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Impact of Corporate Governance on Cash Holdings: Evidence from Non-Financial Sectors of Pakistan

Javeria Malik* Faryal Muazzam
Capital University of Science & Technology (CUST), Islamabad Expressway,
Kahuta, Road Zone-V Sihala, Islamabad, Islamabad Capital Territory, Pakistan
* E-mail of the corresponding author: javeria09@yahoo.com

Abstract
This paper investigates the impact of corporate governance on cash holding of non-financial Pakistani firms listed on the Karachi stock exchange. A sample of 110 non-financial firms is used from 2017 through 2021. This paper tested panel data and report that the fixed effect model is the best result-yielding method. The results show that board independence, the board size, firm size, and cash flow do not show any relationship with cash holding, whereas leverage, market-to-book value, profitability, and dividend have an insignificant relationship with cash holdings. Whereas Net-working-capital, insider ownership, and institutional ownership are positively related to cash holdings. Firms with CEO duality have no effect on cash reserves in firms. The results from this study show that Pakistani firms tend to hold a moderate amount of cash level. The result supports the trade-off theory and some aspects of agency cost theory.
Keywords: Karachi stock exchange, panel data, fixed effect model, cash holding, corporate governance, CEO duality
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1. Introduction

The decision of how to deploy internal funds is central to the conflict between shareholders and managers (Jensen 1986). During an economic expansion, as cash reserves increase, managers make strategic decisions about whether to disburse the cash to shareholders, spend it internally, use it for external acquisition, or continue to hold it. Cash holding is an important obligation of firms to meet investments and carry on opportunities. Companies with weak corporate governance have more amounts of Cash holdings (Dittmar et al. 2003). Weak corporate governance can lead to excess Cash reserves. In countries, where is strong legal protection there is more focus on corporate governance roles and mechanisms. If firms are suffering a shortage of cash, there will be a loss of profitable investments and transaction costs would be high (Ozkan and Ozkan 2004). Idle cash reserves can lead to agency cost problems in different ways. Agency problem increases as Cash holding increases (Kuan 2011). It leads to cause overinvestment issues, loss of shareholder rights, and costly acquisitions. Companies that dilute shareholder rights have speedy elimination of cash (Harford et al. 2008). Managers with a strong position in the company are inclined to store more cash instead of paying profits to shareholders. Small firms hold more cash and liquid assets (Dittmar 2004). Managers of financial constraint firms require a vast measure of capital for further investments. Hence they put just in those ventures that have exceptional yield (Myers & Rajan 1998). Agency problems can be minimized when there is effective corporate governance; shareholders' rights are protected and managers are sincere with their decision-making. These firms keep up the proper optimal level of cash holdings. Firms build their cash holdings when the expense of outer financing is ultimately significant instead of when running out of cash (Nguyen 2006). A high level of Cash holdings suggests managers keep the liquid asset under their control in this way agency problems arise (Afza & Adnan 2007). Larger corporations are growing as a result the concept of corporate governance is evolving. Corporate governance in Pakistan has already hit the surface. It has become increasingly important for the daily economy i.e. investors, society, creditors, owners, and business associates.

2. Corporate Governance (CG)

Corporations are a large form of business entity consisting of legal rights and separate ownership. Corporations have limited liability of ownership. Corporate governance is a dramatic way of conducting affairs for the benefit of all stakeholders by which companies are directed and controlled. It shapes the structure of a corporation that not only specifies the distribution of rights and responsibilities among stakeholders but also provides guidelines for setting objectives and monitoring performance. Cadbury Committee (1992) characterizes Corporate Governance as "the frameworks by which companies are coordinated and controlled".

There is an idea that corporate governance is an extension of agency theory but it is only true in the case of companies. Those directors (agents) are entrusted by shareholders (principal) to care after the issues of the organization and directors are likely to look after their interest first and that of shareholders later. The centre of corporate governance is to shield the rights of the individual and collective interests of shareholders. Hence

agency theory is relevant to corporate governance but it is not fully applicable. Companies that have better governance can attract capital on a substantial amount from shareholders. Most advanced economies succeed to some extent so they solve the problems of corporate governance but some economies fail to do so. In this way there is no surety that the enormous amount of capital is provided to firms and profit is distributed to the providers of finance (Shleifer & Vishny 1997). Metrick (2001) created the "Governance Index" for 1500 larger firms in the 1990s shareholder rights vary across firms and the results have shown that the firms with a stronger level of shareholder rights protection tend to have high profitability, increase in valuation, increase in sales, and growth.

Tompkins et al. (2003) stated that firms with more prominent leverage tend to hold more cash for precautionary purposes. Firms seeing more noteworthy information asymmetries when they require cash later on hold more cash concerning firms seeing a lesser level of information asymmetry. Cash holdings diminish with size, recommending economies of scale in the advantages of cash. Firms holding more elevated amounts of assets that can be considered as cash substitutes hold less cash. The cash holdings of small firms appear to be more molded by preparatory reasons than those of huge firms, following the cash holding proportions of smaller firms react more to cash flow variability; in like manner, the cash holdings of smaller firms are more unequivocally connected to cash flow than those of extensive firms (Faulkender 2002).

2.1 Board Independence (BI)

A board of directors is a person who is as good as he can make decisions taken upon conscientiousness. More non-executive directors (NEDs) create the board independently. The most important tool of the board is its composition function the board is performed effectively in a professional manner when individual directors are competent people. A company might earn an abnormal rate of return when there is an outside board of directors (Demsetz & Lehn 1985, and Shleifer & Vishny 1986). A board must be independent and should not depend on the stakeholders, external parties, or organization. But the key to success is to have the right proportion of elements and attributes in its members. They must have a balance of; power, abilities, representation, and attitudes. Because of family ownership in Pakistan, most boards lack balance on a board. Ozkan & Ozkan (2004) state that smaller independent boards have low managerial ownership; information asymmetry is reduced and the firm has lower cash holdings. Independent directors only attend board meetings and get fixed remuneration. Independent directors contribute to the firm's human capital and decision-making in either monetary or non-monetary terms (Lin Chen 2008).

2.2 Board Size (BS)

Many empirical studies have shown that the performance of a firm improves due to ideal board size (Lipton & Lorsch 1992; Eisenberg, Sundgren & Wells 1998). Limiting board size to a particular level will increase the performance of the firm. The efficiency of the board can be achieved by having several appropriate executives and non-executive directors on the board. Jensen (1993) interpreted that many of the boards are not able to perform effectively because they are outsized. He advised that the 'one size fits all approach is useful. Because it improves the performance of firms as well. Board performs more effectively when it has a smaller size (Hermalin & Weisbach, 2003). Bennedsen et al. (2006) suggested the positive correlation between family size and board size by using a large sample set of 7000 small and medium-sized firms. The decision-making process is more effective in smaller boards (Lopez et al., 2005). Yermack (1996) and Coles et al. (2008) initiate that expanded and large firms hold more directors as compared to small firms on board. The efficiency of the board can be achieved by having several appropriate executives and non-executive directors on the board. There must be diversity on the board. Ozkan and Ozkan (2004) state that small-size boards reduce information asymmetry which lowers the cash holdings. Kuna, Li & Chu (2011) state, that there is a positive relation between board independence and cash holdings. Hensley, (2013) states that most of the time CEO duality and board size lead to high cash holdings. Overall, board size has no positive effect on firm performance (Guest 2009).

2.3 Institutional ownership (INSTO)

The role of institutional ownership in Pakistan is very limited and passive regarding corporate governance. The majority of institutional investors and brokerage houses that are part of the corporation are not handled professionally because these directors lack particular expertise. Shleifer & Vishny (1997) stated that large investors or institutional shareholders have the professional competency to understand the matters of the company. They are in a position to influence the decision-making process at the board of their investee companies. Yan and Zhang (2009) found that short-term institutional shareholding is emphatically identified with cash holding while long haul is contrarily identified with cash holding. The positive relation between institutional shareholding and cash holding is due to short-term institutional ownership. Harford (2012) concluded that long-term horizon investors have a better cost of monitoring so they monitor more. Investor horizon firms have excess cash, so they invest in fewer projects and pay dividends. Butt (2012) states that large

investors and institutions have a major concern about an increase in share price. They can influence the policy-making process of the company because they have a large number of investments in the company. Institutional owners hold a large sum of money on the behalf of depositors.

2.4 Insider ownership (INSIDO)

Ownership focus depends on the position of capital markets, the behaviour of investors, and dividend policy (La Porta, R. et al. 2000). Family ownership devours the rights of minority shareholders and stakeholders in the organization as they make their self-interest decisions (Ronald, C. & David 2003). Family-controlled firms perform better than non-controlled firms. The CEO performs better in those organizations that are family-controlled. Moreover, family ownership is a superior method for enhancing the structure of the organization. Agency cost less emerges in family-controlled firms. Family ownership is more powerful when the family or organizer of the organization serves as President or chairman (Villalonga & Amit 2006). Family ownership has actuated structures that outcomes in lower agency cost of obligation (Anderson & Reeb 2003). Insider shareholdings have a direct influence on the board of the company and its decision-making. They can make any decision and govern the company without opposition from any quarter including voting rights (Wei, K. J., & Zhang, Y. 2008)

2.5 CEO Duality (CEO)

Several studies have examined the separation of CEO and chairman in the same position known as CEO duality. CEO and chairman both are powerful positions in the company (Brian Coyle, 2005). A study by Baliga. et al (1996) showed that the market responds indifferently to duality structure, and operating performance rarely changes by duality structure. Under agency theory, ineffective monitoring of the board is one of the reasons for poor governance since there is little monitoring of managers and it is hard to fire poor performance directors (Carver 2006). Chen (2009) concluded in the studies that CEO ownership, the directorship of venture capitalists (VCs), and independent directors play critical roles in corporate cash policy. Firms perform more effectively when CEO and chairman are the same people. Shareholders accept excess cash holdings in those firms where their interests and rights can be protected. Wai (2013) shows CEO duality and CH are not positively related. The sample consists of random small-size firms and further results showed that Higher CEO ownership supports the shareholders' interests with the managers (Mauer 2011).

3. Corporate Cash Holdings (CH)

Every firm has its level of cash that should be enough to save and pay interest to bondholders, capital expenditures, and to pay dividends to shareholders. According to Adetifa (2005) the cost of holding cash consists of two arrangements i.e. expense of excessive cash holding as circumstance expense of premium expected loss of investment and business opportunities and costs of purchasing power. Investing opportunities cannot be carried out until there is enough cash. Holding excess cash leads to the agency problem. Managers can invest in self-interested opportunities that are risky. The company might incur losses due to the managers' habit of excess and inadequate spending. It also leads to managers' pressure.

Firms might have different levels of Cash holding. Low cash holdings firms have low agency problems because there is no idle cash. Managers require a large amount of capital for investments and to carry out operations. External financing is costly in those firms where agency problems exist (Myers & Majluf 1984). According to Keynes, cash is demanded because of three motives: transaction, precautionary and speculative (Brown 2011 & Nguyen 2006).

- Transaction motive refers to any transaction involved in any exchange for money. Cash must be present to make any transaction. The total number of transactions rises as the income rises. Alternative to holding cash for transaction purposes is short-run assets, their rate of return, and their rate of interest.
- Precautionary motive discusses the main purpose of holding cash of the firms is to overcome financial constraints and extreme cash flow limitations. Financial shocks lead to forgoing financial investments and opportunities. Firms must maintain excessive liquidity to meet the "unexpected contingencies". External financing is costly when there is aggressive trading by institutional investors.
- Speculative motive states that firms should maintain zero excess liquidity that helps to maintain profitable investment opportunities. Only having cash is not profitable because it gives no return and opportunity cost for holding it. Cash holding's opportunity cost can be earned by lending or investing in any opportunities.

3.1 Firm size (SIZE)

Large firms do not accumulate cash due to agency problems. There is no proven relation between firm size and information asymmetry (Harris & Raviv 1990). The large firm mostly has less information asymmetry (Faulkender 2000). The tradeoff theory states that there exists an inverse relationship between firm size. (Ferreira & Vilela 2003), in private firms (Bigelli & Vidal 2009). Faulkender (2000) explained that diversified firms hold

less cash as compared to focused firms. Because the cash needed over time may be less impulsive for the diversified firm. After the Asian financial crisis in 1997, firms accumulate cash, regardless of their firm size. But there still exists no relationship with Cash holdings (Lee & Song 2007). According to Chen (2008) firms that have a different levels of investment opportunities are differently affected by cash holdings and governance. Wai (2013) shows that the relationship involving corporate governance in addition to cash holding; is also affected by the size of the firm. Firms that are smaller in size have more cash because they are concerned with their investments and face a higher cost of external financing (Ferreira & Vilela 2004).

3.2 Dividend (DIV)

Dividend policy has been considered an important factor regarding agency theory by a number of researchers. In the corporate finance area, dividend policy is important for financial decisions. Dividends can be an alternative form of holding cash. Opler (1999) found no relationship between dividends and Cash holdings. Firms maintain a large amount of cash for paying dividends. Robertson and Dahlequiest (2001) suggested that large firms pay lesser dividends. Ozkan (2004) and Ferreira & Vilela (2004) found that firm that prefers not to pay dividends or the firms that discontinued paying dividends can raise funds in capital markets and issue more equity. Salas (2007) could not find any relation between the stock value response to dividend announcements and corporate governance. Belghitar (2011) found that dividends and other firm-specific variables i.e. leverage, growth, size, risk, profitability, and working capital ratio affect cash holdings. While controlling endogeneity, results showed that cash holding does not affect dividend policy. Cash holdings are influenced by dividends and other firm particular variables. Firms follow a pattern in dividend payments. Dividend-paying firms have to maintain a large number of cash reserves to follow the payments (Opler et al. 1999).

3.3 Net working Capital (NWC)

Management of working capital has a considerable effect on a firm's profitability and cash holdings (Deloof 2003). Nobanee et al. (2009) recommend complete holdings and opportunity expenses can be minimized by recalculating the working cycle, cash conversion cycle, and net trade cycle as per these ideal focuses. They guarantee that this ideal cash conversion cycle is a more exact and extensive measure of working capital management that increases the business, profitability, and market value f a firm. Yeboah (2011) showed that creditors significant and positive relation with Cash position. A cash conversion policy expands the benefit and cash position of a firm. Achchuthan (2013) studied the relationship between working capital management policies and governance practices. The cash conversion cycle and the working capital management are not inclined towards corporate governance practices. Furthermore, each firm should design its policies to have practices related to corporate governance, according to firms. CFOs should pay more attention to the collection, payment, and inventory management. It will result in the best strategic solutions and alternatives to keep pace with the competitive environment (Gill 2013).

3.4 Cash flow (CF)

Firms have their target cash levels. The affirmative relation of cash flow and cash holdings indicates the ability of a firm to meet transactional motives as well as to gain the benefits of unexpected opportunities. According to the pecking order theory, cash flows and cash holdings are positively related. Pinkowitz & Williamson (2001) also found a positive relationship, high cash flows enable the firm to carry on its smooth investments and hold cash for transactional, speculative, and precautionary motives. On the contrary, Ozkan & Ozkan (2004) found no relation between cash flows and Cash holdings. Kusnadi (2011) looks at the determinants of corporate cash management arrangements over an expansive sample of global firms. Countries with powerless legal assurance have a propensity to save cash as contrasted with the countries that have solid legal security of minorities and hold less cash flow. Findings contradict the previous studies by Big 4 firms (Deloitte, Ernst & Young, KMPG) as the authors found no relation between cash flow diversion and important aspects of corporate governance. An increase in cash flow generates agency costs for shareholders; cash holding reduces the probability of financial trouble in a time of abundance of cash flows (Molay 2011). Firms decrease the level of cash when there are liquid assets as an alternative way of cash and increase the level of cash when they have high growth opportunities (Al-Amarneh 2013).

3.5 Leverage (LEV)

Many of the theories i.e. Trade-off theory and Pecking order theory prove that an inverse relation is found between leverage and cash holdings (Baskin, 1987). Debt can be an alternative form of cash as it is less harmful and flexible (Diamond, 1984). Myers & Majluf (1984) found that leverage is contrarily identified with Cash holdings. Opler et al. (1999) state that internal funds and leverage are negatively related; as firms most desire excess cash to meet the financing needs of the share issue which is expensive due to the reason of adverse selection. On the other hand, the trade-off hypothesis likewise predicts a positive relationship in the middle of

leverage and cash holdings. According to Ferreira &Vilela (2004) debt grows as retained earnings increase because it is directly related to retained earnings. This is due to the negative relationship between them. Highly levered firms hold more cash to avoid this relationship. It increases the possibility of bankruptcy and the likelihood of financial distress (Ozkan & Ozkan, 2004). Leverage can go about as a substitute for the capacity of the organization to issue obligations (Ansi C. & Hey, 1993). An organization can utilize diverse substitutes for holding high levels of cash. Among these substitutes, one is leverage.

3.6 Profitability (PROF)

If there is excess cash, then it must be circulated or contributed. At the point when the cost of capital is higher than ROA; the risk of business increments and market value decreases. Holding different resources in correlation with ROA results in a lessening of profitability; expansive cash holdings can bring about higher ROA (Czyzewsk & Hicks, 1992). Abuhommous (2013), as per, the risk and return hypothesis there is a negative relationship between liquidity and risk which prompts a negative relationship between liquidity and profitability. Abushammala & Sulaiman (2014) demonstrated that there is a significant positive relationship between cash holding and profitability. It is due to the belief of managers that the absence of liquidity can cause cash shortages, which affect investment decisions, and in turn, it affects profitability. It is also due to the hedging behavior of firms which allows firms to pay obligations. The regression model was utilized as a part of 65 non-financial firms recorded in the Amman stock trade (ASE) over the time of 2000-2011. A successful firm has high operating cash flows. If a company has strong cash streams then it decreases the requirement for money holding (Kim et al., 1998).

3.7 Market to book ratio (MTB)

Dow Industrial average shows that market to book ratio provides unpredictability in the formation of small firms (Pontiff & Schall 1998). Opler et al. (1999) found a positive relation between Cash holdings and MTB. Firms with high MTB proportion have an extensive measure of capital spending when contrasted with low MTB (Asghar & Hauman 2013). Kim et al. (1998) proposed that as Cash holdings expand MTB increments and there is a high unpredictability of Cash streams. MTB is evaluated for development opportunities (Drobets 2006). Firms with high market-to-book ratios have a high proportion of liquid assets while firm size has negative relation to liquidity (Sherman 1998) A high ratio indicates that the firm has a high level of cash holdings so it interests' investors (Ozkan &Ozkan, 2004, Paskelian & Nguyen 2010, Wei, 2010). It is measured as dividing the book value of the firm by the market value of the firm.

3.8 Regional efforts in Pakistan for incorporating corporate governance

Corporate governance has been a favorite subject in the debate on the governance system of companies primarily. Pakistan, formulation of corporate governance code of corporate governance is a choice of achievement in governing system of companies in corporate governance in Pakistan started its journey. When the conference was held in 1998, December all Pakistan charted accountant's conference was held to take the initiative and to evolve a code of governance. SECP presented the code in 2002 and thusly joined in the posting regulation of Pakistan Stock Trade which applies to all companies. Pakistan institute of corporate governance (PICG) was established as a non-profit institute promoting awareness and encouraging good corporate governance practices in Pakistan in December 2004. SECP in April 2012, developed a revised code of corporate governance for listed companies.

4. Underpinning theories

The following theories are found relevant to this paper:

4.1 Pecking order theory

Pecking order theory highlights severe market imperfections i.e., uniformed investors; very high transaction costs, etc. Financial hierarchy theory states that holding equity from external investors is risky and expensive in those firms where the asymmetry of information exists (Myers & Majluf, 1984). Majluf (1984) gave a few assumptions: (1) Mangers better know the company and its financial health and investment plan rather than external investors. (2) They act in the best interest of shareholders. When there is the availability of excess cash firms repay debt, make new investment opportunities and pay a dividend to shareholders. On the other hand, firms use accumulated cash holdings because sometimes retained earnings are not sufficient for new investments.

4.2 Tradeoff theory

Trade-off theory focuses on the capital market structure where firms have to decide whether to opt for equity financing or debt financing based on their capital structure by considering costs and benefits. Firms distinguish their ideal level of cash possessions by measuring the minor cost and minimal advantages of holding cash (Afza

& Adnan, 2007). Holding cash is not a wise decision as it has easy access to the capital market (Miller & Modigliani, 1950). Cash does not interfere with the investment strategy when monetary imperatives are met and successfully brings down the cost of outer raising money or liquidation of benefits (Ferreira and Vilela, 2004).

4.3 Agency Theory

Agency theory refers to the conflict of interest and different approaches to goals and profit-maximizing between principals (shareholders) and agents (managers). Agency cost is the internal cost that firms have to pay to the agent on behalf of a principal. Agency cost mostly arises while dealing with ownership structure and excess control rights (Bebchuk et al., 1999). The presence of an extra amount of debt shares and a high amount of liquid assets can lead to agency problems (Myers & Rajan 1998). La Porta et al. (2002) state that investors expect interest and dividends; because they pay more and they are sure that their investment will return as a profit. Rising external debt can help to overcome the agency cost of equity. Agency problems can lead to lower stock prices. Relying on the outside debt will reduce the slope of managerial consumption (Megginson, 2000). Shareholders can allow managers to hold more cash if there is less asymmetry of information between principal and agent.

5. Data and Methodology

This paper seeks to apply panel data regression which combines both cross-sectional and time series data, thus controlling for individual heterogeneity, providing more informative data, more variability, less collinearity among the variables, more degrees of freedom, greater efficiency, and allowing for a better study of the dynamics of adjustment (Baltagi 2005, 4). Panel data may be balanced with each entity, for example, an individual or a firm, having the same number of observations, or unbalanced with each subject having a different number of observations. Panel data may also be short with the number of cross-sectional units, N being greater than the number of periods, T, or long with T being greater than N (Gujarati 2003, 638).

5.1 Panel Data Regression Models

Generally, there are three-panel data regression models, as discussed below, considering that the panel data is collected for i (i =1, 2,…, N) cross-sectional units over t (t = 1,2,…,T) time periods.

5.1.1 Pooled Ordinary Least Squares (OLS) Model or Common Effect Model

The Pooled OLS model assumes a constant or common intercept for all cross-sectional units and constant slope parameters or regression coefficients. The parameter estimation is conducted by the OLS method on pooled data with NT observations.

$$Y_{it} = \alpha + \beta X_{it} + \varepsilon_{it} \qquad (1)$$

Where;

α = intercept, Yit = dependent variable, Xit = vector of independent variables, β = vector of coefficients of the independent variables, and εit = error term which is assumed to be independent and identically distributed (i.i.d) over i and t.

5.1.2 Fixed Effects (FE) Model

The FE model allows cross-sectional units to have separate intercepts (αi), which are treated as unobserved random variables assumed to be correlated with the observed regressors. At the same time, the slope parameters or regression coefficients remain constant.

$$Y_{it} = \alpha_i + \beta X_{it} + \varepsilon_{it} \qquad (2)$$

where ε_{it} is the i.i.d. error term. The parameters of the FE model may be estimated using three alternative methods, namely Within-Group (WG), Least Square Dummy Variable (LSDV), and Finite-Difference (FD).

5.1.3 Random Effects (RE) Model

The RE model assumes that the unobservable cross-sectional effects are random variables uncorrelated with the observed regressors, while the slope parameters remain constant.

$$Y_{it} = \alpha + \beta X_{it} + v_{it} \qquad (3)$$

where $v_{it} = (u_i + \varepsilon_{it})$ is the composite error term with the error terms u_i and ε_{it} being i.i.d. random variables, and the unobservable cross-sectional fixed effects, $\alpha_i = (\alpha + u_i)$. The parameters of the RE model are estimated using the Generalized Least Squares (GLS) method.

5.2. Sample research design

The entire sample includes non-financial companies of 15 sectors listed Pakistani Stock Exchange. The sample set includes data for five years from 2017 to 2021. The samples of the firms were collected using a combination of non-probability sampling techniques. The balanced panel data set comprises 110 companies with 550 observations. This study includes grouped dataset, which is secondary. Data is collected from the Financial Sheet Analysis provided by the State Bank of Pakistan, the financial statements of the firms, and the business recorder website. Financial firms are not included due to the apparent reason that the factors determining their cash

requirements are altogether different from non-financial firms.

Table 5.2 Measurement of variables

Variable	ID	Attribute	Measure
Cash Holding	CASH	Dependent Variable	Cash ratio
Board Independence	BI	Independent Variable	NEDs /Total no. of directors on board
Board Size	BS	Independent Variable	Total no. of board members
Institutional Ownership	INSTO	Independent Variable	Shares held by institutional owners / Total no. of shares
Insider Ownership	INSIDO	Independent Variable	Number of shares held by all the directors / Total no. of shares
CEO Duality Dummy	CEO	Independent Variable	Whether CEO and chairman are the same people
Firm Size	SIZE	Control Variable	Natural logarithm of total assets
Leverage	LEV	Control Variable	Total debt to Total equity
Profitability	PROF	Control Variable	Return on Assets (ROA)
Cash Flow	CF	Control Variable	EBITDA / Total assets (TA)
Net Working Capital	NWC	Control Variable	(Current assets–current liabilities) / TA
Market-To-Book Value	MTB	Control Variable	MTB ratio
Dividend	DIV	Control Variable	Dividend per share / Earnings per share

5.3. Fundamental Econometric Model

The following equation depicts the relationship between corporate cash holding (dependent variable) and the corporate governance variables (independent variables) for small and large firms considering some control variables:

$$CASH_{it} = \beta_o + \beta_1 BI_{it} + \beta_2 BS_{it} + \beta_3 INSTO_{it} + \beta_4 INSIDO_{it} + \beta_5 CEO_{it} + \beta_6 X_{it+} \varepsilon_{it} \quad (4)$$

where,

$CASH_{it}$ = Corporate cash holding of a firm, BI_{it} = Board independence, BS_{it} = Board size, $INSTO_{it}$= Institutional ownership, $INSIDO_{it}$ = Insider ownership, CEO_{it}= CEO (Chief Executive Officer) duality dummy, X_{it} = Control variables affecting cash holding such as the size of the firm ($SIZE_{it}$), leverage of a firm (LEV_{it}), the profitability of a firm ($PROF_{it}$), cash flow magnitude (CF_{it}), net working capital (NWC_{it}), market to book value (MTB_{it}) and dividend (DIV_{it}); whereas, β_0= Intercept, ε_{it}=Error term, β_{1-5} is coefficients of independent variables. The measures of the dependent, independent, and control variables are tabulated in table 5.3.

6. Results and Discussions

This section enumerates the data analyses and presents the findings and interpretations. The data and methodology have already been explained in the previous section. A panel data sample of non-financial firms listed at KSE has been constructed to analyze the impact of corporate governance on cash holding. The first two sections will explain descriptive statistics and the correlation matrix. The third section will discuss the econometric models and explain how those models are used and evaluated.

6.1 Descriptive Statistics

Descriptive statistics display a summary of the fundamental features of the variables in a data set in terms of central tendency, variation, and distribution. Table (6.1) shows the descriptive statistics of the dependent and the independent variables considered in this study:

The mean value of Cash holding (CASH) is 4.97, which is similar to the result obtained by Lee and Song (2012). The mean board independence (BI) of 84% indicates that on average non-executive directors form a vast majority of the board of directors. The mean BS or the average number of directors on the board of directors is 7.09. The minimum and maximum numbers of directors on a board are 6 and 11, respectively. The average insider ownership (INSIDO) is 45.53%, indicating the proportion of direct and indirect voting rights. Alternatively, this average indicates that families dominate firms. Also, 32% of the board chairpersons and CEOs are the same on average, which is not highlighted in the Pakistani environment.

The maximum and minimum firm size (SIZE) of 19.84 and 2.57, respectively, within a range of 17.27, may seem that there is a wide disparity between the sample firms in terms of the total asset base. However, the standard deviation and coefficient of variation of 3.94 and 33.98%, respectively, indicate that the sizes of the majority of the firms in the sample lie moderately closer to the average firm size of 11.58. The mean, maximum and minimum PROF (return on assets) of 19.68%, 49.7%, and 1.5% highlight that the sample firms have been highly profitable on average during the sample period without any loss-making firm in the data set. However, the average cash flow or cash return on assets of 2.21% is relatively low. The mean market-to-book value (MTB) is

92%, indicating that, on average, the sample companies' market capitalization has been relatively lower than their net book value of assets over the sample period. The average DIV (dividend payout ratio) of 0.44 indicates that 44% of the earnings per share have been distributed as dividends on average by the sample firms over the sample period.

The distributions of all variables, except cash flow (CF) and net working capital (NCW), are positively skewed. The distributions of CEO duality and firm size (SIZE) are platykurtic with thinner or flatter tails. In contrast, the other variables are leptokurtic with heavy and fatter tails. The distribution of CASH with a skewness of 0.15 and a kurtosis of 3.12 is quite similar to the normal distribution.

Variables	Mean	Maximum	Minimum	Std. Deviation	Coefficient Variation(%]	Skewness	Kurtosis
CASH	4.9750	6.3368	3.6687	0.3799	7.6363	0.1534	3.1181
BI	0.8481	1.6818	-1.6094	0.2843	33.5252	1.2547	16.8515
BS	7.9502	6.0000	11.0000	1.4781	18.5920	0.6456	3.3020
INSTO	0.0892	1.6314	-17.4207	1.3656	1530.7186	4.4727	40.7383
INSIDO	0.4532	0.3214	-0.1910	0.4379	96.6145	1.2586	4.2579
CEO	0.3244	1.0000	0.0000	0.4684	144.3753	0.7500	1.5625
SIZE	11.5787	19.8414	2.5703	3.9348	33.9832	0.2105	1.6477
LEV	0.2291	0.8900	0.0170	0.1368	59.7349	1.7188	6.6518
PROF	19.6830	49.7000	1.5000	7.8950	40.1108	0.7946	3.4448
CF	2.2140	4.2959	0.1823	0.4638	20.9470	-0.3626	3.6681
NWC	0.1145	0.2209	-0.8566	0.1290	112.6611	-0.6983	4.5470
MTB	0.9271	7.3841	0.0073	0.7228	77.9639	2.6559	16.2191
DIV	0.4421	2.4600	-0.3200	0.2932	66.3196	0.6938	5.4014

Source: Author compilation using Eviews®10 Enterprise Edition software.

6.2 Correlation Matrix

A correlation matrix portrays the correlation coefficients between all possible pairs of variables for analyzing the nature and strength of the relationship between two variables. For example, Karl Pearson's product moment linear correlation coefficients (r) between two variables have been calculated and shown in table 6.2.

As suggested by Evans (1996, 146), the degree of correlation depending on the absolute value of r may be depicted as follows: 0.00 to 0.19: Very weak; 0.20 to 0.39: Weak; 0.40 to 0.59: Moderate; 0.60 to 0.79: Strong; 0.80 to 1.0: Very strong. Out of the 66 possible pairs of the independent and control variables, the degree of correlation for one pair (SIZE and CF) is substantial, the degree of correlation in respect of 1 pair (BI and BS) is weak, and for the remaining 64 pairs, the degree of correlation is very weak. So, it may be inferred that multicollinearity may not be present in the sample data.

	CASH	BI	BS	INSTO	INSDO	CEO	SIZE	LEV	PROF	CF	NWC	MTB	DIV
CASH	1												
BI	0.002	1											
BS	0.026	0.254	1										
INSTO	0.085	0.042	0.074	1									
INSIDO	0.073	0.106	0.063	0.002	1								
CEO	0.07	0.039	0.046	0.003	0.035	1							
SIZE	0.057	-0.03	-0.012	0.024	0.034	0.015	1						
LEV	0.182	0.005	0.076	0.061	0.034	0.006	0.031	1					
PROF	0.037	0.01	0.087	0.06	0.048	-0.011	-0.097	-0.018	1				
CF	0.003	-0.033	0.026	0.011	-0.078	-0.041	0.667	-0.074	-0.084	1			
NWC	0.481	0.015	0.034	0.03	0.025	0.028	0.03	0.081	0.062	-0.118	1		
MTB	0.082	-0.071	0.084	0.029	0.003	-0.038	0.14	-0.019	0.034	0.094	0.036	1	
DIV	0.061	0.043	0.135	0.023	-0.065	0.093	0.021	0.023	-0.028	0.082	0.01	0.03	1

Source: Author compilation using Eviews®10 Enterprise Edition software.

Cash holding (CASH) is positively correlated to all other variables, with the degree of correlation between CASH and NWC being moderate, that between CASH and LEV being weak and those between CASH and all other variables being very weak. Board Independence (BI) is negatively correlated to firm size (SIZE), cash flow

(CF), and market-to-book (MTB) and positively correlated to all other variables. In contrast, the correlation magnitude between BI and all other variables is very weak. The correlation between BS and SIZE is harmful and very weak, whereas the correlations between BS and all the other variables are positive and very weak. Institutional ownership (INSTO) correlates positively and very weakly to all the other variables. Insider ownership (INSIDO) is negatively and very weakly correlated to CF and DIV, and positively and very weakly correlated to all the other variables. CEO duality is negatively correlated to PROF, CF, and MTB. In contrast, it is positively correlated to all the other variables, with the degrees of correlation for all possible correlation pairs being very weak.

SIZE is positively related to the other variables except for PROF, BI, and BS, with the degree of correlation between SIZE and CF being substantial and the degrees of correlation between SIZE and all the other variables being very weak. LEV is negatively correlated to PROF, CF, and MTB and positively correlated to all the other variables with the magnitude of correlation for all the possible pairs of variables being very weak. PROF is positively related to CASH, BI, BS, INSTO, INSIDO, NWC, and MTB, and negatively correlated to all the other variables, with the degrees of correlation being very weak in all the cases. The correlations between (CF and MTB), (CF and DIV), (NWC and MTB), (MWC and DIV), and (MTB and DIV) are positive. The correlation between (CF and NWC) is negative, with the degrees of correlation for all these cases being fragile.

6.3 Panel Data Regression Analysis

6.3.1 Choice of Pooled OLS, Fixed Effects, and Random Effects Models

Panel data regression analysis will be conducted after choosing the most appropriate model from the three models: Pooled OLS, Fixed Effects, and Random Effects. The following two tests have been conducted for this purpose.

i. Redundant Fixed Effects Test or Chow Test

The redundant fixed effects test chooses between the Pooled OLS Model and the Fixed Effects Model.

Table 6.3.1: Redundant Fixed Effects Test

Null Hypothesis (H_0): Intercept is common for all cross-sectional units (common effect) **Alternative Hypothesis (H_1):** Each cross-sectional unit has its intercept (fixed effects)			
Effects Test	**Statistic**	**d.f.**	**Prob.**
Cross-section F	7.8043	(109,428)	0.0000
Cross-section Chi-square	674.3626	109	0.0000
Inference: Since the null hypothesis is rejected at 1% significance, the Pooled OLS model may not be adequate in favor of the Fixed Effects model.			

Source: Author compilation using Eviews®10 Enterprise Edition software.

ii. Hausman Test

The Hausman test that explains the selection of a model between the Fixed Effects (FE) and Random Effects (RE) models is based on the difference between the RE and FE estimates.

Table 6.3.2: Hausman test

Null Hypothesis (H_0): No correlation between the unobserved cross-sectional effects and the regressors. **Alternative Hypothesis (H_1):** The unobserved cross-sectional effects and the regressors are correlated. **Under H_0:** RE estimate is consistent and efficient while FE estimate is consistent but inefficient. **Under H_1:** FE estimate is consistent, but RE estimate is inconsistent.			
Test Summary	**Chi-Sq. Statistic**	**Chi-Sq. d.f.**	**Prob.**
Cross-section random	42.5958	12	0.0000
Inference: Since H_0 is rejected at a 1% level of significance, the FE and RE estimates may be consistent and inconsistent, respectively, and the FE model may be preferred over the RE model.			

Source: Author compilation using Eviews®10 Enterprise Edition software.

6.4 Fixed Effects (FE) Model

The results of the application of the FE model are tabulated in table 6.4.

The adjusted R^2 value of 0.5925 suggests that 59.25% of the variation in cash holding is explained by the linear combination of the corporate governance variables (independent variables) and the control variables. The rejection of the null hypothesis of the F-test for the overall significance of the FE model at 1% level implies that the model is statistically reliable.

Board Independence (BI), board size (BS), CEO duality (CEO), firm size (SIZE), and cash flow (CF) has no statistically significant (1% or 5% levels of significance) impacts on cash holding (CASH). Institutional ownership (INSTO), insider ownership (INSIDO), and NWC are positively related to CASH at a 1% significance level. Leverage (LEV) and market-to-book value (MTB) are negatively related to CASH at a 1% level of significance, whereas profitability (PROF) and dividend (DIV) are negatively related to CASH at a 5%

level of significance. Therefore, it may be inferred that only two corporate governance variables, institutional ownership, and insider ownership, have statistically significant effects on the sample companies' cash holdings during the study period.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Intercept	5.1619	0.1434	35.9945	0.0000
BI	-0.0336	0.0381	-0.8801	0.3790
BS	0.0099	0.0570	0.1732	0.8626
INSTO	0.0254	0.0076	3.3213	0.0009
INSIDO	0.0088	0.0024	3.6717	0.0003
CEO	-0.0404	0.0223	-1.8071	0.0710
SIZE	-0.0002	0.0013	-0.1790	0.8579
LEV	-0.3949	0.0766	-5.1520	0.0000
PROF	0.0071	0.0036	1.9880	0.0471
CF	0.0032	0.0307	0.1057	0.9158
NWC	0.1393	0.0082	17.0448	0.0000
MTB	-0.0435	0.0146	-2.9752	0.0030
DIV	-0.0798	0.0361	-2.2108	0.0273
R-squared	0.6432			
Adjusted R-squared	0.5925			
F-statistic	12.6931			
Prob(F-statistic)	0.0000			

Source: Author compilation using Eviews®10 Enterprise Edition software.

7. Conclusion

The paper discusses the impact of CG on CH of non-financial firms that are listed in KSE from 2017 to 2021. The analysis undertaken in the study reveals that the tendency of corporate governance in Pakistan is in the development phase, as SECP in Pakistan has gradually become more active in enforcing its relations in the eyes of law. The results from this study show that Pakistani firms tend to hold a moderate amount of cash level. Results show that only two governance variables have a positive effect on cash holdings i.e. Institutional ownership and insider ownership. The results showed that the precautionary motive of cash holding is supported. There is an insignificant relation between cash holdings and leverage which supports the Trade-off theory. The inverse relation suggests that there is no availability of sufficient resources that are liquid enough and managers cannot do external borrowing. There is a weak relation between profitability with cash holdings which contradicts the Pecking order theory. We found no relationship between Cash flow and cash holding which contradicts agency theory. Some of the corporate governance variables have no significant effect on Cash holdings. CEO duality is negatively related to cash holdings. Board independence has shown no relationship with cash holdings. The possible explanation is that independent director on Pakistani boards does not influence decision-making. They do not persuade managers to hold more cash. The results are following Chen (2009); Wai & Zhu (2013). The high amount of Board independence reduces the likelihood of an increase in cash holdings in Pakistani firms. Results also suggested that firms with insider ownership and institutional ownership hold a significant level of cash. It indicates that the family-controlled firms hold a substantial amount of cash which can lessen the agency cost. Whereas the positive relation between institutional ownership and cash holdings can be short-term as Pakistani firms opt for foreign ownership. The dividend has a negative relation with cash holdings as supported by previous literature by Kim et al. (1998) and Jensen (1986), pecking order theory. The negative relationship indicates that firms in financial distress are unlikely to pay a dividend.

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