# EFFECTS OF SIZE ON WORKING CAPITAL LEVELS OF THE FIRMS' IN STEEL INDUSTRY IN INDIA

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**ABSTRACT**

*Present study is about investigating the impact of growing size of the company on working capital levels. I considered measures of working capital levels of a company such as net working capital and working capital to sales. The investigation is about how growing size of the company affects working capital levels.I investigated the relationships between size of the firms and various working capital levels, such as net working capital ratio working capital to sales ratio. It is observed that net working capital level and working capital to sales ratio is negatively related to size of the firms. Two relationships net working capital ratio, working capital to sales ratio were found significant at 1%.As no work in the past is done on this relationship our results will significantly contribute to the body of knowledge.*

***Keywords****: Net working capital level, working capital to sales, steel, regression, correlation and India.*

**Introduction:**

Corporate financial theory is essentially about three areas of financial management. These areas are capital budgeting, capital structure and working capital management. Capital investment decisions are constant challenge to all levels of financial mangers. Broadly whole activities of capital budgeting can be, classified in to the capital budgeting proposals pertain to capital investments, determining the relevant cash flows from the proposals, assessing economic value of the proposal, incorporating risk into capital budgeting decision and finally evaluating whether to leave or borrow-to-buy (Pamela P. Peterson and Frank J. Fapozzifeb, 2002).

Capital structure is extremely important because it can influence not only the returns a company earns for its shareholders but whether or not a firm survives in a recession or depression. Mainly there are two forms of capital as equity capital and debt capital. Each of these capitals has its advantage and disadvantages. A mature corporate management tries to strike a trade-off to find a right mix of capital structure. Equity capital refers to money put up and owned by shareholders (owners). There are two types of contributed capital, one in exchange of shares of stock. And second are retained earnings, which represent profit from past years that have been retained by the company to finance additional operations for growth. The debt capital in a company's capital structure is the borrowed money that is at work in the business. The typical instruments of debt are long-term bonds and short-term commercial papers from the capital market to meet day to day capital requirements. The trade off theory of capital structure means a company chooses how much debt finance and how much equity finance to be used to balance the cost and benefits.

Third and last area of corporate finance is working capital management. Working capital refers to the firm's investment in short term assets. Working capital management is a very important component of corporate finance theory which deals with financing short term financial needs of business organizations. Existing literature characterized working capital management as an area largely lacking in theoretical perspective (Van Horne, 1977). Limited general theories which pertain to working capital management are the off shoots of the finance literature and rather focuses on the relationship between risk and profitability (Smith 1980).Traditionally in the past finance literature has focused on the study of long term financial decisions, and capital structure. Padachi (2006) emphasized that the management of working capital is important to the financial health of business for all sizes. There are many reasons for the importance of working capital management. First, very high amount of capital is invested in working capital in proportion to total assets. As these net current assets constitute significant part of capital employed it is required to use these funds in an efficient way. Second the management of working capital directly affects the liquidity and profitability of a firm and consequently its net worth (Smith, 1980). Working capital management therefore aims at maintaining a trade off balance between liquidity and profitability while carrying out day to day activities of the business.

Efficiency in working capital is vital Ganesan Vedavinayagam, (2007) as almost half of the total assets are employed in the form of capital employed in the firms which are in manufacturing sectors. In the trading and manufacturing firms they are even more thereby affecting profitability and liquidity of the company Rahemen and Nasr. (2007). If we ignore optimum working capital management and profitability keep on increasing, then inaccurate working capital management procedure may lead to bankruptcy Samiloglu and Demirgunes, (2008). If I exercise no control over the levels of current assets it will deteriorate profitability and such situation can easily result in a firm's realizing a substandard return on investment Rahemen and Nasr,(2007). Success of the firm mainly depends on efficient management capability of finance director to manage receivables, inventories, and liabilities Filbeck and Krueger, (2005). Efficient working capital management can strengthen the firm's funding capabilities significantly.

The fundamentals of good working capital management are to provide optimum balance between each element forming working capital. Most of the efforts of finance director in a firm are the efforts they make to carry the balance between current assets and liabilities which are not at optimum level and needs to be brought at optimum level (Lamberson, 1995). Need for working capital influences liquidity level and profitability of the firm, is well stated.

On the other hand if a firm maintains a lower level of current assets, it may incur shortage of funds and face difficulty in maintaining smooth business operations (Horne and Wackowicz, 2000). Corporate goals are to maximize the shareholders investments in the firms. Efficient management of working capital is a very important function of and fundamental strategy in creating shareholders value. Therefore firms try to keep an optimum level of working capital that maximizes their value (Afza and Nazir 2007; Deloof 2003). More specifically, working capital investments involve a tradeoff between profitability and the risk as it affects the firm value. All corporate decisions which tend to increase the profitability also lead to increase the risk. Also simultaneously corporate decisions taken to reduce the potential risk will reduce profitability.

It is very important to maintain liquidity in day to day business operations. This is required to smoothly run the business without any interruptions. Therefore an important part of managing working capital is maintaining the liquidity in day-to-day operations to ensure smooth running and meeting its obligations (Eljelly, 2004). This is very difficult to run business operation efficiently and profitably as running a business efficiently does not necessarily mean enhanced profitability.When business is run efficiently there is always a chance of mismatching current assets and current liability in the process. This mismatch affects both growth and profitability of a firm. The most important part of working capital management is to plan and control cash conversion cycle. Cash conversion cycle is the time lag between the expenditure for purchase of raw materials and the collections from sales of finished goods. Longer cycle means large investment in working capital and therefore less profitability. But a longer cash conversion cycle also may mean higher profitability because it will lead to higher sale. Conversely profitability may decrease with cash conversion cycle, if the cost of higher investment in working capital rises faster than the benefits of holding inventory or granting more credit to customers (Shin and Soenen 1998). (shin and Soenen 1998) highlighted the importance of shortening cash conversion cycle, as managers can create value for their shareholders by reducing the cash conversion cycle to a reasonable minimum.

One of the main principles of finance is to collect money from customers as soon as possible and make payments as late as possible. Management of cash is usually based on the cash conversion cycle. Again, cash conversion cycle is the length of time from the payment for the purchase of raw materials to manufacture a product until the collection of accounts receivable associated with the sale of the product (Besley, Brigham, 2000). But in the conventional theory, long cash conversion cycle causes a reduction in the profitability of a company (Shin and Soenen 1998).

A firm may adopt an aggressive working capital policy with low level of current assets and if the inventory level is reduced too much, the firm risks losing any increasing in sales (Wang 2000). Also too much reduction in trade credit may negatively impact sales for the customer requiring credit. In fact the opportunity cost may exceed 20%, depending on the discount percentage and discounted period granted (Ng et al 1999, Wilner, 2000). Conversely if we maintain high level of current asset adopting conservative policy, it may lead to higher profitability. Conservative approach reduces production interruptions and possible loses for scarcity of products, reduced supply of cost and can protect against price fluctuations (Gartia-Teruel and Martinez-Solano, 2007).

Net working capital level is a measure of a company's ability to cover its short term financial obligations. This ratio can provide some insight as to what is the liquidity of a company. An increasing working capital to total asset ratio is a positive sign for a company, showing company's improving liquidity over time. A decreasing ratio indicates that company may have too many total current liabilities and therefore reducing working capital which available to the company. This ratio actually is represented as net current asset of a company as a percentage of total assets (SEN Mehmet and ORUC Eda 2009). I will make an investigation in our study how the net working capital ratio varies from one industry to other.

Working capital turnover ratio of a company provides useful information as to how effectively a company is using its working capital to generate sales. The working capital turnover ratio is used to analyze the relationship between the money used to fund operations and the sales generated from these operations. Higher working capital turnover ratio is better because it means that the company is generating adequate sales compared to the money it uses

to fund the sales (Singh J. P. and ShishirPandey, 2007). We will also make an investigation how working capital turnover ratio varies across industries for the Indian firms.

Inventory turnover ratio shows how many times a company's inventory is sold and replaced over a period of time. This ratio varies from one industry to other depending on various factors relating to the industry. This ratio for a company should be compared with the industry average. A lower ratio will imply poor sales and/or high turnover otherwise. A high ratio will imply either high sales or ineffective purchasing (Abuzar Eljelly, 2004). { will make an investigation how inventory turnover ratio makes an impact on profitability of a firm.

Our study is believed to be first as to investigate various relationships between net working capital ratio, working capital turnover ratio, current ratio, inventory turnover ratio, day's inventory outstanding, day's payable outstanding, days sales outstanding, cash conversion cycle, sales to total asset ratio and profitability of the firms across industries in India. Our study is expected to reveal many surprising results which will be contrary to past studies.

The study will follow as

Second section will deal with literature review to find out research gaps. Third section will deal with theorization, development of hypotheses and to make hypotheses operational for investigation of various relationships between working capital management and profitability across industries. Fourth section will describe the sample, variable definitions and methodology employed. Sixth section will deal with analysis and findings of the study. And finally I will make conclusions, write down limitations of our study and scope for future research.

**Literature Review:**

In the past many researchers have been conducted to investigate the relationship between working capital management and profitability of the firm in different environments. Shin and Soenen (1998) used a sample of 58,985 firm's years covering the period 1975-1994 in order to investigate the relationship between net-trade cycle which was used as a measure of working capital management efficiency and corporate profitability. He observed a strong negative relationship between the length of net-trade cycle and its profitability.

Mehmet Sen and Eda ORUC (2009) examined the relationship between efficiency level of firms which are traded on ISE (Istanbul Stock Exchange) and their return on total assets. The study found that there is a significant negative relationship between cash conversion cycle, net working capital level, current ratio, accounts receivable period, inventory period and return on total assets. The study used fixed effect and random effect model for model building for five industries undertaken for the study.

Deloof (2003) made an investigation for the relationship between working capital management and corporate profitability. He used a sample of 1009 large Belgium non-financial firms for the period from 1992 to 1996. The results showed a negative relationship between gross operating income, a measure of corporate profitability and cash conversion cycle as well as day's account receivable and inventories.

Lazaridis and Tryfonidis (2006) also investigated relationship between working capital management and corporate profitability for the firms listed in Athens Stock Exchange for a sample of 131 listed companies. Researcher used the company financials from 2001-2004 for the study. The results of the study of regression analysis showed that there was a statistically significant relationship between gross operating profit, a measure of profitability and the cash conversion cycle. He suggested that by optimizing the cash conversion cycle the managers could create value for the share holders.

M. A Zariyawati, et al (2007), investigated the relationship between working capital management and profitability of the firm. Researchers have used cash conversion cycle as a measure of working capital management. This study has used a panel data of 1628 firm year for a period of 1996 to 2006. The coefficient results of pooled OLS regression analysis provide a strong negative significant relationship between cash conversion cycle and profitability of the firms. It is revealed that by reducing cash conversion cycle firm's profitability can be increased.

Raheman and Nasr (2007) also investigated relationship between cash conversion cycle and its components by taking a sample of 94 firms listed on Karachi Stock Exchange for a period of six years from 1999-2004. He investigated that cash conversion cycle is negatively related to net operating profit which is a measure of profitability. Similar relationship was observed for average collection period, inventory turnover in days, and average payment period.

Lyroudi and Lazaridis (2000) considered cash conversion cycle as a measure of liquidity indicator for the firms in Greek food industry. He examined the relationship of cash conversion cycle with current and quick ratio. Researchers examined the implications of the cash conversion cycle in terms of profitability, indebtedness, and firm size. The outcome of the study was a significant positive relationship between the cash conversion cycle and the traditional liquidity measures of current and quick ratios.

Wang (2002) made a study for the firms in Japan and Taiwan to find a relationship between liquidity management and operating performance. He also investigated the relationship between liquidity management and corporate value of firms. The empirical findings for both countries show a negative relationship between CCC and ROA and CCC and ROE. These results were in line with Jose et al. (1996) and Shin and Soenen (1998) that lower cash conversion cycle corresponds with better operating performance. Further in case of both countries it was investigated that aggressive liquidity management is associated with higher corporate value.

Eljelly (2004) empirically investigated the relationship between profitability and liquidity for a sample firms in Saudi Arabia. Researcher took cash gap and current ratio

**Table 1: Descriptive Statistics**

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| SIZE | 144 | -.08 | 4.64 | 3.2366 | .72150 |
| NWCR | 144 | -.23 | 1.53 | .2466 | .21709 |
| WCS | 144 | -.48 | 1.04 | .2229 | .21414 |
| Valid N (listwise) | 144 | | | | |

**Table 2: Correlations**

| | | SIZE | NWCR | WCS |
|---|---|---|---|---|
| **SIZE** | Pearson Correlation | 1 | | |
| | Sig. (2-tailed) | | | |
| | N | 144 | | |
| **NWCR** | Pearson Correlation | -.206* | 1 | |
| | Sig. (2-tailed) | .013 | | |
| | N | 144 | 144 | |
| **WCS** | Pearson Correlation | -.273** | .340** | 1 |
| | Sig. (2-tailed) | .001 | .000 | |
| | N | 144 | 144 | 144 |
| *. Correlation is significant at the 0.05 level (2-tailed). | | | | |
| **. Correlation is significant at the 0.01 level (2-tailed). | | | | |

**Summary Output**
Multiple regression
Using Excel

| Regression Statistics | |
|---|---|
| Multiple R | 0.452467 |
| R Square | 0.204726 |
| Adjusted R Square | 0.193445 |
| Standard Error | 0.647963 |
| Observations | 144 |

| ANOVA | | | | | |
|---|---|---|---|---|---|
| | **df** | **SS** | **MS** | **F** | **Significance F** |
| **Regression** | 2 | 15.23968 | 7.61984 | 18.14869 | 9.69E-08 |
| **Residual** | 141 | 59.19974 | 0.419856 | | |
| **Total** | **143** | **74.43942** | | | |

| | Coefficients | Standard Error | t Stat | P-value | Lower 95% | Upper 95% | Lower 95.0% | Upper 95.0% |
|---|---|---|---|---|---|---|---|---|
| **Intercept** | 3.45594 | 0.082409 | 41.93667 | 1.64E-81 | 3.293024 | 3.618856 | 3.293024 | 3.618856 |
| **NWCR** | -0.73948 | 0.249804 | -2.96022 | 0.003608 | -1.23332 | -0.24563 | -1.23332 | -0.24563 |
| **WC S** | -0.05814 | 0.010843 | -5.36214 | 3.28E-07 | -0.07958 | -0.03671 | -0.07958 | -0.03671 |

as a measure of liquidity. Using correlation and regression analysis a negative relationship was investigated between liquidity and profitability, where current ratio was taken as measure of liquidity. At company level it was observed that cash gap (cash conversion cycle) is more important as measure of liquidity than the current ratio as measure of liquidity that affects profitability. At industry level it was observed that size have significant effect on profitability.

Padachi (2006) investigated the working capital management practices for the manufacturing firms in Mauritius by taking a sample of 58 small firms. Researcher examined the trends in working capital management and its impact on performance. Regression results observed negative relationship between inventories and receivables with profitability. The study has also shown a positive relationship between various working capital components and profitability. An increasing trend was observed in the short-term component of working capital financing.

Garcia-Teruel and Martinez-Solano (2007) examined effect of working capital management on profitability for small and medium size Spanish firms first time. Using panel data authors revealed that there is a negative relationship between inventories and days' account outstanding and profitability. The authors further concluded that by managing working capital such that the cash conversion cycle is reasonably, minimum, the managers can create value for SMEs.

Samiloglu and Demirgunes (2008) examined the effect of working capital management on the profitability of the firms listed at Istanbul Stock Exchange (ISE). By using multiple regressions the study shows that there exist negative relationship between account receivable period, inventory period and leverage and profitability of the firms. However growth (in sales) affects firms positively.

(SEN Mehemet, et al) investigated the change in working capital as a result of change in working capital management efficiency is compared by company size and sectors. With the data available the researchers calculated the effect of change in working capital management efficiency on to the effect of working capital change. It is observed that efficiency change in management of the short term commercial receivables and short term commercial liabilities by a company size and sectorsmakes a positive effect in to the change in working capital.

**Hypotheses:**

Size of company significantly affects the working capital management of firms in steel industry. Steel industry is very large among all industries in India. Net working capital ratio is the measure of firms' capability to finance additional sales without raising additional debts. For NWCR smaller is better therefore there should be a negative relationship between size of the company and net working capital ratio. Hence our hypothesis will be

There would be a negative relationship between size of a company and net working capital ratio.

Size of the company will affect working capital to sales ratio also. For this ratio negative is better. We will hypotheses a negative relationship between size of the company and working capital to sales ratio. Hence our second hypothesis will be

There would be a negative relationship between size of company and working capital to sales ratio.

**Research Methodology:**

We have randomly selected a sample of 12 listed companies. These companies have been selected both from private and public sectors. The data has been obtained from emerging market information services (EMIS). In all we have a panel data of 144 observations.

We have used excel and SPSS to run correlation and regression and tabulated the results. Also we have used descriptive statistics to find out characteristics of explanatory variables.

We have considered size as our dependent variable and as natural logarithm of sales. Two independent variables are Net working capital ratio and working capital to sales ratio.

Results, interpretation and conclusions

**Descriptive Analysis: Ref. Table 01**

The mean value of net working capital ratio is .25 that means on and average industry is able to finance additional sale of 25% without raising any debt. This is possible as the company size is large enough to provide resources to achieve additional sales without any borrowings.

The mean value of working capital to sales ratio is 0.22 which means the firms in steel sector is capable of covering 22% additional short term financial obligations. This is again possible as companies are very big in size in steel industry and size makes an impact.

**Hypotheses Testing**: **Ref. Table 02**

There is observed negative relationship between net working capital ratio and size of the firms in steel industry. Correlation coefficient is -0.206 which is significant. Therefore we accept first hypothesis that size of a firm is negatively related to net working capital of the firm. This means that as the firm size increases the working capital management affectivity increases.

It is observed that working capital to sale is negatively related to size of the firm in steel industry. Correlation coefficient is -0.273 and is significant at 1%. This shows that as the company grows in size its ability to cover short term financial obligations increases.

**Regression Analysis: Refer: Regression output**

We will consider following regression model to explain the size of firm in steel industry

$Y=a+ b (NWCR) +c (WCS)$

$=3.456-0.739(NWCR) - 0.058(WCS)$

From the table we observe that the model is significant and explain 20.47% variability in the size of a firm.

**Conclusion:**

The mean value of net working capital ratio is .25 that means on and average steel industry is able to finance additional sale of 25% without raising any debt. This is possible as the company size is large enough to provide resources to achieve additional sales without any borrowings.

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We will have arrived following regression model to explain the size of firm in steel industry

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=3.456-0.739(NWCR) - 0.058(WCS)

**Future Researches:**

The study can be further taken up to investigate the relationship for other important industries in India and in other countries. Also the study can be extended to develop a model which will explain how working capital management impact profitability.

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