Factors affecting corporate liquidity: evidence from pakistani firms

DOI:10.26524/jms.2016.5

Imran Khan[a], Ihsanullah[b] and Nazish Iftikhar[c]

[a] Freelance Researcher, Islamabad, Pakistan
[b] Freelance Researcher, Islamabad, Pakistan
[c] Freelance Researcher, Islamabad, Pakistan

Abstract

The purpose of this study is to discover those factors which effect liquidity level. Data of 59 non-financial firm has been collected for this purpose for the period 2006-2013. Results show that significant variables are networking capital, short term debt, firm size, dividend and investment, while leverage, sales growth, and ROA are insignificant variables. Leverage, sales growth and investment have negative relationship with liquidity, while networking capital, short term debt, ROA, firm size and dividend have positive impact on dependent variable. Therefore results explore that different factors like networking capital, short term debt, firm size, dividend and investment play essential role in determining the level of firms' cash holdings.

Keywords: Liquidity; Networking Capital; Leverage; Return on Assets; Firm size; Cash holdings

1. INTRODUCTION

Every corporation preserves certain amount of cash for different purposes like precautionary, transactional and speculative. Corporations holds precautionary reserves for any unexpected fluctuations. If any bargain purchases arise, firms use their speculative reserves to take advantage from that bargain. With all that, firms need cash for their routine transections and day to day operations and for this reason transactional reserves are held.

What level of cash a firms should hold? According to (Modigliani & Miller, 1958) external financing is available at fair price all the time, so, the firms need not to hold cash. But conditions do not always remains the same and in time of financial crises firms need to increase cash level and adopt conservative financial policies because external financing becomes expensive (Song & Lee, 2012).

Many researcher have studied the role of cash in credit crises and concluded that firm's performance and corporate investment within the corporations with less cash reserves was more affected by the crises as compared to the corporations with larger cash reserves e.g.(Adjei 2011; Duchin, Ozbas, & Sensoy, 2010). Bruinshoofd and Kool (2004) describe that different factors like opportunity cost, transaction cost and informational asymmetries affect the level of cash held by corporation. Asymmetric information between financial markets and firms arises when

insiders like, managers and executives have better information that outsiders like, investors. Due to information asymmetric issue, cost of external finance increases, which gives rise to precautionary demand for liquidity.

Two theories, the financing hierarchy theory and the trade-off theory, are used to understand firms' motivations to hold cash. According to financing hierarchy theory, firms choose those sources of financing which have lowest cost of information asymmetry and there is no optimal amount of cash, a firm hold. Investments are financed by firms only with internally generated funds and the firms go for external financing only when internally generated funds are not sufficient. So, under this theory, the amount of cash a firm holds is the result of profitability, dividend payout policy and investment outlays (Myers & Majluf, 1984). According to trade off theory, firms determine the optimal level of cash holdings by taking into account the marginal benefits and marginal cost of cash holdings (Kim, Mauer & Sherman, 1998). Benefits include low transection cost, ability to finance investment when other sources are not available and low probability of financial crises (Keynes, 1936; Whalen, 1966).

Cash holdings also affected by agency conflicts. According to Dittmar, Mahrt-Smith, and Servaes (2003) firms hold more cash in the countries where investors have lower protection, while investors force managers to disgorge cash in those countries where investors have more power. Alternatively, firms hold less cash than similar firms, which have entrenched managers, because such managers like to overinvest rather than maintaining high level of cash.

This paper investigate the role of different variable in determining level of cash holdings of manufacturing firms listed in KSE 100 index. Variables included in this study are net working capital, total debt, short term debt, investment, return on assets (ROA), firm size, interest rate, sales growth, growth opportunity and dividend dummy. Rest of the paper organized as follow.
Section 1 discusses the introduction. Section 2 describes literature review. Section 3 discusses methodology and section 4 summarizes and concludes the study.

2. LITERATURE REVIEW

Different researchers have investigated different factor that influence firms cash holdings level with the results of diverse nature.
Ozkan & Ozkan (2004) investigated different factors that affect cash holding in perspective of managerial ownership. This study mainly focused on managerial control of delegating powers. He concluded that cash flows, leverage, liquid assets, bank debt and growth opportunity play significant role to shape firms' cash holdings. Ferreira & Vilela (2004) also examined the effect of different variables on cash holdings and concluded negative relationship between cash holdings and bank debt. That is why firms go for low level of cash holdings. They also concluded that firms which operate in such countries where there is centralized corporate system and the rights of investors are protected, hold lower level of cash.
Jani et.al (2004) investigated cash holdings of Swiss firms, because Switzerland is popular for its hoarding of high levels of cash balances and integrated possession structure. It was concluded that the rights of minority shareholders are not safeguarded. The effect of growth, voting rights of shareholders and investment opportunities on cash holdings were scrutinized and explored that less centralized firms with simple voting rights hold more cash. Hoffman (2006) investigated the factors effecting firm cash holdings and highlighted the important determinants of corporate cash holdings of New Zealand's firms. The study found cash flow variability, growth opportunities,

availability of liquid asset substitutes, dividends, leverage and payment of shareholders as significant determinants of corporate cash holdings. High cash flow variability and high growth opportunities cause an upsurge in the cash holdings. Negative relationship found between cash holdings and liquid asset substitute and payment of shareholders dividends.

Anvar et al (2007) inspected association between working capital management and performance of firms using panel data method for a period of 1996-2006 of the firms listed in Malaya Stock Exchange. They concluded significant relationship between corporate profitability and cash conversion cycle.

Relationship between working capital management and corporate profitability was examined by (Oghloo & Jence, 2008) using data of Turkish firms for the period 1998 to 2007. They used working capital management variables. Results show that leverage, inventory turnover and receivable collection period have significant negative effect on corporate profitability but corporate size has positive impact on profitability. Raheman *et al* (2010) also examined the influence of working capital management on firm's performance in Pakistan for the period 1998 to 2007. The results show that net trade and cash conversion cycle have significant effect on firm performance. They concluded that conservative working capital management policy being followed in Pakistani firms and forms are required to focus on payment policy and improve their collection.

3. METHODOLOGY AND HYPOTHESIS

Keeping in view the findings of prior research, this paper will add to the current literature by examining the effect of different factor on liquidity level with different research setting that has never been tested before in context of Pakistani firms. This study explores different factors that affect liquidity level of Pakistani manufacturing firm listed in KSE 100 index. Data of variables like liquidity, networking capital, total debt, short term debt, cash conversion cycle, investment, interest rate, sales growth, growth opportunity, dividend dummy, ROA and firm size has been collected from firms' annual report and SBP web site. Time period is from 2006 to 2013. Multiple linear regression has been applied. Variables are explained below.

Liquidity

Liquidity is calculated by taking the Logarithm of cash and marketable securities (Gill & Mathur, 2011; Anjum & Malik, 2013).

$$Liquidity = Log\ (cash\ and\ marketable\ securities)$$

Net working capital

According to (Gill & Mathur, 2011) net working capital is measured as ratio of short-term claims (accounts receivables) minus short-term debt (accounts payables) divided by net assets.

$$NWC = accounts\ receivables - accounts\ payables\ /\ Net\ assets$$

Leverage

Leverage is measured as total debt divided by total assets by following (Gill & Mathur, 2011; Anjum & Malik, 2013) formula

Total debt / Total assets

Short term debt

According to (Gill & Mathur, 2011) short term debt is measured as Short-term debt divided by total debt.

Short term debt / Total debt

Investment

Investment is measured as Changes in tangible fixed assets divided by net assets (Gill & Mathur, 2011).

Investment = Change in tangible assets / Net assets

Sale growth

Sale growth is calculated as current year's sale minus previous year's sales divided by previous year's sales multiplied by 100 (Anjum & Malik, 2013).

*Sales Growth = (Current year's sales – previous year's sales) / previous year's sales *100*

Return on assets (ROA)

ROA is used as a proxy of profitability and it is measured as Earnings before interest and taxes divided by net assets.

ROA = EBIT / Net assets

Firm Size

Firm size is measured by taking natural logarithm of net assets.

Firm Size = Log (Net assets)

Dividend

In this study dividend dummy has been used. Value 1 has been assigned to the years in which firms pay dividend and otherwise 0.

The general form of model is as follow

$$LIQ_{it} = \beta_0 + \beta_1(NWC)_{it} + \beta_2(LEV)_{it} + \beta_2(SHTD)_{it} + \beta_3(INVST)_{it} + \beta_4(SG)_{it} + \beta_5(ROA)_{it} + \beta_6(FZ)_{it} + \beta_7(DIVDUM) + \mu_{it}$$

Where

LIQ = Liquidity

NWC = Net Working Capital
LEV = Lev
SHOTDEBT = Short Term Debt
INVST = Investment
SG = Sales Growth
ROA = Return on Assets
FZ = Firm Size
DIVDUM = Dividend Dummy
μ_t = Error Term
β_0 = Intercept of the equation

3.1 Hypothesis

H1: Networking capital has significant relationship with cash holdings
H2: Leverage has significant relationship with cash holdings
H3: Short term debt has significant relationship with cash holdings
H4: Investment has significant relationship with cash holdings
H5: Sales growth has significant relationship with cash holdings
H6: Return on assets has significant relationship with cash holdings
H7: Firm size has significant relationship with cash holdings
H8: Dividend dummy has significant relationship with cash holdings

4. RESULTS AND DISCUSSION

The result of relationship between dependent variable and independent variables has been drawn by analyzing the data obtained from 59 non-financial firms listed in KSE 100. The data has been collected from annual reports of the firms. The results have been drawn by applying descriptive statistics, pearson correlation, and multiple linear regression. Following section explains the results.

4.1 Descriptive Statistics

Descriptive statistics of all the variables have been explained in table-1. According to table-1 mean value of liquidity is 5.083. Mean value of net working capital is -0.091059. This shows that most of the firms have higher accounts payable than account receivable as the mean value of networking capital is negative. Average value of short term debt is 0.68, which means that 68% debt is short term that has to be paid within a year. It is obvious that most of the firms go for short term financing to avoid large number of interest payment.

Table-1: Descriptive Statistics

	Mean	Median	Std. Dev.
LIQ	5.082701	4.959213	0.967967
NWC	-0.09159	-0.06781	0.132400
LEV	0.623594	0.626495	0.321939
SHTD	0.682148	0.700414	0.234525
SG	18.52652	13.53954	48.26395
ROA	0.199090	0.114944	0.582863
FZ	4.232582	3.762348	1.614643
DIVDUM	0.811040	1.000000	0.391893
INV	0.067551	0.032910	0.178337

4.2 Pearson Correlation

Correlation identifies the degree of association and direction of relationship between the variables. Pearson correlation matrix is given in Table-2.

Table-2 shows that firm size, ROA, sales growth, investment and div have positive correlation with liquidity, the strongest positive correlation is between firm size and liquidity, while sales growth has the weakest positive correlation with liquidity. It may concluded that with the increase of any of the above variables, cash holding also increases. But the strength of association shows that firm size more impact on cash holdings as compared to sale growth. Networking capital, leverage and short term debt have negative association with liquidity. According to descriptive statistics mean value of networking capital is negative, which points out that firms have more payables than receivables. So, firms have to pay more cash and cash holding reduce. Same with leverage and short term debt.

Table-2 : Pearson Correlations

	Liq	NWC	Lev	Shtd	inv	sg	roa	fz	divdum
Liq	1	-0.159	-0.029	-0.229	0.012	0.004	0.171	0.675	0.107
NWC		1	0.262	0.227	-0.104	-0.027	-0.035	-0.215	-0.081
Lev			1	-0.138	-0.188	-0.044	0.002	0.027	-0.219
Shtd				1	-0.175	-0.143	0.048	-0.335	0
inv					1	0.098	0.013	0.109	0.013
sg						1	-0.032	0.059	-0.136
roa							1	0.185	0.056
fz								1	-0.136
divdum									1

4.3 Regression Analysis

Multiple linear regression has been applied in this study to measure the impact of independent variables on dependent variable, but before applying regression we applied some regression assumptions tests like normality test, heteroskedasticity and VIF to see whether this data fulfills regression assumptions. Results of these tests are as follow.

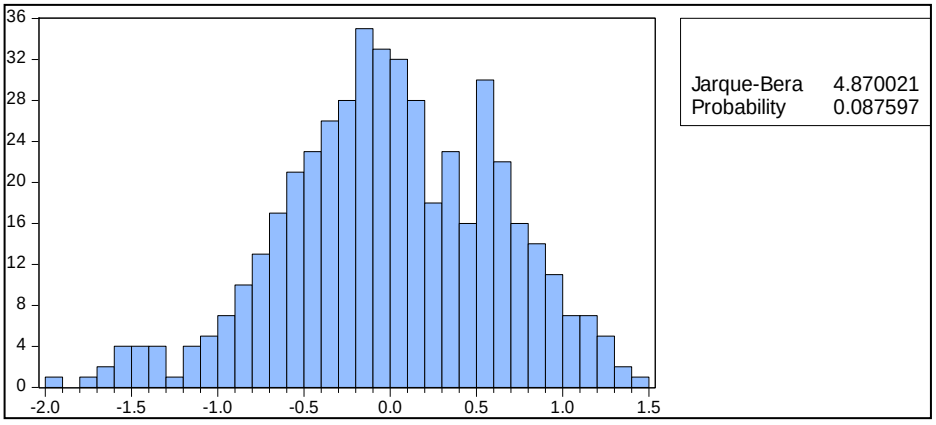

Figure-1 Jarque Bera test

Jarque bera test checks for the data is normally distributed. The bell shaped curve indicates that the data is normally distributed. Also the p value is more than 0.05, which is not significant. As, here null hypothesis (H_0) is, "distribution is normal" while alternative hypothesis (H_1) is, "distribution is not normal". Null hypothesis is not rejected here. So, the regression assumption of normality is fulfilled.

Table-3 Shows breusch-pagan-godfrey test. This test check for the heteroskedasticity in the data.

Table-3 Shows breusch-pagan-godfrey test

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	1.940925	Prob. F(8,462)	0.0523
Obs*R-squared	15.31515	Prob. Chi-Square(8)	0.0533
Scaled explained SS	14.16647	Prob. Chi-Square(8)	0.0775

Null hypothesis of this test is "Residuals are homoscedastic" while alternative hypothesis is "Residuals are heteroskedastic". Null hypothesis is not rejected, so it is proved that the there is no heteroskedasticity of the residuals are normally distributed.

For multicollinearity among the independent variables, we have use variance inflation factor (VIF). Table-4 below explains the result of VIF.

Table-4 Collinearity Statistics

Model	Collinearity Statistics	
	Tolerance	VIF
NWC	.839	1.192
Lev	.807	1.239
Shtd	.771	1.297
inv	.917	1.091
sg	.947	1.055
roa	.942	1.061
fz	.802	1.247
divdum	.896	1.116

All the values of VIF is less than 5. So, there is no multicollinearity among the independent variables. If the value is more than 5 then it is the sign that there is multicollinearity, but all the values are less 5 so no multicollinearity exits.

After fulfilling some regression assumptions we applied multiple linear regression, result of which is shown in table-6.

Table-6: Multiple Linear Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.862227	0.282172	3.055679	0.0024
NWC	0.050020	0.007499	6.670573	0.0000
LEV	-0.019511	0.095503	-0.204300	0.8382
SHTD	0.327686	0.142162	2.305026	0.0216
SG	-0.018776	0.012756	-1.471906	0.1417
ROA	0.058607	0.051052	1.147991	0.2516
FZ	3.073061	0.163422	18.80444	0.0000
DIVDUM	0.320144	0.078624	4.071847	0.0001
INV	-0.341266	0.169052	-2.018704	0.0441
R-squared	0.589396			
Adjusted R-squared	0.582286			
S.E. of regression	0.625605			
F-statistic	82.89633			
Prob(F-statistic)	0.000000			

The projected coefficients of independent variables are used to compare the different results and to comprehend that in which direction independent variables effect the dependent variable by

observing those coefficients. The result of regression shows that networking capital, short term debt, firm size, dividend and investment are significant variables, while all others are non-significant. In hypothesis 1, 3, 6, 7 and 8, null hypothesis is rejected and alternative hypothesis is accepted due to significant relationship. While in hypothesis 2, 4 and 5, null hypothesis is not rejected due to weak relationship of independent variables with dependent variable. Value of R-squared in 0.589 meaning that 58.9% variation in dependent variable is due to those variables, which are included in this study as independent variables. Rest of 41.15 is due to other factors. The model used in this study is overall significant having p value of F-statistic as 0.00.

5. CONCLUSION

The purpose of this study is to discover those factors which effect liquidity level. Data of 59 non-financial firm has been collected for this purpose for the period 2006-2013. Results show that significant variables are networking capital, short term debt, firm size, dividend and investment, while leverage, sales growth, and ROA are insignificant variables.

According to multiple linear regression, networking capital has significant relationship with liquidity with positive coefficient. This result supports the findings of (Anjum & Malik, 213; Bruinshoofd &Kool, 2004; Afza & Adnan, 2012). It may be concluded from this result that highly liquid firms have higher cash holdings as compared to less liquid firms. According to (Isshaq and Bokpin, 2009) firms having positive networking capital have good liquidity position. Leverage has negative insignificant relation with liquidity. This result shows that highly leveraged firms have less cash holdings, but in case of Pakistan the leverage level of firms changes with a lot of different factors and consequently leverage does not play much role in cash holding level. Short term debt has positive significant relationship with liquidity. It means that if the level of short term debt is high, firms try to keep cash to pay for such debt because short term debts are payable within a year and firms do not want to get bankrupt by not paying back these deb. So, firms keep a certain level of cash for such debts. The impacts of sales growth and ROA are not significant, so they do not play significant in cash holdings level. Firm size has significant positive effect on cash holdings because larger firms keep high cash holdings to meet operational requirements as compared to smaller firms. Firms having huge amount of cash holdings, pay dividend, because firms pay dividend when they have excess amount of cash. Investment has significant negative effect on liquidity. Consistent with the findings of (Gill & Mathur, 2011), it may be concluded that liquidity position of the firm is reduced by investment.

6. REFERENCES

[1] Adjei, F. (2011). The sun prime mortgage crises and the changing value of cash. *Journal of Economics and Finance, Springer, 35(1),* 79-92.

[2] Afza, T. and Adnan, M. (2007). Determinants of corporate cash holdings: A case study of Pakistan, *Proceedings of Singapore Economic Review Conference* (SERC) 2007, August 01-04, Organized by Singapore Economics Review and The University of Manchester (Brooks World Poverty Institute), Singapore, (2007), 164-165.

[3] Anjum, S. and Malik, A. (2013). Determinants of Corporate Liquidity - An Analysis of Cash Holdings. *IOSR Journal of Business and Management, 7(2), 94-100.*

[4] Bruinshoofd, W.A. and Kool, C.J.M. (2004) Dutch corporate liquidity management: new evidence on aggregation. *Journal of Applied Economics, **7(2)**,* 195-230

[5] Caglayan-Ozkan, N. and Ozkan, A. (2004). Corporate Cash Holdings: An Investigation of U.K. companies. *Journal of Banking & Finance 28,* 2103–2134.

[6] Dittmar, A., Mahrt–Smith, J. and Servaes, H. (2003). International Corporate Governance and Corporate Cash Holdings. *Journal of Financial and Quantitative Analysis, 38(1),* 111-33.

[7] Duchin, R., Ozbas, O and Sensoy, B. (2010). Costly External Finance, Corporate Investment and the Subprime Mortgage Credit Crisis. *Journal of Financial Economics 109,* 272-291.

[8] Ferreira, M. and Vilela, A. (2004). Why Do Firms Hold Cash? Evidence from EMU Countries. *European Financial Management, 10(2),* 295-319.

[9] Gill, A. and Mathur, N. (2001). Factors that Influence Corporate Liquidity Holdings in Canada. *Journal of Applied Finance & Banking, 1(2),* 133-153.

[10] Hofmann, C. (2006). Why New Zealand Companies hold cash: An empirical Analysis. *Unpublished Thesis.*

[11] Isshaq, Z. and Bokpin, G.A. (2009). Corporate liquidity management of listed firms in Ghana. *Asia Pacific Journal of Business Administration, **1(2)**,* (2009), 189-198.

[12] Jani, E., Hoesli, M. and Bender, A. (2004). Corporate Cash Holdings and Agency Conflicts. *Working Paper*

[13] Keynes, J.M. (1936). The General Theory of Employment, Interest and Money, *Macmillan, London.*

[14] 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,* 305-334.

[15] Myers, S. and Majluf, N. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics 13,* 187-221.

[16] Raheman, A., Afza, T., Qayym, A. and Mahmood, A. (2010). Working Capital Management and Corporate performance of manufacturing sector in Pakistan. *International Research Journal of Finance and Economics,* 47, 151 – 163.

[17] Whalen, E. (1966). A Rationalization of the Precautionary Demand for Cash. *Quarterly Journal of Economics, 80,* 314–324.