Journal of Management Science Research Review
https://jmsrr.com/index.php/Journal/about

Volume 5 Issue No 1 (2026)

Online ISSN: 3006-2047
Print ISSN: 3006-2039

Too Much or Too Little Cash? Optimal Cash Holdings and Firm Value in Family-Owned and Shariah-Compliant Firms

Imran Ali*
School of Accounting, Dongbei University of Finance and Economics, Dalian, China
Email: imran_ali215@yahoo.com

Fahad Najeeb Khan
Lecturer in Finance at the MFK Noon Business School, University of Sargodha, Pakistan Email: fahad.najeeb@uos.edu.pk

Abstract
This study examines whether deviations from optimal cash holdings affect firm value under different ownership and governance structures. Using panel data from 100 non-financial firms listed on the Pakistan Stock Exchange over the period 2009–2018, we employ a threshold model to capture the nonlinear association between corporate cash holdings and firm value. The results reveal a significant nonlinear relationship, confirming the existence of an optimal level of cash holdings that maximizes firm value. Deviations from this optimal level, either in the form of excess or insufficient cash are associated with a decline in firm value. Moreover, the negative value effects of such deviations are more pronounced in family-owned and Shariah-compliant firms, suggesting that concentrated ownership and religious governance frameworks intensify the costs of suboptimal cash policies. These findings offer important implications for corporate managers and policymakers, highlighting the need for carefully calibrated cash management strategies, particularly in firms characterized by family control and Shariah compliance. By providing evidence from a developing economy with relatively weak governance mechanisms, this study extends the cash holdings literature and uncovers previously overlooked moderating roles of family ownership and Shariah compliance in shaping the value consequences of corporate cash policies.

Keywords: Firm Value; Cash Holdings; Family Ownership; Shariah Compliance**.**

Introduction

Corporate cash holdings (CH hereafter) are a debated topic in the finance literature and play a significant role in corporate decision-making, as the old saying "cash is king' highlights the importance of cash, as firms need cash for numerous objectives, including day-to-day operations, debt repayment, tax payments, and for future opportunities, among others. Keynes (1936) states that holding cash has two major advantages for any firm. First, it helps firms to save on borrowing costs by utilizing available cash to make payments. Secondly, having reserve cash enables firms to hedge against the unforeseen risk of future financial obstacles. Thus, robust cash liquidity may

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

ensure the need for firms' operational and production activities while also reducing financial risk.

Furthermore, through CH firms can avoid under-investment costs. The availability of reserve funds enables firms to exploit their attractive investment opportunities while reserve funds help to avert the high transaction costs associated with acquiring external finance. Due to these advantages, CH is important to investors and other stakeholders. As a result, firms keep large amounts of cash in their accounting records. However, the link between CH and FV is complicated. On the one hand, having enough cash on hand allows businesses to make timely investments in high-value projects, which might increase FV (Ferreira & Vilela, 2004). Conversely, too much cash on hand can be harmful since cash is a low-yielding asset that can result in resource underuse, which lowers overall profitability and FV (Dittmar & Mahrt-Smith, 2007). Excessive cash holdings may also result in agency issues, which further reduce FV when management puts personal interests ahead of those of the owners (Michael C Jensen, 1996). Both these dimensions of corporate CH show that it affects a firm's value (FV). However, it is challenging for firms to formulate a corporate CH strategy. Hence, it is critical to determine the optimum cash level that increases the FV.

Most previous research has concentrated on the causes of corporate CH, such as why companies hoard significant amounts of cash, what are the true drivers of CH and how CH influences corporate decisions (i.e., Ferreira & Vilela, 2004; Kim, Mauer, & Sherman, 1998; Opler, Pinkowitz, Stulz, & Williamson, 1999; Ozkan & Ozkan, 2004). Most of this research indicates an anticipated CH level, indicating corporations base their optimum CH decisions on a partial adjustment model. Nevertheless, there is inadequate empirical evidence to support these firms' adherence to CH's partial adjustment model

Furthermore, previous studies also explore the factors that influence a firm's CH (i.e., Opler et al., 1999; Ozkan & Ozkan, 2004). However, little attention has been given to inspecting the relationship between internal ownership characteristics and cash reserves. When it comes to maintaining cash reserves, family-owned firms (FOFs) frequently behave differently than non-FOFs. This is because of their greater demand for control and longer investment horizons (Anderson & Reeb, 2003). Since families want to reduce outside hazards and preserve stability for future generations, this ownership structure may result in greater levels of CH in FOFs (Caprio et al., 2020). Additionally, family ownership may mitigate some of the agency issues seen in widely studies, which affect the link between CH and FV (Ferreira & Vilela, 2004). According to free cash flow theory managers in firms with dispersed ownership might hold funds for personal interests; FOFs might mitigate this risk, as family managers are actively involved in management tighter alignment with the firm's long-term value (Dittmar, Mahrt-Smith, & Servaes, 2003). However, FOFs still struggle to strike a balance between control and the necessity for effective cash utilization, making knowing their CH policies critical for enhancing FV. In emerging nations like Pakistan, there are diverse ownership structures such as director shares, institutional and individual shareholders, and foreign shareholders. The family-owned firm (FOF) structure is one of the significant and common ownership structures in Pakistan. As defined by Andres (2008), family

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

members act as executive directors for the firm and possess the majority of the shares. Prior studies suggest that CH decision in FOF is different than in non-family-owned firms (NFOF). For instance, Caprio, Del Giudice, and Signori (2020) show that the CH level in FOF is higher than in NFOF.

In the ownership literature, numerous studies examine firm decision-making in the context of firms' operations and management. In this respect, Business practices are classified as either Shariah-compliant (S.C.) or non-shariah-compliant (NSC). NSC companies operate according to human-made rules and principles. While SC companies adhere to Sharia rules, derived from the Quran and Sunnah. A unique feature of SC is a prohibition of interest in any form; i.e., SC firms disallow interest that is simple or compound, nominal, fixed, or floating. Thus, to adhere to Shariah principles, corporations should cease to utilize interest (Riba) in their financing and investments.

These divergent business philosophies take distinct approaches to CH strategy. As a result, in this study, we look into how these philosophies influence corporate CH and the FV nexus.The premise of the current study is that firms should hold cash in the event of market imperfection. Different companies have different CH strategies; some keep substantial cash reserves. This situation raises the serious question of why these companies hold a sizable quantity of cash despite the fact that the capital generates only minimal yields and is not appreciated by investors (Faulkender & Wang, 2006). Additionally, according to Dittmar et al. (2003), a firm's cash liquidity may cause an agency conflict between managers and shareholders, resulting in increased monitoring costs. Conversely, firms having lower levels of CH are unable to finance potential future investment opportunities. Firms that keep a substantial sum of cash can continue to follow their optimum investment strategy even in times of financial constraint (Almeida, Campello, & Weisbach, 2011; Han & Qiu, 2007). Corporate CH therefore has advantages and disadvantages for the corporations; therefore, based on cost and benefits the optimum level of CH may exist which maximizes the FV.

This paper makes a substantial contribution to the body of current literature on SC and FOF. We demonstrate that SC and FOF have a moderating effect on the association between deviation and FV. First, we have used data from a developing economy such as Pakistan, where corporate governance regulations and mechanisms are weak and the majority of firms have family-concentrated ownership. However, despite their prevalence, there is little research into how (FOFs) manage cash holdings and how these decisions affect firm value. The distinctive governance structures and cultural influences in Pakistan imply that cash management practices in FOFs may differ significantly from those in non-family firms, making this an important area of investigation. This research explores this issue in the context of Pakistan and intends to give empirical evidence that is not just pertinent to developing countries but that might also enrich global discussions on cash holdings and family ownership. Second, Pakistan is a Muslim-majority country, according to the Pakistan Bureau of Statistics 96.47% is the Muslim population in the 2017 census[1]. Therefore many firms are following Islamic laws where interest-based financing is strictly prohibited and their financing depends

[1] https://www.pbs.gov.pk/sites/default/files/population/2017/sailent_feature_census_2017.pdf

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

on non-interest-based financing sources like equity financing or Sukuk bond. Therefore, following different patterns of financing modes than conventional firms, we are following Martínez-Sola, García-Teruel, and Martínez-Solano (2013) methodology to empirically examine the expected optimum cash level that maximizes FV. We first used the threshold model to investigate a nonlinear association between CH and FV. Secondly, we additionally look at the effects of deviations from the predicted optimal point to see the impact of deviations on the FV. Furthermore, our study includes the variable of Sharia compliance, providing a new viewpoint on how ethical and religious frameworks affect company financial decisions. Based on previous research, we further investigate the moderating impact of family ownership in the association between deviations and FV, particularly in the context of expected optimum cash levels.

Theoretical and Literature Review

Cash flow theories

Free cash flow theory.

Michael C Jensen (1986) Presented the free cash flow theory, which contends that the management and ownership separation will result in several issues, like moral hazard and information asymmetry. Managers are enticed to control more liquid assets, which gives them more control over the capital investment decision. Consequently, managers will so probably hoard more cash for their purposes rather than the interests of the companies, lowering the FV. When there is sufficient cash on hand for investments, the manager does not need to obtain capital from an outside source, such as the capital market, and is not obligated to deliver the financial markets with specific information on the firm's investments in projects. This issue might be reduce to some extent (FOFs) since management and the owning family's interests are aligned. Nonetheless, studies indicate that agency issues can persist in FOFs, especially when there are issues between family and non-family owners (Moolchandani & Kar, 2022). For instance, (Steijvers & Niskanen, 2013) discovered that FOFs frequently retain more cash as a means of control, which might result in underinvestment and a decline in firm value (FV). Furthermore, Shariah-compliant businesses may have fewer agency issues because of strict governance rules, which are based on Islamic values of fairness and ethical behavior. Sharia law forbids interest (riba) and promotes risk-sharing, it may result in more cautious financial management techniques and less chance of hoarding cash for one's own benefit. However, there are hurdles in order to maximize cash holdings while reconciling religious compliance.

Pecking order theory

Pecking order theory was first developed by Myers and Majluf (1984), which is a hierarchy of financing and investment. According to this approach, Businesses implement a sequential strategy to finance their investments. First, they utilize retained earnings followed by secure and risky debt and ultimately resort to issuing new equity. To avoid using debt and equity to finance its investments, management must keep cash on hand. This finance structure aims to reduce the cost of acquiring outside capital. The above theory is especially applicable to FOFs since families tend to depend more on

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

their own resources, including cash reserves, for investments because they want to retain control and prevent ownership dilution (Kuan et al., 2011). However, depending so much on internal funding might lead to larger cash holdings even when such reserves are inefficient which could have a detrimental effect on FV (Gul et al., 2020). The theory is supported in Shariah-compliant businesses by the limitations on debt funding, as Islamic law forbids traditional interest-based loans. Therefore, to finance future opportunities, Shariah-compliant businesses can rely more on internal cash reserves (Saba, Ariff, & Rasid, 2021). This behavior, while consistent with religious values, might lead to inefficiencies if cash is hoarded beyond the firm's optimum liquidity level.

Trade-off Theory

According to the trade-off theory, companies should determine the maximum cash point at which costs and benefits are balanced. Corporate CH has various benefits. First, firms with significant cash balances lead to a lower chance of experiencing financial distress in the future. A CH is a shield when corporations confront unanticipated losses or external fundraising challenges. Moreover, even when a firm faces financial constraints, such cash reserve allows the firm to pursue its optimum investment strategy. Additionally, having cash on hand reduces the cost associated with obtaining outside financing or liquidating current assets. In contrast, the opportunity cost is the primary cost of retaining cash. Furthermore, excessive CH likely reduces the return on current assets and may foster personal interest behavior among investors and management (Michael C Jensen, 1986). FOFs face a difficult trade-off between liquidity and value due to their need for stability and control (Steijvers & Niskanen, 2013). According to this theory, (FOFs) often have larger capital reserves than (NFOFs) in order to protect themselves from market uncertainty and to maintain their survival (Moolchandani & Kar, 2022). However, this conservatism can lead to value destruction if cash holdings exceed the optimum amount needed for operating demands and investment opportunities (Almeida et al. (2011).

Literature Review and Hypothesis Development

Corporate Cash Holdings

Corporate CH plays a vital role in financing decisions as due to high liquidity corporations maintain a significant cash balance in their accounting records to successfully manage their investment strategy and carry out daily operations. Keeping significant cash reserves allows a firm’s greater financial ability to meet unforeseen challenges, exploit opportunities, and make long-term growth investments (Duchin, 2010; Gamba & Triantis, 2008). These cash reserves serve as a buffer against financial uncertainty and financial stress. Therefore, the cash reserve plays a critical role in the firm’s decision-making.

There are numerous studies on CH in the corporate finance literature, with some focusing on CH determinants, such as (Devos & Rahman, 2018; Ferreira & Vilela, 2004; Jebran, Iqbal, Bhat, Khan, & Hayat, 2019; Maheshwari & Rao, 2017). According to these researches, size, leverage, bank debt, and the liquidity of the assets all negatively affect CH, whereas cash flows, investment opportunities, and unemployment risk

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

positively affect them. Some studies address the effect of culture on CH, as Y.-W. Chen, Chan, and Chang (2019) inspect that in areas where Confucianism belief is strong firms hold less cash reserve. Furthermore, according to Akben-Selcuk and Altiok-Yilmaz (2017), highly profitable firms as well as those that have high ratios of leverage hoard more cash. Al-Najjar (2013) observed that the elements influencing CH are essentially the same in developed and emerging economies, including dividend distribution, liquidity, leverage, and firm size. Among others, Yun, Ahmad, Jebran, and Muhammad (2021) and Jabbouri and Almustafa (2021) suggest that firm-specific factors influence CH and firm performance, particularly good corporate governance.

Furthermore, the literature discloses the average value of cash held by corporations. As reported by Faulkender and Wang (2006), the median value of cash retained by all firms is $0.94 on average. In addition, Denis and Sibilkov (2010) documented a larger value of CH in firms that face financing constraints. Moreover, Dittmar and Mahrt-Smith's (2007) study shows that cash value in poorly managed firms is much lower when compared to well-governed firms. These arguments are in line with the transaction cost theory argued by M. C. Jensen and Meckling (1976) which contends that in countries where investor rights are not effectively protected, CH value is comparably lower. Pinkowitz, Stulz, and Williamson (2006) found in their cross-country study that in countries with weak investor protection, the association between CH and an FV is significantly lower than in those with high investor protection. likewise, some research indicates that corporations with inadequate governance systems have smaller cash reserves (Harford, Mansi, & Maxwell, 2008; Kusnadi, 2011; Pinkowitz, Stulz, & Williamson, 2003) discovers considerable proof of rival firms' impacts on CH, which suggests that management should consider the average CH of sectors while determining their cash levels. In addition, Siddiqua, ur Rehman, and Hussain (2019) found that the rate of adjustment of CH is faster in financially constrained companies compared to financially stable firms. Moreover, R. R. Chen, El Ghoul, Guedhami, and Nash's (2018) findings show that state ownership influences corporate CH.

In conclusion, CH is essential for corporations because it provides them with financial flexibility; acts as a buffer against unexpected events occurring, and helps in decision-making. Investment opportunities, profitability, liquidity, cash flow, and firm size are some of the factors that affect CH. The literature illustrates how the average marginal value of CH depends on factors like good governance and access to the capital market. Moreover, the relationship between CH and FV might differ depending on the extent of investor protection and the entire governance framework.

Corporate Cash Holdings and Firm Value

Corporate CH decision is a key component of a firm's liquidity management. Corporations with substantial cash can make investments in R&D, capital expenditure, and strategic acquisitions without having to rely extensively on outside financing, therefore, these types of investments can foster innovation and growth (Lyandres & Palazzo, 2016; Schroth & Szalay, 2010). Furthermore, Fresard (2010) suggests that a significant cash level leads to gaining systematic market share in the future at the cost of industry rivals. Among others, Keynes (1936) and Myers and Majluf (1984) argue

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

firms should maintain cash reserves as a preventive measure to use when faced with financial constraints. According to Han and Qiu (2007) and Almeida et al. (2011), firms with limited financial resources must conserve cash for financing future projects. Moreover, Palazzo (2012) finds a robust association between cash flow and aggregate. They observed that riskier firms are hoarding more cash as a hedge against the potential cash shortage in the future. Thus, due to financial constraints, firms must decide on present and future investments. If the future financial uncertainty cannot be entirely mitigated, financially constrained firms must decrease current investment levels to boost future cash flow investment. Consequently, based on behind literature on CH. We conclude that firms with substantial cash reserves can pursue their optimum investment strategy even under financial pressure.

However, firms that don't have enough cash on hand may need to rely substantially on outside financing to cover their operating and investment needs (Almeida et al., 2011). External capital frequently comes with costs like paying interest and restrictive agreements etc. As a result, firms with insufficient cash reserves can face higher financial costs, which might reduce FV. Furthermore, excessive CH can cause agency problems (Dittmar et al., 2003). As suggested by Michael C Jensen (1986) CH is the easiest approach that gives managers more control over the firm capital allocations since management can be enticed to engage in unnecessary expenditure or build an empire. Furthermore, too much cash could be a sign to investors that management either lacks the confidence to effectively utilize its resources or is excessively risk-averse (Amess, Banerji, & Lampousis, 2015; Dittmar & Mahrt-Smith, 2007). Both of these cases can lead to agency costs. As a result, investors might undervalue the firms, which would reduce stock price and market capitalization. Consequently, the firm's optimal CH level is expected based on the cost and benefits. Thus, Following the forgoing discussion, we proposed the hypothesis that

H1. Cash holdings affect firms' value.

H2. Optimum cash holdings enhance a firm's value.

If there is an optimum CH level that enhances an FV, then variations from the optimum level are probably to reduce the FV. Consequently, we investigate the impact of deviation from the anticipated optimum point of CH on a FV.

H3. Deviation from the anticipated optimal cash holdings level on either side reduces the firm's value.

Family Ownership and Corporate Cash holding

FOF frequently focuses on the long run, with a focus on conserving wealth over generations. FOFs, particularly those run by the founder or later generations, exhibit a higher risk aversion than NFOFs (González, Guzmán, Pombo, & Trujillo, 2013). Such a perception has an impact on their CH decisions. According to (Caprio et al., 2020; Kuan, Li, & Chu, 2011; Liu, Luo, & Tian, 2015) FOF hoard more cash compared to NFOF. Especially, family CEOs hold more cash than CEOs from outside the family. Moreover, Lozano and Durán (2017) note that the CH target level is higher in the FOF than its counterpart. Additionally, FOFs frequently have greater control and decreased agency conflicts than publicly traded companies. According to Michael C Jensen (1986)

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

under conditions of agency rivalry between minorities and dominant shareholders, family-recognized managers tend to hoard extra cash. Thus, FOFs have more freedom to set their desired CH level. Consequently, with the substantial level of cash in family firms being higher than in other firms, there would be an asymmetry in the cost and benefits trade-off of CH in FOF. Therefore, we anticipate that this extra cash in FOF will influence how deviations from the expected optimum CH are associated with FV. Thus, we base our hypothesis on the interaction between family ownership and deviations from the optimum CH. We hypothesize that,

H4. Family ownership influences the relationship between deviations from optimal cash holdings and firm value.

Shariah Label Firms and Corporate Cash Holding

Companies adhering to Shariah law frequently attract a certain group of investors who look for investments that are in line with their ethical and religious beliefs (Charfeddine, Najah, & Teulon, 2016). According to SC businesses must follow Islamic law, which limits the use of credit-based finance to a certain extent i.e., no interest-based financing, and encourages ethical and social responsibility in all economic dealings. Islamic finance emphasizes risk-sharing and prohibits speculative behavior (Hearn, Piesse, & Strange, 2012). Consequently, they look at other financing options like cost-plus financing (Murabaha) and profit-sharing agreements (Mudarabah). These strategies entail more direct involvement in the firm's operations and frequently necessitate greater liquidity. Therefore, cash enables them to satisfy urgent financial needs and meet payment obligations without relying on interest-based loans. Hence, by keeping extra cash, SC firms seek to maintain a stronger financial position and lower dependency on interest-based financing. Additionally, SC firms could confront distinctive liquidity management troubles. They may, for instance, suffer restrictions in obtaining traditional banking services or face tighter regulatory requirements (Alnori & Alqahtani, 2019). Therefore, these elements can further encourage these firms to keep more cash on hand to hedge against any future liquidity problems. The actions of an SC firm regarding its CH are thus influenced by the limited external financing options. Among others, Musarat and Ullah (2015), Bugshan, Alnori, and Bakry (2021), and Mohamad Ariff, Abd Majid, Kamarudin, Zainul Abidin, and Muhmad (2023) have noted SC companies hoard greater amount of cash compared to NSC companies. According to GUIZANI (2017), firms that adhere to Shariah have greater payout ratios as well as a higher likelihood of paying dividends. According to Naz, Shah, and Kutan (2017), SC firms make dramatically different decisions about leverage, dividend payment policy, and working capital than NSC firms. Consequently, firms that adhere to Shariah law hold more cash than those that do not NSC. This indicates that SC firms are departing from the maximum cash level that maximized the FV. Therefore, we employ the interaction SC between the deviations from the optimal CH level and FV. Therefore, we propose that,

H5. Shariah compliance influences the association between deviations from optimal cash holdings and a firm's value.

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

Methodology

Data Description

We used panel data from 100 non-financial companies listed on PSX. We selected a ten-year sample period spanning from 2009 to 2018 to avoid the crisis period. During the crisis period, it may affect the operation and overall cash flow and cash holdings, therefore, it may directly affect our core purpose of how FOFs and SC influence the association between CH and FV in the normal period. We exclude financial firms from our sample because they hold cash differently than non-financial firms (Pinkowitz et al., 2003). We have obtained the data from the balance sheet, the business recorder, and the State Bank of Pakistan's website, which includes data on the balance sheets and income statements of PSX-listed companies. We gathered data on SC firms from the PSX-KMI all-share index compiled by Meezan Bank and the PSX.

Variables

Firm's value.

Firms Value (FV) is the key dependent variable in our study. To assess the robustness of the findings, we measured the FV using two proxies. Earlier research (Lin & Su, 2008; McConnell & Servaes, 1990; McConnell, Servaes, & Lins, 2008; Morck, Shleifer, & Vishny, 1988) employ Tobin's Q to calculate the FV. Following other research (Martínez-Sola et al., 2013), We determined Tobin's Q as the ratio of the market value of equity plus the book value of total debt to the book value of total assets. The Market-to-book ratio (MKBOOOK) is the second proxy of a FV. Dushnitsky and Lenox (2006) determined (MKBOOK) by comparing the market value of equity to the book value of equity.

Cash

Cash is the key independent variable in this investigation. We compute cash by comparing cash and cash equivalents to all assets, as done by Kim et al. (1998). To investigate the nonlinear relationship between CH and FV, Cash-Squared has been employed.

Ownership Structure

We used ownership structure as a dichotomic variable for FOF and NFOF. According to Andres (2008), a company with family ownership is one in which individuals or members of the family own voting rights to company shares and serve as the company's executive directors. We compute Family is equal to 1 if it is, and to 0 otherwise.

Shariah Compliant

The SC is a second moderator in our study. SC and NSC businesses adhere to different sets of principles and rules; for example, NSC works by human-made regulations. On the other hand, SC functions in accordance with Islamic regulations, derived from the Quran and Sunnah (Bugshan et al., 2021; Musarat & Ullah, 2015). We used 1 for SC firms and 0 otherwise.

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

Control variables

Following the earlier research i.e., Dushnitsky & Lenox (2006), we used the following control variables. Firm size, according to past finance research, large companies possess greater information than smaller ones; Consequently, larger companies may be less subject to asymmetric information and have ease in managing their economy (Brennan & Hughes, 1991). Firm size is the natural log of total assets. Leverage is the ratio of total debt (short-term + long-term loan) to total assets. Capital expenditure has been quantified by the ratio of capital expenditure to total assets.

Model Specification

Previous studies on corporate CH and FV had shown the issue of possible endogeneity and unobservable heterogeneity (Ozkan & Ozkan, 2004), Due to primarily reverse causality and omitted variable bias. To address this issue we used panel data methodologies Arellano and Bond's (1991) Generalized Method of Moments (GMM), following the literature (Martínez-Sola et al., 2013; Opler et al., 1999). We employed the Hansen test to find out if there is an association between the instruments and the error term, ensuring that the instruments are appropriately exogenous. Additionally, we performed the M1 and M2 tests to check the first and second-order correlations validating the consistency of the estimator recommended by (Arellano and Bond (1991). We used Model 1 to determine the anticipated cash level that increases the FV. The inclusion of cash and cash square in the model aims to examine the expected balance point between the cost and benefits of CH to identify the anticipated CH level that maximizes FV.

$$V_{it} = \beta_{\circ} + \beta_1 Cash_{it} + \beta_2 Cash_{it}^2 + \beta_3 Capex_{it} + \beta_4 Size_{it} + \beta_5 Leverage_{it} + \eta_i + \lambda_t + \varepsilon_{it} \ldots\ldots (1)$$

Where V_{it} is the FV measure through Tobin's Q and MKBook. $Cash_{it}$ and $Cash_{it}^2$ are the main independent variables, which are the firm's cash and cash equivalents to total assets, $Capex_{it}$ is the firm's capital expenditure to total assets, $Size_{it}$ is the natural log of total assets, $Leverage_{it}$ is the ratio of total debt to equity, $\eta_i$is a dichotomous variable to measure unobservable heterogeneity. Another dichotomous variable is λ_t which controls economic factors that may influence FV and ε_{it} is the error term.

The first model has been used to determine the expected optimum cash level. If the aforementioned break-up relation exists, then there must be an optimal cash point. Therefore, deviation from the optimum level probably reduces the FV. To find the impact of deviations from that point, we follow Tong (2008) methodology to find deviations from the expected optimum point employed by Martínez-Sola et al. (2013).

$$Cash_{it} = \beta_{\circ} + \beta_1 Cashflow_{it} + \beta_2 Liquidity_{it} + \beta_3 Size_{it} + \beta_4 Leverage_{it} + \beta_5 CAPEX_{it} + \eta_i + \lambda_t + \varepsilon_{it} \quad \ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Where $Cash_{it}$ is the firm's cash and cash equivalent to total assets, $Cashflow_{it}$ it is net operating income plus depreciation to total assets; $Liquidity_{it}$ it is the net working capital less short-term investment to total assets. Where $Size_{it}$, $Leverage_{it}$, and $capex_{it}$ are the same as used in model 1, Where η_i captures unobservable heterogeneity and λ_t has used is a dummy variable and ε_{it} is the error term.

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

In model 1, the deviation from model 2 is substituted for $Cash_{it}$ and $Cash_{it}^2$. Which gives the following model

$$V_{it} = \beta_\circ + \beta_1 Diviation_{it} + \beta_2 Size_{it} + \beta_3 Leverage_{it} + \beta_4 CAPEX_{it} + \eta_i + \lambda_t + \varepsilon_{it} \quad (3)$$

Where the FV, V_{it} it is represented by Tobin's Q and MKBook, the key independent variable, "$Diviation_{it}$" is the absolute value of the residual determined by Model 2. $Size_{it}$, $Leverage_{it}$, $capex_{it}$ are control variables described above. In model 3 $\beta_1<0$ is the expectation to see the negative association between deviations from the expected optimum CH level and FV. In model 3, interaction terms are introduced to determine if the deviation is above or below the anticipated point.

$$V_{it} = \beta_\circ + \beta_1 Divaition_{it} + \beta_2(\text{residual dummy} \times Divaition_{it}) + \beta_3(Divaition_{it} \times \text{D ownership}) + \beta_4(Divaition_{it} \times \text{DSharia compliant}) + \beta_5 Size_{it} + \beta_6 leverage_{it} + \beta_7 CAPEX_{it} + \eta_i + \lambda_t + \varepsilon_{it} \quad \ldots\ldots\ldots\

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

Cash	1000	0.19	0.218	0.02	0.112	0.304	0.617
CAPEX	1000	0.049	0.068	0.009	0.031	0.067	0.158
Size	1000	23.205	1.455	22.308	23.224	24.134	25.655
Lev	1000	0.220	0.231	0.010	0.170	0.350	0.620
Family	1000	0.543	0.498	0	1	1	1
Shariah	1000	0.67	0.47	0	1	1	1

Correlation Analysis

Table 2 demonstrates that certain variables positively correlated with independent variables and FV while others are negatively related. The cash and FV have a negative correlation of -3.7%. Capital expenditures positively correlated with Tobin's Q at 10.6% and with MKBOOK at 0.4%. Capital expenditures negatively correlated with cash at -16.4%. The firm's size negatively related to FV at -8.5% and -16.6%, with 13.5% and 9.1% correlated with cash and capital expenditure respectively. Leverage is positively correlated at 32.6% with cash and negatively correlated at -0.7 and -2.9 % with FV. Family ownership is negatively correlated with FV at -22.2% and -15.2% and at -1.13% with cash. Shariah has a negative relation with FV at -2.7% and -6.9%. From the correlation table, none of the variables has a strong correlation, which would suggest multicollinearity among variables.

Table 2. Pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Tobin's Q	1.000							
(2) MKBOOK	0.500*	1.000						
(3) Cash	-0.037	-0.055	1.000					
(4) CAPEX	0.106*	0.004	-0.164*	1.000				
(5) Size	-0.085*	-0.166*	0.135*	0.091*	1.000			
(6) Lev	-0.007	-0.029	0.326*	-0.037	-0.072*	1.000		
(7) Family	-0.222*	-0.152*	-0.013	0.012	-0.206*	0.062	1.000	
(8) Shariah	-0.027	-0.069*	0.116*	0.058	0.046	0.105*	0.056	1.000

Notes: Table 2 shows the Pearson's correlation matrix among the underlying variables. Please refer to Appendix-A for the variables' definition.

Regression Results and Discussion

Corporate Cash Holding and Firm Value

Model 1's regression findings have shown in Table 3. To ensure the robustness of our findings, we employed two measures of FV (Tobin Q and MKBOOK). The findings demonstrate that CH has a positive and statistically significant association with an FV as well as a statistically significant and negative relationship between cash square and FV. The findings are same for the both proxies of an FV. These results suggest that up

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

to a critical point known as the breakdown point, CH improves the FV. The breakdown point, which is the anticipated CH level, has shown by the negative sign with the cash square. These findings lend credence to (Miller and Orr's, 1966) trade-off theory, which proposes the target CH level. Additionally, the findings are consistent with those of (Kim et al., 1998; Ozkan & Ozkan, 2004), who made the implicit assumption that there is a desirable level of CH. Moreover, the results are consistent with Martínez-Sola et al. (2013) study, predicating the optimum CH level where marginal cost and benefits are equal and the FV is maximized at that point.

The control variable in model 1, capital expenditure is statistically significant with Tobin Q while statistically insignificant to MKBOOK. The size is associated significantly and positively with both Tobin Q and MKBOOK. Leverage is related positively to Tobin Q but significantly negatively relates to MKBOOK.

TABLE 3. CORPORATE CASH HOLDINGS AND FIRM VALUE

	(1) Tobin's Q	(2) MKBOOK
Cash	3.825***	23.172***
	(0.401)	(1.966)
$Cash^2$	-5.524***	-18.469***
	(0.426)	(1.607)
CAPEX	-4.859***	0.260
	(0.477)	(1.382)
Size	0.506***	1.966***
	(0.050)	(0.227)
Lev	0.005***	-0.012***
	(0.001)	(0.001)
L.Tobin's Q	0.466***	
	(0.010)	
L.MKBOOK		-0.536***
		(0.049)
Obs.	691	691
M1	-2.24	-1.87
M2	-0.81	-0.77
Hensen test	65.71	34.34
p-value	0.011	0.548
F test (p-value)	0.000	0.000

Note: Table 3 includes the findings of Model 1. Column (1) shows the effect of cash holdings on TobinQ while Column (2) depicts the results of cash holdings and market-to-book ratio.m1 and m2 tests used for second-order correlation in error term. The Hansen test is used for over-identifying restriction. ***, **, and * show significance at 1%, 5% and 10%, respectively. Please refer to Appendix A for the variables' definition.

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

Deviation from the optimal cash level and firm value

Furthermore, to determine whether deviation has an impact on FV from the trade-off level. Because Model 1 findings confirm the existence of a nonlinear association between FV and CH with an optimum point that maximizes FV. Therefore, we estimated model 2 to get deviations. We substitute deviation in model 1 in place of Cash and its square, we get model 3.

Table 4. Findings show an association between deviations and the FV. The Deviation has a negative significant impact on FV, the negative sign indicating that deviating from the optimum point decreases the FV. The findings are in line with Martínez-Sola et al. (2013) study, which contends that deviations from the optimum point diminish an FV. In the control variables, capital expenditure associates significantly negative with both proxies of FV. The firm's size associates positively with Tobin's Q but insignificant with the MKBOOK. Furthermore, leverage related significantly positively with both Tobin's Q and MKBOOK.

Table 4. Deviation from optimum cash level and firm value

	(1) Tobin Q	(2) MKBOOK
Deviation	-6.022***	-21.673***
	(0.729)	(0.715)
CAPEX	-2.852***	-2.312***
	(0.641)	(0.420)
Size	0.189*	0.099
	(0.102)	(0.078)
Lev	0.019***	0.055***
	(0.005)	(0.002)
L. Tobin's Q	0.130***	
	(0.026)	
L.MKBOOK		0.385***
		(0.007)
Obs.	691	691
m2	-1.54	-0.29
Hensen test	42.59	71.79
p-value	0.100	0.142
F-test(p-value)	0.000	0.000

Note: Table 4 shows the impact of deviation from the optimum level of CH on FV. m^2 test is used for second-order correlation. The Hansen test is used for over-identifying restriction. ***, **, and * show significance at 1%, 5% and 10%, respectively. Please refer to Appendix A for the variables' definition.

The deviation is the absolute values that are not differentiated as above or below. Therefore, an interaction term is incorporated in Model 4 to determine the impact of above and below deviations from the optimum point. For the over and under deviation from the optimum point that influences FV, the coefficients of deviation β_1 and

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

deviation+ interact ($\beta_1 + \beta_2$) were counted, therefore β_1<0, and ($\beta_1 + \beta_2$) <0 is expectation. In the case when the residuals are positive, the above optimum has a value of 1, where ($\beta_1 + \beta_2$) signifies the impact on the FV. Whereas, below-optimal has a value of 0 when residuals are negative. For that reason, if INTERACT is zero, the effect of β_1 is accounted for. As a result, deviation appears below the optimum point; Table 5's deviation results are consistent with those of Table 4 previously. It demonstrates that storing cash at less than optimum levels diminishes an FV. According to this finding, corporations may raise their CH level by cutting investments in circumstances where it is below the optimum level. Moreover, the deviation interaction term is significantly and positively related to the FV. According to Tong (2008), interaction terms might be positive, Therefore, residuals that are positive and negative cancel each other out. As a result, the interaction term appears above the optimum level, indicating that deviation over the breakdown threshold diminishes the FV. This conclusion implies that when a firm's CH exceeds the optimum point, it reduces its CH level by raising its investment. These results support the conclusions made by Martínez-Sola et al. (2013) that a FV decreases when deviations from the optimum level occur.

In addition, we analyze whether the moderating role of FOF and SC increases or decreases the association between deviation from the optimum CH and the FV. Findings reveal that the FOF has statistically significant but negatively influenced the association between deviation from the optimum CH level and the FV, indicating that FOF strengthens the association of negative deviations from the optimum CH and the FV. We contend that since FOF has greater CH than NFOF, the market does not appreciate FOF's high CH, which reduces FV. For instance, as shown in previous literature by Caprio et al. (2020) the value of surplus CH that investors placed on extra Euro in FOF relative to NFOF is lower. Therefore, such a huge quantity of CH in FOF is not appreciated by the market.

Moreover, the SC has a significant and negative effect on the association of deviations from the optimum CH and the FV, implying that SC makes the association between the negative deviation from the optimum CH and the FV stronger. The reason behind this is that SC firms have larger CH than NSC firms due to their unique capital structure which disallows interest-based financing (Bugshan et al., 2021; Musarat & Ullah, 2015). In addition, SC firms could also suffer from unique liquidity management issues. For instance, they may encounter barriers to using conventional financial services or stricter regulatory requirements (Alnori & Alqahtani, 2019). As a result, these factors may further motivate these firms to hold onto more capital as a protection against potential liquidity issues in the future. Thus, the restricted external funding choices have an impact on how a SC firm manages its cash reserves. As a result, SC firms face intertemporal trade between current and future investment opportunities, which results in high opportunity costs in SC and lower FV.

Table 5. The role of family ownership and shariah label

	(1) Tobin's Q	(2) MKBOOK

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

Deviation	-22.485***	-46.037***
	(5.792)	(5.117)
Interact	12.205**	29.382***
	(5.808)	(5.918)
Family * Div	-8.484***	-6.449**
	(0.828)	(3.116)
Shariah * Div	-7.142***	-23.174***
	(1.187)	(3.134)
CAPEX	-2.734***	3.449**
	(0.161)	(1.505)
Size	-0.436***	-0.161
	(0.053)	(0.292)
Lev	0.018***	0.060***
	(0.002)	(0.012)
L. Tobin's Q	0.482***	
	(0.010)	
L.MKBOOK		0.414***
		(0.012)
Obs.	691	691
M1	-2.95	-3.06
M2	-1.04	-1.10
Hensen test	83.51	47.30
Hensen test (p-value)	0.013	0.199
F test (p-value)	0.000	0.000

Note: Table 5 shows the effect of deviation of cash holding on firm value and the moderating role of Shariah complaint and family ownership on the association between deviation and firm value.m1 and m2 tests are used for second-order correlation. The Hansen test is used for over-identifying restriction. ***, **, and * show significance at 1%, 5% and 10%, respectively. Please refer to Appendix A for the variables' definition.

Additional Analysis Fixed effect and OLS

Table 6 shows the findings of the Fixed Effects (FE) and OLS which were run as additional analysis to ensure the robustness of our key findings. In both the OLS and FE models, the link between CH and FV (measured by Tobin's Q and MKBOOK) is consistent with our major findings. The positive and significant coefficient of cash implies that a larger CH is related to a higher FV. The negative coefficients in the quadratic term ($Cash^2$) indicate a decrease in FV as CH increases at a specific point, which aligns with the concept of an optimum cash level. While both models give useful insights, our major focus remains on the Generalised Method of Moments (GMM), which is more suited to dealing with endogeneity problems.

Table 6: OLS and Fixed Effect regressions

	(1)	(2)	(3)	(4)

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

	Tobin's Q OLS	MKBOOK OLS	Tobin's Q FE	MKBOOK FE
Cash	1.29*	2.535**	1.528**	4.961***
	(.767)	(1.154)	(.716)	(1.358)
$Cash^2$	-1.933*	-2.454	-2.577***	-4.443***
	(1.044)	(1.572)	(.877)	(1.663)
CAPEX	4.011***	4.632***	-1.123*	.096
	(1.064)	(1.602)	(.609)	(1.156)
Size	-.127***	-.487***	.649***	1.071***
	(.044)	(.067)	(.094)	(.178)
Lev	.003	-.006	.002	.005
	(.008)	(.012)	(.004)	(.008)
_cons	4.215***	12.301***	-13.504***	-23.94***
	(1.02)	(1.536)	(2.153)	(4.085)
Observations	891	891	891	891
R-squared	.029	.065	.072	.076

Note: Table 6 shows the results of cash holdings and firm value. Column (1) shows the effect of cash holdings on TobinQ using OLS while Column (2) depicts the results of cash holdings and market-to-book ratio using OLS. Similarly, Column (3) shows the effect of cash holdings on TobinQ using the Fixed effect while Column (4) depicts the results of cash holdings and market-to-book ratio using the Fixed effect. Standard errors are in parentheses. *** p<.01, ** p<.05, * p<.1. Please refer to Appendix-A for the variables' definition.

Conclusion

Internal fund availability enables firms to undertake the project by using cash rather than an outside fund, which results in saving transaction costs. Such advantages should increase the value of CH for investors. Our study contributed to the antecedent literature of CH in the context of SC and FOF. In this study, we explore the effect of CH on an FV by employing panel data of 100 non-financial companies spanning 10 years, over the period 2009 to 2018. First, we conduct an empirical test to see if CH raises the FV to an expected optimum point and if the deviation from both sides of the optimal point lowers the FV. We also look into how SC and FOF moderate the link between deviation and FV. We based our premise on the costs and benefits of CH. Cash held by a firm may reduce cash flow uncertainty (Keynes, 1936), however, According to free cash flow theory, there also included management preference and opportunity costs. These two impacts, costs, and benefits, are the exact contrary of what was anticipated in terms of how hoarding cash would affect a FV. Therefore, we employ a threshold model to investigate an optimum point based on the costs and benefits of CH. The study's findings support the existence of an optimum CH level that enhances the FV. Additionally, research results support the notion that deviating from the optimum point on either side lowers the FV. Our findings support substantially the trade-off theory.

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

Moreover, our findings show that family firms strengthen the association between deviation and FV. We contend that because FOF firms reserve larger cash than NFOF, This significant quantity is not valued by the market. Similarly, our findings also show that SC moderates the association between deviation from the optimum CH point and FV. We argue that as SC firms' financing is limited to not interest-based financing, therefore, these firms held more cash to avoid any future cash shortfall. Consequently, this excess cash causes high opportunity costs in SC firms and lower FV.

Implications: The study has important implications for firms and policymakers. This study recommends that a firm should not hold cash above or below a certain level, as deviation from the optimal level on either side reduces the firm's value. Additionally, this study suggests that policymakers of family-owned and Sharia-compliant firms to make policies that discourage excess cash holdings or holding cash below a certain level to accomplish the FV maximizing goal; consequently, liquidity management is a key aspect of corporate decision-making that affects FV.

Conflict of Interest

The authors declare that there is no conflict of interest.

References

Akben-Selcuk, E., & Altiok-Yilmaz, A. (2017). Determinants of corporate cash holdings: Firm level evidence from emerging markets. Global Business Strategies In Crisis: Strategic Thinking And Development, 417-428.

Al-Najjar, B. (2013). The financial determinants of corporate cash holdings: Evidence from some emerging markets. International business review, 22(1), 77-88.

Almeida, H., Campello, M., & Weisbach, M. S. (2011). Corporate financial and investment policies when future financing is not frictionless. Journal of corporate finance, 17(3), 675-693.

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, 50-67.

Amess, K., Banerji, S., & Lampousis, A. (2015). Corporate cash holdings: Causes and consequences. International Review of Financial Analysis, 42, 421-433.

Anderson, R. C., & Reeb, D. M. (2003). Founding-family ownership and firm performance: evidence from the S&P 500. The journal of finance, 58(3), 1301-1328. doi:10.1111/1540-6261.00567

Andres, C. (2008). Large shareholders and firm performance—An empirical examination of founding-family ownership. Journal of corporate finance, 14(4), 431-445.

Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. The review of economic studies, 58(2), 277-297.

Brennan, M. J., & Hughes, P. J. (1991). Stock prices and the supply of information. The journal of finance, 46(5), 1665-1691.

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

Bugshan, A., Alnori, F., & Bakry, W. (2021). Shariah compliance and corporate cash holdings. Research in International Business and Finance, 56, 101383.

Caprio, L., Del Giudice, A., & Signori, A. (2020). Cash holdings in family firms: CEO identity and implications for firm value. European financial management, 26(2), 386-415.

Charfeddine, L., Najah, A., & Teulon, F. (2016). Socially responsible investing and Islamic funds: New perspectives for portfolio allocation. Research in International Business and Finance, 36, 351-361.

Chen, R. R., El Ghoul, S., Guedhami, O., & Nash, R. (2018). State ownership and corporate cash holdings. Journal of financial and quantitative analysis, 53(5), 2293-2334.

Chen, Y.-W., Chan, K., & Chang, Y. (2019). Peer effects on corporate cash holdings. International Review of Economics & Finance, 61, 213-227.

Denis, D. J., & Sibilkov, V. (2010). Financial constraints, investment, and the value of cash holdings. The Review of Financial Studies, 23(1), 247-269.

Devos, E., & Rahman, S. (2018). Labor unemployment insurance and firm cash holdings. Journal of corporate finance, 49, 15-31.

Dittmar, A., & Mahrt-Smith, J. (2007). Corporate governance and the value of cash holdings. Journal of financial economics, 83(3), 599-634.

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.

Duchin, R. (2010). Cash holdings and corporate diversification. The journal of finance, 65(3), 955-992.

Dushnitsky, G., & Lenox, M. J. (2006). When does corporate venture capital investment create firm value? Journal of business venturing, 21(6), 753-772.

Faulkender, M., & Wang, R. (2006). Corporate financial policy and the value of cash. The journal of finance, 61(4), 1957-1990.

Ferreira, M. A., & Vilela, A. S. (2004). Why do firms hold cash? Evidence from EMU countries. European financial management, 10(2), 295-319.

Fresard, L. (2010). Financial strength and product market behavior: The real effects of corporate cash holdings. The journal of finance, 65(3), 1097-1122.

Gamba, A., & Triantis, A. (2008). The value of financial flexibility. The journal of finance, 63(5), 2263-2296.

González, M., Guzmán, A., Pombo, C., & Trujillo, M.-A. (2013). Family firms and debt: Risk aversion versus risk of losing control. Journal of Business Research, 66(11), 2308-2320.

GUIZANI, M. (2017). Free Cash Flow, Agency Cost and Dividend Policy of Sharia-Compliant and Non-Sharia-Compliant firms. International Journal of Economics & Management, 11(2).

Gul, R., Ullah, S., Rehman, A. U., Hussain, S., Alam, M., & Ntim, C. G. (2020). Corporate governance and cash holdings: Family versus non-family controlled firms. Cogent Business & Management, 7(1). doi:10.1080/23311975.2020.1854562

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

Han, S., & Qiu, J. (2007). Corporate precautionary cash holdings. Journal of corporate finance, 13(1), 43-57.

Harford, J., Mansi, S. A., & Maxwell, W. F. (2008). Corporate governance and firm cash holdings in the US. Journal of financial economics, 87(3), 535-555.

Hearn, B., Piesse, J., & Strange, R. (2012). Islamic finance and market segmentation: Implications for the cost of capital. International business review, 21(1), 102-113.

Jabbouri, I., & Almustafa, H. (2021). Corporate cash holdings, firm performance and national governance: evidence from emerging markets. International Journal of Managerial Finance, 17(5), 783-801.

Jebran, K., Iqbal, A., Bhat, K. U., Khan, M. A., & Hayat, M. (2019). Determinants of corporate cash holdings in tranquil and turbulent period: evidence from an emerging economy. Financial Innovation, 5(1), 1-12.

Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. The American economic review, 76(2), 323-329.

Jensen, M. C. (1996). Agency costs of free cash flow, corporate finance, and takeovers. Corporate bankruptcy, 76(2), 11-16.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Mangerial Behavior, Agency costs and ownership structure. Journal of financial economics, 305-360.

Keynes, J. M. (1936). „The General Theory of Employment, Interest, and Money “, Mac Millan. Houndsmills, UK.

Kim, C.-S., Mauer, D. C., & Sherman, A. E. (1998). The determinants of corporate liquidity: Theory and evidence. Journal of financial and quantitative analysis, 33(3), 335-359.

Kuan, T.-H., Li, C.-S., & Chu, S.-H. (2011). Cash holdings and corporate governance in family-controlled firms. Journal of Business Research, 64(7), 757-764.

Kusnadi, Y. (2011). Do corporate governance mechanisms matter for cash holdings and firm value? Pacific-Basin Finance Journal, 19(5), 554-570.

Lin, C., & Su, D. (2008). Industrial diversification, partial privatization and firm valuation: Evidence from publicly listed firms in China. Journal of corporate finance, 14(4), 405-417.

Liu, Q., Luo, T., & Tian, G. G. (2015). Family control and corporate cash holdings: Evidence from China. Journal of corporate finance, 31, 220-245.

Lozano, M. B., & Durán, R. F. (2017). Family control and adjustment to the optimal level of cash holding. The European Journal of Finance, 23(3), 266-295.

Lyandres, E., & Palazzo, B. (2016). Cash holdings, competition, and innovation. Journal of financial and quantitative analysis, 51(6), 1823-1861.

Maheshwari, Y., & Rao, K. V. (2017). Determinants of corporate cash holdings. Global Business Review, 18(2), 416-427.

Martínez-Sola, C., García-Teruel, P. J., & Martínez-Solano, P. (2013). Corporate cash holding and firm value. Applied Economics, 45(2), 161-170.

McConnell, J. J., & Servaes, H. (1990). Additional evidence on equity ownership and corporate value. Journal of financial economics, 27(2), 595-612.

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

McConnell, J. J., Servaes, H., & Lins, K. V. (2008). Changes in insider ownership and changes in the market value of the firm. Journal of corporate finance, 14(2), 92-106.

Mohamad Ariff, A., Abd Majid, N., Kamarudin, K. A., Zainul Abidin, A. F., & Muhmad, S. N. (2023). Corporate ESG performance, Shariah-compliant status and cash holdings. Journal of Islamic Accounting and Business Research.

Moolchandani, R., & Kar, S. (2022). Family control, agency conflicts, corporate cash holdings and firm value. International Journal of Emerging Markets, 17(10), 2636-2654. doi:10.1108/IJOEM-07-2020-0828/full/html

Morck, R., Shleifer, A., & Vishny, R. W. (1988). Management ownership and market valuation: An empirical analysis. Journal of financial economics, 20, 293-315.

Musarat, S., & Ullah, N. (2015). Impact of religiosity on cash holdings: Case study of islam. An International Peer-reviewed Journal, 5(1), 20-27.

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. Journal of financial economics, 13(2), 187-221.

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.

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.

Ozkan, A., & Ozkan, N. (2004). Corporate cash holdings: An empirical investigation of UK companies. Journal of banking & finance, 28(9), 2103-2134.

Palazzo, B. (2012). Cash holdings, risk, and expected returns. Journal of financial economics, 104(1), 162-185.

Pinkowitz, L., Stulz, R., & Williamson, R. (2006). Does the contribution of corporate cash holdings and dividends to firm value depend on governance? A cross-country analysis. The journal of finance, 61(6), 2725-2751.

Pinkowitz, L., Stulz, R. M., & Williamson, R. (2003). Do firms in countries with poor protection of investor rights hold more cash? In: National Bureau of Economic Research Cambridge, Mass., USA.

Saba, I., Ariff, M., & Rasid, E. S. M. (2021). Performance of Shari'ah-compliant and non-Shari'ah-compliant listed firms: a case study of Malaysia. International Journal of Islamic and Middle Eastern Finance and Management, 14(1), 128-150. doi:10.1108/IMEFM-04-2019-0186/full/html

Schroth, E., & Szalay, D. (2010). Cash breeds success: The role of financing constraints in patent races. Review of Finance, 14(1), 73-118.

Siddiqua, G. A., ur Rehman, A., & Hussain, S. (2019). Asymmetric targeting of corporate cash holdings and financial constraints in Pakistani firms. Journal of Asian Business and Economic Studies, 26(1), 76-97.

Steijvers, T., & Niskanen, M. (2013). The determinants of cash holdings in private family firms. Accounting & Finance, 53(2), 537-560. doi:10.1111/j.1467-629X.2012.00467.x

Volume 5 Issue No 1 (2026)
Online ISSN: 3006-2047
Print ISSN: 3006-2039

Tong, Z. (2008). Deviations from optimal CEO ownership and firm value. Journal of banking & finance, 32(11), 2462-2470.

Yun, J., Ahmad, H., Jebran, K., & Muhammad, S. (2021). Cash holdings and firm performance relationship: Do firm-specific factors matter? Economic research-Ekonomska istraživanja, 34(1), 1283-1305.

Appendix-A

Variable Name	Variable definition
Firms Value	$\text{Tobin's} = \frac{\text{Market value of Equity} + \text{Book value of Debt}}{\text{Book value of total assets}}$
Firms Value	$\text{MKBOOK} = \frac{\text{Market value of Equity}}{\text{Book value of Equity}}$
Cash Holdings	$\text{Cash} = \frac{\text{Cash and Cash Equivalents}}{\text{Total Assets}}$
Deviations	Deviations as the absolute value of residuals which derive from equation 2 and interaction term (residual dummy × Deviation)
Firm Size	$\text{Firm Size} = \ln(\text{total assets})$
Leverage	$\text{Leverage} = \frac{\text{Total Debt}}{\text{Total assets}}$
Capital expenditure	$\text{CapEx} = \frac{\text{CapEx}}{\text{Total Assets}}$
Cash Flow	$\text{Cash Flow} = \frac{\text{Net operating income} + \text{deprciation}}{\text{Total assets}}$
Liquidity	$\text{Liquidity} = \frac{\text{Net working capital} - (\text{total cash} + \text{short term investment})}{\text{Total assets}}$
Ownership Structure	The Ownership structure is introduced as a Moderate variable.
Shariah Complaints	The shariah Compliant firms are introduced as a moderator in the study.