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Impact of Working Capital Management on Corporate Investments: Evidence from Sri Lankan Manufacturing Sector

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Abstract
The study examines the value effect of working capital management (WCM) for a sample of 28 Sri Lankan manufacturing firms from 2010 to 2015. Previous studies on Sri Lankan manufacturing firms have primarily focused only on net working capital and firm profitability whereas the current research attempts to extend it by providing evidence that corporate investment is a possible method through which efficient management of working capital can be translated into better firm performance. For this purpose, panel data methodology is used to measure the relationship between corporate investment and net working capital. The findings indicate that operating performance of a firm can be improved by utilizing the net working capital through channeling it on corporate investment.
Keywords: Working capital management, Investment, Performance

1. Introduction

Working capital management is a very important component of corporate finance as it has an impact on profitability and liquidity of a firm. Efficient working capital management involves planning and controlling current assets and current liabilities in a way that eliminates the risk of the inability to meet short term obligations of the firm and prevent over investment on current assets (Eljelly, 2004). According to Appuhami (2008), a typical manufacturing firm holds more than half of its total assets in the form of current assets.

Manufacturing sector makes a significant contribution to the economic development of Sri Lanka (15.7% to the Gross Domestic Product as of 2015). According to Perera and Wickremasinghe (2010), manufacturing companies are still in the developing stage and the need to effectively manage the internal funds is imperative for sustaining and expanding the operations. As of 2015, total investment in working capital (i.e., inventories plus receivables) for the sample 28 companies in the Sri Lankan manufacturing sector amounted to Rs. 70.5 billion (37% of total assets) and net working capital (NWC) (i.e., inventories plus receivables minus payables) amounted to Rs. 48.5 billion (25% of total assets). This shows that a substantial amount of firms' assets are in the form of working capital. Research argue that substantial investment in working capital is not necessary.

Ek and Guerin (2011) stress that there are plenty of opportunities to improve the efficiency of WCM in most companies. Bates et al. (2009) in their study substitute NWC to cash. Working capital can be utilized as a source of funds to smooth fixed investment (Fazzari and Petersen, 1993), similarly working capital can also be used to improve firm performance by channeling working capital to increase corporate investment. (Aktas et al., 2015).

The main objective of the current research is to analyze the existence of the relationship between corporate investment and NWC in the Sri Lankan manufacturing companies. Prior studies based on the Sri Lankan context have shed light on the impact of WCM on firm performance (see eg: Niresh, 2012; Jayarathne, 2014; Jahfer, 2015), however there seems to be lack of evidence on the impact of WCM on corporate investment. Since there is a significant amount of net working capital as a percentage of total assets in the sample companies, this study attempts to analyze the relationship between net working capital and corporate investment. Further, the study also provides evidence that increasing investment should also lead to increasing firm performance.

Perera and Wickremasinghe (2010) using a survey studied the working capital management practices of manufacturing firms in Sri Lanka. Information was gathered from chief financial officers of thirty listed and ten unlisted firms. The findings concluded that sales growth has a significant impact on working capital policy and firm's profitability influences the working capital financing decisions. Most importantly, the survey shed light on the importance of working capital changes to the management when making decisions on long term investments. Forty percent of the companies frequently consider working capital, high sales growth companies always consider working capital and more than fifty percent of the sample companies always include working capital components in long term investment decisions. This further proves the importance of exploring the impact on corporate investments of working capital management.

The remainder of this article is organized as follows: Section 2 provides the literature review. Section 3 describes the sample used in the empirical analysis and Section 4 presents the empirical evidence on the relationship between WCM and corporate investment and firm performance and WCM. Section 5 concludes the study.

2. Literature Review

Prior studies on theoretical arguments on working capital management fall onto two views; on the one hand, higher working capital levels allow firms to increase sales and earnings. Large inventory levels help reduce supply cost and minimize potential stock-outs (Corsten and Gruen, 2004). On the other hand, over investment in working capital requires additional financing and increase the probability of a firm going into bankruptcy (Kieschnick et al., 2011). Moreover, Ek and Guerin (2011) states that too much cash tied up in working capital also obstruct firms from implementing value enhancing investment projects in the short run. Banos-Caballero et al. (2014) proved that there is an inverted U-shaped relation between working capital and firm performance. That is, investment in working capital and corporate performance relate positively at low levels of working capital and negatively at higher levels.

Empirical literature on working capital management has focused primarily on its effects on firm profitability. Shin and Soenen (1998) examined the relationship between cash conversion cycle and firm profitability for a large sample of listed American firms. Deloof (2003) investigated same relationship for a sample of Belgian non-financial firms. The findings of both studies provide evidence that the profitability of a firm is improved as the firm improves the management of its working capital. Garcia-Teruel and Martinez-Solano (2007) tested the effect of WCM on profitability of Spanish SMEs. In a recent study done by Afrifa (2016) on UK SMEs shows that there is a convex relationship between NWC and firm performance when cash flow is taken into consideration.

A plethora of research has been conducted in relation to working capital management and profitability in the context of emerging markets. Based on a sample of Malaysian listed firms, Mohamad and Saad (2010) provide evidence on negative relationship between cash conversion cycle and profitability. Makori and Jagongo (2013) found similar findings based on a sample of manufacturing and construction companies in Kenya. However, Sharma and Kumar (2011) using a large sample of Indian non-financial firms proved that inventory number of days and accounts payable days are negatively associated with profitability while accounts receivable and cash conversion cycle period are positively associated with firm profitability. Recent study based on a frontier market by Kumaraswamy (2016) on cement manufacturing Gulf Cooperation Council (GCC) companies proves that profitability increase with increase in average payment period, inventory conversion period and decrease in average collection period.

Studies conducted on the Sri Lankan firms are also consistent with the international research. Jayarathne (2014) based on listed manufacturing firms in the Colombo Stock Exchange, proves that profitability is negatively associated with the account receivable period, inventory turnover period and cash conversion cycle while profitability is positively associated with account payable period. Jahfer (2015) provides evidence on the same industry using more control variables to analyze the impact of working capital management of firm's profitability.

Firms in fast growing industries are continuously faced with new investment opportunities. If these opportunities are not undertaken as they arise, firms may loose out on first mover advantage and ultimately result in lower firm value. Firms often seek to maintain a smooth fixed investment path and finance constraints prevent them achieving that objective as it is relatively costly to depend on external finance. Therefore, Fazzari and Petersen (1993) argues working capital is a reversible store of liquidity that can be utilized to smooth fixed investment in a firm. Even for financially constraint firms with negative cash flow shocks on fixed investment can offset it by adjusting working capital. The authors studied the impact of working capital on fixed investment using plant and equipment investment scaled by firm's capital at the beginning of the period, as a measure of fixed investment. The findings show a negative relationship between working capital and fixed investment.

Aktas et al. (2015) provide evidence on the relationship between WCM and firm performances by documenting the existence of an optimal level of working capital improve operating performance over the subsequent period. They also uncover that decrease in excess NWC leads to corporate investment. The argument behind this is that firms with unnecessary working capital, the improvement in WCM increases firm's financial flexibility. This is apparent in the short run by releasing cash tied up in working capital, and also in the long run by reducing the need to take finances to fund day today operating activities. Furthermore, Denis and Sibilkov (2010) argue that financially flexible firms have a greater ability to take investment opportunities. Therefore, Aktas et al. (2015) proves that decrease in excess NWC by managing unnecessary cash tied up in working capital can lead to increase in corporate investment.

The current research provides comparable evidence on the listed manufacturing firms in Sri Lanka and extends the studies conducted on Sri Lankan context by emphasizing the relationship between corporate investment and working capital management. According to Aktas et al. (2015) decrease in working capital from one period to the next translates into higher firm performance. If a firm cuts working capital to redeploy underutilized resources to higher-valued uses, working capital reductions should be associated with increase in firm performance. Therefore the paper also shed light on the fact that increasing investment is a possible channel through which improvement in working capital should affect firm performance.

3. Data and Methodology

3.1: Specification of the model and methodology

According to the previous section there are reasons which justify the relation between net working capital and corporate investment. Given the panel structure of the dataset, this study employs fixed effect model (as the one adopted by Aktas et al., 2015) to measure this relationship.

The dependent variable of interest, CORP is corporate investment. Following Bates et al. (2009) and Aktas et al. (2015), the study uses capital expenditures and cash outflows on acquisitions as proxies for corporate investment. In this study corporate investment is regressed against net working capital. Additional variables are also present in the model to control for other potential influences on the corporate investment in the firm. Specifically, the variables are cash and cash equivalents (CASH), sales growth (GROWTH) and leverage (LEV).

Following Hill et al. (2010), Aktas et al. (2015) and Afrifa (2015) NWC is net working capital (trade receivables plus inventories minus trade payables) divided by sales. NWC is lagged by one period as the focus is to measure the impact of net working capital in the previous year on the current year investments.

CASH is cash and cash equivalents at the end of the period scaled by total assets at the beginning of the period, lagged by one period. Bates et al. (2009) suggested that working capital can be a substitute to cash reserves in a firm. Lang et al. (1996) proves that cash flow has a positive effect on growth, specifically on capital expenditure, therefore this study uses cash reserves as a control variable.

Following Garcia-Tereul and Martinez-Solano (2007), Hill et al (2010), Aktas et al. (2015) and Afrifa (2015) control variables GROWTH and LEV are included in the study. GROWTH is sales growth, it is the percentage change in sales revenue over the previous year. According to Hill et al. (2010) the relationship between sales growth and net working capital is complicated by possible endogeneity problems. For instance, increase in trade credit period for debtors coupled with increase in inventory levels in the company can lead to increase in sales. Lang et al. (1995) argues that due to this multiplier effect there is a positive relationship between sales growth and corporate investment. LEV is the ratio of short term and long term debt to the value of total assets at the beginning of the period.

η_i is the unobservable heterogeneity or the firm's unobservable individual effects, which can be used to control for the particular characteristics of each firm.

Therefore, the following model is estimated:

$$CORP_{i,t} = \alpha_t + \eta_i + \beta_1 NWC_{i,t-1} + \beta_2 CASH_{i,t-1} + \beta_3 GROWTH_{i,t} + \beta_4 LEV_{i,t} + \varepsilon_{i,t} \quad (1)$$

The subscript i denotes the nth firm and the subscript t denotes the nth year. ε is the error term. The variables CORP, CASH and LEV are divided by assets to control for the effect of the size of the firm.

3.2: Data and summary statistics

The sample for this study is drawn from companies listed under manufacturing sector in the Colombo Stock Exchange. As of August, 2016 there are 37 companies listed under this sector, however the study takes into account 28 companies due to the availability of data over the period from 2010 to 2015. To be included in the sample, firms should neither have been delisted at the stock exchange nor merged with any other firms during the study period from 2010 to 2015. The data is collected from the annual reports of the sample companies.

Table 1: Summary statistics

Variable	Mean	Median	Std. Dev.
CORP	0.0655	0.0367	0.0948
NWC	0.2779	0.2655	0.1594
CASH	-0.0026	-0.0071	0.1269
GROWTH	0.1790	0.1177	0.4142
LEV	0.2780	0.2758	0.1975

Table 1 shows the summary statistics of the variables used in the study. Corporate investment as ratio of total assets, on average is 6.5%, mean net working capital as a ratio of sales is around 28%, cash and cash equivalents as a ratio of total assets is negative 0.26%. The sample firms have seen their sales grow by almost 18% annually on average and approximately 28% of their total assets are taken up by short term and long term debt.

PP Fisher Individual root test was conducted to test for the stationarity in the individual variables. The results indicated that all variables are stationary, I(0) therefore use of normal regression to run the model can be validated.

4. Empirical evidence

4.1Effect of net working capital on corporate investment

The results obtained from Equation (1) appear in Table 2. Consistent with the model, decrease in previous period

net working capital leads to increase in corporate investment in the subsequent period. NWC is statistically significant at 5% level. Concerning the control variables, the coefficient estimates of cash reserves and sales growth are statistically significant at 1% level and leverage is significant at 5% level. Cash reserves are positively correlated with corporate investment, increase in cash and cash equivalents in the previous year leads to increase in capital expenditure. Sales growth and leverage are both positively related to the dependent variable. The results are consistent with the empirical work of Lang et al. (1995).

The Fisher - statistic is 9.92, statistically significant and indicate that the model fits the data sufficiently well. Adjusted R – square is 62%.

Table 2: Estimation results of net working capital and corporate investment.

Variable	CORP (log)	
	Coef.	p-value
NWC_{t-1}	-1.4544	0.0245
$CASH_{t-1}$	2.4636	0.0098
GROWTH	0.7740	0.0003
LEV (log)	0.2578	0.0300
Adjusted R-squared	0.6274	
Fisher statistic	9.9225	0.0000
Number of observations	160	

The estimated residuals from the regression are symmetrically distributed. JB statistic is about 1.2586, and the probability of obtaining such a statistic under the normality assumption is about 53%. Therefore, the hypothesis that the error terms are normally distributed, is not rejected.

4.*2 Net working capital and firm performance*

The above section verifies the effect of net working capital management on corporate investment. Decrease in working capital from one period to the next translates into superior firm performance by redeploying those internal resources into investments in capital expenditure and other cash related acquisitions. Therefore in order to assess the robustness of the investment channel as the main channel which translates into superior firm performance the study perform an additional test to measure the impact of working capital management on firm performance.

In order to test this, the following Equation (2) is estimated.

$$ROA_{i,t} = \alpha_t + \eta_i + \beta_1 NWC_{i,t} + \beta_2 GROWTH_{i,t} + \beta_3 LEV_{i,t} + \varepsilon_{i,t} \quad (2)$$

Return on Assets (ROA) is the dependent variable, following Garcia-Tereul and Martinez-Solano (2007) and Aktas et al. (2015), is used to measure the firm performance. The variable is defined as the ratio of earnings before interest and taxes, to total assets. In this section, net working capital is regressed against ROA. In addition, control variables are included such as sales growth (GROWTH) and leverage (LEV). These variables are measured using the same method as the previous section. The subscript *i* denotes the *nth* firm and the subscript *t* denotes the *nth* year. ε is the error term.

Table 3 shows the results obtained from Equation (2). The coefficient estimate of NWC is negative and statistically significant at 5% level. The results are consistent with the model, which is decrease in net working capital improves firm performance. With reference to control variables, all these are significant at 5% level. Similarly, firm performance is positively related to sales growth, i.e increase in sales leads to increase in profitability. Total debt is negatively related to performance as increase in debt level in a firm leads to higher financing cost thereby lowering the profitability.

Table 3: Estimation results of net working capital and firm performance

Variable	ROA	
	Coef.	p-value
NWC	-0.1306	0.0283
GROWTH	0.0278	0.0488
LEV(log)	-0.0163	0.0428
Adjusted R-squared	0.4649	
Fisher statistic	5.7480	0.0000

The Fisher - statistic is 5.74, statistically significant and indicates that the model fits the data sufficiently well. Adjusted R – square is 46%.

5. Conclusion

This paper provides evidence of a relationship between WCM and firm performance using a sample of 28 manufacturing companies in Sri Lanka over a 6-year period between 2010 and 2015. The findings show that decrease in net working capital leads to an increase in corporate investment in a firm. The paper also proves that

management of NWC efficiently through redirecting the funds to acquire new assets and other investments leads to superior firm performance in the selected sample. The current study implies that WCM is highly valuable for a firm during periods of expanding investments.

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