The Influence of Working Capital Management on the Profit Performance of Large Non-Financial Corporations Listed at Karachi Stock Exchange

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Abstract: Working Capital Management has an underlying impression on a firm's output performance. However, for larger firms, working capital does not usually constitute a sizeable fraction of their total assets. It is, therefore, perceived that an efficient management of working capital might not be an issue of marked concern for larger corporations. With this conjecture, this study moves on to determine the potential effect of working capital management on the profit performance of large-sized companies listed in Karachi Stock Exchange. To investigate, effect of working capital management was determined on profitability of a sample of 103 Pakistani large corporations listed in Karachi Stock Exchange for a period of six years from 2003 to 2008 which led to a total of 618 firm-year observations. Findings from the analyses suggested that indicators of working capital management had a very remarkable impact on profitability of firms under study.
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1. Introduction

Working Capital Management is one of the most imperative and crucial aspects of short-term financial matters of an organization. Firms of all sizes demonstrate sensitivity of their profit performance to the efficient management of their working capital. However, which category of firms (small or large) exhibit relatively more responsiveness to proficient working capital management is obscure. Presumably small firms and large firms are different from each other in that working capital management may affect more (or less) the profitability of one or the other. This paper, however, is aimed at determining the effect of Working Capital Management on Profitability of *large* firms listed in Karachi Stock Exchange. Besides, an attempt is also made to discretely elucidate the influence of *Liquidity* on profitability of large companies listed at Karachi Stock Exchange.

Shin and Soenen (1998) were probably among the pioneers to relate efficient management of working capital with enhanced profitability. They found that a reasonable reduction in the Cash Conversion Cycle could lead to an increase in the firms' Profitability.

Marc Deloof (2003) investigated the relationship between working capital management and profitability for a sample of large-sized Belgian firms during the period 1992-1996. He observed that profitability could be enhanced by reducing the Receivable Collection Period and the Inventory Conversion Period. Vishnani and Shah (2007) also made a pragmatic analysis of Indian Consumer Electronics Industry to determine the impact of working capital policies & practices on profitability for the period 1994–95 to 2004–05. They found a negative relationship between the determinants of WCM and profitability for most of the companies in their sample. In another related paper written by Lazaridis and Tryfonidis (2006), profitability was found to be statistically significant with the cash conversion cycle of firms listed in the Athens Stock Exchange for the period 2001-2004.

Ramachandran and Janakiraman (2009) also attempted to devise a significant relationship between the Working Capital Management Efficiency and EBIT. The results of their Regression analysis showed a significant *negative* relationship of EBIT with Cash Conversion Cycle.

One of the very few efforts made in Pakistan with the aim to assess the impact of Working Capital Management on Profitability was that initiated by Rehman and Nasr (2007) of COMSATS Institute of Information Technology, Islamabad. They took a sample of 94 Pakistani non-financial firms listed in Karachi Stock Exchange for a period of six years from 1999 to 2004. The results of their analyses demonstrated a very strong negative relationship between the determinants of working capital management and that of profitability. In addition to that, they also found a significant negative relation

between the *liquidity* and profitability of firms in their sample.

Mallik et al. (2005) took a sample from the Indian Pharmaceutical Industry to examine the relationship between working capital management and profitability but failed to establish any. Mukhopadhyay (2004) indicated, in his article *"Working Capital Management in Heavy Engineering Firms—A Case Study"*, that no significant role did current assets play in the profit maximization of the firms under study. A study with a view to analyzing the relationship between working capital management efficiency and corporate profitability in the Indian Cement Industry was conducted by Ghosh and Maji (2003). Their results depicted a significant association between effective and efficient use of current assets and profitability.

Biswas and Ganguly (2001) found a very strong positive link between liquidity and profitability in the Indian Aluminum Producing Industry. Govind Rao and P. M. Rao (1999) researched the relationship of WCM and profitability in Indian cement industry and found a mix of positive and negative connections between the working capital related variables and that of profitability.

Vijaykumar and Venkatachalam (1995) explored a negative correlation between liquidity and profitability in the Tamil Nadu Sugar Industry. On the other hand, Bardia (2004) discovered a positive relationship between liquidity and profitability in the steel giant SAIL for the period 1992-2002. Narware (2004), however, found both positive and negative interrelationship between working capital management and profitability in a fertilizer company, NFL.

Singh (2008) observed that the level of Inventory had a profound influence on the management of working capital. He stressed on the need to prudently handle the Inventory. Singh and Pandey (2008), in their article *"Impact of Working Capital Management in the Profitability of Hindalco Industries Limited"* observed a significant effect of the management of working capital on the profitability of Hindalco Industries.

2. Material and Methods

This research work investigated the relationship of Corporate Profitability and Working Capital Management in *large* listed companies of Karachi Stock Exchange for a period of six years from 2003 to 2008. The data for this purpose was acquired from an official and legitimate document titled, *"Balance Sheet Analysis of Joint Stock Companies Listed on the Karachi Stock Exchange --- (2003-2008)"*, formally published by the Statistics and DWH Department of the State Bank of Pakistan (SBP). This document contained the Balance Sheet analysis of all the *non-financial firms* listed on the Karachi Stock Exchange as at June 30, 2008. Hence the research was entirely based on the *Secondary data*. Firms of various economic groups and sectors are included in the document including Cotton and Other Textiles, Chemicals, Engineering, Sugar and Allied Industries, Paper & Board, Cement, Fuel & Energy, Transport & Communication, Tobacco, Jute, Vanaspati & Allied Sector and others. It should be mentioned that the *financial corporations* like Banking Companies, Insurance Companies, Leasing Companies and Modarabas etc. are not included in this study due to their distinctively dissimilar nature of business in comparison with the *non-financial* business entities.

There were a total of 436 non-financial companies listed on the Karachi Stock Exchange as at June, 2008 as per the analysis published by the State Bank of Pakistan. Out of these, 343 were categorized as the large companies while the remaining 93 were found to be small or medium-sized companies as per the SBP's *SME Prudential Regulations*.

The Quantitative analysis includes *Multiple Regression analyses* in order develop an understanding of, the relationship of WCM and corporate performance, and that between the Liquidity and Profitability of firms under study.

The Hypothesis

The hypothesis developed for the study was:

H_0: *Working Capital Management has no relevance to Profitability of Large-sized corporations listed at Karachi Stock Exchange.*

H_1: *An efficient management of Working Capital may have a significant relationship with the Profitability of Large-sized corporations listed at Karachi Stock Exchange.*

The Regression Model

Multiple Regression analysis was employed in the study to explore the combined effect of the variables of working capital management on profitability. Since two profitability variables were taken, separate regression analyses were performed for both.

The first Regression Equation for the sample follows:

$$ROA\ o_t = \beta_0 + \beta_1 (RCP\ o_t) + \beta_2 (ICP\ o_t) + \beta_3 (PDP\ o_t) + \beta_4 (CCC\ o_t) + \beta_5 (CR\ o_t) + \beta_6 (LNS\ o_t) + \beta_7 (SG\ o_t) + \beta_8 (FL\ o_t) + \varepsilon$$

The second Regression Equation for the sample is:

$$OPS\ o_t = \beta_0 + \beta_1 (RCP\ o_t) + \beta_2 (ICP\ o_t) + \beta_3 (PDP\ o_t) + \beta_4 (CCC\ o_t) + \beta_5 (CR\ o_t) + \beta_6 (LNS\ o_t) + \beta_7 (SG\ o_t) + \beta_8 (FL\ o_t) + \varepsilon$$

Where:
ROA ot = "Return on Assets" of firm *o* at time *t*; *o* = 1, 2, 3, …, 103 large firms listed in Karachi Stock Exchange
OPS ot = "Operating Profit to Sales" of firm *o* at time *t*; *o* = 1, 2, 3, …, 103 large firms listed in Karachi Stock Exchange
β0 = The intercept of equation
t = Time = 1,2,3, …, Years
RCP = Receivable Collection Period
ICP = Inventory Conversion Period
PDP = Payable Deferral Period
CCC = Cash Conversion Cycle
CR = Current Ratio
LNS = Natural Logarithm of Sales
SG = Sales Growth
FL = Financial Leverage
ε = The Error Term

3. Results

Summary Statistics

This section gives the descriptive details of the pooled data of all firms included in the sample. Table 1 gives the mean values and the standard deviation for each variable in the study. Aside from that, the table also includes the minimum and maximum values for each variable in order to reveal the extreme values achieved by all variables during the years of study.

Table 1: The Descriptive Statistics
103 Large Non-financial Firms Listed in KSE: (2003-2008) 618 Firm-year Observations

VAR	Obs	Mean	Min.	Max.	St. Dev.
ROA	618	0.108	-0.295	0.636	0.119
OPS	618	0.128	-0.308	4.225	0.217
ICP	618	69.34	0.00	457.69	58.93
RCP	618	29.68	0.00	293.10	30.27
PDP	618	197.96	19.25	2578.8	163.50
CCC	618	-98.94	2439.1	116.88	157.89
CR	618	1.465	0.177	8.432	0.982
FL	618	0.591	0.082	1.646	0.194
LNS	618	22.790	18.394	27.092	1.127
SG	618	0.242	-0.527	11.187	0.658

Source: Calculations based on the Balance Sheet Analysis of firms from 2003 to 2008

The Regression Analysis 'A'

In the Regression analysis A, the indicators of working capital management and liquidity are regressed against the 'Return on Assets'. A total of five regressions are made to investigate the determinants of ROA for all 618 firm-year observations. The results of the Regression analysis 'A' are shown in Table 3 and described in the next lines:

The Regression 1 is run to explore the relationship between the Return on Assets and the Inventory Conversion Period. The Regression shows an insignificant negative association of -0.051 between the two variables.

In Regression 2, the Inventory Conversion Period is replaced by the Receivable Collection Period. This Regression demonstrates a highly significant negative relationship of -0.226 (at ά = 0.000) between the RCP and the ROA.

The third Regression is run using the Payable Deferral Period as a replacement for the Receivable Collection Period. This Regression shows an insignificant negative association of -0.021 between the PDP and the ROA.

In the fourth Regression, the Payable Deferral Period is replaced by the Cash Conversion Cycle. This Regression shows an insignificant negative association of -0.042 between the CCC and the ROA.

In Regression 5, all the indicators of working capital management are excluded in order to separately measure the impact of Current Ratio (liquidity) on the Return on Assets. This Regression shows a significant positive association of 0.127 (at ά = 0.011) between the CR and the ROA.

Table 2: Linear Regressions for Sample Firms with 'Return on Assets' as a Dependent Variable

The Regression Analysis A					
Dependent Variable: Return on Assets					
103 Large-sized Non-Financial Firms listed in KSE (2003 to 2008), 618 Firm-year Observations					
VAR.	Reg. 1	Reg. 2	Reg. 3	Reg. 4	Reg. 5
Cons.	-0.072 *(0.457)*	-0.063 *(0.476)*	-0.105 *(0.262)*	-0.125 *(0.173)*	-0.117 *(0.202)*
CR	0.136 *(0.007)*	0.128 *(0.008)*	0.126 *(0.012)*	0.131 *(0.009)*	0.127 *(0.011)*
FL	-0.333 *(0.000)*	-0.308 *(0.000)*	-0.340 *(0.000)*	-0.355 *(0.000)*	-0.347 *(0.000)*
LNS	0.118 *(0.002)*	0.119 *(0.001)*	0.131 *(0.000)*	0.139 *(0.000)*	0.136 *(0.000)*
SG	0.014 *(0.698)*	-0.004 *(0.911)*	0.015 *(0.687)*	0.016 *(0.648)*	0.016 *(0.666)*
ICP	-0.051 *(0.190)*	- -	- -	- -	- -
RCP	- -	-0.226 *(0.000)*	- -	- -	- -
PDP	- -	- -	-0.021 *(0.593)*	- -	- -
CCC	- -	- -	- -	-0.042 *(0.255)*	- -
Ad R^2	0.207	0.254	0.205	0.206	0.206
F Stat	33.178	43.044	32.815	33.071	40.994

The Regression Analysis 'B'

In the Regression analysis B, the indicators of working capital management and liquidity are regressed against the 'Operating Profit to Sales'. A total of five regressions are made (from Regression 6 to 10) to investigate the determinants of OPS for all 618 firm-year observations. Results of the Regression analysis 'B' are shown in Table 4 and described subsequently:

The Regression 6 is run to investigate the relationship between the Operating Profit to Sales and the Inventory Conversion Period. The Regression shows a highly significant negative association of -0.098 with a significance level of (0.020).

In Regression 7, the Inventory Conversion Period is replaced by the Receivable Collection Period. This Regression also demonstrates a highly significant negative relationship of -0.112 (at ά = 0.004) between the RCP and the OPS.

Table 3: Linear Regressions for Sample Firms with 'Operating Profit to Sales' as a Dependent Variable

The Regression Analysis B					
Dependent Variable: Operating Profit to Sales					
103 Large-sized Non-Financial Firms listed in KSE (2003 to 2008), 618 Firm-year Observations					
VAR.	Reg. 6	Reg. 7	Reg. 8	Reg. 9	Reg 10
Cons.	0.800 *(0.000)*	0.695 *(0.000)*	-0.016 *(0.910)*	0.398 *(0.002)*	0.647 *(0.000)*
CR	0.339 *(0.000)*	0.323 *(0.000)*	0.342 *(0.000)*	0.389 *(0.000)*	0.322 *(0.000)*
FL	0.167 *(0.002)*	0.161 *(0.003)*	-0.064 *(0.130)*	0.013 *(0.729)*	0.142 *(0.008)*
LNS	-0.197 *(0.000)*	-0.171 *(0.000)*	-0.023 *(0.438)*	-0.114 *(0.000)*	-0.163 *(0.000)*
SG	-0.010 *(0.788)*	-0.017 *(0.658)*	0.024 *(0.415)*	0.007 *(0.799)*	-0.007 *(0.848)*
ICP	-0.098 *(0.020)*	- -	- -	- -	- -
RCP	- -	-0.112 *(0.004)*	- -	- -	- -
PDP	- -	- -	0.669 *(0.000)*	- -	- -
CCC	- -	- -	- -	-0.692 *(0.000)*	- -
Ad R^2	0.092	0.096	0.469	0.532	0.086
F Stat	13.566	14.176	110.144	141.454	15.481

The eighth Regression is run using the Payable Deferral Period as a replacement for the Receivable Collection Period. The Regression shows a very large coefficient of association between the PDP and the OPS with full significance --- 0.669 at ά = (0.000).

In the ninth Regression, the Payable Deferral Period is replaced by the Cash Conversion Cycle. This Regression also shows a highly significant and a huge negative association of -0.692 (at ά = 0.000) between the CCC and the OPS for Sample 2.

In Regression 10, all the indicators of working capital management are excluded in order to separately measure the impact of Current Ratio (liquidity) on the Operating Profit to Sales ratio. This Regression too shows a highly significant positive association of 0.322 (at ά = 0.000) between the CR and the OPS.

4. Discussions

Based on the Regression analysis of pooled data of the sample firms, following deductions are drawn:

Studying the results of the Regression Analysis 'A', one of the WCM indicators, i.e. the Receivable Collection Period, was found to be negatively related with the Return on Assets with a very high degree of significance. Nonetheless, no significant associations were detected between the other indicators of Working Capital Management and the Return on Assets.

In the Regression Analysis 'B', however, the pooled data displayed highly significant relationships of OPS with all the indicators of working capital management including the 'Inventory Conversion Period', 'Receivable Collection Period', 'Payable Deferral Period' and 'Cash Conversion Cycle'. This is a clear indication of the fact that the efficiency of managing working capital has a very positive effect on the profitability of large-sized firms.

Hence, based on the deductions made above, we reject our Null Hypothesis H_0 that stated, "*Working Capital Management has no relevance to the Profitability of Large Joint Stock Companies listed at Karachi Stock Exchange*", and accept the Alternate Hypothesis, H_1.

Similar to the majority of research works, this study also carries some inadequacies. Hence, following are policy recommendations for future researchers which, if properly incorporated, will help in further strengthening the reliability of the results of the study:

The study is exclusively reliant on the Secondary source of data that includes *"Balance Sheet Analysis of Joint Stock Companies listed in Karachi Stock Exchange"*, a yearly document published by the State Bank of Pakistan. The accuracy of the results of the study is, therefore, dependent upon the reliability and correctness of the

financial information of firms given in the source of data mentioned above. An effort should be made to gather the annual financial reports of all the sampled firms in order to have a rather more reliable data on hand for analysis.

The study merely covers a period of six years for data analyses ranging from the year 2003 to 2008. The reason for choosing a shorter period for data analyses was that most of the firms listed at Karachi Stock Exchange had financial information available for that period only. A study incorporating a larger span of time, i.e., the one analyzing financial data for added number of years, could, thus, come up with somewhat different, and possibly more accurate, findings.

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