

**Topic: Determinants of Cash Holdings by Non-Financial Firms in  
Pakistan: A Macroeconomic Perception.**



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CERTIFICATE

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## **Declaration**

I, Fawad Ali, MPhil scholar, Economics and Finance, hereby declare that the matter printed in this study is my own work and has not been printed, published and/or submitted as research work, dissertation or publications in any form in any university in Pakistan or abroad.

**FAWAD ALI**

**Dedicated**

**To**

**My beloved parents**

(Whose prayers, support and encouragement always enlightened my way?)

**&**

**Off course, my honorable teacher**

(Who educate me and made me believe that I can do everything)

## **AKCNOLDGEMENT**

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## **ABSTRACT**

The corporate cash holding maintained by firms is an area of extensive research literature that argues its importance to the firm in maximizing value of shareholders wealth. The factors on which these holdings depend are largely firm specific. However, the motives that drives firm's appetite to hold liquid asset call for a need to look at these factors on a macroeconomic level. We investigate the macroeconomic determinants of corporate cash holdings, together with firm specific factors and put forth the potential effect of macroeconomic environment of a country upon the levels of liquid assets that firm hold. We use panel model methodology to analyze such effects for 100 non-financial firms of Pakistan over a period of 16 years from 2000 to 2015. The firm specific factors include firm's size, leverage, sales growth, and cash flows of the firm, whereas macroeconomic factors are represented by GDP growth rate, government budget deficit, and interest rate. We find that all macroeconomic factors are significant and consistent in their impact on the cash holding levels. Among firm specific variables, we conclude that only leverage and firm size are significant determinant of cash holdings. The study recommends that while deciding upon the levels of corporate cash holdings that a firm should maintain to achieve its motives, namely, the transaction, precautionary and speculative motives, assessing macroeconomic conditions of the country should be a very relevant practice.

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## List of acronyms

<b>CS</b>	<b>Cash ratio</b>
<b>GDP</b>	<b>Gross domestic product</b>
<b>BD</b>	<b>Budget deficit</b>
<b>INT</b>	<b>Interest rate</b>
<b>RS</b>	<b>Residual series</b>
<b>FSZ</b>	<b>Firm size</b>
<b>CF</b>	<b>Cash flow</b>
<b>NPV</b>	<b>Net present value</b>
<b>GMM</b>	<b>Generalized method of moments</b>
<b>SBP</b>	<b>State bank of Pakistan</b>
<b>KSE</b>	<b>Karachi stock exchange</b>
<b>EMU</b>	<b>European economic and monetary union</b>
<b>UK</b>	<b>United kingdom</b>
<b>US</b>	<b>United states of America</b>
<b>OLS</b>	<b>Ordinary least square</b>
<b>RE</b>	<b>Random effect</b>
<b>FE</b>	<b>Fixed effect</b>



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# CHAPTER 1

## 1.1 Introduction

While there can be several reasons, objectives and an optimal level for a firm's cash holdings, and where a lot has been said about the subject from these perspectives, what remains controversial, or at least less clear, is the nature of factors that affect cash holdings by the management of a firm. While such factors, as are increasingly focused upon, can definitely be microeconomic or firm's specific in their nature, ignoring macroeconomic factors from the equation may lead us away from the search for a better set of determinants that the management uses in managing the liquid assets. Because one of the motives of holding liquid assets is precaution (Keynes 1936), it implies consideration of macroeconomic factors while studying the determinants of cash holdings. The present study, therefore, tries to put up some additional empirical evidence on not just firm's specific but also macroeconomic determinants of cash holdings from the developing capital markets.

The managers within the firms hold cash and cash equivalents to meet their short term financial obligations and operations. The theory offers three motives for holding asset that are easily convertible into money. According to Keynes (1936), these motives are transaction, precaution and speculation. Transaction motive arises from the need to avoid costs associated with raising capital through liquidating assets, or through external finances (Dittmar et al., 2003). Uncertainty of future economic situation forces the management of firms to guard itself against difficult times by holding cash in hand (Diamond, 1984), that presents the precautionary measure for holding cash. Speculative motive manifest itself in the fact that a firm may lose an attractive investment opportunity with a high return. However, holding high levels of cash is not free of cost rather firms incur some cost related to it. Because liquid assets are assigned low risk, the return they offer is very low (Ferreira and Vilela, 2004). It

may also be used in a sub optimal investment under the manager discretion which in turn may trigger agent - principal conflict (Jensen, 1986).

As to the issue of optimal level of cash holdings, theory offers a level that needs to be maintained while holding cash and cash equivalents. In this regard, the most famous theory is Trade-off theory that argues that a cost-benefit analysis should be done in deciding the optimal holding levels. In other words, the marginal costs associated with cash holdings must equate its marginal benefits. However, in practice empirical evidence shows that the balance is often not maintained, and this in the favor of manager discretion. The agency problem is explained by free cash flow theory (Jensen, 1986) where the manager within the firm act as an agent to its principal – the shareholder. As a matter of fact, the agent does not always act in the sheer interest of the principal and may want to gain power over the financial decisions of the firm. The accumulation of funds within the firm reduces the efficiency of firms in terms of its investments because a possibility of over investments and that too sub optimal investments now exists. This creates a divide between the management and ownership which is referred to as agency problem. A lot of evidence has been provided in this respect (Opler et al., 1999; Al-Najjar et al., 2011; Gill and Shah, 2012; Wasiuzzaman, 2014; Azmat, 2014).

A more basic debate of the subject is directed towards the sources of these funds and managers' preference towards these alternate sources. According to literature there are two theories that explain the order of financing; the Pecking Order theory and Market Timing theory. The pecking order theory of (Myers and Majluf, 1984) provides the order of financing a management must adopt to avoid the costs as much as possible. A firm in need of cash must first look at the internally generated resources to finance its investments. In the case where these finances do not meet the expenditures associated with these investments, only then should the firm look outwards. While generating funds internally either the dividend policy, even if a fixed regime policy, should be altered and managed accordingly, or in worse

situations the liquid assets must be floated to extract the funds needed. On the other hand, choosing between the external sources debt should be preferred over hybrid securities like convertibles that in turn should be preferred over issuance of new securities.

However, large evidence on the time series patterns of financing activities in US contradicts and does not support the suggestions of Pecking Order Theory and Trade-Off theory (Huang and Ritter, 2005). A yet another important theory regarding the financing decisions by a firm is the Market Timing theory. Simply put, the argument of the market timing theory is that it is not any order the firms must follow while choosing between the three financing options, rather a simple rule of thumb is to be followed, i.e., equity is to be preferred over debt when the former is cheaper. In other words, when the cost of equity is lower, equity should be issued otherwise the firm should issue debt. Moreover, the market timing theory assumes markets to be not semi-strong form efficient, thus some firm managers out of their perception regarding their equity to be overvalued, may gain from equity issuance. This implies that some firms issue equity (or debt) even when they do not actually need to.

The determinants of cash holdings, in the literature, include firm specific variables. Most of the previous work provide evidence from both developing as well as developed capital markets on a range of firm specific variables. Previously, little endeavor is made to incorporate the macroeconomic factors. Particularly, in a developing country like Pakistan where firms operate, for most of the time, under macroeconomic instability and uncertainty, it is imperative to consider macroeconomic variables that provide grounds for managers to hold and justify higher levels of easily convertible current assets under precautionary motive. In other words, in situations of volatile macroeconomic conditions, the income stream of a firm faces uncertainty and to avoid the high costs of external finances in these situations, corporate managers hold liquid assets in excess of their transaction demands. Therefore, this study

investigates the effect of macroeconomic factors in addition to firm specific variables on the cash holdings.

## **1.2 Research Gap**

In the extant literature several studies have focused on firm specific variables as determinants of cash holding (Opler, et al. 1999; Kim, et al. 1998; Afza & Adnan, 2007; Shah, 2011; Shabbir, et al. 2016). As a matter of concern, very little attention has been drawn upon the macroeconomic conditions that determine the level of cash firms would hold. Several studies have been conducted in developed markets but only a handful of studies have been conducted in developing or emerging markets like Pakistan where adverse socio-economic problems and less favorable business conditions influence the level of cash holdings of companies across dissimilar industries. The present study, therefore, attempts to bridge this gap by considering macroeconomic factors like GDP growth, interest rate and government budget deficit along with some firm specific variables.

## **1.3 Research Questions**

This study tries to answer following research questions:

- Does the firm specific variables affect the level of cash holdings?
- Does macroeconomic variables affect the level of cash holdings?

## **1.4 Research Objective**

In our study we attempt to understand the relationship between the levels of cash that firms maintain and the macroeconomic and firm specific variables. In particular, the study first finds the impact of macroeconomic variables on the cash holdings. Any unexplained variation is then explained by firm specific variables. This implies running a regression between firms' cash holdings and macroeconomic variables in the first step. The residual

series from this regression is consequently regressed over firm specific variables in a second regression.

Such a sequence of the study is aimed at determining the degree of explanatory power that the included macroeconomic variables hold in determining the levels of cash maintained by firms. Additionally, the study also tries to make a comparison between the firm level and macroeconomic variables in terms of their effect on the cash holdings.

### **1.5 Significance of the Study**

By establishing a relationship between the cash holdings and firm specific variables the study seeks to provide useful information to the corporate managers who are concerned with the value maximization of the shareholders' wealth since holding their wealth in cash or liquid form bears a financial as well as economic cost to the shareholders. The study also intends to provide an insight into the macroeconomic conditions under which the cash holdings – in the form of liquid/ short term investments – might be preferred over longer term and high-return bearing investments. This is due to several reasons, at least, in the developing capital markets like Pakistan where, unlike developed capital markets, the regulatory environment for the corporate sector is not as stringent as it should be to avoid the several tiers of business and financial risk. For the uncertainty pertinent to weak regulatory regime and poor corporate governance (Dittmar et al, 2003), the firms' management resort to holding high level of cash to meet any adverse events that may occur. Secondly, macroeconomic conditions in developing markets also bears an impact on the stability of firms' cash flows. As a result of volatile cash flows coupled with uncertainty, the management would hedge any downside risk by holding high levels of liquid assets to avoid the situations where external funds cannot be accessed with relative ease as compared to stable macroeconomic conditions. Moreover, the study intends to aid the insiders (managers) to a firm, through the impact of firm specific variables, in constructing such efficient investment portfolios that meet both the short term as

well as long term objectives of the firm. In other words, since short term investments, cash or cash equivalents bear a cost to the shareholders, it is necessary that the managers must have knowledge about the optimal levels of cash holdings in order to minimize the costs and maximize the value of the firm and be able to effectively assess the impact of macroeconomic uncertainty in cash holdings decisions.

## **1.6 Theoretical Background**

The basic theories which remained more applicable to cash management practices of firms in determining the level of cash holdings include trade-off, pecking order and free cash flow theory (Wasiuzzaman, 2014). According to the trade-off theory, to maintain the optimal level of cash firms consider the point where the marginal cost and benefit of holding cash are equal. Keynes (1936), describes the dominant benefits of cash holding; transaction cost motive and precautionary motive. Firms need liquidity for transactional purposes which enables them to adjust the difference between cash inflows and outflows and also to avoid transaction costs to raise funds or to liquidate assets (Dittmar et al., 2003). Secondly, firms stock cash against unexpected variations in cash flows (Diamond, 1984). Corporations hold excess cash as a precautionary measure against uncertainty prevailing in the market and high volatility in cash flows. Liquid assets generate low rate of return (Ferreira and Vilela, 2004). Therefore, these benefits are weighted against the alternative costs of holding cash. According to Jensen (1986), excess cash holding could increase agency cost. Therefore, the managers could pursue their own interests rather than shareholders because they do not required to access capital market for financing which hide them from the market monitoring. In addition, if cash is distributed to shareholders it can also be exposed to double taxation at corporate and individual levels (Kim et al., 1998).

The pecking order theory was first formulated by (Myers, 1984) and (Myers and Majluf, 1984). According to this theory firms decision about funding projects follow specific order.



Complying to this theory, firms first prefer internally generated funds to finance their projects by using the retained earnings and liquid assets. After that, they issue debt while, their last resort is issuance of equity. Firms follow this order of financing to minimize asymmetric information costs.

The interests of managers may not always be similar to those of the owners and the efforts by managers may sometimes be directed at serving their personal gains. Such agency problems can be a result of optimal level of cash holdings. Free cash flow theory – originally presented by Jensen (1986) – dominates finance literature on the subject. According to this theory high levels of liquid asset holdings by managers is aimed among others at achieving greater control over the assets of the owners, and gaining powers in financial decision making. Such discretionary powers of the managers often result in over investment within the firm (Ferreira and Vilela, 2004). On the other hand, in highly regulated countries, managers within the firms are also found to hold low levels of liquid assets (Ferreira and Vilela, 2004). Both of these cases demonstrate the discretionary powers of managers in managing cash levels.

## CHAPTER 2

### 2.1 Literature review and hypothesis development

Cash is most liquid asset and is used by firms to pay bills on time. Liquid assets are irrelevant in the frictionless world of Miller and Modigliani. Whenever cash flow unexpectedly turn out low for daily operations and for financing projects, firms can borrow without any cost because there is no liquidity premium. However, in real world market imperfections do exist which induce corporations to hoard significant amount of cash. Theoretical and empirical studies show that a number of factors affect decision making of firms regarding corporate cash holdings.

#### *2.1.1 Firm Size and Corporate Cash Holdings*

Size of firm is important factor that effects cash holdings. For larger firms, the cost to generate funds from outside the company is less as compared to smaller firms (Ferri and Jones, 1979), these firms are less likely to be in financial distress because they are highly diversified (Titman and Wessels, 1988), these firms can get larger amounts of capital, and are more likely to benefit from the economies of scale (Mello et al. 2008). Also, financial distress is associated with high fixed costs and these costs are proportionately greater for smaller firms (Warner, 1977). Thus, the trade-off theory predicts inverse relationship between size and cash holdings. However, Opler, et al. (1999) and Afza and Adnan (2007) report that due to their high rate of success, large firms should have more cash in hand than invested in long term assets. Thus, pecking order theory predicts a direct relationship between size and liquid assets held. Therefore, association between firm size and cash holdings can be either negative or positive.

H<sub>1</sub> : Firm size has positive impact on cash holding.

### ***2.1.2 Leverage And Corporate Cash Holdings***

Leverage ratio is also a key factor that affect cash levels of the firm. Firms can access debts from debt market instead of holding high level of cash (John, 1993). Firms that have the ability to issue debt can also borrow funds whenever there is a shortfall of cash. Various studies Afza and Adnan (2007), Wasiuzzaman (2014), Ferreira and Vilela (2004) and Shah, 2011 find negative relationship between leverage and cash holdings. However, Guney, et al. (2007) find non-linear relationship between leverage and cash level. The argument presented is that leverage shows that firms can issue debt and hence there would exist a negative relationship. However, higher leverage would mean that firms should hoard more cash in hand to minimize the risk of financial downturn and bankruptcy. Thus, there may exist a positive relationship between leverage and levels of liquid assets held by firms. Hence, sign of relation is not clear. It can be concluded that the impact of leverage on cash holdings can be either positive or negative.

H<sub>2</sub> : Leverage has positive impact on cash holding.

### ***2.1.3 Cash flow and Corporate Cash Holdings***

Kim et al. (1998); Ferreira and Vilela, (2004) define cash as a ready and alternative source of liquidity which reduces the need to hold high level of cash. Trade-off theory predicts a negative relationship between cash flows and the amount of cash holdings of a firm. Several studies have found positive relationship between level of cash and cash flows (Ferreira and Vilela, 2004; Afza and Adnan, 2007; Shah, 2011; Wasiuzzaman, 2014; Shabbir, et al. 2016). Myers & Majluf, (1984) argue that firms will use internal resources for funding, when there exist asymmetry of information. Garcia-Teruel & Martinez-Solano, (2008) also supports the idea that firms would prefer to finance new investments from internal resources in the presence of information asymmetries. Hence, pecking order theory predicts positive relationship between cash flows and cash holdings because firms that face high levels of cash

flows will maintain cash levels at very high to meet new investment opportunities. Ozkan & N. Ozkan (2004), argue that cash flows are also a proxy for firm's growth opportunities, the positive impact may indicate that firms with higher cash flows also hold higher cash reserves to avoid such situations in which they give up valuable investment opportunities.

H<sub>3</sub> : Cash flow has positive impact on cash holding.

#### ***2.1.4 Sales Growth and Corporate Cash Holdings***

The cost and benefit analysis of external funds that are available to the firms is dependent on the degree of information asymmetry present in the capital markets. When asymmetrical information between insiders and outsiders to a firm exists, such external financing is deemed to be costly. In situations like these the firms will prefer to raise finances within the firm rather than looking outwards (Myers and Majluf, 1984). Such is the case particularly with the growing firms whose earnings streams are less certain as compared to those of the large established firms, and hence, these growing firms are expected to give up even those projects with positive Net Present Value (NPV). Opler et al. (1999) Ozkan & N.Ozkan (2004) Shah (2011) Shabbir et al. (2016) argue that the growing firms in their effort to deal with the costly external financing when profitable investments come up resort to excess liquid assets. This implies that the more a firm faces growth opportunities the more they will resort to liquid assets. Resultantly, a positive relationship is expected between the cash holdings these firms maintain and the growth opportunities they face. Similarly, Myers (1977) argues the agency cost of debt when firm face growth opportunities and opines that growing firms will avoid even projects with positive NPV when risky debt is present in firms' capital structure. Thus, both the agency cost of debt to the managers and the presence of information asymmetry regarding the cash flows of the firm will cause a positive relationship to hold between the growth of the firms and liquid cash holdings.

Contrarily, if we consider the agency perspective of cash holdings decisions we find that entrenched managers tend to hold higher liquid assets even when there are no positive NPV projects available to the firms (Ferreira & Vilela 2004; Jani et al., 2004; and Bates et al., 2009). Here we expect a negative relationship between the market-to-book value of the assets and the cash levels.

H<sub>4</sub> : Sales growth has a positive impact on cash holding

### ***2.1.5 GDP Growth and Corporate Cash Holdings***

Macroeconomic conditions of a country could be an important determinant of firm's cash holding behavior and affect cash policy of a firm. Kim et al. (1998) find a positive and significant relationship between liquidity and measures of future economic conditions, which supports the prediction that firms shape liquidity in expectation of favorable future investment opportunities. Among macroeconomic variables, GDP is important variable which is used as proxy for measurement of economic growth. Chen & Mahajan (2010) using a data of 34 countries from 1994-2005, show that macroeconomic variables bear a positive influence on level of cash holdings. The study report positive relation between GDP growth and corporate liquidity. This implies that during high economic growth, firms hold more cash, which is consistent with the income effect prediction of the money demand theory. Furthermore, the study uses interaction between macro variables and firm-specific variables to examine the indirect effect of macroeconomic variables on corporate cash holdings, because prevailing macroeconomic conditions are very likely to have an effect on the impact of firm-specific variables. After inclusion of additional interaction variables, the effects of firm-specific variables on cash holdings remain the same. Abushammala & Sulaiman (2014), also find similar results that firms hoard cash during higher economic growth, hence, income effect prediction of money demand theory hold. In contrast to above results, other studies

have found insignificant relationship between GDP growth and corporate cash holdings (Bayyurt & Nizaeva, 2016; Mesfin, 2016).

H<sub>5</sub> : GDP growth has positive impact on cash holding

### ***2.1.6 Interest Rate and Corporate Cash Holdings***

Another macroeconomic variable that effect cash holdings of firm is interest rate. Natke (2001) report that economies of scale exist and interest rate effect corporate cash holdings of Brazilian manufacturing firms. Lower interest rate means company will hold more cash, because opportunity cost of holding funds in investment falls (Stone et al. 2015). Garcia-Teruel & Martinez-Solano (2008) use 1-year T-Bill rate as a measure for interest rate to study the relationship between cash levels of small and medium sized firms in Spain and interest rate from 1996-2001. The study finds that cash holdings reach its highest level, when interest rate are at their lowest and vice versa. Bates et al. (2009) find a negative relationship between interest rate and cash to total assets ratio using 3-month T-bill rate. However, using an alternate measure for cash holdings, cash and marketable securities to total assets, and T-Bill rates they could not prove a significant relationship. Chen & Mahajan (2010) also find negative relationship between real short-term rate and corporate liquidity. This implies that firms reduce their instantly convertible assets when the opportunity cost is higher, which is consistent with the argument of money demand theory. On the other hand, Bayyurt & Nizaeva (2016) studying 164 Turkish listed manufacturing firms witness positive association between interest rate and corporate liquidity. The study justify this relationship with the argument that companies prefer to borrow debt when interest rate is low in order to take advantage of low interest rate because interest rate is cost of external financing. Therefore, an association of positive relationship can be explained with the reasoning of pecking order theory.

H<sub>6</sub> : Interest rate has negative impact on cash holding

### ***2.1.7 Government Budget Deficit and Corporate Cash Holdings***

The impact of government deficit on corporate liquidity is ambiguous because an increase or decrease in government deficit also signals changes in other macroeconomic variables (Saleh and Harvie, 2005). For example, when government deficit increases, it will likely raise interest rates because to finance additional expenditure government will borrow by issuing debt at lower price. Interest rate is the opportunity cost of holding fund, so higher interest rate should result in lower level of holding cash (Keynes 1936). Higher interest rates and reduced resources due to higher government spending will likely crowd out private investments and this will likely slow down economic growth. Therefore, the need for holding cash to anticipate and take advantage of future investment opportunities decreases and hence, firms will reduce cash holdings (Kim et al., 1998). On the other hand, firms are to hoard more cash as a precautionary measure because government deficits create economic uncertainty (Chen and Yo, 2012). Furthermore, Chen and Yo (2012) find negative impact of government deficit on corporate liquidity in their empirical results. It means the negative effect of inflation and interest rate has dominated the positive effect of economic growth and uncertainty, such that net effect of government deficit is negative. Chen and Mahajan (2010) also find negative impact of government budget deficit on cash holdings. They argue that corporations will stock less cash in anticipation of lower investment opportunities in future because increase in budget deficit signals decrease in economic growth.

H<sub>7</sub> : Government budget deficit has negative impact on cash holding.

## **2.2 Summary of empirical literature on determinants of corporate cash holdings**

Results of prior studies revealed that there is a dynamic effect of firm specific and macroeconomic factors on cash holdings of a company. John, (1993) studied the financial distress cost and argued that the cost of financial distress had a positive relation with the firm's cash holding level. His findings support a hypothesis that firms hold more in liquid assets with higher cost of financial distress. Kim et al, (1998) investigated determinants of cash holding of U.S. companies. They demonstrate that the cash holding level increases proportionate to the expected returns, volatility in expected cash flows and cost of retained earnings and decreases with the firm size. Opler et al. (1999) employ publicly traded US firm's data for the period 1971-1994 and reports that firms with relatively higher risk in future cash flows and firms with significant growth opportunities tend to hold higher levels of cash. Chang & Noor bakhsh, (2006) analyze 22,000 firms' data for 44 countries and indicate that firms hold high levels of cash where shareholder protection is low. The author's results also indicate that size of the firm also had a negative relation with cash holdings. These results are also similar to Dittmar et al, (2003). Pinkowiz & Williamson, (2007) analyze the determinants of cash holding patterns in the Japanese and German firms. They find that, in contrast to the US firms, Japanese and German firms have distinct features in cash holding patterns. Guney et al, (2007) examine the relationship of leverage on corporate cash holdings in some of the developed markets including UK, US, France, Germany and Japan for a period of 1996-2000, as these markets are characterized by different legal and institutional arrangements. The results of the study report a significant negative (positive) nonlinear relationship at the lower (higher) levels of leverage. The authors attribute their findings to the view that, since, at the lower levels of leverage the firms have the ability to borrow as and when needed and, hence, they maintain low levels of cash. Whereas, high levered firms need



to maintain higher levels of cash in order to avoid the increased chance of financial distress. Kim et al, (2010) study firm level corporate cash holding variables for the US restaurant industry and find an inverse relationship between levels of cash holding and firm's variables such as size, liquid asset substitutes, capital expenditures and dividend payouts while the results indicate that restaurant firm's cash patterns are directly related to investment opportunities. Gryglewicz, (2011) analyzes liquidity (short term) measured as cash flow volatility together with cash reserves and solvency (long-term) measured as uncertainty in future profitability together with leverage. The author concludes that firms hold larger amounts of cash where there is higher volatility in cash flows and less uncertainty in future profitability. He attributes these differential effects on cash holdings to the short-term and long-term uncertainty (risk) in cash flows and profitability. Kusandi & Wei, (2011) investigate the cash flow sensitivity by studying the role of legal protection to investors. The results of the study show that firms hold the lesser amount of cash in relation to the cash flows in those countries where the legal system provides strong protection to investors. They also document that firms with financial constraints hold larger cash levels in relation to cash flows in countries.

In addition to firm-specific variables, macroeconomic conditions can play an important role on firm's cash holdings behavior. Changes in economic environment in a country are closely associated with changes in macroeconomic factors such as interest rate, GDP growth, and budget deficit. Changes in these macroeconomic variables sequentially affect the quantity and price of the product, firm's cash flows, firm's financial decision and eventually firm value. Holmstrom and Tirole (1997) explain the high preference in cash and equivalence with "credit crunch" story in which capital becomes scarce during the economic downturn. Korajczyk and Levy (2003) frame firms target capital structure model as a function of firm-specific and macroeconomic variables and find that macroeconomic variables are significant

for security issue choice for financially unconstrained firms but less significant for constrained firms. Consistently, Erel et al. (2012) find that an economic downturn leads the decrease in the expected maturity of public bonds and private loans, indicating that firms during an economic downturn tend to hold more cash and equivalence. Furthermore, (Kim et al, 1998; Saleh & Harvie, 2005; Chen & Mahajan, 2010; Chen & Yo 2012; and Abushammala & Sulaiman, 2014) have find in their studies that macroeconomic conditions like GDP growth, Government budget deficit, and interest rate ect significantly influence the level of cash holdings of a firm.

## CHAPTER 3

### METHODOLOGY

#### 3.1 Model Specification

The relationship between the identified variables (both firm specific as well as macroeconomic) and the level of cash holdings is tested by two subsequent regression models that would incorporate panel data methodology. In the first model we explore the impact of macroeconomic factors on the corporate cash levels and generate a residual series. In the second step the residual series so obtained from first model is made the dependent variable and regressed over firm specific variables. Such fashion of research is aimed at upholding to the assumption of Classical Linear Regression since the incorporation of both type of variables in a single regression model would give rise to the interdependency of regressors over each other. In other words, a single model for the analysis would be faced with the collinearity of covariates and hence, unbiased results which no longer would be reliable for policy analysis.

##### 3.1.1 Macroeconomic Model

The association between macroeconomic conditions represented by GDP growth, government budget deficit and interest rate and Cash Holdings is analyzed in the following model:

$$Cash_{it} = \alpha + \beta_1 GDP + \beta_2 INT + \beta_3 BD + \mu_{it} \quad (1)$$

Where,

the subscripts 'i' refers to cross sections and 't' refers to time-period, Cash shows cash to net assets ratio,  $\alpha$  refers to the constant term,  $\beta$  refers to a vector of coefficients of regressors, GDP represents the GDP growth, INT refers to the interest rate, BD refers to government budget deficit, and  $\mu_{it}$  shows the unexplained variation in the cash holdings for a firm i at time t.

### **3.1.2 Firm Specific Model**

Here we check for a similar association between firm specific variables and the unexplained variation in cash ratio left over by macroeconomic variables. The model is specified as follows

$$\mu_{it} = \lambda + \gamma_1 FSZ_{it} + \gamma_2 LEV_{it} + \gamma_3 CF_{it} + \gamma_4 GR_{it} + v_{it} \quad (2)$$

Where the subscripts *i* and *t* refers to the cross sections and time-period respectively,  $\mu$  shows the residual series from the previous equation (1). The firm specific variables include firm size (FSZ), leverage (LEV), cash flows (CF), and sales growth (GR).  $\lambda$  is the constant term, and  $\gamma_i$  refers to the coefficients of the regressors and  $v_{it}$  is the regular disturbance term.

### **3.2 Estimation Technique**

The objective of this study – estimating the relationship between cash ratio and the explanatory variables – is achieved by employing the static panel data techniques. One advantage of the panel data methodology is that it controls the unobserved heterogeneity that might exist either over time periods or cross sections or both. For the said purpose, pooled OLS, Fixed Effects and Random Effects models with their assumptions and limitations are used here. Pooled OLS assumes that the cross sections are similar in the risk-return preferences in terms of investing in liquid assets. A restricted F-test is used to validate this assumption (Gujrati, 2003). The results of this test reject the assumption made here and we conclude the inappropriateness of pooled OLS. We, therefore, decide between the fixed effects and random effects model. However, the former model loses too many degrees of freedom since it includes estimating several dummy variables, whereas, the later may be inconsistent in its estimates due to the correlation between individual effects and regressors (Greene,2006). The application of the appropriate model between the two is decided upon by

incorporating Hausman test (1978). The null hypothesis of Hausman test states the validity of Random Effects model as opposed to the alternate which suggests the Fixed Effects model.

## **CHAPTER 4**

### **VARIABLE CONSTRUCTION AND DATA**

#### **4.1 Description of variables**

This section deals with the definition and construction of dependent and independent variables.

##### ***4.1.1 Firm Size***

Size of the firm is computed as natural logarithm of market capitalization. This variable is used in regression because a lot of studies have use total assets to divide the firms into small, medium and large size to examine that whether cash holding behavior of firms is homogenous across these different size groups or not. Ahmad and Attiya, (2008) and Chay and Suh (2009) claims that firm's size is important determinant of cash holdings. A negative relationship between this and liquidity is expected here. This means that large firms would not face the problem of accessing external finances under instable conditions where as small firms because they cannot easily manage to get external finances and will face a big deal in accessing the external finances. So, a negative relationship is, hence, expected.

##### ***4.1.2 Leverage***

leverage ratio represents the amount of total assets that are levered by debt. This ratio also indicates the ability of a firm to meet its obligation. It is the ratio of firm total debts to total assets. Whereas total debts include both short term and long-term debts. It can be calculated as dividing total debt by total assets of the firm.

The leverage decreases shareholders' return and it also increase risk for the firm because when a firm acquire debt, it must pay fixed financial charges (interest) on that and repay the borrowed principal amount, so failing of these (principal and interest) repayment cause liquidation of a firm. In order to repay the borrowed amount firm holds good liquidity position. Hence, positive relationship is expected between leverage and liquidity because the inclusion of high debt levels increases the cost of bankruptcy and so the firms are expected to hold excess cash levels. (Cleary, 2006; Deng et al, 2013; Bradley et al, 1998; Ahmad & Attiya, 2008; and Afza & Mirza, 2014) used this variable in their studies.

#### ***4.1.3 Cash Flow***

Cash flow is defined as the level of cash generated by firms from operating activities. It is a proxy for internal funds. Cash Flow is measured as earnings before interest and taxes minus interest, taxes and common dividend and add back depreciation and amortization and then divided by total assets.

Cash flow is an important factor for the firms because higher cash flow shows that high levels of internal funds are generated by a firm which can be used as a source of financing for investment opportunities. It is a cheaper source of finance. We expect a positive relationship between the two since in the face of information asymmetry firms will hold high cash levels out of internal finances to finance new investment opportunities. Numerous studies like (Shabbir et al, 2016; Afza and Adnan, 2007; Al-Najjar Belghitar, 2011; Opler et al, 1999; Minton & Schrand, 1999; Deshmukh & Vogt, 2005; Booth & Cleary 2006; and Deng et al, 2013) use cash flow as an explanatory variable in their equations.

#### ***4.1.4 Sales Growth***

Sale growth can be defined as the average annual change in sales of a firm. It can be calculated as current year's sale less previous year's sale scaled by previous year's sale.

Sale is an important variable for the firm. It indicates revenue generated by the firms. The main objective of the firm is to maximize the sale for the purpose of growth. This variable is included in the study because it captures investment opportunities for the firms. Sale growth gives a signal to the firms for expected future demand. Sale growth is taken as independent variable by (Minton & Schrand, 1999; Cleary, 2006; and Mulier et al, 2014) as a determinant of corporate cash holdings. We expect a positive association here since in the face of information asymmetry it will be difficult for growing firms to raise external finances and hence, they will hold excess amounts in cash.

#### ***4.1.5 GDP growth***

GDP growth is computed as percentage change in the GDP of current year to a base year. We expect a positive relationship because higher GDP growth means new investment opportunities will come due to favorable economic activities and thus firms will hold high cash levels (Chen & Mahajan, 2010; Chen & Yo, 2012 and Abushammala & Sulaiman, 2014).

#### ***4.1.6 Government budget deficit***

Government budget deficit is measured as government budget deficit/surplus as a percentage of GDP. We expect negative relationship since higher budget deficit indicate slowdown of economic activity and hence reduced number of investment opportunities that firm expect (Chen & Mahajan, 2010; Abushammala & Sulaiman, 2014; chen & Yo, 2012).

#### ***4.1.7 Interest rate***

Interest rate measures rate paid for demand, time, or any saving deposits. We expect negative relationship between cash holdings and interest rate because higher interest rates mean that the finances that the firms would otherwise manage would now be expensive by (Natke, 2001; Chen & Mahajan, 2010; Garcia-Teruel & Martinez-Solano, 2008).

#### ***4.1.8 Cash Reserve Ratio***

Dependent variable chosen in this study is cash reserve ratio (CSH). It is defined as cash and cash equivalents over total assets in most of the previous studies (Opler, et al. 1999; Dittmar, et al. 2003; Ferreira & Vilela, 2004; Shabbir, et al. 2016; Shah, 2011).

#### **4.2 Description of data**

This section of the chapter presents a description of the data used in our study. The study analyzes a panel of 100 non-financial firms listed on Pakistan Stock Exchange for a period of 16 years from year 2000 onwards until 2015. The sample include those firms that have annual data available over the period of the study, however, few firms based on their huge market share are being included even if their data is available from subsequent years. 100 firms are selected from 20 sectors to represent the whole economy. All the firms included in our sample are supposed to be listed on Pakistan Stock Exchange. The data for the study is mainly collected from the annual publications of the State Bank of Pakistan on the analysis of balance sheets of firms and on the macroeconomic indicators.

Several variables that are suggested in the extant literature are included in our study. These variables are firm size, leverage, cash flows, and sales growth (Shabbir et al 2016, Shah,2011; Bates et al, 2009; Ferriera & vilela,2004; Ozkan & N. Ozkan, 2004; Opler et al, 1999). Macroeconomic conditions are represented in our study by GDP growth, interest rate and government budget deficit indicators. The firm specific variables included are computed in the following fashion:



## CHAPTER 5

### RESULTS AND DISCUSSION

This section provides the results of FE and RE model to check the impact of firm specific and macroeconomic variables on the cash maintained by Pakistan's non-financial firms for year 2000 onwards until 2015. The impact of independent variables on the dependent is carried out in two subsequent steps. In the first step, we regress Cash Holdings on several macroeconomic variables and obtain the residual series. Here Hausman test is conducted that suggested the appropriateness of Random Effects Model. In the second step, the residual series obtained in the first step is then regressed over firm specific variables. The Hausman test suggested Fixed Effects model in the second step. The rationale behind two stage estimation to obtain the desired result is such that macroeconomic variables and firm level accounting variables are interdependent and hence give rise to multicollinearity problem. The results of Linear regression become biased in the presence of multicollinearity and cannot be relied upon for further policy analysis. These results are provided in the following sections. Section 4.1 displays the descriptive statistics of all the independent and dependent variables. Section 4.2 will present the results of the study.

#### 5.1 Descriptive Statistics

The summary statistics mean, standard deviation, minimum, maximum, skewness and kurtosis of all the variables used in study for data from 2000-2015 are calculated, and the results obtained are mentioned in table 1.

Table 1 shows the results of descriptive statistics for all the variables of the study and give a general summary of the characteristics of the data. Cash ratio has an average 15% value which means that the firms maintain a high level of liquid assets compared to total assets,

with the minimum of 0.00 and the maximum of 0.99, implying that the cash level varies significantly among firms. The similar result was found out by Afza and Adnan, (2007) using KSE data. Opler et al. (1999) examined that US publicly traded firms held 17% of cash to total assets. On the other hand, Ferreira and vilela (2004) observed that the firms held an average 14.8% of cash to total assets. However, this ratio is higher than the studies conducted by (Shabbir et al, 2016; Shah, 2011; Al-Najjar and Belghitar, 2011), where the ratio is between 7 to 9 per cent. The main difference between such studies and the present study is that the ratio value here is associated with that of firms in the developed capital markets. One of the possible reasons for this may be either because of the difference in the time period of these studies or possibly because of other differences in the model specification.

Another distinct feature of the firms evident from the data is the capital structure of the firms included in the study. From the mean value of leverage value, it can be inferred that these firms are highly levered firms. However, it shows a high variation and the highest levered firm has as much as 1.41 per cent leverage in its capital structure.

**Table 5.1.1 - Descriptive Statistics**

<b>Variable</b>	<b>Obs.</b>	<b>Mean</b>	<b>Median</b>	<b>Std. dev</b>	<b>Min</b>	<b>Max</b>	<b>Skewness</b>	<b>Kurtosis</b>
<b>CS</b>	1611	0.15	0.07	0.17	0.00	0.99	1.71	6.07
<b>FSZ</b>	1611	7.60	7.60	2.32	-9.68	15.23	-0.75	8.27
<b>CF</b>	1611	0.08	0.07	0.18	-1.90	3.10	5.23	138.15
<b>LEV</b>	1611	0.43	0.44	0.43	-8.11	1.41	-9.61	148.00
<b>GR</b>	1611	0.19	0.11	0.55	-1.00	13.45	12.22	250.83

<b>BD</b>	1611	5.47	5.50	1.37	2.90	8.00	-0.09	2.32
<b>INT</b>	1611	0.10	0.09	0.02	0.07	0.14	0.10	1.79
<b>GDP</b>	1611	4.16	4.40	1.79	1.60	7.70	0.43	2.40

The growth of the firms is the most striking as the value suggest that there are no growth opportunities for these firms. This is opposite to the results of many studies previously conducted both in the context of Pakistan as well as developed markets.

Furthermore, the mean value of budget deficit, interest rate and GDP are 5.47, 0.10 and 4.16, having minimum value of 2.90, 0.07, 1.60 and maximum 8.00, 0.14 and 7.70. The significant variation in these factors suggests that macroeconomic uncertainties prevails in Pakistan.

## 5.2 Correlation Matrix

The existence of correlation among different variable of the analysis produce unbiased regression results. This is a common consequence of multicollinearity problem where the standard errors of parameter estimates become very large and the individual effect of the explanatory variables is concealed. This means that additional variables bring no additional information to the analysis. Anderson et al, (2008) and Hair et al., (2006) argue that correlation between variables below 90 per cent may not cause serious multicollinearity problem in econometric models. Moreover, Malhotra, (2007) stated that multicollinearity problem becomes problematic when the correlation reaches 75 per cent. Correlation of each variable with itself gives the value of 1. Otherwise it may range between -1 and 1. Table 5.2.1 and 5.2.2 illustrate the results for this study.

Here we find the highest correlation between GDP and budget deficit that touches around 70 per cent, which though is very high theoretically but practically and in accordance to the

studies of Heir et al, (2006) and others, not high enough to cause serious multicollinearity problem. A similar correlation is found between GDP and interest rate. A noticeable feature of the high correlation is that the variables are macroeconomic in nature, more specifically percentages of the GDP that may have caused such high correlation between these variables. Furthermore, the correlation matrix shows that budget deficit and interest rate are negatively correlated with cash holdings, whereas, GDP is positively associated with cash holdings.

**Table 5.2.1 Correlation Matrix (macroeconomic factors)**

<b>Variables</b>	<b>CS</b>	<b>BD</b>	<b>INT</b>	<b>GDP</b>
<b>CS</b>	1			
<b>BD</b>	-0.1124	1		
<b>INT</b>	-0.1058	0.4005	1	
<b>GDP</b>	0.1269	-0.7089	-0.7197	1

**Table 5.2.2 Correlation matrix (Firm specific factors)**

<b>Variables</b>	<b>RS</b>	<b>CF</b>	<b>FSZ</b>	<b>LEV</b>	<b>GR</b>
<b>RS</b>	1				
<b>CF</b>	0.0476	1			
<b>FSZ</b>	0.0932	0.0314	1		
<b>LEV</b>	0.2261	0.0742	0.1826	1	
<b>GR</b>	0.0087	0.0812	-0.0668	-0.0422	1

The results illustrated in table 5.2.2 indicates that all the firm specific variables correlation coefficient is lower than 0.3 advocating that there is no multicollinearity problem. Furthermore, all the variables like cash flow, firm size, leverage and growth opportunities are positively correlated with cash holdings.

### **5.3 Regression Results**

#### *The effect of macroeconomic variables*

The table below provides the results for the effect of macroeconomic variables. To decide between the fixed and random effects model, we conducted Hausman test that suggested the appropriateness of fixed effects model. The p-value of Hausman rejects the null hypothesis. The validity and good-fit of the model is subsequently confirmed by the F-statistic and  $R^2$  respectively. We find that the model incorporated is a valid model and that the fit of the model is good. The reported adjusted-  $R^2$  is 0.60 and the p-value of F-statistic is below 0.05. It is observed in our study that the macroeconomic environment of the country bears a significant impact on the corporate cash holdings. In our model all three indicators of the macroeconomic environment namely the GDP Growth, Government Budget Deficit and interest rate are found to be stringently significant. The signs of the variables are consistent with our expectations and theory. GDP growth is found to be positively associated with the levels of corporate cash holdings by firms which is indicative of the fact that as the economic activity grows and new investment opportunities start to appear the firms will increase cash in their disposal so in order to exploit these profitable investment opportunities. This result is same as the prediction of money demand theory. This is also found by (Chen & Mahajan, 2010; Chen & Yo, 2012; and Abushammala & Sulaiman, 2014). In terms of magnitude, our results show that a 1 per cent change in the GDP growth leads the firm to change their cash holdings by 0.8 per cent. Contrarily, the government budget deficit and interest rate are found

to be inversely related to corporate cash holdings. However, interest rate bears a larger impact than the budget deficit. Higher budget deficit indicates slowdown of the economic activity and therefore, reduced number of investment opportunities that firm expect. In response to such macroeconomic environment the firms decrease the level of cash held. A somewhat similar result is found by (Chen & Mahajan, 2010; Abushammala & Sulaiman, 2014; Chen & Yo, 2012). Results show that a 1 per cent change in the budget deficit would force the firms to change their cash holdings by almost 0.8 per cent.

**Table 5.3.1: Impact of Macroeconomic Variables on Corporate Cash Holdings**

<b>Variables</b>	<b>Coefficient</b>	<b>Std. Error</b>	<b>t-statistic</b>	<b>Prob.</b>
GDP	0.008018	0.002238	3.582071	0.0004
BD	-0.007829	0.002737	-2.860453	0.0043
INT	-0.372295	0.133747	-2.783578	0.0405
Constant	0.194242	0.028557	6.801891	0.0000
Adjusted R	0.599679			
F-statistic	22.49984			
<i>P-Value</i>	0.000000			

Interest rate is one of the major factors that affects the cost of capital for the firms and is a measure of opportunity cost of holding cash. Higher interest rates mean that the finances that the firms would otherwise manage would now be expensive. So, it follows that the relationship between interest rate and cash holdings by firms is inverse, i.e., higher the interest rates lower will be the liquid amounts of cash that a firm would hold. The findings of our study confirm such results and by far the impact of interest rate on cash holdings is the largest. A one per cent change in the interest rate would shift the cash holdings by 37 per cent. Similar results are found by (Natke , 2001; Chen & Mahajan, 2010; Chen & Yo, 2012; Garcia-Teruel & Martinez-Solano 2008).

#### **5.4 Summary**

The study finds that the macroeconomic perception does matter when the corporate managers decide about the cash level to maintain, that would then be utilized in meeting their short-term liabilities, day to day transactions and to grab any high return bearing investment opportunities. However, analyzing macroeconomic perception all such indicators' impact on cash holdings is studied altogether, and not in isolation.

##### ***The effect of firm specific variables***

The table below shows the results for the effect of firm specific variables on the corporate cash holdings maintained by Pakistan's non-financial firms over a period of 16 years from year 2000 onwards until 2015. For firm specific model, Hausman test suggested the appropriateness of Random effects model. The p-value of Hausman accept the null hypothesis. The validity and good-fit of the model is subsequently confirmed by the F-statistic and  $R^2$  respectively. We find that the model incorporated is a valid model and that the fit of the model is good. The reported adjusted-  $R^2$  is 0.70 and the p-value of F-statistic is below 0.05. We find that the cash flow stream and the growth of the firms are insignificant in affecting the cash levels of these firms. However, the signs of these variables are consistent

with the priori expectations of the study as are found in the finance literature. Firm size and leverage, on the other hand, are found significant in our study. Firm size is negatively associated with the corporate cash holding maintained by the managers. Such negative significance is justified by several theories namely the information asymmetry theory, the financial distress hypothesis and the transaction cost hypothesis. These theories suggest for the smaller firms to hold more liquid assets because the associated cost of raising external finances is very high. This result is consistent with the studies of by (Ferreira & Vilela, 2004; Drobetz & Gruninger 2007; Al-Najjar, 2013; sheikh et al, 2018 and jebran et al, 2019). However, according to Opler et al. (1999) large firms can easily raise external finances when needed since these firms have a market reputation. Similarly, the study finds that the capital structure of the firms matters when deciding upon the cash holdings that should be maintained. Leverage is found to be positively associated with the cash ratio. Specifically, a percentage change in the leverage would require the managers to change the cash levels by 2.7 percentage points. This result is consistent with the study of (Guney et al. 2007; and jebran et al, 2019). The results reached here seem intuitively appealing if we take into account the costs associated with the default risk of the firms. This calls for the firms to hold more liquid assets at their disposal to minimize such costs.

Firms are supposed to hold high levels of cash to guard against costly bankruptcy situations especially when the probability of financial crises and bankruptcy associated with leverage is quite high. The cost of external finances is further increased by the agency cost of free cash flows (Jansen, 1986). One addition to this cost according to some researchers may also be attributed to the legal environment prevailing in a country. The degree of protection to the investors and creditors determine the level of agency cost according to Porta, Silanes (1997), Shliefer & Vishnay (1998). Thus, as the legal protection deteriorates in a country the expected agency costs rises thereby making it difficult for the firms to access external finance



at easy terms. In circumstances like these, the firms are forced to mitigate the loss arising out of financial distress by accumulating large amounts of cash holdings. Pakistan is a country where legal protection to the investors is almost nonexistent, and especially in the aftermath of Bhutto's nationalization drive the prevailing perception in the market is particularly anti investor. Thus, an inverse relationship between leverage and levels of cash is very relevant to a developing country like Pakistan.

**Table 5.3.2: Impact of Firm Specific Variables on Corporate Cash Holdings**

Variables	Coefficient	Std. Error	t-Statistic	Prob.
Cash Flow	-0.001683	0.014470	-0.116279	0.9074
Growth	0.005681	0.004713	1.205520	0.2282
Firm Size	-0.003608	0.001977	-1.824782	0.0683
Leverage	0.027075	0.008096	3.344109	0.0008
Constant	0.014074	0.015735	0.894402	0.3713
Adjusted R <sup>2</sup>	0.703232			
D-W Stat	2.107821			
F-statistic	32.09315			
<i>P-value</i>	0.000000			



## CHAPTER 6

### CONCLUSION AND SUMMARY

#### 6.1 Conclusion

This study investigates the firm specific and macroeconomic determinants of corporate cash holding by Pakistan's non-financial firms over a period of 16 years using panel data methodology. The study objectifies the association between corporate cash holdings and firm specific and macroeconomic variables by questioning the relative strength of macroeconomic variables over firm specific factors.

The study find that all the macroeconomic factors are significant determinants of the cash holdings with their signs consistent with our prior expectations. Specifically, we find that GDP growth has a positive impact on firms' decision regarding liquid assets. This finding is consistent with the money demand theory which implies that with the economy growing, firms will foresee profitable investment opportunities in the near future and will, thus, hoard internally generated funds in excess of that needed at present. Similar result is found by (Chen & Mahajan, 2010; Abushammala & Sulaiman, 2014; Chen & Yo, 2012). The study also find that the government budget deficit and interest rate are negatively related to the corporate cash holdings. Similar results have been found by several other studies (Chen & Yo, 2012; Abushammala & Sulaiman, 2014; Chen & Mahajan, 2010). A negative significance of the government budget deficit suggests, on the other hand, that economic activity will shrink in response to high budget deficits, thereby reducing the investment opportunities whatsoever. The management suspecting any investment opportunities to appear in the future will prefer to invest in long term projects rather than holding it in liquid assets. Similarly, the interest rate bears a negative impact on the cash decisions of the firms. Higher interest rates are indicative of low GDP growth and lower investment opportunities.

Thus, firms expecting interest rates to rise will reduce amounts held in liquid assets and instead will divert its funds to other avenues. This result is consistent with the studies of (Natke , 2001; Chen & Yo, 2012; Chen & Mahajan,2010).

On the impact of firm specific variables, we find that only firm size and leverage are significant determinants of cash holdings by firms. It is found that firm size negatively affects the corporate cash holdings. This is similar to the results found by (Ferreira & Vilela, 2004; Drobetz & Gruninger 2007; Opler, et al. 1999; Al-Najjar, 2013; sheikh et al, 2018 and jebran et al, 2019). According to information asymmetry, financial distress hypothesis and transaction cost hypothesis, higher fixed processing fee associated to high levels of debt discourages small firms to go for external finances and rather encourages them to hoard more liquid assets. The finding also supports the view that firms consider transaction motive while deciding upon the level of corporate cash holdings. The precautionary motive of the firms is represented by amount of leverage these firms incorporate into their capital structure. We find that it is positively associated with the corporate cash holdings which means that the firms fearing the default risk and the high cost of bankruptcy will accumulate liquid assets to meet any such unfavorable event. Somewhat similar results have been found by (Guney et al., 2007; Gill & Shah, 2012; Drobetz & Gruninger, 2007; Jebran et al, 2019).

To encapsulate, our study finds that although all the macroeconomic variables have a significant impact on the firms' cash holdings decision, firm specific factors such as the capital structure of these firms and the age of the firms (represented by their size) is more relevant in such decisions. This is true and intuitively appealing in a country like Pakistan where we observe ownership concentration in most of the firms and so, they are more concerned with firm specific factors rather than the overall conditions of the market.

## **6.2 Policy Implication**

The theme of this study is to provide a macroeconomic perception when deciding upon the determinants of corporate cash holdings. Our study builds a strong case for the consideration of macroeconomic aggregates to the policy makers that they should assess these factors before taking such decisions. The efficient resource allocation as a result of a well thought policy decisions both on macro as well as micro levels will confirm that the objectives of value maximization are sufficiently achieved.

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