

Factors Affecting Cash Holdings: The Empirical Evidence of Non-Financial Firms

Lala Rukh* and Shafiq ur Rehman†

Abstract

Cash holdings has always remained a key issue in the field of corporate finance, investment and financing decisions. However, the evidence from the past studies regarding cash holdings and its determinants lacks the ability to present a detailed examination of the subject matter. Majority of the research analysis is being carried out in the developed economies like UK and USA and the results obtained are not generalizable to the developing countries, like Pakistan. According to the research authors in the field of finance such Shah and Hijazi (2004) and Akbar et al. (2013) accounting procedures, tax laws, leadership styles, reporting systems and institutional structures of both developed and developing countries have striking differences, which justify the reason for further research, to find out the determinants of cash holdings. To achieve our goal, the study used fixed effect regression model. The study has taken 349 listed non-financial Pakistani firms of KSE100 index from 2005 till 2012. Results reveal that capital employed and leverage has positive impact on cash holdings. The result obtained is statistically insignificant for the capital employed. Cash flow, networking capital and size shows a significant and negative impact on cash holdings. The global financial crisis negatively impact the result which is not statistically significant indicating that it does not statistically effect the cash holdings of the selected companies under study.

Key words: cash holdings, non-financial firms, global financial crisis

Introduction

Holding liquidity is important and so are the reasons behind holding it. The two important reasons for retaining cash and its equivalents are explained by the precautionary motive and transaction cost as cited by (Chan, Chen and Chang 2019). The authors further argue that sustaining adequate amount of cash is very much necessary for efficient operations of a business. Management holds the liquid assets for the purpose to make payments to shareholders as well as to make necessary expense payments and to acquire the necessary assets. However, some of the liquidity also appears on the balance sheet of firms as cash for the imbursement of unpredicted expenses. Different reasons for holding liquidity are set apart by different policies regarding management of cash flow, capital structure, requirements of working capital, investment and asset management. In addition to the mentioned factors some other factors also effect the cash holdings of the firms.

* PhD Scholar, University of Malakand. E-mail: lalarukh@uswat.edu.pk

† Associate professor at University of Malakand.

Detrimental et al. (2013) examined 11000 firms as a sample collected from 45 different republics came up with a conclusion that in such countries where shareholders rights are violated; such firms retain larger amount of liquid assets as compared to those shareholders of the firms where shareholders' rights protection is high. Considering the different motives of holding liquid assets (cash and cash equivalents) the management has to decide about the optimum level of liquidity which they have to maintain.

Literature Review

A perfect market situation is discussed by many authors regard. In case of perfect market, the cost financing is not an issues as cost advantage does not prevail in such market (Miller and Modigliani, 1958). However, the reality differs from the ideal situation of perfect market as the markets are always imperfect due to inequality of information and cost of raising fund (equity and debt) also differs. Keeping in mind the imperfect market and cost associated with issuing of debt and equity there is a need for holding cash in order to benefit from future investments. Nadiri (1969) took manufacturing firms of US in order to determine their needs and cash balances. The researcher used quarterly data for the period of 1948—1964. He came up with the evidence that output i.e. wealth, price of the commodities, borrowing rate and change expected in general inflation decides about the liquidity needs. He concluded that the mentioned factors should be considered while deciding about the amount of liquidity to hold. There should also be some motivation for holding liquidity despite of the mentioned factors.

There are different motives for holding liquid assets (cash and cash equivalents). The reason for which managers retain cash is to restrain from external pressure (Jensen and Meckling 1976). Shareholders would try to hold maximum cash rather than issuing equity as issuing equity will bring more owners. Managers and shareholders' motives of holding equity differ from one another. According to the study of Myers (1984) about 62% of the capital expenditures also including investment in short term assets and inventory, were all financed from internal sources of financing that is the internally generated cash. Therefore, the author concludes that the utmost priority of any firm is to opt for internal financing and then should opt for debt financing. Due to the mentioned reason companies hold cash and marketable securities to exploit future opportunities with minimum financing costs. For maintaining cash reserves Jensen (1986) used agency theory. Due to his findings if the

Managers are tightly controlled; they would be more conscious of retaining free cash rather than making misuse of it. As a result, it would create buffer stocks that could be best utilized in time of financial constraint. Poor managerial decisions always lead toward more costs. In such cases idle cash kept is used to cover the losses occurred due to poor managerial decisions. More cash is held by firms having more volatile cash flows and MKTB (Kim et al, .1986). Liquidity shows an indirect relation with financial distress, debt, size and cash conversion cycle (Kim *et al.*, 1998 and Opler et al. 1999). Anjum and Malik (2013) selected 345 non-financial firms for a period of 2005-2012. All the selected firms are listed on kse100 index. Their analysis shows a direct relationship of Size with cash holdings. It also shows a positive relation of cash holdings with networking capital. While the relation between cash holding and leverage is reported negative. Moreover, Chen Chan and Chang (2019) suggest that the decisions of rival firms' cash should be considered when the purpose is to find out the factors affecting cash holdings of specific firm.

Opler *et al.* (1999) studied a number of manufacturing firms of US for a time period from 1971 to1994, to investigate the factors effecting cash as well as marketable securities. They also investigated the changing behavior of firms regarding liquidity. They also concluded that trade off theory was modified by the managers for the reason to strengthen shareholder's wealth and hoarding more cash than expected. The results of the model of Opler *et al.* (1999) showed that the firms which were risk takers had more opportunities for growth and firms of smaller size held more cash than others. The reason of larger firms to retain less cash is the maximum access of such firms to capital markets as well as their good credit ratings. The main reason for which the firms maintain cash is the volatility of cash-flows and the high costs associated with getting external funds.

Hardford (1999) found that in US the regulations were strict and as a result the shareholders were at a safer side even though managers held more liquidity. Consequently, it shattered their future investments opportunities which could give higher returns. For such reason when markets are controlled or near perfection managers go for investment rather than holding cash. According to the research results obtained by Almeida, Campello and Weisbach (2002) financially restricted firms hold more cash and the reason is that raising external funds is more expensive for financially constrained firms as compared to non-financially restricted companies which hold less cash as raising external funds is not that expensive for them as financially constraint firms. Brick

and Liao (2017) worked the joint determinants of the debt structure and cash holdings by taking the case of financial constraints. The authors took 11792 firms as a sample of study for the time period of 1985-2013. The researchers established a positive relationship between Cash holdings and Debt Maturity Structure. The author also concludes that more liquidity is held by family owned businesses. He found that Cash holding is inversely related with Bank Debt, Leverage and liquid assets while it is directly proportional to Growth Opportunities and Cash-flow. A study on a sample of those companies is studied by Hatzell *et al.*, (2007) over a time period from 1984-2003. The sample of the firm selected were having \$100 million cash. The relationship between tax payments by MNC's and cash holdings is studied. In the same study other variables affecting liquidity requirements of firms are also thought out. The study is consistent with the two theories of liquidity i-e precautionary motive and the transaction motive. The author found a negative correlation between Leverage and Cash holdings. They also concluded that firms with uncertain cash flows prove the transaction cost motive.

Methodology

Sample size and sampling technique

A sample of 411 firms is initially taken that are listed at Pakistan Stock exchange (PSX). The time period taken is from 2005 to 2012. This time period is selected for the reason of the availability of the data and also the time period of the Global Financial Crisis of 2007 to 2009 automatically lies in the selected time period by default (Akbar *et al.*,2017) The focus of the study is to examine the different factors affecting cash holdings of the selected non-financial firms. The firms of financial sector are excluded as the cash requirement for such firms is differs from non-financial companies (AfzaandAdnan, 2007).The utility sector firms, energy & fuel sector companies plus information, communication and transport sector firms are not included in the sample for the study as they might be under government regulations and their cash needs may be different from the rest of the sample. Afza andAdnan (2007). Finally, we were left with the sample of 349 companies only.

Sources of data

The data is retrieved from secondary sources. It is extracted from the balance sheet analysis (BSA) of non-financial listed firms which is extracted from the website of the SBP for the time period of 2005 to 2012.

Variables

The behavior of each variable is examined under the three theoretical models of cash holdings, namely, the Free Cash- flow Theory, the Tradeoff theory and the Pecking Order Theory, to study the relationship of cash holdings with the given variables. Variables taken in the research are defined as explained in Opler et.al (1999). The formulas used in this paper are also used by Afza in his research (Afza and Adnan 2007).

Cash

The definition of cash is in terms of cash ration which is measured as cash and cash equivalent to net asset (Dittmar and Servaes, 2003). Cash is the outcome variable and is represented by the cash ratio (Opler, 1999; Ferreira and Vilela, 2004). CASH is the response variable and is given by the cash ratio;

$$CH = \frac{CH \text{ and } CH \text{ EQ}}{BK \text{ V of ASST} - CH \text{ AND } CH \text{ EQ}}$$

CH= Cash EQ= equivalents BK= book value of assets

CPTLEMP

For the investment opportunity set capital employed (CPTEMPL) is taken as a proxy. CPTLEMP is calculated by adding the sum of Debt, book value of common stock as well as preferred stock. (Kaplan and Zingales, 1997).

Total capital employed =Shareholder's equity+ Long term secured loan+ Long term unsecured loan+ Debentures/ TFC's+Employees benefit obligations.

Size

Natural log of total assets is used for calculating Size (SIZE) of firms. *Kim et al* 2006). The importance of Size can never be ignored in capital structure (Booth et al, 2001; Amidu, 2007; Abor and Biekpe, 2006; Abor and Biekpe, 2009).

Cash Flow (CF)

Net assets ratio is taken as a measure of CF (Opler, 1999; Ferreira and Vilela, 2004)

$$CF = \frac{EAT + DEP}{TA - CH \text{ AND } CH \text{ EQ}}$$

EAT=after tax profit DEP= depreciation TA= Total assets

Net Working Capital (NWC)

NWC measures the liquidity of a business less than a year. This measurement gives an insight about the competence of the company to know how efficient the firm utilizes its assets. The following formula is used by Sohani Islam (2012) and Afza and Adnan(2007)

$$NWC = \frac{NCA - CH \text{ and } CHEQ}{TA - CH \text{ and } CHEQ}$$

NCA= net current assets CH and EQ= cash and cash equivalents TA= Total assets

Leverage

Following existing literature (Opler et al., 1999; Afza and Adnan, 2007; Ozkan and Ozkan,2004; M. Bigelli and Vida,2012; Mello et al, 2008) leverage is measured by the following formula .

$$LVRG = \frac{TD-CH \text{ AND } CHEQ}{TA-CH \text{ and } CHEQ}$$

Model

The model used is similar in spirit to the model of Opler et al. (1999). According to Opler’s model cash holdings is the function of riskiness of cash flows, growth opportunity, and the price of raising funds through dividend cuts and by selling assets. Some of the variables used by Opler (1999) like the R and D (research and development) expenditure, capital expenditures and the regulatory dummy are not included because of the unavailability of such data in Pakistan. For a firm *i* in the year *t*, the cash model is presented by the following equation:
 CASH = α + β1 CPTLEMP + β2SIZE + β3CF + β4NWC + β5LEVERAGE + β6GFC + C1

Results and Conclusion

The research study is aimed to find out the factors affecting cash holdings of the listed non-financial firms of Pakistan. A global financial crisis of 2007 is also focused in the study to explore its impact on selected firms. A simple panel regression is used and results obtained are given below.

Table 1. *Factors affecting cash holdings*

Variable Coefficient Std. Error t-Statistic Prob.

| | | | | |
|----|--------|-------|---------|-------|
| CH | 0.912 | 0.384 | 2.374 | 0.017 |
| CF | -0.242 | 0.006 | -36.906 | 5.984 |
| SZ | -0.132 | 0.063 | -2.090 | 0.036 |
| CE | 1.328 | 7.564 | 1.755 | 0.079 |

| Factors Affecting Cash Holdings... | | | | Lala, Shafiq |
|---|--------|-------|---------|---------------------|
| NWC | -0.154 | 0.005 | -25.744 | 2.498 |
| LEV | 0.053 | 0.002 | 21.308 | 5.776 |
| GFC | -0.107 | 0.094 | -1.136 | 0.255 |

| | |
|--------------------|--------|
| R-squared | 0.652 |
| F-statistic | 808.69 |
| Prob (F-statistic) | 0 |

The data used is panel, so, the existing literature suggests either to run fixed effect regression or random effect regression. For the said reason Hausman Specification Test (1978) is done in order to know whether fixed effect model is suitable for the data or random effect model. The result of the test is stated in table2 below. The result obtained divulges that fixed effect model should be used for further analysis.

Table 2. *Hausman Test*

| Test Summary | Chi-Sq. Statistic | Chi-Sq. d.f. | Prob. |
|----------------------|-------------------|--------------|-------|
| E | | | |
| Cross-section random | 272.482 | 6 | 0 |

The results of fixed effect model are reported in table 3.

Table 3: *Factors affecting cash holdings using fixed effect model*

| Variable | Coefficient | Std. Error | t-Statistic | Prob |
|----------|-------------|------------|-------------|-------|
| CH | 1.842 | 0.609 | 3.021 | 0.002 |
| CF | -0.188 | 0.007 | -26.688 | 0.00 |
| CE | 1.37 | 1.22 | 1.122 | 0.261 |
| LEV | 0.061 | 0.003 | 19.598 | 0.00 |
| NWC | -0.129 | 0.005 | -21.951 | 0.00 |
| SZ | -0.287 | 0.100 | -2.845 | 0.004 |
| GFC | -0.100 | 0.087 | -1.145 | 0.252 |

| | |
|---------------------|----------|
| R-squared | 0.742433 |
| No. of Observations | 2596 |
| F-statistic | 18.73619 |

Prob(F-statistic) 0.000000

The results of table 3 shows that leverage has positive coefficient with high statistical significance (i-e at the level of 1%). The positive coefficient reveals that leverage positively effects cash holding. It means that high levered firms hold more cash. However the result is in consistent with the existing literature as most of the researchers came up with negative relation such as Hatzellet *et al.*, (2007), Ferreira and Vilela (2004) Ozkan and Ozkan (2004), Anjum and Malik (2013) and Kim *et al.*, (1986). One of the reasons of this inconsistency might be that none of the cited authors have considered the global financial crisis of 2007. From the above quoted researchers it is clear that the majority of the study is conducted on developed countries that might be another reason for the inconsistency of the result.

In Table 3 the coefficient of capital employed is positive but not significant. As the result is insignificant so it cannot be statistically concluded. Although the positive relation might indicate that the managers hold internal cash balances and invest them whenever there is a good opportunity for investment. It is clear from the above table that networking capital depicts a positive relation with liquidity and the statistical result reveals that it has a highly significant impact on cash holding. It supports the Tradeoff Theory, it suggests that firms hold cash on their balance sheet after cost benefit analysis.

Size exhibits a negative relation with dependent variable. It supports the tradeoff model while it is in contraction with Pecking Order Theory and Free Cash Flow Theory. The negative relation of size with cash holdings is also supported by Ferreira and Vilela (2003) and Opler *et al.*, (1999) while Anjum and Malik (2013) negated the inverse relation. This in turn suggests that firms of smaller size retain more cash than large sized firms, which can easily access the capital markets for funds raising. The cash flow has a negative and highly significant coefficient thus supporting the Tradeoff Theory. From the obtained results it is assumed that firms keep more cash in order to prevent the company from financial crunch. The same result is reported by earlier researchers for the developed countries (see for example Opler *et al.*, (1999), Ozkan and Ozkan (2004) and Ferreira and Vilela (2004)). However, the results are negated by pecking order theory.

GFC shows negative relation and is not significant. From the obtained result it is concluded that the Global Financial Crisis of 2007 has no direct impact on the cash holding of the non-financial listed firms of Pakistan. The value of F obtained is 18.73 as it is above 18.73 that is above the level of significance which is 4, it clearly suggests the overall

model is significant. The value of R square is 0.742 which in other words mean that 74% change in explanatory variable is due to the responding variables. From the above result it is concluded that more than 50% of change in the regressed variable is due to the regressor variables. The data used is panel, so, the existing literature suggests either to run fixed effect regression or random effect regression. For the said reason Hausman Specification Test (1978) is done in order to know whether fixed effect model is appropriate for the data or random effect model. The result of the test is stated in table2 below. The result obtained divulges that fixed effect model should be used for further analysis of the data.

Conclusion

The study empirically investigated the determinants of cash and cash equivalents among the non-financial firms listed on KSE100 index for time span of 2005-2012. The research study is approached through the previous literature in two ways. First the discussion in literature is about the capital structure theories and then panel data is considered to find out the variables that determine cash holdings of the selected firms under study. Panel regression is used for the analysis of the 349 selected companies listed on kse100 index. The three important theories of the field of corporate finance c i.e. Pecking Order Theory, Tradeoff Theory and Free Cash flow Theory were used to analyze the behavior of these variables on the firms' liquidity.

Result of regression reveals that cash flow; leverage NWC and Size are significant, signaling the level of cash and cash equivalents of firms of Pakistan. Whereas Global Financial Crisis and Capital Employed are exhibiting insignificant behavior. The findings of the research suggest that capital employed and leverage is positively co related while cash flow, net working capital, size and global financial crisis are negatively co related. This study contributes to the existing literature in many important dimensions. First of all it is well tried to fill in the gap in the existing literature. Secondly, most of the work done on the topic under discussion is done in the developed countries while the focus of this study is a developing country that is Pakistan. Another contribution is that to the best of the author's contribution no one has considered Global Financial Crisis as one of the determinants of cash holdings and it is covered in this paper.

References

- Almeida, H., Campello, M. and Weisbach, M.S., 2002. *The demand for corporate liquidity: a theory and some evidence*. Working paper, New York University, New York, NY.
- Brick, I. E., & Liao, R. C. (2017). The joint determinants of cash holdings and debt maturity: the case for financial constraints. *Review of Quantitative Finance and Accounting*, 48(3), 597-641.
- Chen, Y. W., Chan, K., & Chang, Y. (2019). Peer effects on corporate cash holdings. *International Review of Economics & Finance*, 61, 213-227.
- Harford, J., 1999. Corporate cash reserves and acquisitions. *The Journal of Finance*, 54(6), pp.1969-1997.
- Islam, S., 2012. Manufacturing Firms' Cash Holding Determinants: Evidence from Bangladesh. *International Journal of Business and Management*, 7(6), p.172.
- Foley, C.F., Hartzell, J.C., Titman, S. and Twite, G., 2007. Why do firms hold so much cash? A tax-based explanation. *Journal of Financial Economics*, 86(3), pp.579-607.
- Jensen, M.C., 1986. Agency cost of free cash flow, corporate finance, and takeovers. *Corporate Finance, and Takeovers. American Economic Review*, 76(2).
- Jensen, M.C. and Meckling, W.H., 1976. Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of financial economics*, 3(4), pp.305-360.
- Kim, C.S., Mauer, D.C. and Sherman, A.E., 1998. The determinants of corporate liquidity: Theory and evidence. *Journal of financial and quantitative analysis*, 33(03), pp.335-359.
- Myers, S.C., 1984. The capital structure puzzle. *The journal of finance*, 39(3), pp.574-592.
- Nadiri, M.I., 1969. The determinants of real cash balances in the US total manufacturing sector. *The Quarterly Journal of Economics*, pp.173-196.
- Opler, T., Pinkowitz, L., Stulz, R. and Williamson, R., 1999. The determinants and implications of corporate cash holdings. *Journal of financial economics*, 52(1), pp.3-46.
- Ozkan, A. and Ozkan, N., 2004. Corporate cash holdings: An empirical investigation of UK companies. *Journal of Banking & Finance*, 28(9), pp.2103-2134.