



Factors Effecting Corporate Cash Holdings of the listed Non-Financial Firms in Pakistan

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Abstract- This research study tries to examine the effect of micro and macro-economic variables on corporate cash holdings patterns of listed non-financial firms of Pakistan. The study collected data from 184 firms from four major sectors (Textile Sector, Cement Sector, Motor vehicles, trailers & auto parts Sector and Fuel and power Sector) listed on Pakistan Stock Exchange (PSX). Annual data for the current study has been extracted from the published annual reports of the companies for the period 2013-2018. Feasible Generalized Least Square (FGLS) technique has been used to determine the relationship between selected variables. The study result showed that GDP is significantly positively associated with corporate cash holdings. Whereas growth opportunities, leverage and dividend payments indicates significant negative relationship with corporate cash holdings for selected firms. The findings of the research study are beneficial for policy and decision makers to make clear understanding and knowledge on corporate cash holding pattern.

Keywords: Corporate cash holdings, interest rates, dividend payments, inflation rate.

I. INTRODUCTION

Cash is considered as a life blood for any firm. Cash holding means money in hands or deposited in the financial institution like bank which could be used easily to fulfill the day to day requirements of the business (Ali et al., 2016). Company can't even imagine to survive without money, and every business must maintain a substantial level of current assets as their monetary reserve as there are no negative implications of holding positive cash reserves (Rukh and Rehman, 2019; Shabbir et al., 2016; Thakur and Kannadhasan, 2019). Study conducted in past defined cash as money or cash counterparts (Opler et al., 1999; Kim et al., 1998; Ferreira and Vilela, 2004). To deal with diverse business affairs different authors define various ratios of maintaining cash reserves. For instance, Kalcheva and Lins (2007) mention in their research study that company maintains 16% of their total assets in the form of cash and cash counterparts. Ferreira and Vilela (2004) also reveal 15% in his study, Dittmar et al. (2003) calculated 13 percent, Al-Najjar and Belghitar (2011) determined 9% cash to total assets should be kept by the firms for any uncertain situation.

The money holding behavior by the firms can be discussed in depth detail with the support of Keynes' opinion that he mentions in his book written in 1936. Keynes' view and previous findings help to answer the query 'why do companies clamp a money balance' has remained examined widely in the previous literature (Afza and Adnan, 2007; Cossin and Hricko, 2004; Drobetz and Grüninger, 2007; Gil and Shah, 2012). There are three motives of the cash that is, transactional motives, precautionary motives and speculative motives. Speculative motives push the management of the firm to hold cash balance in reserve, to meet the liquidity of the firm related to all motives of cash (Ross, 2000). According to Das and Goel (2019), transactional motive is required for meeting working capital requirements also this motive is related with the liquidity need of the firm. Precautionary motive is associated with instable cash patterns in unpredictable world and provides minimum level of liquid reserve for providing shelter in case of shortfall of cash movement (Diamond, 1984; Mahjabeen et al., 2018; Stiglitz and Weiss, 1981). Finally speculative motives help companies to back optimistic net present value schemes once exterior funds are either overpriced or unobtainable.

The financial literature revealed three theoretical models to explain the optimum level of cash flow. First, Trade-off theory (TOT) suggested that there is trade-off concerning fringe costs and peripheral benefits to hold ideal money reserves. Second, the pecking order theory (POT) by Myers and Majluf (1984) suggested

that in order to cut down the funding cost, companies have a sort of preferences for a funding grading wherever funds are supported first with internal funds, then debts and finally with the equity. "Preferred financing hierarchy" hypothesis defines that cash act as cushion between inside generated funds and outlay needs. However, this theory suggests that there is no optimal level in the firms to maintain Corporate Cash Holdings (CCH). Last, the Free Cash flow theory by Jensen (1986) stated manager value "flexibility" and "control".

That they have incentives to increase the amount of cash in order to get control on overall assets of the organization and their decisions about investment. Firms with huge amount of cash at one end overcome the burden of managers to work hard and perform well and this strategy allows them to work best for the interest of their shareholders by investing in any project according to their interest.

Various prior research studies explored different factors (cash flow volatility, effective tax rate, growth opportunity, financing deficit, net working capital ratio, dividend payment, market to book value ratio, and capital expenditures ratio) that govern the corporate cash holding for the develop economies like UK, USA, Japan and Italy (Al-Najjar and Belghitar 2011; Bates et al., 2009; Bigelli and Sánchez-Vidal 2012; Chen, 2008; D'Mello et al., 2008; Gao et al., 2013, Harford et al., 2008, Opler et al., 1999; Ozkan and Ozkan 2004). Whereas, some other authors conducted studies on emerging equity markets like Jordan, Kenya and Turkey (Al-Amarneh, 2015; Kariuki et al., 2015; Shabbir et al., 2016; Uyar and Kuzey, 2014). As Pakistan is a developing country and few research has been done on the determinants of corporate cash holding factors and conduct research on food, textile, manufacturing, oil and gas sector while using different factors e.g. profitability, firm size, net working capital, leverage, market to book value, cash flow, dividend policy, growth of firm (Khalil, 2017, Ali et al., 2016). But in these studies still a gap exist and further research is required. Firm level variable are widely study all over on the other hand only few research is available on country level variable. Therefore this research study aim is to determine the impact of micro and macro determinants of the CCH behavior among non-financial sectors in Pakistan.

II. LITERATURE REVIEW

CCH have been studies extensively studied in the financial literature (Al-Najjar, 2013; Raheman and Rizwan, 2018). Prior literature reported different determinants of the CCH. Leverage and debt ratio indicates the percentage of the business assets which are financed through the debt. In line with the transaction cost motive, there should be negative association between debt and the CCH. Similarly previous findings reveal that there is negative link between leverage and CCH (Ahmed et al., 2018; Borhanuddin and Pok, 2011; Das and Goel, 2019; Guizani, 2017; Thu and Khuong, 2018; Sheikh et al., 2018; Wasiuzzaman, 2014; Yudaruddin, 2019). This association supports the POT which indicates higher profitable firms with sufficient liquid resources (CCH) finance less debt compared to the firms which are profitable with insufficient liquid resources (Sheikh et al., 2018). Similarly, debt ratio has a significant positive relationship with CCH after the crisis period, indicating that firms increases their debt ratio to enhance cash level after crisis period (Jebran et al., 2019). In addition, findings reveal that there is leverage and corporate cash holding decisions are positively correlated (Guney et al., 2007; Khalil, 2017; Masood et al., 2018; Rukh et al., 2017). High leverage ratio indicates that managers hold high level of cash to reduce the risk of debt repayments. Higher the level of holding cash lead towards the higher the level of risk so managers in the firm hold high level of cash as a precautionary measure (Khalil, 2017).

H₁: Leverage is negatively associated with the level of CCH.

Based on the TOT, the association between dividends payments and CCH should be negative. Contrary to the concept given by the TOT findings suggests that there is positive association between dividend payouts and CCH. This indicates that firms which pay dividends may cut or reduce the dividend payments when the firms have not sufficient cash. So holdings the excess cash enables the firms to avoid such situations to keep the reputation of dividend payments (Guizani, 2017). Moreover, findings revealed that dividend payments and CCH are positively associated that suggest dividend payers are mostly reluctant to pay dividend that's why they hold large amount of corporate cash (Ahmed et al., 2018; Chireka and Fakoya, 2017; Drobetz and Grüninger, 2007; Shah, 2011). Contrary to the studies, findings exhibit that there exists indirect relationship between dividend payments and CCH which suggests that dividend distribution to shareholders which directed towards minimization of liquid assets of the companies so less cash is hold by firms that distribute dividends (Sheikh et al., 2018).

H₂: Dividend payments are positively associated with the level of CCH.

In general, growth refers to the percentage change in total assets. According to the TOT, there exists positive linkage between growth opportunity and CCH. While Packing Order Theory (POT) argues on the positive association on the growth opportunity and CCH (Guizani, 2017). This positive relationship is supported by the work of Ahmed et al. (2018). However, growth has an insignificant link with the CCH in the three sub-periods indicates that leverage is not considered as significant factor in the determination of the CCH level in Pakistan (Jebran et al., 2019). In addition there is inverse association of growth on CCH (Sheikh et al., 2018). Similarly, insignificant association found between growth opportunities and cash holdings which suggests that insignificant results based on the different institutional settings of the SWISS financial system (Drobetz and Grüninger, 2007). Contrary to the findings indicates that there is inverse relationship between growth opportunities and corporate cash. This negative association suggests that profitable MNCs despite the availability of cash avoid investing in investment projects and in tangible assets in order to mitigate the agency conflicts.

H₃: *Growth opportunities are positively associated with the level of CCH.*

According to the TOT there is inverse association between firm size and CCH. On the other hand, both the POT and Free Cash Flow Theory (FCFT) predicted the positive association between firm size and CCH that suggests large firms tend to perform better and sufficient resources such as liquid assets in the form of cash, than small firms because large firms have high level of CCH (Jebran et al., 2019). The negative association between firm size and CCH indicates that large banks have the ability to handle risky situations, they are more diversified and have the less chances of financial distress, and therefore large banks hold less corporate cash (Ahmed et al., 2018; Afza and Adnan, 2007; Drobetz and Grüninger, 2007; Masood et al., 2018; Rukh et al., 2017; Saddour, 2006). Contrary to the findings it is stated that there is positive link between firm size and the CCH of the firms. This positive association of firm size on the CCH confirms the fact that firms which have large size have more ability to generate high level of returns because of the economies of scale which ultimately suggests that these firms are more capable to accumulate cash which can be used to finance the large and small investment projects (Anjum and Malik, 2013; Khalil, 2017; Rafinda et al., 2018). Likewise, Barasa (2018) investigated insignificant relationship between firm size and CCH.

H₄: *Firm size is negatively associated with the level of CCH.*

GDP refers to the gross domestic products and it can be measured through the percentage change in the GDP growth. However, findings indicates that GDP growth has positive association with the corporate cash liquidity which suggest that firms can hold high level of corporate cash in response to the higher economic growth, that is considered persistent with the income effect prediction of the money demand theory (Chen and Mahajan, 2010). However insignificant association found between GDP and CCH which suggest that macroeconomic factors have no significant effect on the cash reserves of the mining companies of Indonesia (Yudaruddin, 2019).

H₅: *GDP growth has a positive and insignificant association with CCH.*

There is negative association between CPI and CCH, but this relationship is reversed when CPI reached at the certain level. Therefore, when inflation level is high, the association between operating cycle and CCH is negative at the certain point, and when inflation level is low, it shows the positive association between operating cycle and cash holdings that indicates enterprises might face relax environment and less financial hurdles in low inflation to obtain low cost external funds (Dehghanfard and Moslemi, 2017; Dong et al., 2013; Omid and Jamil, 2017). Contrary to the studies, inflation rate positively impact the corporate liquidity that might suggest that when inflation increase firms should reduce the level of holding corporate cash reserves but should invest in cash equivalents and marketable securities which are the basic elements of cash (Chen and Mahajan, 2010).

H₆: *Level of inflation has a negative and insignificant association with CCH.*

Baumol (1952) studied that interest rate and corporate cash holding allows the companies to gain benefit by keeping corporate cash instead of borrowing or withdrawing it from investment. Literature reveals that short term interest rate has negative association with corporate cash liquidity that suggest firms reduce the level of cash holdings when opportunity cost is high which is consistent with the prediction of the money demand theory (Chen and Mahajan, 2010). Similarly literature found the negative association between interest rate and log of cash to total assets ratio but they were did not verify the statistically

significant association between their second measures for cash holdings, cash and marketable securities to total assets and the T-Bill rate etc.(Bates et al., 2009).

H7: Interest rate has a negative and insignificant association with CCH.

III. METHODOLOGY

To estimate the effect of firm-specific and country-specific determinants of CCH the quantitative secondary data for this research is collected from published annual reports of the companies. The data of interest rate collected from the international financial statistics (Chen and Mahajan, 2010). The sample of the study include all companies which have data available for all selected variables for the selected period of time.

3.1 Population and Sample

This study includes non-financial firms which are listed on PSX as a population of this study. A sample of 184 public limited companies listed from the four major sectors textile, cement sector, motor vehicles, trailers & auto parts sector, fuel and power sector are selected over the time span of five years (2013-2018).

Table 1. Number of Firms from selected Sectors

Name of Sector	Number of Firms
Textile Sector	134
Cement Sector	21
Motor vehicles, trailers & auto parts Sector	17
Fuel and power Sector	12
Total	184

3.2 Dependent Variable (Corporate Cash Holdings)

CCH is used as the dependent variable in the study which is measured as the ratio of cash and cash equivalents to the total assets of the firm. More specifically cash holding is defined as the cash in hand or in a bank that can be easily to meet the day to day requirements of the business. Daher (2010) defines the cash holding as “the amount of cash and marketable securities that can be easily converted into cash” (Ali et al., 2016). Therefore to measure the CCH data will be obtained from the PSX and is measured as the total cash and equivalents in the firm and can obtained this by subtracting cash and cash equivalents from total assets of the firm (Guizani, 2017).

$$CCH_{it} = \alpha + \beta_1 LEV_{it} + \beta_2 DVDPYMT_{it} + \beta_3 GO_{it} + \beta_4 FS_{it} + \beta_5 GDP_{it} + \beta_6 CPI_{it} + \beta_7 IR_{it} + \mu_{it}$$

Whereas

α = intercept

β_{1-8} = slope

μ_{it} = Error Term

CCH_{it} (Corporate cash holding for firm i in time t) = total assets of the firm - cash and cash equivalents.

3.3 Independent Variables

3.3.1 Leverage (LEV)

Leverage or debt ratio indicates the percentage of the business assets which are financed through the debt.

$$LVRG_{it} (\text{Leverage for firm } i \text{ in time } t) = \text{total debt} / (\text{total assets} - \text{cash and equivalents}).$$

3.3.2 Dividend Payments (DVDPYMT)

A dividend payment refers to the earning per share which is earned by the shareholder monthly in the form investment returns.

$$DIV_{it} (\text{Dividends paid by firm } i \text{ in time } t) = \text{earnings per share} / \text{share price}.$$

3.3.3 Growth Opportunity (GO)

In general, growth refers to the percentage change in total assets.

GO_{it} (Growth opportunities for firm i in time t) = current year sales–previous year sales/previous year sales.

3.3.4 Firm Size (FS)

Firm size is measured through the natural logarithm of total assets.

FS_{it} (Firm size for firm i in time t) = Natural Log of total assets

3.3.5 Inflation (CPI)

Inflation referred to as the consumer price index of that particular country which is based on the previous year (last year=100) the firm i .

CPI_{it} (Inflation for firm i in time t) = current year inflation–previous year inflation/previous year inflation.

3.3.6 Gross Domestic Products (GDP)

GDP refers to the gross domestic products and it can be measured through the percentage change in the GDP growth.

GDP_{it} (Gross Domestic Products for firm i in time t) = current year GDP– previous year GDP/ previous year GDP.

3.3.7 Interest Rate (IR)

Interest rate refers to the rate with the short term to maturity which includes money rate, call money rate, and T-bills etc.

3.4 Data Analysis Procedure

Statistical analysis will be carried out using panel data techniques. This study used the quantitative method of the research by using the secondary data non-financial sector of Pakistan.

3.4.1 Panel Data

Panel data enables us to handle the factors which can't be seen or measure like social components and the variables which change overtime. Panel data also called time-series cross sectional data or the longitudinal data which is a dataset in which the conduct of elements are seen crosswise over time.

3.5 Estimation Techniques

3.5.1 Unit-Root Stationary Test

Within current study check the stationary of the data in the panel data analysis current study used different stationary tests i.e. fisher type test, Levin-Lin Chu test etc. The null hypothesis of the of LM test states that all the panels are stationary and the alternative hypothesis states that unit root exists in the panels.

3.5.2 Modified-Wald Test

This test is used to check the heteroskedasticity issues in the data either there is heteroskedasticity or not. If the variance among error term is constant that is said to be homoscedasticity or if the variance among error terms is not constant that is said to be heteroskedasticity. Null is homoscedasticity and alternative is heteroskedasticity.

3.5.3 Serial Correlation

Woldridge test is used to check the presence of serial correlation. Its null hypothesis indicates that there is no first order correlation while alternative indicates that there is first order correlation.

3.5.4 Feasible Generalized Least Squares (FGLS)

To check the potential impact of different micro and macro determinants of CCH in the non-financial sectors of Pakistan different diagnostic test are applied. Modified-Wald test, Woldridge test identify the occurrence of the heteroskedasticity issues and the presence serial correlation. Therefore, this study employ the feasible generalized least squares (FGLS) to overcome the issues of serial correlation and heteroskedasticity to estimate the model of this study.

IV. DATA ANALYSIS AND FINDINGS

4.1 Descriptive Statistics

Table 2 shows the descriptive statistics for corporate cash holding and other explanatory variables of this study for the time period from 2013 to 2018.

Table 2. Descriptive Statistics

Variable Name	Mean	Std.Dev	Min	Max	Obs
Corporate Cash Holding (CCH)	-521088	2157454	-3.6307	9.3235	948
Gross Domestic Product (GDP)	2.0943	0.0338	2.0475	2.1468	1146
Inflation (CPI)	0.6889	0.1630	0.4623	0.9344	1146
Interest Rate (IR)	0.8745	0.0925	0.7773	0.9952	955
Leverage (LEV)	177.7044	126.3927	1	450	1130
Growth Opportunities (GO)	37.3144	667.0980	-1	14785.68	992
Dividend Payments (DVDPYMT)	439.3927	276.8231	1	934	1128
Firm Size (FS)	537.8174	315.7146	1	1081	1128

4.2 Unit Root Stationary Tests

Table 3 shows the output of unit root/stationary tests which includes fisher, Levin-Lin Chu and Hadri LM test. The study applied the fisher type test on that data which is not strongly balanced. However the null contains data/variable is unit root while alternative contains data/variable is stationary at certain level. On the other hand Levin-Lin Chu and Hadri LM tests were applied on those variables on which data is strongly balanced. All of the above stated tests contains null hypothesis that series contains a unit root except Hadri LM test.

Table 3. Fisher, Hadri and Levin-Lin Chu Test

Variables	Levin-Lin Chu Test	Hadri LM Test	Fisher Type Test	
	At Level	At Level	At Level	1 st Difference
Corporate Cash Holdings (CCH)			-16.0054*** (0.0000)	
Gross Domestic Product (GDP)		31.9768*** (0.0000)		
Inflation (CPI)				-19.7776*** (0.0000)
Interest Rate (IR)	-6.9597*** (0.0000)			
Leverage (LEV)			-71.5101*** (0.0000)	
Firm Size (FS)				-10.5404*** (0.0000)
Growth Opportunity (GO)			-5.9153*** (0.0000)	
Dividend Payments (DVDPYMT)			-14.3143*** (0.0000)	

Standard Errors in parentheses *** p<0.01, ** p<0.05, * p<0.1
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4.3 Diagnostic Tests

Table 4 shows that output of some diagnostic tests after running the Wooldridge test of serial correlation in panel data. Findings of this study reports that there is first order serial correlation among series by accepting the alternative hypothesis. On the other hand after running the modified Wald test for checking the heterokedasticity problems in the panel data, results of this test suggests that there is group wise heterokedasticity in this model by accepting the alternative hypothesis.

Table 4.Diagnostic Tests

Diagnostic	Prob > F
Wooldridge Test	4.719 *
	(-0.0616)
Modified Wald Test	2.0e+29***
	(0.0000)
Standard Errors in parentheses *** p<0.01, ** p<0.05, * p<0.1	

4.4 Estimation Model

Table 5 reports the empirical results of this model. For this study FGLS regression estimation has been used for testing the hypothesis.

Table 5.Feasible Generalized Least Squares (FGLS)

Variables	Corporate Cash Holding
Gross Domestic Products (GDP)	0.083* (2306457)
Inflation (CPI)	0.174 (-308985.8)
Interest Rate (STIR)	0.111 (-1090720)
Growth opportunities (GO)	0.033** (-43166.93)
Firm Size (FS)	0.848 (-2384.364)
Leverage (LEV)	0.000*** (-75148.34)
Dividend Payments (DVDPYMT)	0.006** (-66.95325)
Constant	0.086* (-5517613)
Standard Errors in parentheses *** p<0.01, ** p<0.05, * p<0.1	

Corporate cash holding has been taken as the dependent variable of the study. While this study contains the some macroeconomic this is GDP showing the positive and significant association with CCH at 1% level of significance. The study measured the GDP through percentage change in annual gross domestic products. These findings supported by the literature (Chen and Mahajan, 2010) reported that firms can

hold high level of corporate cash in response to the higher economic growth, that is consistent with the income effect prediction of the money demand theory. Other macroeconomic variable is inflation which is measured through the consumer price index showing the insignificant and negative association with corporate cash holding. From previous studies (Dong et al., 2013; Omid and Jamil, 2017; Yudaruddin, 2019) predicts the insignificant negative association which suggests that firms in the high level of inflation might affect badly and may more expense, and to prevent this situation managers set appropriate policies and procedures. Moreover, the macroeconomic indicator called as interest rate is showing the insignificant and positive association with corporate cash holding. From previous studies (Yudaruddin, 2019) reported insignificant association of interest rate and cash level which suggest that macroeconomic factors have no significant effect on the cash reserves of the mining companies of Indonesia.

On the other hand, Table 5 also contains the findings of the microeconomic variables of this study that is growth opportunities showing the significant and negative association with the corporate cash holding at the 5% level of significance. From previous studies (Sheikh et al., 2018) reported results which suggest that higher the level of sales for the firms have less chances of financial distress because these firms have high consideration in investment tangible assets with the expectation to avoid agency conflicts that's why companies keep less cash reserves. So this study rejects the third hypothesis. This association is supported by the POT which predicts the negative association between growth opportunities and cash level. However, leverage also influence on the level of holding corporate cash which shows the significant and negative association at 0.01% level of significance. From previous studies (Barasa, 2018; Kafayat et al., 2014) it is reported that debt act as a proxy for the ability of the company to issue debt finance with the expectation of holding less cash with higher leveraged firms. According to the TOT, leverage can have positive and negative association with the cash level. However, POT and FCFT predicts the negative effect on the corporate cash holding. Firm size has also impact on cash holding which shows the insignificant and negative association. From previous studies (Masood et al., 2018) that indicates large banks have the ability to handle uncertain conditions, they are more diversified and have less financial distress, therefore large banks hold less cash. However, these insignificant negative associations are consistent with the TOT which predicts an inverse relationship between firm size and corporate cash holding. Moreover, dividend payments show the significant and negative association with the corporate cash holding at 5% level of significance. From previous studies (Sheikh et al., 2018) suggest that firms which distribute dividends to shareholders leads to hold less liquid resources. This relationship is supported by the TOT which predicts that dividend payments and CCH should have negative association.

V. CONCLUSION

The purpose of this study was to establish the linkage between determinants of corporate cash holding among non-financial firms listed on Pakistan Stock Exchange (PSX) for the time period 2013-2018. For achieving the objectives, this study developed seven hypotheses. The study sample consists of the 184 firms from major non-financial sectors of Pakistan. FGLS estimation techniques have been taken into account because it overcomes the serial correlation and heteroskedasticity problems and makes causative understanding. The study reported a number of key micro and macro determinants of the cash level. It is determined that gross domestic product has positive significant impact on corporate cash holding and leverage, growth opportunity and dividend payment have significant negative association with the corporate cash holding of the non-financial firms listed on Pakistan Stock Exchange. The study used three corporate cash level theories including TOT, pecking order theory, and free cash flow theory to make clear understanding on different determinants of cash level. However this study utilize the three motives of holding cash which are transaction cost motive, precautionary motive, and speculative/agency cost motive to justify the level of certain amount of holding cash.

VI. IMPLICATIONS AND FUTURE DIRECTION

Practically, the findings of this study are useful for the firms which maintain their ideal level of holding corporate cash. Managers should take measures to boost's firm's worth through external debt; encourage manager through bonus shares and incentive, and allow them to invest in profitable projects that will boost performance of the firm. As Pakistan is developing economy and its firms heavily depend on the corporate cash to make investments and to manage precautionary needs. Government should take into account to keep the economy stable so that firms will tend to invest in more profitable projects and hold less cash reserves that might decrease interest rates to increase access to finance for all other types of firms.

Current research will help researchers to explore the determinants of corporate cash holding in other sectors. For obtaining better results, future research should be undertaken by considering other macro-economic variables such as budget deficit, environmental conditions etc. which might have significant influence on cash.

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