



Corporate Cash Holdings and Firm Value: Evidence of Nonlinear Effects Under Ownership and Shariah Governance in Pakistan

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ABSTRACT

This study analysed the differences between cash holdings change value when ownership and governance are different. The panel data from 100 firms listed on the Pakistan Stock Exchange over the period 2014–2024 has been collected. A cutoff model that finds a point where the link between cash holdings and firm value's not a line. The model shows a bend in the link, between cash holdings and firm value. The bend results that there is an amount of cash holdings that makes firm value highest. In short cash holdings that are too high hurt firm value and the right cash holdings lift firm value. Having cash or not enough cash hurts a company's value. The drop, in value is bigger for family-owned firms and for firms. That shows that family ownership and religious rules make the cost of a cash policy higher. The results tell managers and policymakers that they must set cash management strategies carefully. They especially need to watch cash policies in family-owned firms and, in firms. 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.



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1. Introduction

In financial accounting the corporate cash holdings have a significant role in the efficiency of a firm. This emphasizes the significance of cash, as companies require cash for diverse purposes, such as day-to-day activities, repayment of loans, payment of taxes, and for upcoming occasions, and so on. Shaai (2022) mentions that the foremost advantage of corporations possessing cash is that it assists in saving on interest expenses in loans as the firm can pay off its dues with the help of available cash. The subsequent advantage is that possessing cash reserves shields the company from the unexpected risk of future financial hurdles. Therefore, strong cash liquidity may generate demand for the firm's business and minimize the risk of finance.

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. Akhtar et al. (2024) showed that the advantages of cash holdings (CH) are 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. 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. Rajnović and Mihailović (2024) Excessive cash holdings may also result in agency issues, which further reduce FV when management puts personal interests ahead of those of the owners. 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.

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. Saba et al. (2021) in her study, investigated 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 (Mun & Jang, 2015). Additionally, according to 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 (Duchin et al., 2017). 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 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.

2. Literature Review

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. A Fund of Funds (FOFs) is an investment vehicle (such as a mutual fund, hedge fund, or private equity fund) that invests in a portfolio of other funds, rather than directly in individual stocks, bonds, or specific private assets. This issue might be reduced 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 (Buckle & Thompson, 2020). For instance, Nasir (2024) 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.

There are numerous studies on CH in the corporate finance literature, with some focusing on CH determinants, such as (Malik & Muazzam, 2022). According to these research, size, leverage, bank debt, and the liquidity of the assets all negatively affect CH, whereas cash flows, investment opportunities, and unemployment risk 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 Butt and Baig (2024), highly profitable firms as well as those that have high ratios of leverage hoard more cash.

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 (Siddiqui & Raheman, 2025). FOFs face a difficult trade-off between liquidity and value due to their need for stability and control (Rochman & Eid, 2024). According to this theory, (FOFs) often have larger capital reserves than (NFOFs) to protect themselves from market uncertainty and to maintain their survival. However, this conservatism can lead to value destruction if cash holdings exceed the optimum amount needed for operating demands and investment opportunities (Jiang et al., 2024).

Abdoh and Varela (2018) suggests that a significant cash level leads to gaining systematic market share in the future at the cost of industry rivals. Among others, Rehman et al. (2025) and Arshad et al. (2022) argued firms should maintain cash reserves as a preventive measure to use when faced with financial constraints. According to Martínez-Sola et al. (2018) firms with limited financial resources must conserve cash for financing future projects. Moreover, Boot and Vladimirov (2019) 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.

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 (Tanin et al., 2023). According to supreme court (SC) of Pakistan 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 (Wilson, 2021). 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 (Iqbal & Mirakhor, 2017).

3. Research Methodology

This study had used panel data from 100 non-financial companies listed on Pakistan Stock Exchange (PSX). The 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 (Ngo et al., 2023). The study has 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.

3.1. Analytical Model

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 (1991) Generalized Method of Moments (GMM), following the literature (Martínez-Sola et al., 2018). 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) 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.

$$V_{it} = \beta_0 + \beta_1 Cash_{it} + \beta_2 Cash_{2it} + \beta_3 Capex_{it} + \beta_4 Size_{it} + \beta_5 Leverage_{it} + \eta_i + \lambda_t + \varepsilon_{it} \quad (1)$$

Whereas;

V_{it} is the FV measure through Tobin's Q and MKBook.

$Cash_{it}$ and $Cash_{2it}$ 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,

η_i a dichotomous variable to measure unobservable heterogeneity.

λ_t which controls economic factors that may influence FV and,

ε_{it} is the error term.

4. Results And Discussion

4.1. Descriptive analysis

Table 1 shows that firm value (Tobin's Q) exhibits substantial variation across firms, indicating heterogeneity in market valuation. The high dispersion in the market-to-book ratio further confirms differences in growth opportunities and investor expectations. Cash holdings and capital expenditure are relatively modest on average, suggesting conservative liquidity and investment policies among non-financial firms. Firm size displays limited variation, reflecting a reasonably balanced sample. Leverage levels are moderate, implying neither excessive reliance on debt nor extreme risk exposure. The binary variables indicate that a significant proportion of firms are family-owned and Shariah-compliant, highlighting the relevance of ownership concentration and religious governance in the sample.

Table 1
Descriptive Statistics of Firms

Variable	N	Mean	St. Dev	p25	Median	p75	p95
Tobin's Q	1000	1.612	1.945	0.781	1.045	1.548	4.702
MKBOOK	1000	3.184	5.692	0.615	1.322	2.901	13.105
Cash	1000	0.198	0.225	0.025	0.118	0.312	0.631
CAPEX	1000	0.052	0.071	0.011	0.034	0.069	0.162
Size	1000	23.287	1.472	22.351	23.261	24.192	25.712
Lev	1000	0.228	0.238	0.015	0.176	0.358	0.635
Family	1000	0.551	0.497	0	1	1	1
Shariah	1000	0.684	0.465	0	1	1	1

Source: Authors' data analysis results, 2025.

4.2. Correlation Analysis

The correlation analysis indicates moderate associations among key firm characteristics, suggesting limited multicollinearity concerns. Firm value is positively correlated with cash holdings and firm size, while leverage shows a negative association with firm value. Overall, the correlations support the inclusion of all variables in the multivariate analysis.

Table 2
Pairwise correlations Analysis

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Tobin's Q	1.000							
(2) MKBOOK	0.487*	1.000						
(3) Cash	-0.041	-0.062	1.000					
(4) CAPEX	0.112*	0.009	-0.158*	1.000				
(5) Size	-0.091*	-0.173*	0.142*	0.096*	1.000			
(6) Lev	-0.011	-0.034	0.318*	-0.041	-0.078*	1.000		
(7) Family	-0.229*	-0.158*	-0.017	0.015	-0.214*	0.068	1.000	
(8) Shariah	-0.031	-0.074*	0.121*	0.061	0.049	0.109*	0.059	1.000

Source: Authors' data analysis results, 2025.

The pairwise correlations indicate that Tobin's Q is positively associated with market valuation and investment activity, while it shows a negative relationship with firm size and family ownership. Cash holdings are positively correlated with leverage and firm size, suggesting precautionary liquidity motives in larger and more leveraged firms. Family ownership is negatively related to firm value and size, reflecting potential agency or entrenchment effects. Overall, the relatively low correlation magnitudes suggest that multicollinearity is unlikely to be a concern in subsequent regressions.

4.3. Analytical Results of Corporate Cash Holding and Firm Value

The analytical regression model findings are 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 both proxies of an FV. These results suggest that up to a critical point known as the breakdown point, CH improves the FV. The breakdown point, which is the anticipated CH level, has been shown by the negative sign with the cash square. These findings lend credence to Opler (1999) trade-off theory, which proposes the target CH level. Additionally, the findings are consistent with those of Kim et al. (1998), who made the implicit assumption that there is a desirable level of CH. Moreover, the results are consistent with Martínez-Sola et al. (2018) study, predicating the optimum CH level where marginal cost and benefits are equal and the FV is maximized at that point.

Table 3
Regression Results for Corporate Cash Holdings and Firm Value

Variables	(1) Tobin's Q	(2) MKBOOK
Cash	3.912*** (0.418)	22.684*** (1.942)
Cash ²	-5.437*** (0.439)	-17.982*** (1.589)
CAPEX	-4.732*** (0.491)	0.294 (1.401)
Size	0.521*** (0.053)	2.041*** (0.234)
Lev	0.006*** (0.001)	-0.013*** (0.001)
L.Tobin's Q	0.458*** (0.012)	
L.MKBOOK		-0.549*** (0.052)
Observations	691	691
M1	-2.19	-1.82
M2	-0.78	-0.74
Hansen test	64.85	35.11
p-value	0.014	0.531
F-test (p-value)	0.000	0.000

Source: Authors' data analysis results, 2025.

The regression results show a positive and statistically significant coefficient for Cash (3.912 for Tobin's Q and 22.684 for MKBOOK), indicating that higher cash holdings initially

enhance firm value. However, the negative and significant Cash² term (−5.437 and −17.982) confirms a nonlinear relationship, implying that excess cash reduces firm value beyond an optimal level. CAPEX negatively affects Tobin's Q (−4.732), suggesting that overinvestment may destroy value, while its effect on MKBOOK is insignificant. Firm size has a strong positive impact on both value measures (0.521 and 2.041), reflecting scale advantages and market confidence. Leverage increases Tobin's Q (0.006) but reduces MKBOOK (−0.013), indicating mixed valuation effects of debt. The significant lagged dependent variables confirm persistence in firm value, while diagnostic tests support model validity.

4.4. Results for OLS and Fixed Effect Regressions

The OLS and fixed effects regressions show a significant association between cash holdings and firm value, with consistent coefficient signs across specifications. Fixed effects results indicate that unobserved firm-specific heterogeneity plays an important role in explaining valuation differences. Overall, the findings support the robustness of the baseline relationship before accounting for endogeneity.

Table 4
Regression Results OLS

Variables	Tobin's Q (OLS)	MKBOOK (OLS)	Tobin's Q (FE)	MKBOOK (FE)
Cash	1.31* (0.75)	2.48** (1.12)	1.49** (0.70)	4.88*** (1.34)
Cash ²	-1.89* (1.01)	-2.41 (1.55)	-2.53*** (0.85)	-4.39*** (1.62)
CAPEX	3.96*** (1.02)	4.58*** (1.56)	-1.08* (0.58)	0.11 (1.11)
Size	-0.13*** (0.04)	-0.46*** (0.06)	0.62*** (0.09)	1.04*** (0.17)
Lev	0.004 (0.008)	-0.005 (0.011)	0.003 (0.004)	0.006 (0.008)
Constant	4.18*** (0.99)	12.11*** (1.49)	-13.26*** (2.10)	-23.52*** (4.01)
Observations	891	891	891	891
R-squared	0.031	0.067	0.074	0.078

Source: Authors' data analysis results, 2025; Standard errors are in parentheses. *** $p < .01$, ** $p < .05$, * $p < .1$

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 Fixed effect

5. 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 investigate 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.

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.

Conflict of Interests/Disclosures

The authors declared no potential conflicts of interest w.r.t the research, authorship and/or publication of this article.

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