Corporate Cash Holdings and Firm Value: Moderating Role of Family Ownership and Shariah Label

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CERTIFICATE

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DEDICATION

I would like to dedicate this accomplishment to my beloved and caring parents, my family members and to my teacher with the support of whom I am standing at this step of my life stairs.

ACKNOWLEDGMENT

Most humbly I express my thanks to the supreme Ruler, the ALLAH Almighty, the most Benevolent, ever Merciful, Whose divine helped me to complete this study within time. I would like to express my feelings and gratitude to all those who helped me emotionally, philosophically and financially in doing my MS and writing this thesis. I am not being able to find the words to express my profound gratitude to my supervisor, Dr. Ahmad Fraz and Dr Arshad Hassan for valuable suggestions throughout the writing of this dissertation. I am very thankful to him for their encouragement which has always been a source of motivation for me whose valuable arguments, suggestions and psychological comments played a vital role in providing me confidence that I could do this dissertation within time. I am special thankful to my parents and siblings for their patience, without their support it would not possible for me to do my MS.

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Abstract

The aim of this study to examines the impact of corporate cash holding on firm value for the period of 2009 to 2018 by using panel data of 100 non-financial companies listed at PSX. This study used threshold model to test whether there is a nonlinear relationship exist between cash holdings and firm value, the study use Generalized Method of Moment (GMM) for estimations. This study empirically tests whether cash holding increases the firm value up to an optimal level and deviations from optimum level on either side decreases the firm value. The study also addresses the issue that how deviation from optimal cash holding can affect the value of the company in the presence of family ownership and sharia compliant securities. The results show a nonlinear relationship exist between cash holdings and firm value which confirm the existence of optimum level of cash holdings and deviation from optimal level reduce the firm value. Furthermore the study contributes to the literature in the context of sharia and family firms. Findings show that family firms and shariah compliant firms have significant impact on the relationship of deviation from optimal cash level and firm value.

List of Keywords: Firm Value; Cash Holdings; Family ownership; Shariah Compliant

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Chapter 1

Introduction

Corporate cash holdings are a debatable topic in the corporate finance literature and it is always an important part of the firm decision making. It is defined as cash and cash equivalent of the company (Opler *et al.,* 1999). Firms do need cash for various purposes, such as for daily operating activity, to pay debts and taxes, etc. According to Keynes (1936), there are two major benefits of holding cash the first is the saving of borrowing cost for the transaction by using cash to make payments and the second is to have surplus cash to hedge for the unseen risk of future cash shortfalls which are for precautionary motives of cash holdings.

Cash equivalents are the part of company current assets, which can be converted into cash in a very small period and in this manner it is characterized as a high degree of liquidity. Corporations hold significant sum of cash in their accounting records and it is one of the factors that affect the firm's value. In this way managing liquidity may a key issue for corporate policy. The strong liquidity of cash can ensure to meet the demand for firms' operational and production activities and also reduce financial risk. On the other hand, too much cash holdings probably decrease the firm's profitability as well as evolve the self-interest behavior of management and controlling shareholders (Jensen, 1986).

The corporation's cash holding strategy is one of the most challenging problems in the field of finance (Myers & Majluf, 1984). Therefore it is very important to determine the optimal level of cash holding which improves the value of the firm. As previous literature of cash holdings suggests that corporate cash holdings have benefits and costs like brokerage costs for the company, so an optimal level of cash holdings may exist at which the firm value is maximized (Miller & Orr, 1966). Different studies have focused on this topic looked at

antecedents of firms cash holdings i.e. some studies have focused on why corporations hold cash, how corporations utilize cash in corporate decisions and what are the real consequences of corporate cash holdings choices (Kim *et al*., 1998; Opler *et al*., 1999; Ferreira & Vilela, 2004; Ozkan & Ozkan, 2004). Most of these studies assume that a target level of cash holdings exists; providing the evidence that corporations follow a partial adjustment model in cash holdings decisions, however no empirical evidence justifies why firms follow a partial adjustment model. Moreover, Sola *et al*. (2013) study examine the association between firm value and corporate cash holdings, the finding of the study suggests that optimum level of cash holdings maximize firm value and deviations from optimal level reduce firm value.

Several previous studies explore the factors that influence firms cash holdings such as the study of Opler *et al*., (1999); Ozkan and Ozkan (2004) find the different determinant of cash holdings. Though, less consideration has been given to investigate the association between the inside attributes of ownership and cash holdings. Ownership structure plays significant role in any firm because they have the power to vote for directors and to select an auditor who takes the major decisions of a firm. According to the free cash flow theory, cash holdings are the easiest way that gives managers more power so managers are tends to hold more cash for their own interest rather than of company interest which destroys the firm value (Dittma *et al*., 2003). In the developing countries like Pakistan, there are mix ownership structure e.g directors shareholding, individual shareholding, institutional shareholding, Investment Company's shareholding, and foreign shareholding. One of the most common and significant pattern of ownership structure is family ownership, as family members who own company shares and act as the executive directors in the company (Andres, 2008). Current literature has commonly

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concluded that family firms make different corporate cash decisions from nonfamily firms as Caprio *et al*., (2019) examine that family firms hold more cash than non-family firms.

In the ownership literature, a noticeable amount of studies have discussed the firm decision making in the context of the conduct of business operations. In this regard, the nature of business conduct is divided into shariah complaint (S.C) and non shariah compliant (NSC) business. NSC firms operate under different sets of rules and principles i.e. based on man-made rules. Where, SC firms operate under the shariah rules i.e. Islamic laws, which are based on Quran and Sunnah. One distinctive component of SC is that it strictly prohibits interest, whether it is simple or compound, nominal or excessive, fixed or floating. To comply with the principles of shariah, investments must not include interest (riba). These diverse business philosophies have a different approach on the firm's cash holdings policy. The previous study of Musarat and Ullah (2015) determines that SC firms hold more cash than NSC firms because SC credit-based financing is limited to a particular degree and so their largely focus is on the cash based financing modes rather than issuing interest base security.

This study adds to the literature in four ways. It explains the effect of cash holdings on firm value. It measures the effect of deviations from the expected level to explain whether the absolute value of deviation increase or decrease the firm value. This study attempts to explain whether family ownership moderates the association between absolute deviation from expected optimum level of cash holdings and firms value? The study attempts to explain how shariah compliant ownership moderates the relationship between absolute deviation from the expected optimum level of cash holding and firms value?

1.2 Problem Identification and Problem Statement

Corporate cash holdings strategy is an important issue in the field of corporate finance. Firms follow different patterns of holding cash such as some firms hold large cash and bear an additional cost. This condition raised serious questions as to why these companies are holding such an extensive amount in the form of cash even when these cash give just nominal return and are not valued by shareholders, therefore, the cash is not efficiently managed which reduce the firm value. The corporate cash liquidity can cause agency conflict between managers and shareholders of free cash flow which makes additional monitoring cost (Dittma *et al*., 2003). In contrast, those firms which hoard the small level of cash has face financially constraint to finance future investment opportunities so high level of cash holdings allow firms to pursue their optimal investment policy even when firm met financial constraints. Thus corporate cash holdings have benefits and costs for the firm therefore an optimum level of cash holdings may exist at which the value of the firm is maximized. The current study address the issue that how optimal cash holding can affect the value of the company in the presence of family ownership and sharia compliant securities.

1.3 Research Questions

This study answer the following questions

i. Does cash holdings affect firm value?

ii. Whether family ownership moderates the relationship between absolute deviation from optimal cash holdings and firm value?

iii. How shariah compliant ownership moderates the relationship between absolute deviation from the optimal level of cash holding and firm value?

iv. Does deviation above the optimum cash flow holding moderate the relationship between absolute deviations from the optimal level of cash holding and firm value?

1.4 Objective of the study

The aim of this study to empirically investigate the relationship between cash holdings and firm value for the existence of an optimal level of cash holdings that maximizes firm value. Second obejctive of the study is that if the optimal level of cash holding exist thus deveiations from expected optimal level probably reduced firm value, therefore study also analyzes whether or not deviations from the optimum level of cash holdings decrease firm value. Moreover the study examine how ownership structure and shariah compliant moderates the relationship between absolute deviation from the optimal level of cash holding and firm value. Furthermore this study explore that whether deviation above from the optimum cash flow holding moderate the relationship between absolute deviation from the optimal level of cash holdings and firm value?

1.5 Significance of the study

Cash holding is always considered as an important element of decision making, as an old phrase cash is a king. It is a key element of the company balance sheet and the least productive asset. Corporate cash holding has several benefits. First firms hold cash for the precautionary purpose to maintain liquidity to meet unexpected risk of future cash shortfall. Thus firms hold cash to hedge future cash shortfalls and to reduce cash flow risk. For transactional purposes firms need cash to pay current expenses (Keynes, 1936). At last, cash could avoid underinvestment costs. Internal source of funds empower firms to carry out their profitable investment projects by utilizing internal fund to avoid high transaction costs of rising outside funds. The presence of such advantages should make cash holdings valuable to investors. However in the previous literature in the context of Pakistan corporate cash holdings strategies and techniques are still in the growing phase. An enormous and growing literature document the association between corporate cash holdings and firm value in terms of decrease or increases the firm value. However

there is less literature available around the cash holding and firms value in the context of pakistan compare to developed countries. This study will help the managers to know that firm value will increase or decrease if they are not following any cash holdings policy which results to decrease the value of the firm if the level of cash holdings did not follow any optimal level. Because cash holding policy has benefits as well as costs whenever a firm is away from an optimum cash holding level it will decrease the firm value. Therefore it is evident that managers have to identify an optimal level of cash holding to achieve the objective of maximizing the firm value.

Findings of the study will serve as the best tool for firms to make the best cash holdings and investment decisions. Study findings will also help the managers to understand how ownership structure affects the relationship between corporate cash holdings and firm value. Ownership structure plays an important role in firm financing decisions. According to agency theory of free cash flow, managers have more power withholding more liquid asset i.e cash so managers tend to hold more cash for their own interest rather than of company interest which destroy the firm value (Dittma *et al*., 2003). Findings of this study will help the managers to know that how SC affect the association of corporate cash holdings and firm value as SC firm has different financing mode which strictly prohibits interest base financing so SC bears different cash holdings policy.

1.6 Research Gaps

The current study is based on the perception that in the case of market imperfections firms need to hold cash. Previous literature of cash holdings showed that there are costs and benefits of holding cash. Thus, it is expected that cut off point of cash holdings exists where the cost of cash holdings will be offset by its benefits and firm value is maximized. Earlier set of

studies related to the corporate cash holdings Kim *et al*., (1998); Opler *et al*., (1999); Ferreira and Vilela (2004); Ozkan and Ozkan (2004) described that there is a target cash level and firms follow partial adjustment models to make their cash holdings decision. Sola *et al*., (2013) study empirically that there is an optimum level of cash holdings which maximizes firm value and deviation from that level decreases the firm value. In the context of Pakistan Azmat (2014) study the impact of cash holding on firm value. This study contributes to the literature by testing empirically whether firms have an optimum level of cash at which their values get maximized. The study first considers threshhold model i.e. a nonlinear relationship between cash holdings and firm value. It measures the effect of deviation from the expected optimum level to explain whether the absolute value of deviation increase or decrease the firm value. The present study contribute to the existing body of knowledge because no evidence has been found with the reference which explains the impact of sharia compliant SC firms and family ownership structure on the relationship of cash holdings and firm value in the context of Pakistan. This study explains whether family ownership moderates the relationship between absolute deviation from optimal cash holdings and firm value? The study attempts to explain how shariah compliant ownership moderates the relationship between absolute deviation from the optimal level of cash holding and firm value? Differentiation in this aspect has not been spotlighted. So this study would add to the existing body of knowledge and addition with innovation in the area of cash holdings and its impact on the firm's value.

1.7 Plan of the study
This study consists of five chapters. The first three chapters are related to the theoretical background of the study and the last two chapters include empirical findings of the study. First chapter includes on the background of the study, research objective, problem statement, research gap, research questions and significance of the study. Second chapter include on the literature

review of the study. Third chapter discussed the methodology of the study, data descriptions, and measurement of variables. Fourth chapter includes on the findings of the study, their interpretations, and discussions. Fifth chapter consists on conclusion recommendation policy and direction for future research of the study.

Chapter 2

Literature Review

2.1 Overview of the Chapter

This chapter briefly discusses the theoretical and empirical background of the study. The empirical study includes on the study of the different researchers who studied cash holdings and the firm's value using data of the different markets and find some consistent and contrary results. Theoretical models which help to identify that firm which characteristics determine cash holdings decisions.

2. 2 Theoretical Review

This section discusses three theories related to the study.

2.2.1 Free cash flow theory

Free cash flow theory is introduced by Jensen (1986) which suggests that due to separation of ownership and management there will be a moral hazard, asymmetry of information and many other problems. Managers have incentives to hold more liquid assets under their control which give more power to manager over the firm investment decision; therefore cash holdings are the easiest way that gives managers more power so managers are likely to hold more cash for their own interest rather than of company interest which destroys the firm value. When cash is available for investments, the manager does not need to raise funds from an external source like the capital market and to provide detailed information about the firm's investment projects to capital markets. Therefore, managers could undertake investments.

2.2.2 Pecking order theory

The pecking order theory is a hierarchy of financing and investment introduce by (Myers & Majluf, 1984). Which states that firm's finance their investments first through retain earning, then with safe and risky debt, and finally through issuing new equity. Management needs to hold

cash to avoid financing their investments through debt and equity by using hoarding cash. The aim of this order of financing is to reduce asymmetric information costs and the cost of raising external funds. This theory argue that firms do not have any target level of cash, but instead, firms used cash as a shield between fund need for investments and retained earnings. Thus, when firm internal fund are enough to finance new investment opportunity so firms repay debt and hoard cash. When internal funds are not enough to finance current investment opportunity firm utilizing their hoarding cash and, if needed issue debt security.

2.2.3 Trade-off Theory

Trade-off theory state that firms set their optimum level of holding cash where marginal costs are upset by marginal benefits. Corporate cash holdings have several benefits, first firms that have a large balance of cash leads to reduce the probability of financial distress which firms may experience in the future as cash reserve provides safety when firms face unexpected loss or external fundraising constraints. Second, cash holdings allow the firms to pursue their optimal investment policy even when the firm met financial constraints. Another contribution of corporate cash holding is that it minimizes the costs of raising external financing or to liquidate existing assets as cash reserve acts as a buffer between the firm's sources and uses of funds. Contrary to this the opportunity cost of capital is the major cost of cash holding. Too much cash holdings probably decrease the rate of return on liquid assets as well as evolve the self-interest behavior of managers and investors (Jensen, 1986).

2.3 Empirical Review

Sola *et al*., (2013) investigate the effect of cash holding on firm value, using a sample of 472 non-financial U.S firms for the period of 2001 to 2007. The study has used Arellano and Bond (1991) GMM methodology by employing threshold models to test the nonlinear relationship between cash holding and firm value. The results suggest that cash holding increases the firm value up to an optimal level and the deviations from this level on either side decrease the firm value. It is evident that managers have to identify an optimal level of cash holding to achieve the objective of maximizing the firm value. The study of Azmat (2014) supports the findings of Sola *et al*., (2013) for the Pakistani stock market. Azmat (2014) argues that there is a maximum level of holding cash exist where marginal benefits are offset by marginal cost at that point firm value will be maximized and deviation from optimal point reduce the firm value. These findings support the trade-off theory of (Miller & Orr, 1966).

Han and Qiu (2007) studied the precautionary cash holding motive for corporate cash holding. They analyze the interaction between financial constraints firm, cash holding and cash flow volatility and also for the unconstrained firm and cash flow volatility, by using a sample of quarterly U.S publicly traded firms from 1997 to 2002 and using Arellano and Bond (1991), Generalized Method of Moments (GMM). Their result shows that financially constrained firms increase their cash holdings with an increase in cash flow volatility and there is no systematic relationship between unconstrained firms cash holding and cash flow volatility. This is because financial constraint firms need an intertemporal trade-off between current and future investments. If future cash flow risk cannot be fully diversifiable then financially constrained firms to need to reduce their current investment to increase future cash flow investment. Almeida *et al*., (2011) finding support the study of (Han & Qiu, 2007). Almeida *et al*, (2011) argue that financially constrained firms should hold more cash today to finance a project in the future.

Palazzo (2012) supports the precautionary savings motive. Palazzo (2012) finds a strong correlation between aggregate shock and cash flow, that riskier firm hedge more cash against the future shortfall of cash flow. These results also support the finding of (Myers & Majluf, 1984). who predicts that financial constraint firms should retain more cash to spend it later. These findings are consistent with the precautionary motive of cash holding (Keynes, 1936).

Ferreira and Vilela (2004) examine the determinant of corporate cash holding in the European Monetary Union (EMU) countries for the period of 1987 to 2000. Their result indicates that cash holdings are positively affected by the investment opportunity set and cash flows and negatively affected by firm size, leverage, Bank debt and asset liquidity. Their results also show that firms in those countries where investor protections are high and concentrated ownership hold more cash. Their results are consistent with the result of (Opler *et al*., 1999). Opler *et al*., (1999) examine that firms with strong growth opportunities, riskier and small firms hold more cash than other firms and firms that have easy access to capital markets, such as firm with large size and with credit rating and high levered firms hold less cash. Maheshwari and Rao (2017) support the finding of Ferreira and Vilela (2004). Maheshwari and Rao (2017) study find a significant positive relationship between cash holdings and investment opportunities, net equity and debt issuance of firms. And indicate a significant negative relationship between cash holding and the networking capital ratio, research and development expenditure, leverage, capital expenditure ratio.

Selcuk and Yilmaz (2017) examine the corporate cash holdings determinant using a sample of 1991 firms for the period of 2009 to 2015 of emerging markets Russia, Turkey, Brazil, Mexico and Indonesia. The study has used Arellano and Bond (1991), Generalized Method of Moments (GMM). Their finding suggests that highly profitable firms and firms with high

leverage ratios in their capital structure are held more cash. Their results also show a significant negative impact of liquidity and firm size on the level of corporate cash holdings. Results also show that high capital expenditures firms also hold less cash. And their result shows no significant impact of growth opportunities on the level of corporate cash holdings. Selcuk and Yilmaz (2017) results of an emerging market that firms with high leverage ratio in their capital structure are held more cash and no significant impact of growth opportunities on the level of corporate cash holdings are not support the finding of (Opler, Pinkowitz, Stulz & Williamson 1999; Ferreira & Vilela 2004). Pinkowitz *et al*, (1999); Ferreira and Vilela (2004) find that firms with strong growth opportunities, riskier and small firms hold more cash than other firms. And show a significant negative relation between leverage and corporate cash holdings. Najjar (2013) also studied the determinants of corporate cash holdings of emerging markets China, Russia, Brazil and India. Their findings suggest that factors determining cash holdings in both developed countries and emerging markets are mostly similar. In particular leverage, dividend payout, profitability, asset liquidity, and firm size have an impact on cash holdings.

Ozkan and Ozkan (2004) investigate the determinants of cash holdings for the non-financial U.K firms over the period of 1984–1999 using Arellano and Bond (1991), Generalized Method of Moments (GMM). Their results show a non-linear relationship between managerial ownership and cash holdings. They argue that the monitoring ability of outside shareholders for management decrease as there is a continues increase in managerial ownership. Their results suggest that the presence of ultimate controllers and board composition do not have a significant impact on cash holdings. Moreover result suggest that cash flows and growth opportunities of firms exert positive impacts on their cash holdings and liquid assets, leverage and bank debt exert a significant negative impact on cash holdings. In addition, their result suggests the target

adjustment model of cash holding adjustment. Ozkan and Ozkan (2004) target adjustment model supports the finding of (Opler *et al*., 1999). Opler *et al*., (1999) estimate a target adjustment model relating firm target cash holding to their actual cash holding and provide supportive evidence for the existing firm's target cash levels.

Faulkender and Wang (2006) examine the marginal value of cash holding of non-finanial firms using data for the period of 1971 to 2001 and follow Fama and French (1998) methodology. They find $0.94 is the average marginal value of cash across all firms and show that as firms leverage and cash level increase, their marginal value of holding cash significantly decreases. And The average marginal value of cash holdings significantly higher for those firms which face difficulty in access to capital. The marginal value of cash between constrained firms and unconstrained firms will be high for those firms which appear to have valuable investment opportunities but a low level of the internal fund. Denis and Sibilkov (2009) support the finding of (Faulkender & Wang, 2006). Denis and Sibilkov (2009) finding suggest that the value of holding cash are more valuable for those firms which are financially constrained than unconstrained. They associated cash holdings with the level of investment for both constrained firms and unconstrained firms and show that the marginal value of the investment is greater for constrained firms.

Dittmar and Smith (2007) examine the impact of corporate governance on firm value by comparing the using and value of corporate cash holdings in poorly and well-governed firms. Their sample consists of the period 1990 to 2003 of all U.S publicly traded firms and uses Fama and French (1998) methodology. Their result shows that in poor corporate governance firms the value of cash substantially less as compare to the well-governed firms. poor corporate governance dissipates excess cash reserves more quickly on less profitable investments than

those with good governance. So poorly governed firms waste excess cash resources and thus destroy firm value. Dittmar and Smith (2007) findings support the Agency theory of free cash flow (Jensen, 1986).

Pinkowit *et*., (2006) investigate the impact of corporate governance on cash holdings and firm value in a cross country analysis by using data for the period 1983 to 1998 and employing Fama and French (1998) methodology. Their result finds a much weaker relationship between cash holdings and firm's value in poor investor protection countries than in other countries. And also find a much weaker relationship between firm value and dividends in those countries where investor protections are strong. Furthermore, findings show that investors in countries with below-median governance scores place a lower value ($0.33) on a dollar of corporate cash holdings than investors in countries with above-median governance scores ($0.91). These findings support the view that in poor investor protection countries the value of cash holdings is less. These findings are consistent with the transaction cost theory of managerial ownership and firm value (Jensen & Meckling, 1976).

Dittma *et al*., (2003) examine the impact of corporate governance on cash holdings using the sample from 45 countries for more than 11,000 companies. Their result shows that corporations in countries where shareholder rights are not well-protected hold more cash from those countries where shareholder rights are well protected. In contrast, Harford *et al*, (2008) find that firms with weaker corporate governance structures have smaller cash reserves. Kusnadi (2011) supports the finding of (Dittma *et al*., 2003). Kusnadi (2011) argue that firms with less effective governance attributes are found to hold more cash than those with more effective governance.

Pinkowitz *et al*., (2003) studied the agency cost and trade-off theories that why corporate performance is different in countries with poor protection of investor rights by using data from different countries for the period of 1988 to 1999 and using (Fama & MacBeth, 1973) methodology. Their finding suggests that managers make different decisions in countries with poor protection of investor rights. Their explanation is that shareholder wealth maximizing managers face different tradeoffs in such countries. Alternatively, firms in such countries are less likely to be managed for the benefit of shareholders because the poor protection of investor rights makes it easier for management and controlling shareholders to use corporate resources for their own benefit. Moreover, their result shows that firms in countries with greater GDP per capita, with more risk and with poor protection of investor rights hold more cash and the value of cash $0.65 of minority shareholders of firms in such countries but worth approximately $1 in countries with good protection of investor rights. Dittmar and Smith (2007) support the finding of (Pinkowitz *et al*., 2003). Dittmar and Smith (2007) examine that $1.00 of cash in a poorly governed firm is valued at only $0.42 to $0.88. Good governance approximately doubles this value.

Kim *et al*., (1998) Develop optimal corporate investment models in liquid assets based on a cost and benefits tradeoff between the cost of holding in liquid assets (low return) and the benefit of minimizing the need for costly external financing. They used panel data of 915 U.S industrial firms for the period of 1975-1994. Their findings show that optimal investment in liquidity increases the cost of external financing, the variance of future cash flows, and the return on future investment opportunities, while it is decreasing in the return differential between physical assets and liquid assets. Furthermore, their result suggests a negative relation between firm size and liquidity and positive relation between liquidity and cost of external

finance. Their finding also suggests that more volatile earning firms and firms with lower returns on physical assets relative to those on liquid assets tend to have significantly larger positions in liquid assets.

Siddiqua *et al*., (2018) investigate the downward and upward adjustment behavior of Pakistani firms toward their maximum level of holdings cash. By using a sample of 200 non-financial firms listed on the Pakistan Stock Exchange for the period of 2006 to 2016 and employing Arellano and Bond (1991), Generalized Method of Moments (GMM). Their result shows the higher speed of adjustment of those firms which hold cash above the target level of cash holding than the firms which hold cash below the target level. Moreover, the finding suggests that financially constrained firms are faster adjusting their cash holdings than financially unconstrained firms. When financial constraints are controlled, the high speed of downward adjustment does not remain persistent.

Chen *et al*., (2018) investigate the impact of state ownership on corporate cash policy by using a sample from 59 countries for the period of 1981 to 2014. Their result shows a positive relationship between state ownership and cash holdings. Their result suggests that the strength of country-level institutions affect the relationship between the state ownership and the value of corporate cash holdings, so institutional environment affects the financing decision of corporations.

Tong (2008) investigate the transaction cost theory of managerial ownership and firm value by studying the relation between optimal CEO ownership and firm value using data for the period 1996–2000. Their result shows that change in CEO ownership affect firm value and deviations on either side of optimal CEO ownership reduce the firm value and a change in CEO ownership is associated with a higher, lower abnormal return if it moves the ownership towards,

away from the optimal level. Tong (2008) findings are consistent with the transaction cost theory of managerial ownership and firm value (Jensen & Meckling, 1976).

Brown *et al*., (2011) investigate how institutional investors impact the tendency of U.S firms to hoard cash, they use a sample of nonfinancial U.S firms for the period of 1981 to 2007. Their findings suggest that the ownership of short-term institutions (i.e., institutions that trade commonly for short-term trading profits) increases firm cash holdings. They show that the aggressive trading behavior of short-term institutional investors destabilizes the firm's stock price. So stock return volatility affects excess to external financing, resultantly demand the precautionary cash holdings enhance. while the persistent holding behavior of long-term institutional investors (i.e., institutions that trade infrequently) has the opposite effect, that the ownership of long-term institutions decreases firm cash holdings. Moreover Navissi and Naiker (2006) examine that shareholding by active institutional investors of up to 30% positively influences firm value. Beyond 30%, the ownership tends to decrease the firm value, which proposes that there are a non-linear relationship exists between the two.

Caprio *et al.,* (2019) examine the cash holding policy of family firms by using data of non financial listed compaines of European union for the period of 1997 to 2016. Their results show that family firms hold more cash relative to non family firms. Specifically, family CEOs hold more cash than outside CEOs. This is according to the impilications of trade of theory of cash holdings which characterized families by high risk averse than non families CEOs confront a lower opportunity cost of hoarding cash as a security against negative events. A subsequent clarification is the informations asymmetry endured by family firms, along these lines driving them to depend more on inside financing. Such a large amount of hoarding cash in family firms is not valued by the market as the value that investors place on an additional Euro of cash is

lower than in the case of non-family firm. Furthermore Lozano and Durán (2016) study the impact of ownership stucture on cash holdings using data of western European countries. Their finding suggests that family firms target level of cash holdings is higher than non family firms and family firms speed of adjustment of cash holding is faster than non family firms. Furthermore their finding show differences in the speed of adjustment within the group of family firms. In particular, young family firms, financially constrained family firms, and family firms that operate in countries with strong investor protection adjust their cash more aggressively.

Guizani (2017) investigate that how shariah compliants reduce the agency costs of free cash flow by means of dividend policy using sample of Gulf Co-operation Council (GCC) countries stock exchange listed companies for the period of 2009 to 2014. The results show that shariah-compliant firms not just have higher payout proportions but in addition have higher probability to deliver dividend. In addition, steady with shirking of the free cash flow, the finding show that the dividend payments of sharia-compliant firms react more intensely to free cash flow from do the dividend payments of non-sharia-compliant companies. In like manner, Sharia-compliant firms are probably going to pay out a greater amount of their free cash flow than non-sharia-complaints firms, which can keep managers from abusing the assets in manners that may not enhance shareholder capital.

Musarat and Ullah (2015) study the impact of religiosity on cash holdings when credit based financing is limited to a particular degree and the main focus is an around the cash based financing modes by using sample of 313 listed companies at PSX over the period of 2006 to 2011. Their result show that liquidity, cash flows, leverage, dividend payments, Islam, cash flow variability and Market to Book ratio significantly affect the cash holdings only size has shown a different behavior which show insignificant impact on cash holding.

In the past, a number of studies investigate the dynamic relationships between cash holding and firm value particularly in developed economies such U.S and U.K, Japan, etc. Han and Qiu (2007); Almeida *et al*., (2011); Palazzo (2012) studied precautionary cash holding motive for corporate cash holding. Their studies suggest that financial constraint firms should retain more cash to spend it later. Morever Ferreira and Vilela (2004); Opler *et al*., (1999); Maheshwari and Rao (2017) explain that how cash holdings are positively affected by the investment opportunity set and cash flows and negatively affected by firm size, leverage, Bank debt and assets liquidity. Kim *et al*., (1998); Opler *et al*., (1999); Ferreira and Vilela (2004); Ozkan and Ozkan (2004) described that there is a target cash level and that firms follow partial adjustment models for making their cash holdings decision. Sola *et al*., (2013) study empirically that there is an optimal level of cash holding which maximizes firm value and deviation from that level decreases the firm value. In the context of Pakistan, the present study will contribute to the existing body of knowledge because no evidence has been found with the reference which explains the impact of sharia compliant SC firms and family ownership structure on the relationship of cash holdings and firm value. The following are the theoretical framework of the study.

2.4 Theoretical Framework
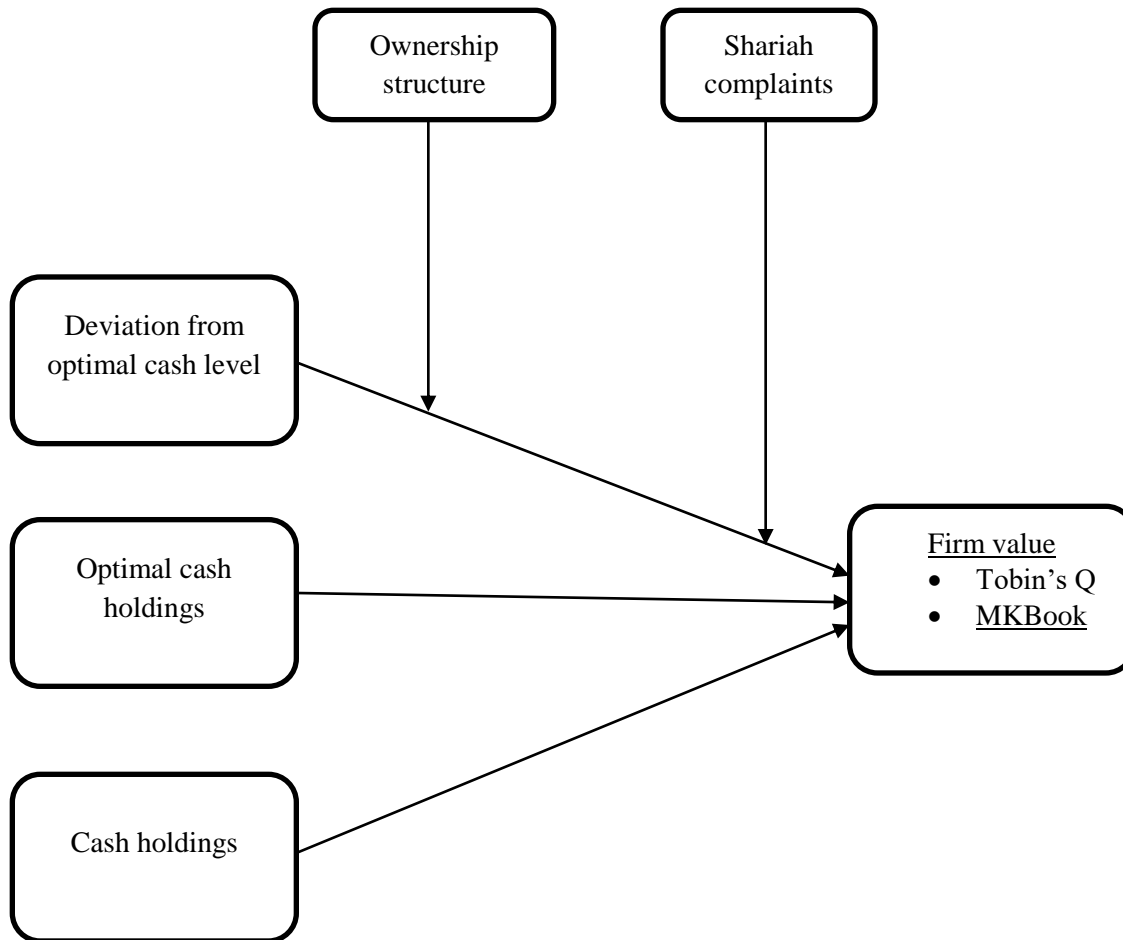
Fig 2.1 Model explain the impact of cash holdings on firm value

The model in Fig 2.1 presented two explanatory variables and one dependent variable. The study first test the impact of cash holdings on firm's value which is measured through Tobin's Q and Market to Book ratio. Corporate cash holdings decision is an important element of lequidity management. Acording to Keynes (1936); Myers and Majluf (1984) firms should hold cash for precautionary purpose to spend it later when firms face financial constraint. Moreover Almeida *et al.*, (2011) argue that financially constrained firms should hold more cash today to finance a project in the future. Palazzo (2012) supports the precautionary savings motive.

Palazzo (2012) finds a strong correlation between aggregate shock and cash flow, that riskier firm hedge more cash against the future shortfall of cash flow. Therefore high level of cash holdings allow firms to pursue their optimal investment policy even when firm face financial constraints.

In contrast those firms which hold large amount of cash which make additional cost because this large amount of cash give only nominal returns and are not valued by investors (Faulkender & Wang, 2006). Therefore, the cash is not efficiently managed which reduce the firm value. Moreover Dittma *et al*. (2003) examine that the corporate cash liquidity can cause agency problems between managers and shareholders of free cash flow which makes additional monitoring cost. According to free cash flow theory introduced by Jensen (1986) managers have an incentives to hold more liquid assets under their control which give more power to manager over the firm investment decision, therefore Cash holdings are the easiest way that gives managers more power so managers be likely to hold more cash for their own interest rather than of company interest which destroys the firm value. Thus corporate cash holdings have benefits and costs for the firm therefore an optimum cash level may exist at which the value of the firm is maximized (Kim *et al*., 1998; Sola *et al*., 2013). Therefore the study used threshold model i.e. quadratic equation to investigate whether there is optimal level of cash holding which enhance firm value.

Caprio *et al.,* (2019) examine the cash holding policy of family firms by using data of non financial listed compaines of European union. Their results show that family firms hold more cash relative to non family firms. Specifically, family CEOs hold more cash than outside CEOs. Such a large amount of hoarding cash in family firms is not valued by the market as the value that investors place on an additional Euro of cash is lower than in the case of non-family

firm. Furthermore Lozano and Durán (2016) finding suggests that family firms target level of cash holdings is higher than non family firms and family firms speed of adjustment of cash holding is faster than non family firms.

Guizani   (2017) examine that shariah-compliant firms not just have higher payout proportions but in addition have higher probability to deliver dividend. Moreover Sharia-compliant firms are possibly going to pay out a greater amount of their free cash flow than non-sharia-complaints firms, which can keep managers from abusing the assets in manners that may not enhance shareholder capital. Musarat and Ullah (2015) study the impact of religiosity on cash holdings when credit based financing is limited to a particular degree i.e. not interest base finance and the main focus is an around the cash based financing modes. They examine that shariah firms are holding more cash than non shariah firms. Therefore the study also tests the impact of deviation from optimal level in the presence of family ownership and sharia compliant companies.

Chapter 3

Data Description and Methodology

This chapter briefly discusses data collection procedures and methodologies to empirically study the association between cash holdings and firm's value.

3.1 Data Description

This study examines the impact of cash holdings on the firm's value by using panel data of 100 non-financial listed firms of PSX. The study first selected sample of 150 firms but due to unavailability of data it reduced to 100 firms. Financial firms are not part of this study because financial firms hold cash for a different purpose than non-financial firms (Pinkowitz *et al*., 2003). This study used a sample period of ten (10) years from 2009 to 2018 of non-financial firms of different sectors and used control variable like size, leverage etc. to control heterogeneity. The data are taken from the balance sheet, the web site of state bank of Pakistan which provides information about income statement and balance sheet of all industrial listed firms and from the business recorder.

3.2 Variables

List of key variables and their explanations

3.2.1 Dependent Variable

Firm value. Firm value is a measure of the total value of the firm. It is the entire market value of the firm rather than just equity value. So it includes on all assets claim both equity and debt. This study is using two proxies for firm value to measure it.

The first measure of firm value is Tobin's Q. Most of the previous studies used Tobin's Q for measuring firm value (Morck, 1988; McConnell & Servaes, 1990; Lin & Su, 2008; McConnell & Servaes, 2008; Tong, 2008). To measure Tobin's Q there are several formulas. In mostly previous finance literature i.e. Sola *et al*., (2013); Azmat (2014); Javed and Iqbal (2006)

calculated Tobin's Q as a ratio of the market value of equity plus the book value of total debt to

the book value of total assets. Therefore in the current study Tobin's Q is calculated as follow

$$Tobin's\ Q = \frac{Market\ value\ of\ Equity + Book\ value\ of\ Debt}{total\ assets}$$ 3.1

The second measure of firm value is the Market to Book ratio (MKBOOOK). To confirm

Tobin's Q the robustness of our result, another formula is used to measure firm value is Market

to Book ratio (MKBOOK) it is calculated by market value to book value of equity (Dushnitsky

& Lenox, 2006). $MKBOOK = \frac{Market\ value\ of\ Equity}{Book\ value\ of\ Equity}$ 3.2

3.2.2 Independent Variables
The independent variables of this study are as follow

3.2.2.1 Cash and Cash-Squared
  Federal Reserve System (FRS) defined cash equivalents are short term and highly liquid

investments that are easy to convert into cash without significant loss in value.

Cash is the main independent variable in the study, measured as cash and cash equivalents to

total assets Kim *et al*., (1998).

$$Cash = \frac{Cash + Cash\ Equivalents}{Total\ Assets}$$ 3.3

3.2.2.2 Cash Flow
  Cash flow use is an independent variable in equation 3.10 in order to find deviation. In

this study cash flow is measured as a ratio of net operating income plus depreciation to total

assets.

$$Cash\ Flow = \frac{Net\ operating\ income + deprciation}{Total\ assets}$$ 3.4

3.2.2.3 Deviations

Deviations are the absolute value of residuals which derive from the following equation. In order to find how deviations from expected optimal levels affect firm value, the study is applying Tong (2008) methodology used by (Sola *et al.*, 2013; Azmat, 2014).

$$Cash_{it} = \beta_\circ + \beta_1 Cash\ flow_{it} + \beta_2 Liquidity_{it} + \beta_3 Size_{it} + \beta_4 Leverage_{it} +$$
$$+ \beta_5 capex_{it} + \eta_i + \lambda_t + \varepsilon_{it}$$

Where the dependent variable $Cash_{it}$ is the cash and cash equivalent of i firm it time t, $Cash\ flow_{it}$ is the cash flow of firm i it time t, $Liquidity_{it}$ is the liquidity of i firm it time t, $Capex_{it}$ is the capital expenditure of firm i it time t, $Size_{it}$ is the size of firm i at time t, $Leverage_{it}$ is the leverage of i firm it time t, η_i is a dummy variable to measure unobservable heterogeneity of i firm it time t, λ_t is dummy variable to capture economic factor which may affect firm value and firms cannot control it and ε_{it} is error term.

3.2.3 Control variables

This study includes on the following control variables. Previous literature suggests that these variables also affect the value of firms (e.g., Dushnitsky & Lenox, 2006).

3.2.3.1 Firm Size

Firm size can be defined by multiplying the market price per share with an outstanding share of a firm. Vast early finance literature suggested that large size firms have more information than small firms; therefore, large firms may less suffer from asymmetric information and these firms easily managing their economy about the firm (Brennan & Hughess, 1991). This study measure firm's size is the natural logarithm of firm assets.

$$Firm\ Size = ln(total\ assets) \qquad\qquad 3.5$$

3.2.3.2 Leverage

The leverage ratio measures the ability of a firm to meet its obligations. In this study leverage is the ratio of total debt (short term + long term loan) to total assets.

$$Leverage = \frac{Total\ Debt}{Total\ assets} \qquad\qquad 3.6$$

3.2.3.3 Capital expenditure

Capital expenditure refers to investment by a firm to acquire, upgrade physical assets and maintain these assets such as property, plant or equipment, buildings, and technology. In this study, it is measured as the ratio of capital expenditure to total assets.

$$CapEx = \frac{CapEx}{Total\ Assets} \qquad\qquad 3.7$$

3.2.3.4 Liquidity

Liquidity is described as how quickly firm buy or sell assets or security with intrinsic value in the market. Liquidity is used as a control variable in equation 3.11 which is measured by working capital less total cash and short term investment to the total asset.

$$Liquidity = \frac{Net\ working\ capital-(total\ cash+short\ term\ investment)}{Total\ assets} \qquad\qquad 3.8$$

3.2.4 Ownership Structure

The study use ownership structure is a dummy for family and non-family ownership. Family ownership are defined as firm in which family members or an individual who own company shares in term of voting right and act as the executive directors in the company (Andres, 2008). In this study family is equal to 1 if family and 0 otherwise.

3.2.5 Shariah Compliant

The shariah Compliant firms is introduce is a dichotomic variable in the study. Shariah complaint (S.C) and non shariah compliant (NSC) business firms operate under different sets of principles and rules i.e. based on man-made rules. Where, SC firms operate under the shariah

rules i.e. Islamic laws, which are based on Quran and Sunnah (Musarat & Ullah, 2015). This study use 1 for shariah compliant firms and 0 for otherwise.

3.3 Model Specification

Corporate cash holdings' previous literature showed that there exist the problem of unobservable heterogeneity and potential endogeneity (Ozkan & Ozkan, 2004). The endogeneity problem may arise due to numerous reasons. Such as random shocks influence the firm's cash holdings decision, some other firm-specific factors like firm's leverage and growth opportunities also affect cash holdings. In cash holding policy firms may differ due to several unobserved factors related to firm's conditions, preferences, management idea and competition with other firms, etc. To deal with these issues in recent literature panel data techniques Generalized Method of Moments Arellano and Bond (1991) GMM are used by (Opler *et al*., 1999; Pinkowitz & Williamson, 2001). This study has used the Generalized Method of Moments (Arellano & Bond, 1991) in order to explore the impact of cash holdings on firms' value. The study used the Hansen test for over-identifying restrictions, which tests for the absence of correlation between the instruments and the error term. The study also used Fisher-type unit-root test for both proxies of dependent variable Tobin's Q and MKBOOK under the null hypothesis that there is unit roots in all panel. The GMM method is as follows.

3.3.1 Generalized Method of Moments (GMM)

Arellano and Bond (1991) develop the Generalized Method of Moments (GMM) of estimation. This model is used to control for unobservable heterogeneity and prevents potential endogeneity problems. This model controls potential endogeneity problems are more effective than fixed effect. Although time-invariant unobserved firm-specific factors are controlled by fixed effect estimation but it does not prevent potential endogeneity problems. According to Arellano and Bond (1991), the GMM estimation method includes taking the first differences of

the model and then applying the GMM, uses the lagged levels of the endogenous variables as instrumental variables. Taking the first differences controls for the non-observable firms fixed effect. It is assumed that there is no serial correlation in the disturbance term and all the lagged variables can be used as valid instruments in the first difference equation (Ahmed & Javid, 2009).

3.4 Econometric Models

This study used the following equations to investigate the association between cash holdings and firm value. And then find the impact of deviations from the expected optimum level on firm value. The study used Model 1 to find the optimal level of cash holding which maximizes firm value. Where the firm market value depend on cash and its square. The aim of these two variable to include in the model to tests the transactional and precautionary motives of cash holding and the free cash flow theory and opportunity costs, as well as to determine the expected optimal point of the firm value and cash holdings.

$$V_{it} = \beta_\circ + \beta_1 Cash_{it} + \beta_2 Cash_{it}^2 + \beta_3 Capex_{it} + \beta_4 Size_{it} + \beta_5 Leverage_{it} + \eta_i + \lambda_t +$$
$$\varepsilon_{it} \qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad 3.9$$

Where the dependent variable V_{it} is the firm value i at time t, $Cash_{it}$ and $Cash_{it}^2$ is the cash and cash equivalents of firm i at time t, $Capex_{it}$ is the capital expenditure of firm i it time t, $Size_{it}$ is the size of firm i at time t, $Leverage_{it}$ is the leverage of i firm it time t, η_i is a dummy variable to measure unobservable heterogeneity of i firm it time. The model measure both firms particular characteristics and the characteristics of the sector in which they operate, λ_t is dummy variable to capture economic factor which may affect firm value and firms cannot control it and ε_{it} is the error term.

This equation determines the optimal level of cash holdings of firm i at time t. If the above quadratic relationship exists hence there exists an optimum level of cash. In order to find how deviations from optimum level affect firm value, the study has applied Tong (2008) methodology used by (Sola *et al*., 2013; Azmat, 2014). Their studies measure deviation from the optimum level from the following equation.

$$Cash_{it} = \beta_\circ + \beta_1 Cash\ flow_{it} + \beta_2 Liquidity_{it} + \beta_3 Size_{it} + \beta_4 Leverage_{it} +$$
$$+ \beta_5 capex_{it} + \eta_i + \lambda_t + \varepsilon_{it} \qquad\qquad 3.10$$

Where the dependent variable $Cash_{it}$ is the cash and cash equivalent of i firm it time t, $Cash\ flow_{it}$ is the cash flow of firm i it time t, $Liquidity_{it}$ is the liquidity of i firm it time t. $Size_{it}$, $Leverage_{it}$, $capex_{it}$ was early described, η_i unobservable heterogeneity, λ_t dummy variable and ε_{it} are error term.

Deviation derived from equation 3.10 is put in equation 3.9 in place of $Cash_{it}$ and $Cash_{it}^2$. Hence the new equation is

$$V_{it} = \beta_\circ + \beta_1 Diviation_{it} + \beta_2 Size_{it} + \beta_3 Leverage_{it} + \beta_4 capex_{it} + \eta_i + \lambda_t +$$
$$\varepsilon_{it} \qquad\qquad 3.11$$

Where $Diviation_{it}$ is the absolute value of residual derived from equation 3.10. In equation 3.12 interaction terms is added to see deviation is above or below the optimum level.

$$V_{it} = \beta_\circ + \beta_1 Divaition_{it} + \beta_2 (\text{residual dummy} \times \text{Divaition}_{it}) + \beta_3 (\text{ Divaition}_{it} \times$$
D ownership$) + \beta_4 (\text{Divaition}_{it} \times \text{DSharia compliant}) + \beta_5 \text{Size}_{it} + \beta_6 \text{leverage}_{it} +$
$\beta_7 \text{Capex}_{it} + \eta_i + \lambda_t + \varepsilon_{it} \qquad\qquad 3.12$

Where the dependent variable V_{it} is the firm value i it time t, $Diviation_{it}$ is the absolute value of residual, (residual dummy × Deviation) is the interaction term to see deviation is above or below the optimum level. Above-Optimal is a dummy variable that takes 1 for positive residuals and 0 otherwise. So, the definition of the variable interaction is above optimal × DEVIATION and below × DEVIATION, D ownership is a dummy variable to test the impact of ownership structure (i.e., Family owner and non-family owner) and DSharia compliant sharia and non-sharia compliant firms on the association of firm's value and deviation of cash holdings from optimum level and other are control variables as described earlier.

Table 3.1 List of variables

Variable	Formula
Tobin's Q	$$\text{Tobin's} = \frac{\text{Market value of Equity} + \text{Book value of Debt}}{\text{Book value of total assets}}$$
Market to Book ratio(MKBOOOK)	$$\text{MKBOOK} = \frac{\text{Market value of Equity}}{\text{Book value of Equity}}$$
Cash	$$\text{Cash} = \frac{\text{Cash and Cash Equivalents}}{\text{Total Assets}}$$
Deviations	Deviations as the absolute value of residuals which derive from equation 3.10 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 Strucure is introduce is a dichotomic variable in the study.
Shariah Complaints	The shariah Compliant firms is introduce is a dichotomic variable in the study. Shariah complaint (S.C) and non shariah compliant (NSC) business firms operate under different sets of principles and rules i.e. based on man-made rules and Islamic rules.

Chapter 4

Analysis and Discussion

This part of the study present descriptive statistics, empirical finding and analysis of cash holdings and firm value by using sample period for the year 2009 to 2018.The chapter first explains the descriptive statistic and correlation analysis and finally explains the regression results of cash holdings and firm value.

4.1 Descriptive statistics

Descriptive statistics are used to clarify the basic feature of data set like Mean, median, min, max, standard deviation etc. mean and median show the central tendency of observations and standard deviation measure the variation in data from mean, median. The min, max value represents lowest and highest value respectively. Table 1 present descriptive statistics for each variable.

Table 4.1 Summary statistics

	N	Mean	St.Dev	min	max	p25	Median	p75	p95
Tobin's Q	1000	1.585	1.967	-.627	19.539	.763	1.011	1.526	4.614
MKBOOK	1000	3.101	5.874	-.581	32.680	.593	1.294	2.839	12.893
Cash	1000	.19	.218	-.417	.996	.02	.112	.304	.617
Capex	1000	.049	.068	-.239	.749	.009	.031	.067	.158
Size	1000	23.205	1.455	18.174	27.223	22.308	23.224	24.134	25.655
Lev	1000	.220	.231	-.070	1.540	.010	.170	.350	.620
Family	1000	.543	.498	0	1	0	1	1	1
Shariah	1000	.67	.47	0	1	0	1	1	1

Notes: Table provides descriptive statistics of data for the period of 2009 to 2018. The variable Tobin's Q as a ratio of the market value of equity plus the book value of total debt to total assets, MKBOOK as a ratio of market value to book value of equity, cash is measured as cash and cash equivalents to total assets, size is the natural logarithm of firm total assets, Capex as the ratio of capital expenditure to total assets, leverage is the ratio of total debt to total assets, Family is dummy variable, shariah is a dummy variable.

Table 4.1 present descriptive statistics of dependent and independent variables of the study. The data show that the mean value of Tobin's Q is 1.585 and median is 1.011 with St. Dev

1.967 and the highest value of Tobin's Q is 19.539 and lowest is -.627. MKBOOK has a maximum value 32.680 and minimum value -.581 with mean value 3.101, median of 1.294 and St. Dev is 5.874. Cash is the main independent variable of the study, their average value is 19% and median is 11.2% of maximum .996 and minimum -.417 with St, Dev .218. The average CapEx value is .049; median is .031 of maximum .749 and minimum -.239 with St.Dev .068. Size is the natural log of total assets and the average size of firms is 23.205 and median is 23.224. The maximum size of firm is 27.233 and minimum size is 18.174. Standard deviation of firm size is 1.455. The maximum value of leverage is 1.540 and minimum value is -.070 mean value of leverage is .220 and median is .170 with St.Dev .231. The average value of family ownership is .543 and median is 1 with standard deviation .498. The maximum value of family ownership is 1 and minimum value is 0 it is because the study has used ownership structure is a dummy variable 1 for family ownership and 0 otherwise. Shariah has a mean value of .67 and median is value is 1 with standard deviation .47. The maximum value of shariah is 1 and minimum value is 0 it is because the study has used shariah label is dummy variable 1 for shariah compliant and 0 otherwise.

4.2 Correlation Analysis

Correlation explains the strength of the association between the variables. This study analyzed the association of dependent and independent variables. The table 4.2 show that some variables are positive correlated with independent variables and firms value and some are negative. The cash has a negative correlation with firm value with -3.7 percent. The Capital expenditure has positive correlation with Tobin's Q with 10.6 percent and positive relationship with MKBOOK with 0.4 percent and capital expenditure has a negative relationship with cash with -16.4 percent.

Table 4.2 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 provides descriptive statistics of data for the period of 2009 to 2018. The variable Tobin's Q as a ratio of the market value of equity plus the book value of total debt to total assets, MKBOOK as a ratio of market value to book value of equity, cash is measured as cash and cash equivalents to total assets, size is the natural logarithm of firm total assets, Capex as the ratio of capital expenditure to total assets, leverage is the ratio of total debt to total assets, Family is dummy variable, shariah is a dummy variable. * shows significance at the .05 level.*

Size of the firm has negative relationship with firm value with -8.5 and -16.6 percent and positive relationship with cash and capital expenditure with 13.5 and 9.1 percent. Leverage has negative relationship with firm value with -0.7 and -2.9 percent and positive relationship with cash with 32. 6 percent. Family has a negative correlation with firm value with -22.2 and -15.2 percent. Family has negative relationship with cash with-1.13 percent. Shariah has a negative relationship with Tobin's Q with -2.7 percent and it is negative relationship with MKBOOK with -6.9 percent value. In the correlation table there is no variable observe with high correlation which cause multcollinearity among the variables.

4.3 Regression Analysis

This study used two step Generalized Method of Moments (GMM) for analysis, as it is discussed earlier in section 3.3.

4.3.1 Corporate Cash Holding and Firm Value

The table 4.3 indicates the results of the regression of model 1. This study has use two measures for firm value (Tobin Q and Market value of equity to Book value of equity). In First column of table 4.3 the calculation of firm value is Tobin Q and in column 2 the Market value of equity to Book value of equity are measures for firm value respectively. The results reveal that cash is statistically positive and significant while cash square is statistically negative and significant for the two measures of firm value. The results of the study indicate that cash holdings increase the value of a firm up to the breakup point and after that increase in the cash holding decreases the value of firm. The negative sign with cash square show the breakup point which is the expected optimal level of cash holding at which firm value maximize. These results support the trade of theory of Miller and Orr (1966) which suggests target level of cash holdings. Moreover results support the findings of Kim *et al.*, (1998); Ozkan snd Ozkan (2004) on cash holdings, which have implicitly assumed the existence of optimum level of corporate cash holdings. Furthermore, the finding is also consistence with the finding of Sola *et al*., (2013); Azmat (2014) Which argues that there is a maximum level of holding cash exist where marginal benefits are offset by marginal cost at that point firm value will be maximized.

The model 1 findings for control variables are mixed. The capital expenditure relates statistically negative and significant to Tobin Q while statistically insignificant to market value of equity to book value of equity. The size relates statistically positive and significant to both Tobin Q and market value of equity to book value of equity. This study show that leverage relates statistically positive and significant to Tobin Q and statistically negative and significant to MKBOOK.

Table 4.3 CORPORATE CASH HOLDING 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
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: In table 4.3 two measures are used for firm value as mentioned in column 1 (Tobin Q) and in column 2 MKBOOK which is the ratio of market value of equity to book value of equity). The cash holding is measure through cash and cash square. Capex is the capital expenditure of a firm. Size is natural log of total asset of a firm. Lev is the leverage of firm. Capex, size and lev are used as a control variable in this study. Standard error values are given in parenthesis. m^2 is the statistical test for second order correlation in error term. Hansen test is a test of over-identifying restriction. Significance level is as follow at 99% (*** p<0.01), at 95% (** p<0.05), at 90% (* p<0.1).

4.3.2 Deviation from the optimal cash level and firm value

The next objective is that to examine whether deviations from breakup point affect firm value or not. As model 1 result confirm that a nonlinear relationship exists between firm value and cash holdings where optimal point exist which maximizes firm value, therefore the study further estimated model 2 in order to obtain deviation. The deviation is the absolute value of residual is putted in model 1 after eliminating cash and cash square and obtain model 3.

The table 4.4 demonstrates the findings of model 3 in order to explain the relationship of deviation and firm value. The deviation is statistically negative and significant with firm's value

which means that deviation from optimum level reduces the firm value. These finding are consistent with the finding of Sola *et al*., (2013); Azmat (2014) which argue that deveiation from optimum level reduce firm value. The model 3 findings for control variables are mixed. The capital expenditure relates statistically negative and significant to both Tobin's Q and market value of equity to book value of equity. The size relates statistically positive and significant to Tobin's Q and insignificant with the market value of equity to book value of equity. This study show that leverage relates statistically positive and significant to Tobin's Q and market value of equity to book value of equity.

Table 4.4 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: In table 4.4 two measures are used for firm value as mentioned in column 1 (Tobin's Q) and in column 2 (MKBOOK which is the ratio of market value of equity to book value of equity). Deviation is the absolute value of error term and it is derived from equation 3.10, which is used in order to find out optimal level of cash holding. Capex is the capital expenditure of a firm. Size is natural log of total asset of a firm. Lev is the leverage of firm. Capex, size and lev are used as a control variable in this study. Standard error values are given in parenthesis. m^2 is the statistical test for second order correlation in error term. Hansen test is a test of over-identifying restriction. Significance level is as follow at 99% (*** p<0.01), at 95% (** p<0.05), at 90% (* p<0.1)

In table 4.4 deviations is the absolute value which not distinguished as positive and negative therefore to find the impact of above and below deviation from optimal level the interaction term is introduced in model 4. The coefficient of deviation β_1 and deviation+ interact ($\beta_1 + \beta_2$) were count for the above and below deviation from optimal level which affect firm value, therefore $\beta_1<0$ and ($\beta_1 + \beta_2$) <0 is exaptation. For the situation that residuals are positive, above optimal variable takes the value 1, and ($\beta_1 + \beta_2$) signifies the impact on firm value. Otherwise at the point when residuals are negative, below-optimal variable takes the value 0. Therefore if INTERACT is zero, β_1 is account for the impact. Thus deviation shows below the optimal level, In table 4.5 the deviation results are same as earlier in table 4.4.which reveals that below optimal level cash holding reduce the firm value. This finding suggests that in those situations when the cash level below the optimal level firms can increase their cash level by reducing investments. The interaction term of deviation relates statistically positive and significant to firm value. As Tong (2008) argues that Interaction term could be positive hence positive and negative residual cancel each other. Therefore interaction term shows above the optimal level which show deviation above from breakup point reduce the firm value. This finding suggests that firm reduce their cash level by increasing investment when they are above optimal level. These finding are consistent with the finding of Sola *et al*., (2013); Azmat (2014) which argue deviations from optimal level reduce firm value.

Moreover study further include the moderating role of ownership structure and shariah compliant in order to investigate whether these terms increase or decrease the relationship between deviation from optimal cash holdings and firm value. The interaction term of ownership structure is negative and statistically significant to the relationship of deviation from optimal cash level and firm value, which means that family ownership strengthen the association of

negative deviation from optimal level and firm's value. This is because as in the previous literature Caprio *et al*., (2019) show that the family firms hold more cash than non-family firm and the value of excess cash that shareholders place on an additional Euro in family firm is lower than non-family firm so such a large amount of cash in family firms is, not appreciated by the market. Furthermore Lozano and Durán (2016) finding examined that family firms target level of cash holdings is higher than non family firms. The interaction term of sharia complaint relates negative and statistically significant to the association of deviation from optimal cash level and firm value which means that Shariah complaints strengthen the association of negative deviations from optimal level and firm's value. One reason for this is that Shariah complaints firms holding more cash than non shariah firm. As previous study of Musarat and Ullah (2015) examine that shariah firm hold more cash than non sharia firm because in shariah compliant credit based financing is limited to a particular degree and the main focus is an around the cash based financing modes.

The model 4 findings for control variables are mixed. The capital expenditure relates statistically negative and significant to Tobin's Q and market value of equity to book value of equity. The size relates statistically negative and significant to Tobin's Q and market value of equity to book value of equity. This study show that leverage relates statistically positive and significant to Tobin's Q and market value of equity to book value of equity.

Table 4.5 DEVIATION FROM THE OPTIMUM CASH LEVEL AND FIRM VALUE

	(1) Tobin's Q	(2) MKBOOK
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
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: In table 4.5 two measures are used for firm value as mentioned in column 1 (Tobin's Q) and in column 2 (MKBOOK which is the ratio of market value of equity to book value of equity). Deviation is the absolute value of error term and it is derived from equation 3.10, which is used in order to find out optimal level of cash holding. Interact is the moderation term of residual dummy with deviation. Family is the interaction term of ownership structure dummy* deviation and Shaiah is the interaction term of Shariah complaint dummy*deviation. Capex is the capital expenditure of a firm. Size is natural log of total asset of a firm. Lev is the leverage of firm. Capex, size and lev are used as a control variable in this study. Standard error values are given in parenthesis. m^2 is the statistical test for second order correlation in error term. Hansen test is a test of over-identifying restriction. Significance level is as follow at 99% (*** p<0.01), at 95% (** p<0.05), at 90% (* p<0.1)

Chapter 5

Conclusion and Recommendation

The purpose of this study to test the impact of cash holding on firm value. This study use panel data of 10 year for the period of 2009 to 2018 of 100 non-financial firms listed at PSX. The study empirically tests whether cash holding increases the firm value up to an optimal level and whether deviations from optimum level on either side decreases the firm value. Internal fund availibilty enable firms to undertake project by using cash to save the transaction costs of external capital, the existence of such benefits should make cash holdings valuable to shareholders.

Firms cash holding may decrease cash flow uncertainty, while free cash flow theory argue that the free cash flow involves agency cost of management preference and opertuinity cost. The results of these two effects, costs and benefits are directly opposite expectation concerning the impact of cash holding on firm value. The study consedering non linear relationship between cash and firm value to separate the effect of costs and benefits of cash holdings. The findings of the study support substantialy the trade of theory. The trade-off theory suggest that firms set their optimum level of holding cash where marginal costs are upset by marginal benefits. Results of the study confirm the existence of optimum level of cash holding which increase the value of the firm. Moreover study finding confirm that deviations either side from the optimal level reduce the firm value. Furthermore the study contributes to the literature in the context of sharia and family firms. Findings show that family firms and shariah compliant firms have significant impact on the relationship of deviation from optimal cash and firm value which were previously unaddressed. Therefore it is evident that managers have to identify an optimal level of cash

holdings to achieve the objective of maximizing the firm value, thus liquidity management is an important part of firm decision making which affect shareholder value.

5.1 Study Implication

This study is important in the aspect of family firms and Islamic firms because family and Islamic firms are studied and analyzed in the study which has excellent implications for the policymakers and analysts in Muslim countries and Islamic financial systems and for family firms. Overall, our results have implications for liquidity decision in Pakistan and in other countries where business are shariah or family.

5.2 Direction for Future Research

This study used sample of Pakistani firm thus this finding are limited to the one market. Therefore future research should conduct on other country where firm operate under family control and sharia compliant which gave generalization to the study. This study used only two proxies for firm value so for future research, researcher can use more proxy for firm value which can give robustness.

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Appendix A

Fisher-type unit-root test for Tobin's Q
Based on augmented Dickey-Fuller tests

Ho: All panels contain unit roots	Number of panels =	100
Ha: At least one panel is stationary	Number of periods =	10

AR parameter: Panel-specific	Asymptotics: T -> Infinity
Panel means: Included	
Time trend: Not included	Cross-sectional means removed
Drift term: Included	ADF regressions: 2 lags

	Statistic	p-value
Inverse chi-squared(200) P	359.1941	0.0000
Inverse normal Z	-7.9770	0.0000
Inverse logit t(504) L*	-7.8824	0.0000
Modified inv. chi-squared Pm	7.9597	0.0000

P statistic requires number of panels to be finite.
Other statistics are suitable for finite or infinite number of panels.

Fisher-type unit-root test for MKBOOK
Based on augmented Dickey-Fuller tests

Ho: All panels contain unit roots	Number of panels =	100
Ha: At least one panel is stationary	Number of periods =	10

AR parameter: Panel-specific	Asymptotics: T -> Infinity
Panel means: Included	
Time trend: Not included	Cross-sectional means removed
Drift term: Included	ADF regressions: 2 lags

	Statistic	p-value
Inverse chi-squared(200) P	401.2665	0.0000
Inverse normal Z	-10.1017	0.0000
Inverse logit t(504) L*	-9.7063	0.0000
Modified inv. chi-squared Pm	10.0633	0.0000

P statistic requires number of panels to be finite.
Other statistics are suitable for finite or infinite number of panels.