
Working Capital Management and Corporate Cash Holdings: A Comparative Analysis of Large and Small Scale Non-Financial Pakistani Firms

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Abstract

Working capital management greatly influences the corporate cash holdings and liquidity of firms. This study analyzed the impact of working capital management on corporate cash holdings and also made comparison between small and large scale firms. The sample of 148 non-financial Pakistani firms listed on KSE is extracted for the period of 2004-2013. In balance panel methodology, the results of whole data set showed that both of the working capital related variables, the cash Conversion Cycle and Working Capital net of Cash are the strong predictor of firm Cash Holdings. The separate analysis of small and large scales firms showed that the Working Capital Net of Cash is the only working capital related predictor of Cash Holdings in both type of subsamples. So, Small and large scale Pakistani firms need to keep high cash substitutes in order to remain in an appropriate liquidity position.

Key words: Working Capital Management, Cash Holdings, Firm Age, Financial Leverage, Size of Firm, Growth of Firm, Cash Flow Ratio, Non-Financial Sector, Fixed Effect Model.

Karl Marx in 1867 germinate the concept of working capital in term of ‘variable capital’ that is the outlays for the advanced wages or payrolls to workers before the completion of goods they were worked on. In the evolved form, the working capital is generally said as a portion of total financial resources which are put to a variable operative purpose. Fixed assets investments that are necessary to carry out productive activity are operated by working capital therefore, proper planning of working capital is crucial for any business enterprises. If the organization does not have sufficient funds at any point of time to meet its short-term debts, it may become technically insolvent. The collapse in giant organizations and the recent global financial crises evolves the need of management of resources especially working capital management (Charitou et al., 2010). The profitability, solvency and consequently the survival of firm is dependent on working capital because it is the key to prevent from the liquidity crises. To avoid excessive investment in current assets and to eliminate the risk of liquidity, working capital management and efficiency is required. The components that constitute the working capital imply similar but separate costs and benefits. Therefore, the level of current assets greatly influences the value of firm. The way the working capital is being managed is significantly different in different firms. Management of all the constituents of working capital is important to all business enterprises but the establishment and maintenance of target cash level is vital one. It is the capability of cash level of firm that it captures and depicts the information about the future prospects of firm (Simutin, 2010).

To justify the cash holdings of firms keynesian motives are mostly referred. The Keynes (1936) in his renowned book “The General Theory of Employment, Interest and Money” dedicates whole chapter to “The Psychological and Business Incentives to Liquidity”. He described the motives on holding cash that are the “Transactions-Motive”, the “Precautionary-Motive” and the “Speculative-Motive”. The transaction motive deals with bridging the gap between collection of cash and disbursements. He divides the transaction motive into to subordinates motives first is “Income-Motive” and second is ‘Business-motive’. Income motive describes an individual’s behavior of holding cash while business motive deals with the enterprise’s motive for holding cash and both of the motives are based on the same principle. As for as this study is concerned the business motive is important as to meet the daily expenses of their regular activities, firms used to hold specific amount of cash. Keynes’ second motive is the ‘precautionary-motive’ that deals with the company’s “unforeseen opportunities of advantageous purchases” and need to provide for unsuspected expenses. The chances of a profitable acquisition and risk of a sudden contingency determines the strength

of the 'precautionary-motive'. The third Keynes motives is the speculative-motive that describes that the firm holds cash for the purpose of speculation. The main assumption of this motive is that when interest rates rises, it induces to diminish the price of securities and vice versa. According to Horne (2001) companies usually do not hold cash for this purpose and this assumption is even more valid for small scale firms because they do not have enough resources to make such a complex financial decision. Motives of cash holdings described by Keynes are further developed and slightly modified in relevant literature. Literature described another important motive of holding cash that is the "The Taxation Motive". The firms with high income and greater tax needs used to hold more cash and the multinational firms having the subsidiaries in foreign countries also need to hold more cash due the tax cost on repatriating the income of foreign subsidiaries (Junli, 2011). So, Keynes' motives provides the basis for cash management models and to explain the companies' behavior on cash holdings.

The level of cash in firms differ significantly mostly depending on the scale of the firms. Large scale firms need to hold more cash due to vast level of activities and small scale firm hold less cash because of their low spectrum of activities. The other stance about level of cash holdings believes that the small firms need to keep high cash level because they are more likely to suffer in financial distress due to the severe information asymmetries and financial constraints while due to the economies of scale, high exposure to financial markets and diversification opportunities, large firms tend to hold lower cash reserves (Gao et al., 2013; Ogunidipe et al., 2012). Working capital can be a substitute of cash holdings because the more the efficient of working capital management, the lesser the need to hold cash (Shin & Soenen, 1998). Working capital as a substitute of cash holding is referred by Oppler in (1999). In some recent studies researchers tried to explain the cash holdings by working capital management perspective but still so far, quiet lesser studies have been conducted to explain the impact of working capital efficiency on cash holdings. So, previous studies provide an anchor for further researching the topic and comparatively analyzing the impact of working capital management on cash holdings of small and large scale firms as small scale firms may have more profound impact of working capital management on cash holdings (Abel, 2008). This study is conducted to make the picture more clearer regarding the cash holdings differences and working capital related determinants of cash holding for small and large scale non financial firms and ought to answer the questions that whether working capital management has any significant impact on the level of cash holdings in nonfinancial Pakistani Firms? Whether differences exist in small and large scale Pakistani non-financial firms in term of working capital management and cash holdings? If differences exist, then what are the working capital related determinants of Pakistani small and large scale non-financial firms? To answer these question, the current study set the objectives as: To empirically analyze the association of working capital management on the level of cash holdings of non-financial Pakistani firms, to find out the differences in large and small scale firms regarding the working capital management and cash holdings and to find out the differences in working capital related determinants of cash holding in small and large scale non-financial Pakistani firms.

The next sections provide the literature review and on the basis of this, propositions are formulized and variables are defined. Further, methodology for this study and data analysis tools are described. Finally, the results, important tables, discussion on results conclusion, policy implications and future research directions are presented.

Literature Review

The management of working capital has direct influence on the firm's liquidity and profitability hence, it is a very vital constituent of corporate finance. If the organization does not have sufficient funds at any point of time to fulfill its short term obligations, it may become technically insolvent. In a preliminary research by Lamberson (1989), an insight was provided on the importance and utilization of working capital management where a questionnaire was floated to 477 small firms' chief financial officers. 90% of the respondents, ranked working capital as important and most important. Among the various elements of working capital, inventory and accounts receivable management were ranked the most important. The concept of weighted cash conversion cycle was introduced by Gentry in (1990). Weights are obtained by dividing the tied up cash in each element by the product's final value. The flow of funds through working capital accounts of a firm was aggregately measured by the proposed weighted cash conversion cycle. A lot of studies are available in the context of working capital management and value creation and profitability of firms. First time, the researcher Soenen (1993) examined the association between return on investment

and net trade cycle. The study also analyzed the cash conversion cycle's effect on profitability of the firms across several industries. The 2000 firms were analyzed across 20 industries from 1970-1989. The return on assets and length of net trade cycle showed negative association by chi-square test while industry wise analysis showed inverse relationship. Charitou et al. (2010) analyzed the same phenomenon in Cyprus firms for the period of 1998-2007. The results showed that cash conversion cycle and all its elements are the significant predictor of profitability of firms.

Realizing the importance of working capital management for both small and large firms, research is being conducted on this important sector of economy. The very important work by Lamberson (1995) provide the insight into how the small firms' response to economic activity changes by changing the extent of current liabilities and current assets and positions of working capital. As a measure of economic activity, index of annual average coincident economic indicator was used and to measure working capital current assets, inventory and current ratio were used. The study found very weak association between working capital changes and changes in economic conditions. The value creation of small and medium sized enterprises greatly influences by the management of working capital as current assets showed major chunk of investment and current liabilities showed major source of external financing of SMEs (García-Teruel & Martínez-Solano, 2007; Tauringana & Afrifa, 2013). The topic of profitability and working capital association also remained the area of interest of Pakistani researches and there are several studies conducted in Pakistani economy as most of the cash is invested in working capital in Pakistani firms that greatly affect the performance of the firm. Some studies reveal the inverse association in working capital management and profitability of firm (Raheman & Nasr, 2007) where most of the studies describes the positive association between working capital association and profitability measures (Chapra & Naqvi, 2010; Raheman et al., 2010).

The recent financial crises has highlighted the change on the firms' demand on cash holdings and in explaining the high level of cash holdings the increased sensitivity of cash flow volatility is one of the important factors. (Song & Lee, 2012). The existence of cash is also criticized as it arises the agency conflicts and the agency problems are one of the very important influential factors of holding cash (Dittmar et al., 2003; Jensen, 1986; Kalcheva & Lins, 2007). Corporate governance and corporate cash holdings is one of the most debated issues now a days. The firm that are governed poorly used to quickly disperse cash in the ways that decrease operating performance significantly and if firm is governed well, inverse influence of holding more cash is cancelled out (Dittmar & Mahrt-Smith, 2007) while the family controlled firms are more complex as they have to consider the desire and need of family owner in addition of capturing the opportunities and fulfilling common business needs (Kuan et al., 2011)

Grasping the importance of cash holdings the researchers are focusing on the determinants of cash level. The determinants of cash level tend to be different in in different studies and in different environments. Anjum and Malik (2013) examined the determinants of cash holdings and found that the cash conversion cycle, firm's size, net working capital and debt level are the strong determinants of cash holding in nonfinancial firms of Pakistan. While the sale's growth showed no association with cash holdings. Oppler et al. (1999) studied the implications and determinants of holding cash equivalents and cash by analyzing 1048 U.S publicly traded firms. Covering the large time period from 1971-1994 results showed inverse link of cash holdings to net working capital, size, dividend, leverage, government regulations and payment while they found positive relation among cash and cash flow, industry volatility, the capital expenditures and research and development. They concluded that having the better access of large firms to capital markets, they hold less cash while the firms having riskier cash flows and better growth opportunities, kept higher levels of cash. The presence of cash substitutes leads to have low cash holdings it means that cash and cash substitutes have inverse relationship with cash holdings (García-Teruel et al., 2004).

The working capital management as the important predictor of cash holding is referred by Oppler et al. (1999) but the empirical findings are deferred. The first comprehensive study on this issue is conducted by Abel in 2008 where working capital impact on cash holding is analyzed in Swedish manufacturing small and medium enterprises to explore the issue using the univariate and bivariate test of correlation and further research is directed. Later on the cause and effect relationship is analyzed by Yeboah and Agyei (2012) for the banks of Ghana where they found in general negative relation of working capital management and cash holding. Contrary to the other findings, Junli (2011) found positive and insignificant

relation between cash conversion cycle and cash holding and inverse but insignificant relation between cash substitute and cash holdings of Finnish manufacturing firms for the study period of 2003-2007.

So, the management of working capital and level of cash holdings is different in the small and large scale firms as described by the researchers. Small scale firms depend more on internally generated funds as well as their scale of activity, growth patterns and their profitability level is also different than that of large scale firms (Abel, 2008; García-Teruel et al, 2004). Besides the cash holding patterns, the other attributes of small scale firms are also different than their counter part. So, to find out the possible differences in both of the subsample, following hypothesis is developed.

H1: Significant differences exist in small and large scale firms regarding the working capital management and cash holdings.

The aim of following hypothesis is to describe and illustrate the relationship among the elements of working capital management, control variables and corporate cash holdings. To determine the optimal level of cash holdings, the cost associated with running out of cash has to be kept in mind. The shortage costs consist of various aspects but from the working capital perspective, the presence or lack of cash substitutes - one of these aspects - can be interpreted. Because cash substitutes decrease shortage costs, therefore the existence of cash alternatives are expected to decrease cash holdings (Bates et al., 2009 ; Ferreira & Vilela, 2004; Oppler et al., 1999). Working capital management efficiency is demonstrated by the cash conversion cycle as it illustrates how quickly a firm converts their current assets into cash (Junli, 2011; Yeboah & Agyei, 2012). So higher the working capital management's efficiency and cash substitute, lower the needs to hold cash for precautionary and transaction purpose so, Keynesian motives of holding cash also predicts negative relation of cash holdings with cash conversion cycle and cash substitutes. So, it is hypothesized that

H2: Cash substitutes and cash conversion cycle have significant impact on level of corporate cash holdings.

Higher age of the firm leads to have better relationship with creditors and suppliers and better establishment of firm's reputation in markets. Due to this, higher age firms have better access to financial markets and can get external finance easily at the time of need or to overcome the temporary shortages of cash. So the grown or higher age firms need not to keep high cash level for precautionary purpose. Negative association between firm cash holding and age of firm is expected (Eije, 2012; Gao et al., 2013) and the hypothesis for firm age and cash is positive as

H3: The age of firm has significant impact on corporate cash holdings.

Leverage ratio shows the level of external financing or debt. The firms that have high ability to raise debt tend to hold less cash or higher ratio of debt tend to lower the cash in firm (Bates et al., 2009; Ferreira et al., 2004; Oppler et al., 1999). It is hypothesized that

H4: The level of debt has significant impact on corporate cash holdings.

Size of firm affects the cash level of firm as large size firms need to hold more cash because of the large scale of business activities and wide range of regular expenses (Oppler et al. 1999; Yeboah & Agyei, 2012). Keynesian motives for holding cash also indicate positive relation between size and cash level. In this study significant association is expected between firm size and firm cash level. So, the hypothesis is

H5: The size of firm has significant impact on corporate cash holdings.

Firm growth is the results of opting profitable projects that augments the opportunities of future investments. So the growing firms need more cash to avail the opportunities to invest. Since sales growth involves economies of scale and therefore to increase the sale growth, large amount of inventory needs to be kept in stock along with increased account receivable hence, less cash holdings for transaction and precautionary motive (Anjum & Malik, 2013; Yeboah & Agyei, 2012) and it is hypothesized that

H6: The growth of firm has significant impact on corporate cash holdings.

The firms with high cash flows and high profitability supposed to have more cash holdings than the firm with low profitability and this phenomenon is supported by the Keynesian speculative motive and the extended taxation motive. Following the Ozkan and Ozkan, (2004) , Ferreira and Vilela(2004) , Yeboah and Agyei (2012), it is hypothesized that

H7: The Cash flow ratio has significant impact on corporate cash holdings.

The mechanism of small firms is altogether different than the giant stock organizations because they have to perform in very different environment thus, the factors that affect their assets management structure is also different. In the same way, the working capital may have more profound effect on cash

holdings in small scale firms. Therefore, the factors that determines the cash holdings of small firms are also very different than that of their counterparts. To find out the possible differences in determinants of small and large scale firms, it is hypothesized that

H8: The working capital related determinants of cash holdings differ between small and large scale firms.

Research Methodology

This study used the panel data methodology for analysis because panel data possess many advantages over conventional data sets of time series or cross section as it increases the degree of freedom as it contains the large number of data points hence improves the econometric estimates’ efficiency by reducing the multicollinearity among predictors (Raheman et al., 2010). Initial sample contains all the non-financial firms listed on Karachi Stock Exchange for the study period 2004-2013. The final sample includes firms having the complete data for all variables and for all study years. Final sample contains 148 companies. Furthermore, working capital related determinants of corporate cash holdings is analyzed separately for small and large scale firms and for the purpose of comparison, the sample is further divided into two categories first is the “large scale firms” and second is “Small scale firms”. Following Eije, (2012) and Pinkowitz et al., (2013), firms are scaled on the basis of total assets. Total assets of all firms in sample is divided into two equal parts or median value (Q2) is found and assets of each firm is compared with the median value. The firm that have the assets below the median value are categorized into small scale firms and set to ‘0’ while the firm is considered as large scale firm and set to ‘1’ if firm’s assets are above the median value. The resulted subsample of small scale firms contains 104 firms and the subsample of large scale firms contains 44 firms. For the purpose of analysis Cash Conversion Cycle and Working Capital Net of Cash is taken as the working capital related determinants of Cash Holding while Firm Age, Financial Leverage, Size of Firm, Growth of Firm and Cash Flow Ratio are taken as control variables. Table 3.1 presents the type of variables, their denominations and computation.

Table 3.1: *Measurement of Variables*

Type of Variable	Variable	Computation
Dependent Variable	Cash holding (CH)	Liquid funds / Total assets
Independent Variable	Working Capital Net of Cash (WCNC)	(Current Assets – Short Term Liabilities - Cash) / Total Assets
	Cash Conversion Cycle (CCC)	CCC = DSI + DSO – DPO
	Size of Firm (SOF)	log (firm total assets)
	Growth of Firm (GOF)	(Sales _t – Sales _{t-1})/Sales _{t-1}
Control Variables	Financial Leverage (FL)	Total Debt/ Total Assets
	Cash Flows Ratio (CFR)	(Earning after Interest and Tax + Depreciation) / Total Assets
	Firm Age (FA)	log (age of firm since its incorporation)

The methodology originally developed by Yeboah and Agyei (2012) is adapted where the variable ‘working capital net of cash’ is added in model because previous studies showed significant relationship between cash substitute and cash holdings and for the purpose of comparison, scale dummy variable is also added. The regression equation tested to analyze the possible effects of working capital management on cash holdings for the whole sample is given below in ‘Model 1’ while in ‘Model 2’ the scale dummy notion is excluded to make separate analysis of large and small scale firms. The models are presented below

Model 1:

$$CH_{it} = \beta_0 + \beta_1 (CCC_{it}) + \beta_2 (WCNC_{it}) + \beta_3 (SOF_{it}) + \beta_4 (GOF_{it}) + \beta_5 (FL_{it}) + \beta_6 (CFR_{it}) + \beta_7 (FA_{it}) + \beta_8 (SD_{it}) + \eta_i + \lambda_t + \varepsilon$$

Model 2:

$$CH_{it} = \beta_0 + \beta_1 (CCC_{it}) + \beta_2 (WCNC_{it}) + \beta_3 (SOF_{it}) + \beta_4 (GOF_{it}) + \beta_5 (FL_{it}) + \beta_6 (CFR_{it}) + \beta_7 (FA_{it}) + \eta_i + \lambda_t + \varepsilon$$

Where:

CH = cash holding, WCNC = working capital net of cash, CCC = cash conversion cycle, SOF = size of firm, GOF = growth of firm, FL = financial leverage, FA = firm age, CFR = cash flow ratio, SD = scale dummy (0 for small scale firms and 1 for large scale firms), β_0 : The intercept of model, β_i : Coefficients of X it variables, X_{it} : The different explanatory variables taken in this study at time t , $t = \text{Time} = 1, 2 \dots 10$ years., η_i = measures the firm specific characteristics referred as impalpable heterogeneity, λ_t = is a parameter for time dummy variables which changes over time but equal for all firm in each year, ϵ : The error term

Data Analysis and Discussion

The summary of descriptive statistics of studied variables is presented in Table 4.1. The mean of the cash ratio of Pakistani manufacturing and trading companies during 2004-2013 is 5.8%.The average mean cash of small firms is 4.2% while it is 9.4% for large firms. This indicates that small firm hold less cash from large firms. The average value of cash conversion cycle for the whole data set is 85 days along with the highest value of standard deviation. The CCC of small firms is 92 days while it is 68 days for large firms.

Table 4.1: Descriptive Statistics of Whole Sample, Small and Large Scale Firms

	Whole data set				Small Firms				Large Firms			
	Mean	Max	Min	std. dev	Mean	Max	Min	std. dev	Mean	Max	Min	std. dev
CH	0.05	0.93	4.38E-0	0.10	0.04	0.68	0.00	0.07	0.09	0.93	0.00	0.14
CCC	84.5	349.79	-142.33	72.67	91.58	349.7	-142.33	68.59	68.0	338.3	-101.9	79.18
WC NC	0.00	5.90	-2.45	0.32	-0.00	0.80	-2.459	0.31	0.01	5.90	-0.94	0.361
FA	3.38	5.08	0.00	0.57	3.40	4.91	1.60	0.46	3.36	5.08	0.00	0.776
FL	0.68	5.47	0.01	0.41	0.71	5.47	0.01	0.46	0.60	1.56	0.03	0.247
SOF	15.2	19.84	11.15	1.49	14.5	18.20	11.15	1.09	16.7	19.84	13.53	1.069
GOF	0.22	6.88	-0.93	0.47	0.23	6.88	-0.93	0.51	0.19	2.85	-0.85	0.368
CFR	0.15	38.27	-1.03	1.26	0.16	38.2	-1.03	1.50	0.11	0.55	-0.31	0.111

Table 4.2: Mean Difference Analysis between Small and Large Scale Firms

	Mean		Mean Difference	t value	Significance
	Small Firms	Large Firms			
CH	.042553	.093560	-.0510072	-6.239	0.000
CCC	91.579682	68.179544	23.4001380	6.164	0.000
WCNC	-.000120	.0172066	-.0172410	-1.017	0.331
FA	3.402137	3.358824	.0433131	-1.017	0.486
FL	.715768	.607808	.1079596	7.150	0.000
SOF	14.545371	16.786282	-2.2409110	-13.131	0.000
GOF	.236370	.198601	.0377690	.740	0.469
CFR	.165507	.114071	.0514356	1.163	0.272

Note:CH = cash holding, WCNC = working capital net of cash, CCC = cash conversion cycle, SOF = size of firm, GOF = growth of firm, FL = financial leverage, FA = firm age, CFR = cash flow ratio.

The mean value for WCNC for whole data set is 0.049% while its negative value for small scale firms indicate that the on average small firms don't have cash substitutes rather hold the liabilities more, while the average cash substitutes for larger firm is 1.6%. The average age of whole data set and subsample is almost equal employing that on average, Pakistani firms are almost three and half years old. The average Financial Leverage of the whole sample is 68.36% while it is 71.5% and 60.7% for small and large firms respectively pointing out that the small firms take more debt than the large firms. The firms that have the negative equity also have the large amount of total debt hence, greater value of total debt than their total assets as the maximum value of total debt indicates this phenomenon. The log of firm's assets had a mean of 15 for whole data set and it is 14.5 and 19.84 for small and large firms respectively indicating the higher level of total assets for large firms. The growth in sales of the whole data set 22.46% while it is 23.5% for small firms and 19.8% for large firms indicating that the small firms are striving hard and making growth. the mean of cash flow ratio is 15% for whole data set and it is 16.5% for small firms while large firms have low cash flow that is 11.3%. So, from the descriptive statistics we can summarize that the small firms holding less cash, taking more loans and making more growth and cash flows than the large firms.

Mean difference analysis is conducted using t-test statistics for both of the subsamples to know whether there is a significant difference in mean values of small and large scale firms. Table 4.2 shows the t-test results and the statistics shows that the mean of cash holding and cash conversion cycle of small scale firms is different than that of large scale firms. However, the mean of working capital net of cash and firms' age don't have significant differences. The mean of financial leverage and size of firms is different in both type of subsample. The mean of growth of firm and cash flow ratio do not show significant differences. So, the descriptive statistics and t-test statistics confirm the difference in small and large scale firms regarding the studied variables and lead to accept the **H1** that both of the subsamples are different to one another.

In quantitative analysis, first the correlation analysis is conducted then regression analysis is made to analyze the possible impact of predictors on dependent variable. Table 4.3 contains the correlation coefficients of different variables of study. The correlation between CH and CCC is in line with expectation and is negatively related and absolute value is statistically significant at 1% level of significance which indicates that when CCC decreases CH increases. The WCNC and CH also negatively related but not statistically significant.

Table 4.3: Correlation Matrix of Sample Firms for Study Variables

		CH	CCC	WCNC	FA	FL	SOF	GOF	CFR
CH	Pearson Corre.	1							
	Sig. (2-tailed)								
CCC	Pearson Corre.	-.160**	1						
	Sig. (2-tailed)	0.000							
WCNC	Pearson Corre.	-0.02	.207**	1					
	Sig. (2-tailed)	0.443	0.000						
FA	Pearson Corre.	-.064*	.064*	.096**	1				
	Sig. (2-tailed)	0.013	0.014	0.000					
FL	Pearson Corre.	-.165**	-.149**	-.691**	-0.023	1			
	Sig. (2-tailed)	0.000	0.000	0.000	0.383				
SOF	Pearson Corre.	.125**	-.108**	.090**	0.046	-.201**	1		
	Sig. (2-tailed)	0.000	0.000	0.001	0.075	0.000			
GOF	Pearson Corre.	0.04	-.074**	0.002	-.073**	0.028	-0.03	1	
	Sig. (2-tailed)	0.128	0.004	0.938	0.005	0.275	0.256		
CFR	Pearson Corre.	0.003	-0.008	-.126**	0.007	.248**	-.052*	-0.037	1
	Sig. (2-tailed)	0.911	0.744	0.000	0.787	0.000	0.047	0.153	

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Note:CH = cash holding, WCNC = working capital net of cash, CCC = cash conversion cycle, SOF = size of firm, GOF = growth of firm, FL = financial leverage, FA = firm age, CFR = cash flow ratio.

FA and CH is negatively and significantly related at 5% level that is according to expectations as older firms don't need to hold cash because they have established relation with creditors and can get cash easily on need. FL and CH is negatively related as expected and have significance at 1% level indicating that more leverage lessen the need to hold cash. The GOF and CH neither significantly related nor have the expected direction. SOF and CFE are positively related to CH in line with the expectations while SOF is significant at 1% level. So, it is also clear from the Pearson coefficient matrix that the problem of multi-collinearity doesn't exist in the variables of the study sample.

The impact of working capital management on cash level of Pakistani non-financial firms is estimated controlling the influence of certain variables where the Model 1 is regressed first using the common effect analysis on whole data set. The results in Table 4.4 indicates that the CCC and WCNC is significant predictor of firm cash level and negative sign with coefficients predicts negative relation of WCNC and CCC with cash holdings of firms and results are in line with the previous findings (Abel, 2008; Afza and Adnan, 2007; Yeboah and Agyei, 2012). So, on the basis of these results **H2** is accepted and it is elucidated that the cash substitutes and cash conversion cycle have significant negative impact on level of corporate cash holdings. It means lower CCC leads to have high cash level and higher cash substitute-WCNC- leads to have lower cash reserves. Coming to the control variables, the age of firm (FA) has negative but insignificant relation with firm cash holding which indicates that the firm's age doesn't have any impact on firm cash holdings so **H3** is rejected. The financial leverage (FL) has negative coefficient and significant impact on the cash level as predicted so, **H4** is accepted that the higher debt obligations lessen the cash holdings of firm (Oppler et al., 1999; Yeboah and Agyei, 2012). The size of firm (SOF) is significant here with negative coefficients which shows that the size of firm has negative and significant relation with cash holdings and this leads us to accept the **H5**so, the firms that have large assets base, need to hold less cash holdings. The growth of firm (GOF) is insignificant that showed that it is not a significant predictor of cash holdings. The results are in accordance with the findings of Yeboah and Agyei (2012) and Junli (2011) and leads to reject the **H6**. The cash flow ratio proved to be significant predictor with positive coefficient so, **H7** is accepted. So, the firms with high cash flows and high profitability have more cash holdings than to the firm with low profitability (Junli, 2011; Oppler et al., 1999; García-Teruel et., 2009). Finally, and very importantly the scale dummy (SD) notion is significant here indicating that the small and large scale firms do have differences. The significant probability confirms the differences in the determinants of small and large scale Pakistani nonfinancial firms that leads us to accept the **H8**.

Table 4.4: *Determinants of Corporate Cash Holding*

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.237253	0.036964	6.418559	0.00000
CCC	-0.000189	3.54E-05	-5.34814	0.00000
WCNC	-0.06674	0.01068	-6.249059	0.00000
FA	-0.004895	0.004339	-1.128162	0.25940
FL	-0.08323	0.00858	-9.700482	0.00000
SOF	-0.007171	0.002312	-3.100972	0.00200
GOF	0.009912	0.00527	1.880919	0.06020
CFR	0.004873	0.002021	2.41167	0.01600
SD	0.055879	0.007483	7.467276	0.00000
R-squared	0.131574	Adjusted R-squared		0.126851
S.E. of regression	0.095014	Sum squared resid		13.27962
F-statistic	27.85872	Prob(F-statistic)		0.000000

Note:CH = cash holding, WCNC = working capital net of cash, CCC = cash conversion cycle, SOF = size of firm, GOF = growth of firm, FL = financial leverage, FA = firm age, CFR = cash flow ratio, SD = Scale Dummy.

After having the significant value for the scale dummy (SD) the separate analysis for both of the samples are conducted by applying the Model 2 to further find out the difference in determinants of small and large scale firms. To choose the appropriate measure from random effect and fixed effect approaches, Hausman (1978) test is conducted that showed the statistically significant p-value (0.000) so, null hypothesis is rejected and alternative is accepted that is the fixed effect model is the appropriate model for

this data set. One step ahead, to choose the most appropriate measure from fixed effect and common effect, redundant likelihood test is also conducted and that also showed the 0.000 probability and suggest the fixed effect as the most appropriate test for regression analysis.

The comparison of determinants of corporate cash holdings between small and large scale firms is presented in following Table 4.5.

Table 4.5: *Determinants of Corporate Cash Holdings for Small and Large Firms*

	Small Firms				Large Firms			
	Coefficient	Std. Error	t-Statistic	Prob.	Coefficient	Std. Error	t-Statistic	Prob.
C	0.478005	0.05289	9.037464	0.00000	0.578366	0.178139	3.246709	0.00130
CCC	-0.00005	0.00004	-1.39394	0.16370	-0.0002	0.000109	-1.86522	0.06290
WCNC	-0.0876	0.01146	-7.64184	0.00000	-0.06734	0.015285	-4.40586	0.00000
FA	-0.04424	0.02028	-2.18136	0.02940	-0.10442	0.025418	-4.10784	0.00000
FL	-0.08999	0.00980	-9.17683	0.00000	0.000744	0.040175	0.018507	0.98520
SOF	-0.01487	0.00529	-2.80923	0.00510	-0.00819	0.012093	-0.67728	0.49860
GOF	-0.00003	0.00324	-0.00829	0.99340	0.017599	0.012876	1.366806	0.17250
CFR	0.001831	0.00114	1.598283	0.11030	0.136581	0.066971	2.039411	0.04210
R squared	0.5946				0.5906			

Note:CH = cash holding, WCNC = working capital net of cash, CCC = cash conversion cycle, SOF = size of firm, GOF = growth of firm, FL = financial leverage, FA = firm age, CFR = cash flow ratio.

CCC is insignificant for the small and large firms depicting that the cash conversion cycle doesn't have any relation with firm cash level that is against the logic and general rationale but empirically supported by previous findings reported by Junli (2011) for Finnish manufacturing firms. WCNC remained significant here for both of the sub samples with negative coefficients showing the inverse relation with cash holdings. so, higher the cash substitute, the lower the need to hold cash as cash substitute can be converted into cash in time of need. As for as the control variables are concerned, age of firm is significant for the subsamples with negative coefficients in their separate analysis indicating that higher age firms need to hold less cash. The grown firms have established market relations and excellent exposure and information of financial markets so, they can borrow money in time of need easily and therefore, grown firm don't need to hold cash. Very interestingly, the financial leverage is highly insignificant for the large scale firms while it is highly significant in small scale firms showing the inverse and strong relation of leverage and cash. It means that when there is huge debt obligations and outrage of cash in the form of interest or repayment of debts, it reduces the cash holdings or cash level of firm that have many implications on firm's performance and other attributes. So to be in appropriate liquidity position, debt obligations need to be decreased. Again the huge difference is depicted in terms of scale impact on cash level, as size of firm is highly significant with negative coefficient for small scale firms but it is highly insignificant for large scale firms. Coming to the growth of firm, results showed positive and insignificant relation alike for the small and large firms pointing that the GOF has insignificant relation with cash level of firm as reported by Yeboah and Agyei (2012) and Junli (2011). Again the CFR's results are different for subsamples as it proved insignificant in small scale firms while it is significant with positive coefficient for the large scale firms. It means that for large scale firms, the cash flow ratio or profitability have positive association with cash level and high profitability leads to have higher cash holdings.

Conclusion

This study attempted to analyze the influence of working capital management on corporate cash holdings by making the comparison in small and large scale non-financial Pakistani firms. For this purpose, detail descriptions are made on working capital management, cash holdings and different texture of small and large scale firms regarding their asset management techniques.

The descriptive analysis showed very different attributes of small and large scale firms. The level of cash holdings is high in large scale firms and distinctively low in small scale firms. Similarly, longer CCC and low cash substitutes are found in small scale firms along with the higher financial leverage, growth and profitability. On the other hand, large scale firms showed lesser days of CCC and high cash substitute with lower financial leverage, lower growth rate and low profitability than their counter part. The t-test results also confirm the significant differences in mean of CH, CCC, FL and SOF of small and large scale firms. Regression is estimated using panel data methodology and pooled scale dummy is inculcated in common effect test while analyzing the whole sample of Pakistani non-financial firms. From working capital perspective, both the cash conversion cycle and cash substitutes are found as strong predictors of cash level for the whole sample. The negative coefficient indicates the inverse association between CCC, WCNC and CH. It means that when firm takes less days to convert its inventory into cash, it leads to high cash level and when the firm has more cash substitutes, the firm hold less cash. After finding the significant value of SD, the separate analysis of small and large scales firms is also conducted where results indicate only WCNC as a working capital related predictor of cash holding for both subsample. The negative sign with coefficient indicates the inverse relation between WCNC and cash holding as higher cash substitutes leads to hold lower cash. Form the control variables, the FA is the strong predictor of cash holdings for both of the subsample indicating that grown firms need to hold less cash. FL and SOF are the predictor of small scale firm's cash level pointing the inverse association with cash level and CFR is defining the cash holding of large scale firms only as higher cash flow or profitability leads higher cash level in firm.

To deduce we can say that the Pakistani non-financial small and large scale firms hold great difference in terms of working capital management and level of cash holdings. Low cash reserves, low cash substitutes and high debt obligations than the large scale firms are the major obstacles of small scale firms, but with high profitability and higher growth they are surviving. Study confirmed that the cash substitutes, firm age, financial leverage and size of firms are the determinants of cash level of small scale firms. So, Pakistani small scale firms need to take these factors into consideration while establishing cash level in firms. To set themselves on healthy feet and to remain in appropriate liquidity position, small firms need to keep high cash substitutes and low debt obligations to reach the optimal capital structure. Higher cash substitutes will help them to manage the cash constraints in time of need and by lessening the debt obligation the outrage of cash in form of debt repayment will be controlled. On the other hand, excess cash reserve, shorter CCC, low growth and low profitability are the attributes of large scale firms as compared to their counterpart. The study showed that cash substitutes, firm age and cash flow ratio are the determinants of cash level in large scale firms. To cultivate success and faster growth, large scale firms need to opt profitable opportunities to increase growth rate and hence profitability and to remain in a good liquidity position they need to have high cash substitutes and high profitability.

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