The Impact of Capital Expenditure on Working Capital Management of Listed Firms (Karachi Stock Exchange) in Pakistan

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Abstract
The present study was conducted to examine the impact of capital expenditure on working capital management. For the study, 109 firms have been selected from eight different sectors, listed on Pakistan Karachi stock market. Data for the study is retrieved from the balance sheets, income statements and cash flow statements of these firms from 2006 to 2010. The website of State Bank of Pakistan was used for this purpose. The Shulman and Cox’s (1985) working capital requirements and the net liquidity balance methodology as proxy of working capital measurement is used for analysis. The results conclude that a positive and highly significant relationship exists between the working capital requirements and capital expenditure. On the other hand, the net liquidity balance and capital expenditure has significant but negative relationship. Overall the results suggest that the working capital management affect the liquidity and profitability of firms and it is also responsible for the success and failure of firms.

Introduction
The three main decisions of corporate finance are capital structure, capital budgeting and working capital management decisions. The working capital management has relations with the profitability and liquidity of management. Therefore one of the important components of corporate finance is working capital management. The working capital of any firm is related with the current assets and current liabilities. The working capital management of firms is important for the managers, as for the manufacturing firms, the current assets is somewhat more than proportion in total assets then distribution firms. If the level of this working capital becomes low in the firms’ total assets they will face the inconveniences of firms’ daily operations. For the purpose of smooth operation of firms, by efficient working capital management, these firms need the planning and controlling of the current assets and liabilities to avoid the problem of paying current liabilities and on the other hand control the unnecessary investment in the working capital.

As working capital concern with the amount and composition of current assets as well as with the financing decision of the current assets. The decision about working capital components takes more time because it is frequent and in the repetitive form. Now-a-days companies use the new style of firm growth stimulation procedures for better financial performances and in the modern competitive environment reduces the risk. The working capital of firm act like the reserve for firm and use for future growth, most of firms’ keep their working capital in marketable securities especially in stocks and receivables and it is also an empirical evidence that most of firms’ when manage their working capital have earn the maximum profit. The good management of such working capital management leads to the solvency of firms’ and also the survival of firms in short time period. The efficient management creates the competitive advantages for firms’ as firm response at appropriate time to unobservable situations of market in the form of interest rate and prices of raw materials etc. most of firms’ in this competitive area also ignore the management of working capital but its efficient management vary from business to business, industry to industry, etc and still it is a very important phenomenon to manage the working capital efficiently.

Working capital management means the administration of current assets namely cash, marketable securities, receivables and inventories. It acts as a regulator for the current assets and current liabilities for companies, short term liabilities are to be paying and also manage the fixed assets. All the components of working capital require to be managing in the efficient way and ensure the capital adequacy of the companies. The amount of working capital which is adequate and desirable cannot be determined easily. As the components of working capital are cash, debtors, receivables, inventories, marketable securities and redeemable futures, all these basic components adequacy and necessity depend on the nature of business and on the type of industry. The adequacy of working capital requirement for business and industry depend on the operating cash flow, size and growth of firms. The management of firms when not understand the adequacy and determinants of working capital leads firms to trouble of bankruptcy.

As every research work has its own background and gap for which further work of research perform. In this sense this research work is performed to examine how the capital expenditure effect the working capital management of listed firms on Karachi stock exchange.
Review of Literature

Capital Expenditure

Appuhami in (2008) examined the impact of firms’ capital structure on the working capital management of listed firms at Thailand stock market. The study found that the firms’ capital expenditure has significant impact on the working capital management; the control variable as operating cash flow used has significant relationship with working capital management. The findings support the previous research and enhance the relevant body of knowledge in this area of research.

In another study Appuhami in (2009) investigated the relationship between the corporate investment and working capital management. From the results the researcher concluded that the net liquidity balance has positive relationship with corporate investment and on the other hand has negative relationship with working capital requirement, the results of both situations are significant. The results findings also concluded that during the situations of growth and opportunities these firms of Thailand in an efficient way manage the working capital requirements and that leads to high net liquidity balance of firms in high growth time.

Valipour, Javad and Kobrain (2012) investigate the impact of capital expenditure on working capital management of listed firms in Tehran stock exchange. For this purpose they used the net liquidity balance and working capital requirement as proxies of working capital management. This study was conducted in two phases, in first phase examined the impact of expenditure on net liquidity balance and then considered the expenditure on the working capital requirement. The study found the positive impact of capital expenditure on working capital requirement in companies with high and low growth opportunity.

Raheman et al in (2012) examined the impact of capital expenditure on working capital management, the net liquidity balance and working capital requirement are used in form of proxies for the measurement of working capital management. Time period of 2004 to 2010 was selected for the study and include only cement, sugar and energy sectors for examinations. The study concludes the negative but significant relationship of the net liquidity balance and working capital requirement with capital expenditure. The reason of negative relationship is that the firms cannot increase the most liquid assets when make capital expenditures. These firms also have not many internally generated funds for fixed investment process and do not manage the non-financial components efficiently to increase the cash balance.

Working Capital Management

Smith examined in (1973) that the chief financial officers of firms usually give more time and focus on the daily working capital management process, but still most of the firms do not properly manage the current assets and liabilities and it leads to the failure of good working capital management. Smith identifies total eight different theoretical approaches for the management of working capital. He stressed on the model development with dual nature as of profitability and liquidity, and insisted on this type of model to help managers of finance to smoothly operate daily operations and make good decisions.

Largay and Stickney in (1980) found in the study of bankruptcy of W.T Grant (is a national departmental store), that the store had deficit cash flows during its operations in eight years out of ten years of its overall life.

Opler et al. (1999) investigate the determinants as well as their implication for marketable securities and holding cash of public companies in United State. It has found that those firms which have the opportunities of growth and high risk in cash flow hold more proportion of current assets in total assets, those companies when increase in cash holding than ready for the payment of more cash for the acquisition of assets.

Maness and Zietlow in (2004) presented two models for the purposes of value creations in order to help the short term financial management process in an effective way. But the models are not unique and important because these models are of generic natures. And there are few studies which provide the information about the working capital management models.

Chiou and Jeng-Ren in (2006) conducted the study on the determinants of working capital management; they used the variables of working capital requirement and liquid balance. From the results it has found that the debt ratios and companies operating cash flows have impact on working capital management.

Nazir and Afza (2009a) examined the determinants of working capital requirements of total 132 of 14 different industries belong to non-financial sectors in Pakistan from 2004 to 2007. The results found that the factors such as operating cycle, leverage, and return on assets effect the working capital requirements.

Nazir and Afza in (2009b) used the total sample of 204 firms from 17 non-financial sectors listed at Karachi stock market in Pakistan. In this study they focus on relation of profitability and working capital management. Results shown the firms with aggressive working capital have negative form of returns.

Research Methodology

For the methodology and analysis in this research work, the Shulman and Cox (1985) model is used. This model divides the net working capital into two components, one is working capital requirement and other is net
liquidity balance. They mentioned that this is the complete approach for working capital. In the model they indicate the absolute dollar and the net liquid balance, which focus on liquid financial assets and obligations. The other indicators of liquidity also exist but these indications cannot reveal the solvency status and bankruptcy situations of firms.

As the methodology of each research is specific with the research type and nature, this research is concerned with working capital management in Pakistan (Karachi Stock exchange) which is the important component of financial management. This section discussed about the analytical framework of firms selected for study, data collection, model, and the variables to find the relationship between the capital expenditure and working capital management.

3.1 Hypothesis of the study:
H0: There is no relation of capital expenditure with working capital management.
Ha: There is positive relation of capital expenditure with working capital management.
Hb: There is negative relation of capital expenditure with working capital management.

3.2 Data Collection
Data is financial in nature, collected from the financial statement as statement of financial position, profit and loss and statement of cash flow of the listed companies in Karachi stock exchange from the time period 2006 to 2010. The source of data is balance sheet analysis of non-financial firms from the state bank of Pakistan (central bank of country) website.

3.3 Sample Selection
Sample is selected on the basis of purposive sample. Data of non financial sectors is considered which play key role in market performances. It include total of 109 listed companies from the eight different sectors of Karachi stock exchange, different sectors are textile, sugar, fuel and energy, information, communication and transportation, cement, mineral products, coke & refined petroleum products and Motor Vehicles, Trailers & Auto parts. In this study sample cannot include the financial sector firms’ due to the different nature of these companies from other.

3.4 Variables of the Study
3.4.1 Dependent variable
The working capital management is a dependent variable, measure in the form of working capital requirement and net liquidity balance. A good and well design working capital management is a value additive factor and it leads to establish value for firms.

3.4.2 Independent variable
The study examined the capital expenditure in the form of independent variable, in this situation the capital expenditure means expenditure on acquisition and upgrade the physical assets, as in the form of building, machinery and equipment, land and vehicles. The capital expenditure is included in the assets account and it also applies the depreciation in all of its useful life and it charge against the profit of firm. The capital expenditure incurred at the time when the firms buy the new and fixed assets, and sometime add value to existing assets by increasing the economic values to these assets. For this variable managers are very careful because these decisions are very expensive and cannot be reverse.

The components of the capital expenditure are carriage inwards, value of assets, legal and insurance cost and all other cost that incurring in the preparation of fixed assets for working condition.

3.4.3 Control variables
The operating and financial expenditure are different from the capital expenditure. Other variables which have impact on working capital management were also considered on the basis of past literature review related to this topic, these variables are used as control variables. The operating cash flow, growth of firms’ as measure by the sales and leverage has impact on working capital management. The relations of all these variables with working capital management vary depending upon the particular company and business strategies, as well on economic and financial environment.

3.5 Statistical Model of the Study
The traditional approaches of working capital management use the current and quick ratios and net working capital. In the views of modern researchers, these approaches do not measure the correct liquidity position of firms’ therefore they now use the working capital requirement and net liquidity balance for correct measurement; working capital requirement is measure for the evaluation of working capital and the net liquidity balance measure the firm ability of acquiring and allocation of capital. Researchers like Shulman and Cox (1985), Hawawini, Viallet and Vora (1986) used these techniques for their research to determine the impact of capital expenditure on the working capital management.
The Following Model Forms are Applied in This Study Based on Past Reviews.

\[ \text{NLB}_{ait} = \beta_{\text{CAPEXP}} Xa + \beta_{\text{FINEXP}} Xa + \beta_{\text{OPEXP}} Xa + \beta_{M/B} + \beta_{SG} + \beta_{D/E} + \beta_{\text{OCF}} + \varepsilon \]

\[ \text{WCR}_{ait} = \beta_{\text{CAPEXP}} Xa + \beta_{\text{FINEXP}} Xa + \beta_{\text{OPEXP}} Xa + \beta_{M/B} + \beta_{SG} + \beta_{D/E} + \beta_{\text{OCF}} + \varepsilon \]

CAPEXP = is the capital expenditure  
FINEXP = is financial expenditure  
OPEXP = is the operating expenditure  
M/B = is the market to book value  
SG = sales growth  
OCF = is the operating cash flow  

4. Results and Discussion

In this research work the researchers investigate the impact of capital expenditure on working capital management; use the regression analysis and sample of 109 firms used from eight different sectors (listed at Karachi stock exchange Pakistan) along with dependent and independent variables also include the control variables which also effect the working capital management of firms. NLB and WCR are used as the proxies for measurement of working capital management. Model of pooled least square used without weights,

\[ \text{WCR}_{ait} = \beta_{\text{CAPEXP}} Xa + \beta_{\text{FINEXP}} Xa + \beta_{\text{OPEXP}} Xa + \beta_{M/B} + \beta_{SG} + \beta_{D/E} + \beta_{\text{OCF}} + \varepsilon \]

Table 4.1 working capital requirements

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>T</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>-1.340E6</td>
<td>453140.841</td>
<td>-2.957</td>
</tr>
<tr>
<td></td>
<td>OE</td>
<td>-1.452</td>
<td>.075</td>
<td>-.704</td>
</tr>
<tr>
<td></td>
<td>MB</td>
<td>-7463.343</td>
<td>27805.031</td>
<td>-.007</td>
</tr>
<tr>
<td></td>
<td>DA</td>
<td>105074.174</td>
<td>500199.865</td>
<td>.005</td>
</tr>
<tr>
<td></td>
<td>SG</td>
<td>.022</td>
<td>.021</td>
<td>.028</td>
</tr>
<tr>
<td></td>
<td>FE</td>
<td>-1.370</td>
<td>.301</td>
<td>-.160</td>
</tr>
<tr>
<td></td>
<td>OCF</td>
<td>.468</td>
<td>.039</td>
<td>.382</td>
</tr>
<tr>
<td></td>
<td>KE</td>
<td>.338</td>
<td>.071</td>
<td>.133</td>
</tr>
</tbody>
</table>

a. Dependent Variable: WCR

The above equation show the relationship of WCR with the capital expenditure and other control variables, the above results of these relations provide the detail information. The t-values of the capital expenditure has 4.739, it means there is significant relationship of WCR with the capital expenditures of listed firms in Pakistani stock market. The p-values is (.000) which show the highly significant relationship, and the co-efficient of capital expenditure is .338 which is positive and it support the Ha hypothesis as there is positive relation between WCR and capital expenditure.

The t values of operating cash flow, financial expenditure and operating expenditure are also significant and the operating cash flow is positively significant and other two are negatively significant. The market to book value, debt to assets and sales growth are insignificant and market to book value is negative and other two are positive. The coefficients of operating expenditure, market to book value and financial expenditure are negative, while the coefficients of operating cash flow and sales growth are positive. Positive sign of coefficients means that these variables increase after making changes in WCR and the negative sign indicate the decrease in these variables after changes made in WRC.

Table 4.2 ANOVA

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>3.843E16</td>
<td>7</td>
<td>5.491E15</td>
<td>166.409</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>1.772E16</td>
<td>537</td>
<td>3.299E13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>5.615E16</td>
<td>544</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), KE, MB, OE, DA, SG, OCF, FE  
b. Dependent Variable: WCR
The f-values of this model are very high and p-value is .000. It means that the WCR is highly significant.

### Table 4.3 Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>.827</td>
<td>.684</td>
<td>.680</td>
<td>5.744E6</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), KE, MB, OE, DA, SG, OCF, FE

The table of 4.3 present the model summary and it mention the R square is 68.4%, it means that this percent WCR are explained by the independent variables.

\[
NLB_{alt} = \beta_{CAPEXP}X_{a} + \beta_{FINEXP}X_{a} + \beta_{OPEXP}X_{a} + \beta_{M/B}a + \beta_{SG}a + \beta_{D/E}a + \beta_{OCF} + \epsilon
\]

### Table 4.4 Net Liquidity Balance

#### Coefficients\(^a\)

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>T</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>(Constant)</td>
<td>888549.714</td>
<td>599387.434</td>
<td>1.482</td>
</tr>
<tr>
<td></td>
<td>OE</td>
<td>-.734</td>
<td>.100</td>
<td>-.197</td>
</tr>
<tr>
<td></td>
<td>FE</td>
<td>-6.263</td>
<td>.420</td>
<td>-.404</td>
</tr>
<tr>
<td></td>
<td>MB</td>
<td>127683.314</td>
<td>36820.604</td>
<td>.062</td>
</tr>
<tr>
<td></td>
<td>DA</td>
<td>-1.278E6</td>
<td>661971.135</td>
<td>-.035</td>
</tr>
<tr>
<td></td>
<td>SG</td>
<td>-.278</td>
<td>.029</td>
<td>-.194</td>
</tr>
<tr>
<td></td>
<td>OCF</td>
<td>.323</td>
<td>.047</td>
<td>.146</td>
</tr>
<tr>
<td></td>
<td>KE</td>
<td>-.825</td>
<td>.057</td>
<td>-.358</td>
</tr>
</tbody>
</table>

a. Dependent Variable: NLB

The above table mention the results of net liquidity balance with independent and control variables, the t-values of capital expenditure is very high but negative sign it means the relation are high and negatively significant, the p-value is .000 which also show the significant relation. The coefficients is negative it means the capital expenditure is decrease with changes in working capital management. These findings support the hypothesis of Hb that there is negative relationship between capital expenditure and working capital management. The relation of operating expenditure, financial expenditure, market to book value, sales growth and operating cash flows are significant, while the only debt to assets are insignificant. All these relations are also prove from the p-values, operating cash flow confident sign is positive it means the firms cannot manage the operating cash flow efficiently, market to book value became high while all variables coefficients are negative and show the declining stage with change in working capital requirements. The results are significant in both cases which are matching with the Appuhami in (2008) and the negative significant results of net liquidity balance are matching with Appuhami in (2009) and Raheman et al in (2012).

### Table 4.5 ANOVA

#### ANOVA\(^b\)

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Regression</td>
<td>1.526E17</td>
<td>7</td>
<td>2.180E16</td>
<td>375.963</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>3.114E16</td>
<td>537</td>
<td>5.799E13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>1.837E17</td>
<td>544</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), KE, DA, MB, OCF, SG, OE, FE

b. Dependent Variable: NLB

This model also provides support for the model that the f-value is high and the p-values are also highly significant. The overall ANOVA provide the information that the NLB is highly significant in this case of analysis.
Table 4.6 Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.911*</td>
<td>.831</td>
<td>.828</td>
<td>7.61496E6</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), KE, DA, MB, OCF, SG, OE, FE

In case of mode summary the R square value is .831, it explain that the NLB is 83.1% explain by the independent variables of this model.

Conclusion and recommendations

In this research work examined the impact of capital expenditure on working capital management of 109 listed firms at Karachi stock exchange, used secondary data from 2006 to 2010. Working capital management is measured by WCR and NLB, used as proxies. After the proper analysis the results concluded that the WCR has positive and highly significant relationship with capital expenditure and the sign of coefficient is also positive. In second case the NLB has also highly significant but negative. This support the past research work related with this area of interest.

On the basis of the conclusion mention above it is recommended for firms’ managers to take calculated decision for capital expenditure and working capital management because these variables have close relationship to each other.

Future research plan is recommended for other researchers to include other sectors of Karachi stock exchange for this type of study and investigate the relationship.

REFERENCES


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