org/10.1016/j.jfineco.2010.10.006

Megginson, W. L., Ullah, B., & Wei, Z. (2014). State ownership , soft-budget constraints , and cash holdings : Evidence from China' s privatized firms. *Journal of Banking and Finance*, *48*(November 2010), 276–291. https://doi.org/10.1016/j.jbankfin.2014.06.011

MengYun, W., Um-e-Habiba, Husnain, M., Sarwar, B., & Ali, W. (2021). Board financial expertise and corporate cash holdings: Moderating role of multiple large shareholders in emerging family firms. *Complexity*, 1–22.

Naz, I., Shah, S. M. A., & Kutan, A. M. (2017). Do managers of sharia-compliant firms have distinctive financial styles? *Journal of International Financial Markets, Institutions and Money*, *46*, 174–187. https://doi.org/10.1016/j.intfin.2016.05.005

Neamtiu, M., Shroff, N., White, H. D., & Williams, C. D. (2014). The impact of ambiguity on managerial investment and cash holdings. *Journal of Business Finance & Accounting*, *41*(October), 1071–1099. https://doi.org/10.1111/jbfa.12079

Nur Hayati. (2020). Corporate governance sebagai variabel moderating dengan net working capital, capital expenditure, cash conversion cycle, cash flow, dan growth opportunity yang dapat mempengaruhi cash holding. *Business Management Analysis Journal (BMAJ)*, *3*(2), 84–111.

Oler, D. K., & Picconi, M. P. (2014). Implications of insufficient and excess cash for future performance. *Contemporary Accounting Research*, *31*(1), 253–283. https://doi.org/10.1111/1911-3846.12012

Opler, T., Pinkowitz, L., Stulz, R., & 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

Ozkan, A., & Ozkan, N. (2004). Corporate cash holdings: An empirical investigation of UK companies. *Journal of Banking and Finance*, *28*(9), 2103–2134. https://doi.org/10.1016/j.jbankfin.2003.08.003

Petersen, M. A. (2009). Estimating standard errors in finance panel data sets: Comparing approaches. *Review of Financial Studies*, *22*(1), 435–480. https://doi.org/10.1093/rfs/hhn053

Rafinda, A., Hadzhiev, A., Tähkänen, S., & Helvert, L. van. (2018). Determinants of cash holdings in developed and developing countries. *Jurnal Dinamika Manajemen*, *9*(1), 1–11. https://doi.org/10.15294/jdm.v9i1.14647

Ramezani, C. A. (2011). Financial constraints, real options and corporate cash holdings. *Managerial Finance*, *37*(12), 1137–1160. https://doi.org/10.1108/03074351111175074

Ramli, N. E., & Haron, R. (2017). Debt determinants of Shari'ah approved firms: Empirical evidence from Malaysia. *Journal of Islamic Finance*, *6*(Special Issue), 188–204. https://doi.org/10.12816/0047349

Saxena, V., & Sahoo, S. (2023). What drives corporate cash holdings in MSMEs?: Evidence from India. *Managerial Finance*, *49*(2), 291–314. https://doi.org/10.1108/MF-04-2022-0184

Securities Commission Malaysia. (2024). *List of Shariah- Compliant Securities by the Shariah Advisory Council of the Securities Commission Malaysia* (Issue May).

Shahar, W. S. S., Ahmad, N., & Jaafar, M. N. (2020). Impacts of CEO's overconfidence in financing decisions on Sharīʿah-Compliant firms listed on the Bursa Malaysia. *JKAU: Islamic Econ*, *33*(1), 101–116. https://doi.org/10.4197/Islec

Subramaniam, V., Tang, T. T., Yue, H., & Zhou, X. (2011). Firm structure and corporate cash holdings. *Journal of Corporate Finance*, *17*(3), 759–773. https://doi.org/10.1016/j.jcorpfin.2010.06.002

Sun, Q., Yung, K., & Rahman, H. (2012). Earnings quality and corporate cash holdings. *Accounting & Finance*, *52*, 543–571.

Thakur, B. P. S., & Kannadhasan, M. (2019). Corruption and cash holdings: Evidence from emerging market economies. *Emerging Markets Review*, *38*(July 2018), 1–17. https://doi.org/10.1016/j.ememar.2018.11.008

Upadhyay, A., & Zeng, H. (2017). Cash holdings and the bargaining power of R&D-intensive targets. *Review of Quantitative Finance and Accounting*, *49*(4), 885–923. https://doi.org/10.1007/s11156-016-0611-z

Vuković, B., Mijić, K., Jakšić, D., & Saković, D. (2022). Determinants of cash holdings: Evidence from Balkan countries. *E&M Economics and Management*, *25*(1), 130–142. https://doi.org/10.15240/tul/001/2022-1-008

Weidemann, J. F. (2017). A state-of-the-art review of corporate cash holding research. *Journal of Business Economics*, 1–33. https://doi.org/10.1007/s11573-017-0882-4

Wibowo, W. C., & Wahyudi, S. (2019). The effect of financial performance, IOS, and firm size on cash holdings: The role of dividend policy as moderating variable. *Diponegoro International Journal of Business*, *2*(2), 96. https://doi.org/10.14710/dijb.2.2.2019.96-106

Yu, H., Sopranzetti, B. J., & Lee, C. (2015). The impact of banking relationships, managerial incentives, and board monitoring on corporate cash holdings: An emerging market perspective. *Review of Quantitative Finance and Accounting*, *44*, 353–378. https://doi.org/10.1007/s11156-013-0402-8

Yun, J., Ahmad, H., Jebran, K., & Muhammad, S. (2020). Cash holdings and firm performance relationship : Do firm-specific factors matter ? *Economic Research-Ekonomska Istraživanja*, 1–23. https://doi.org/10.1080/1331677X.2020.1823241