

Working Capital Management and Corporate Performance: Evidences from Textile Sector of China

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Abstract:

The study investigates the relationship between working capital management efficiency and firm performance for a panel data of 77 listed Textile companies from a rapidly emerging market of China from 2007 to 2013. Ordinary Least Square (OLS) model and panel fixed effect and random effect models are used to analyze this relationship. Working capital management efficiency is gauged through Net Trade Cycle (NTC) and Return on Assets (ROA) is used as a proxy to replicate firm performance. Moreover, leverage, firm size and production efficiency are used as control variables because they can have some effect on firm performance. Results are consistent with previous literature that net trade cycle has significant negative relationship with firm performance. Meaning, larger the number of days firms take to liquidate their short term investments in account receivables and inventories the lower the performance. Study concludes that finance manager shall improve working capital management practices by focusing on every individual component of net trade cycle to accelerate firm performance. Marketing efforts shall aim at increasing the inventory turnover to ensure that excessive funds are not tied up in stock. Recovery department shall design policies to collect accounts receivables as early as possible and payments to trade creditors shall be reasonably delayed to achieve a shorter net trade cycle. Moreover, a significant negative relationship between leverage

and ROA suggests that Textile firms shall reduce their dependence on external debts to avoid financial cost and to minimize firm's risk. The study provides a fresh perspective on working capital and performance relationship from an emerging economy of China.

Key words: Working Capital Management, Firm Performance, Production efficiency, Leverage, Net Trade Cycle

1.0 Introduction

Chinese economy witnessed remarkable growth since last two decades. Trends in growth were significant in both manufacturing as well as service sector. Textile industry is amongst the major industries in China's economy. Since its inception Textile sector of China posted a yearly growth rate of 14% and China become an important exporting country in this area. Textile industry of China plays a significant role in earning foreign exchange and largely contributes in economic development of the country. Textile industry of China experienced several slowdowns due to unfavorable environment and changes in domestic and international demand. However in recent years, this industry has made distinctive achievements due to industrial progress and structural reforms. As per the statistics of November 2012, 1,831 listed and non listed Textile firms were in operation with an annual sales volume of more than RMB20 million and an output of RMB226 billion. In recent years domestic market became a driving factor to accelerate sales and output of the sector. The domestic sales volume grown by 20.2% however exports volume of textile products increased merely by 1.3%. Though, in 2012 exports to emerging markets increased sharply. Exports to BRIC countries grew by 19% and to Russia by about 60%. On the other hand, in this year profitability of some firms declined due to rise in the prices of raw materials (China Home Textile Industry Report, 2012-2015).

The recent financial and liquidity crunch of 2008 brought more emphases on the ways firm manage their investments in short lived assets and liabilities. This stimulates the attention of managers in companies around the globe to focus on techniques to improve working capital management. One group of financial experts and researchers is of the view that firms can improve their competitiveness and profitability by efficient management of working capital during periods of economic boom. While others stressed that working capital management is equally important in periods of economic recessions (Reason 2008).

The pressure of decreased credit terms, rising interest rates and a rapid decrease in turnover of firm's products and services resulted in pile up of inventories hence a larger capital is tied up in stocks. Thus many firms shifted their focus from growth to improve internal efficiency and short term financial management. Excessive liquidity can reduce the capital available to fund long term projects while shortage of liquidity can hamper the routine functioning of operations. Thus tradeoff between liquidity and profitability pose challenges for finance personnel in conducting day to day business operations in a way that maximizes firm value (Padachi 2006). In a competitive world efficient working capital management is important for all firm sizes operating in any part of the world. However, working capital management is more important for firms working in emerging markets. Firms in emerging markets are comparatively smaller in size and have limited access to capital markets. These firms mostly depends on internal resources, trade credits and short term bank loans to make investments in account receivable and inventories (Chittenden, Poutziouris and Michaelas 1998).

Given the substantial investment in working capital and impact of working capital policy on firm's risk and return, working capital policy choice can have important ramifications for firm profitability and performance. Successful short term financial management will result increased firm performance.

This study explores the working capital management and performance relationship in Textile sector of China. Reason for choosing this sector is, Textile firms have larger manufacturing cycle and raw material is available on seasonal basis. So Textile firm's managers have to adopt unconventional policies to manage inventories, account receivable and account payables. Return on assets is used as a proxy for firm performance while working capital management is analyzed using net trade cycle. Leverage, firm size and production efficiency are used as control variables that are expected to affect firm performance. In English published literature, very less work has been done with regards to working capital and performance relationship in context of China especially in the Textile sector. The study adds value to the literature in the sense that it will explore how the working capital management practices effects firm performance in Textile industry of China. It will also provide important insights about how this relationship prevails in a rapidly emerging market of China.

1.1 Review of Literature

Besides Capital budgeting decisions and capital structure decisions, working capital management is also a very important element of corporate financial management. Efficient working capital management will enable firms to adjust quickly to changes in market fundamentals such as interest rates, fluctuation in the prices of raw material, and move ahead of its competitors (Appuhami 2008). Finance managers spend a considerable amount of time in routine management of working capital in order to ensure that excessive capital is not stuck into current assets. On the other hand current liability management is also very important. Firm will try to postpone its current obligations as much as it can without damaging its credit worthiness. The recent advancements in credit markets and increased financialization have made working capital

management an important topic for managers and researchers. Thus, working capital is a very important and technical area in the field of corporate finance.

In case of Jordan, the effect of working capital management on firm performance was explored by Abuzayed (2012) by taking all the firms listed on Amman Stock exchange from 2000 to 2008. Cash conversion cycle and its components are used to measure the effectiveness of working capital management on the part of finance manager. Firm performance is measured by using both accounting as well as market measures. Regression analysis is conducted by including several control variables in the model such as leverage, size, growth, GDP and others. Study employed OLS estimation techniques as well as panel data analysis by using both fixed effect model, random effect model, and generalized methods of moments. Study found a positive relationship between working capital and profitability by concluding that profitable firms pays less attention on working capital management.

Makori and Jagongo (2013) analyzed the role of working capital management in improving profitability of five Kenyan firms listed Nairobi Stock Exchange for the period of 2003 to 2012. Using Pearson's correlation and OLS regression they found profitability has a negative relationship with cash conversion cycle and account receiveable days, inventory days, and number of days account payable. Findings revealed that firms shall increase their inventory to an optimal level. Further more profitability can be enhanced by delaying payments to creditors as long as it does no effects the business relationship. Thus a carefull reduction of cash conversion cycle by finance managers can increase the profitability of firms and add to shareholder's wealth maximization.

From the context of Pakistan, Raheman, Afza and Qayyum (2010) found that working capital management plays a considerable role in performance of 204 manufacturing firms. The results of a balanced panel imply that net trade cylce and

cash conversion cycle have a significant negative relationship with firm performance. Moreover, control variables such as leverage, growth and size also significantly effects firms financial performance. They discovered that firms are using conservative working capital management policies. Rather finance personels shall focus on improving the collection and payment policies. Study suggested that manufacturing firms shall appoint specialized financial experts to increase working capital management efficiency of the manufacturing sector of Pakistan.

Deloof (2003) argues that majority of firms have substantial investment in working capital . Therefore working management practices will have a significant impact on firm's profitability. Study foud a significant negative relationship between gross operating income and components of cahs conversion cycle of Belgian firms. Hence reduction in number of days accounts receiveable and number of days inventory to a sizeable limit will create value for shareholders. Negative relationship between number of days accounts payable and profitability is justified on the grounds that less profitable firms take more time to repay their short term obligations. On the contrary Shin and Soenen (1998) argued that firms can achieve higher sales volume by using a genrous credit policy. Thus, firms with larger cash conversion cycle can have larger profitability.

Ding, Guariglia and Knight (2013) investigated a large panel of Chinese firms from 2000-2007 to find the link between fixed assets investment and working capital and financing constraints. They found that firms with larger investment in working capital are more sensitive to investment in working capital to cash flows and are less sensitive to investment in fixed capital to cash flow. Findings suggested that active working capital management can help firms to minimize the effect of financing constraints on fixed assets investment. Similar results were reported by Vahid, Elham and Mohsen

(2012) in a study of 50 companies listed on Tehran Stock Exchange.

The relationship between working capital management and corporate profitability across different countries was examined by Ukaegbu (2014). Using balanced panel of manufacturing firms of four African countries with different stages of industrial development he finds that there is a significant negative relationship between profitability measures and working capital in all these countries. Implication is that when the cash conversion cycle increases the profitability of sampled firms decreases. Thus financial manager can enhance firm profitability by reducing the number of days account receivable and increasing the inventory turnover. Moreover, firms shall delay their payments to creditors to ensure the availability of sufficient funds in order to meet day to day expenses without demaging their credit ratings.

Lazaridis and Tryfonidis (2006) examined the similar relationship in companies listed on Athens stock exchange. They found a significant relationship between cash conversion cycle and corporate profitability. They concluded that keeping each component of cash conversion cycle to an optimum level can enhance firm's profits. Arshad and Gondal (2013) explored the working capital and profitability relationship in Cement sector of Pakistan. Study used 21 Cement companies that are listed on Karachi stock exchange from 2004 to 2010. The results reported a negative relationship between working capital and firm's profitability. A recent empirical work by Caballero, Teruel and Solano (2013) discovered the linkage between corporate performance and working capital management in non-financial firms of UK. Findings suggested that working capital positively effects performance upto a certain threshold level. After that point excessive working capital might hurt corporate performance. This postulate that firms shall try to explore the optimal level of working capital to boost performance. Moreover, the study also examine sensitivity of

working capital management to alternate measures of financial constraints.

Smith and Begemann (1997) explored short term financial activities of industrial firms listed on Johannesburg Stock Exchange. Results indicated that current liabilities to gross flow of funds leads to improved return on investment. In a sample of New Zealand firms, McInnes (2000) discovered that 94% of the firms did not integrate their components of working capital as proposed by the theory. Ghosh and Maji (2004) conducted an empirical study to discover the use of current assets and its impact on profitability in cement and tea industry of India. They concluded that degree of current asset's utilization have positive association with profitability of sampled companies. Zariyawati et al. (2009) studied the relationship between length of cash conversion cycle and profitability using six diverse economic sectors of Malaysia. Empirical evidence supports significant negative relationship between duration of cash conversion cycle and firm profitability. This study will explore the similar phenomenon in a unique and fastly growing economy of China.

1.2 Data and Methodology

The study includes 77 listed companies of Textile sector of China from the year 2007 to 2013. Firm must have consecutive five years data available to be included in the sample. Data of these companies was obtained from OSIRIS data base. Stata12 software was used for empirical analysis. Four companies were excluded because of missing observations. This results in an unbalanced panel of 528 firms and years observations. Descriptive statistics is used to observe the behavior of each variable. In the first model, the effect of working capital management on firm performance is analyzed using OLS regression method. However, there is a risk that this model will provide biased results because panel data requires different

stochastic specifications. Fixed effect model and random models are applied to get more accurate estimates. There are several benefits of using these panel data models. Firstly, firms are heterogeneous in nature and firm specific characteristics may influence their values that are hard to measure. So, panel data models controls provides unbiased results by controlling unobservable heterogeneity. Secondly, Panel data methodology allows us to control the problem of endogeneity. Endogeneity arises because of the fact that model does not only shows the effect of independent variables on ROA but also the possible effects that ROA have on these independent variables. This two way relationship can seriously affect our estimations. Afterwards, Hausman test was used in order to decide that which model provides more consistent estimation results between fixed effect and random effect model.

1.2.1 Selection of Variables

To analyze the relationship between working capital management and firm performance in Textile sector of China, Study used similar research framework as used by Deloof (2003) & (Abuzayed 2012). As in Raheman, Afza and Qayyum (2010) & Tufail (2013) rather than focusing on individual aspect of profitability, firm's overall financial performance measured by ROA is taken as explained variable in all the regression models. As in Caballero, Teruel and Solano (2013) net trade cycle is considered as proxy of working capital management efficiency.

Consistent with past emperical studies (Shin and Soenen (1998) & Lazaridis and Tryfonidis (2006)), some control variables are included as explanatory variables. Leverage, firm size, and production efficiency are expected to explain some variation in ROA so they are included in all the regression models.

Table 1: Measurement of Variables

| Variable | Definition | Measurement |
|---------------|-------------------------|---|
| ROA | Return on Assets | Earnings before Interest & Tax/Total Assets |
| ARD | Account Receivable Days | Account Receivable/Sales*365 |
| APD | Account payable Days | Account Receivable/Sales*365 |
| ID | Inventory Days | Inventory/Sales*365 |
| NTC | Net Trade Cycle | ARD+ID-APD |
| Leverage | Leverage | Total Debt/ Total Assets |
| Size | Size (Deloof 2003) | Natural Log of Sales |
| P. Efficiency | Production Efficiency | Gross Profit/Net Sales*365 |

Source: Author (2014)

1.2.2 Hypothesis and Proposed Model

Null Hypothesis: Working capital management does not effects firms performance

Alternate Hypothesis: Efficient management of working capital improves firms Performance.

Return on Assets is regressed against net trade cycle and control variables to test the proposed hypothesis.

$$ROA_{it} = \beta_0 + \beta_1 NTC_{it} + \beta_2 Leverage_{it} + \beta_3 Size_{it} + \beta_4 P.Efficiency_{it} + e_i$$

1.3 Results of Analysis:

This section empirically examines the relationship between working capital management and corporate performance along with control variables.

Table 2: Descriptive Statistics

| Variable | Mean | Std. Dev. | Min | Max |
|---------------|--------|-----------|---------|---------|
| ROA | 4.354 | 9.635 | -67.53 | 35.91 |
| NTC | 148.97 | 354.083 | -383.84 | 4425.82 |
| Leverage | 53.04 | 24.46 | 7.98 | 193.93 |
| Size | 14.00 | 1.25 | 6.87 | 16.74 |
| P. Efficiency | 25.86 | 16.15 | -10.33 | 92.05 |

Table 2 presents the descriptive statistics of variables included in the analysis. Values suggest larger volatility in variables across companies. Mean value of ROA is 4.35%, whereas

minimum and maximum values are -67.5% and 35.9% respectively. On average firms in the Textile Sector takes 149 days to convert their current assets into Cash that is quite large. One possible reason is the long manufacturing cycle and seasonal nature of business. Moreover, standard deviation value of 354 days demonstrates that some firms in the data set are highly efficient in managing their working capital and others are highly inefficient with poor liquidity management. Mean leverage of firms is 53% which shows that most of the firms in textile sector of China are depending on debt to ignite their growth. Standard deviation of 1.25% clues the presence of both middle and large size firms in the data set. Furthermore, average production efficiency ratio of textile sector is 25.8% that shows significant growth of this sector during the period under observation.

Table 3: Results of Regression Models

| Dependent Variable: Return on Assets (ROA) | | | |
|---|-----------------------|-----------------------|-----------------------|
| Regression Models | OLS Model | FE Model | RE Model |
| Constant | -18.269 (0.000)*** | 32.327 (0.005) *** | -12.534 (0.049) ** |
| NTC | -.002 (0.073)* | -.006 (0.000) *** | -.0032 (0.009) *** |
| Leverage | -.111 (0.000)*** | -.089 (0.000) *** | -.092 (0.000) *** |
| Size | 1.691 (0.000)*** | -2.183 (0.005) *** | 1.144 (0.007) *** |
| Production Efficiency | .197 (0.000)*** | .321 (0.000) *** | .242 (0.000) *** |
| Adjusted R2 | 0.2270 | | |
| Between Groups | | 0.073 | 0.342 |
| Within Groups | | 0.192 | 0.146 |
| Overall | | 0.095 | 0.219 |
| F Statistic | 39.68 (0.000)*** | 26.58 (0.000)*** | 114.78 (0.000)*** |

FE & RE denotes fixed effect and random effect model respectively. *, ** and *** indicates significance level at 10%, 5% & 1% levels, correspondingly.

Table 3 presents the results of ordinary least square, fixed effect, and random effect regression models. ROA is used as dependent variable that shows firm's performance during the period under investigation. NTC is used as the explanatory variable that reflects the working capital management efficiency of firms. Leverage, Size, and Production Efficiency are used as control variables in all three regression models. The motivation behind using these variables is they are supposed to explain some variation in ROA. NTC has a negative coefficient with ROA in all of the three regression models and results are robust at 1% significance level. This provides strong support to our hypothesis that inefficient working capital management negatively affects firm performance. Implication is a firm taking less time to convert their liquid assets to cash performs better than their counterparts. Hence companies in the Textile sector of China shall strive to lower their net trade cycle to boost financial performance. These results are consistent with previous empirical studies. Leverage also has a significant negative coefficient in three regression models. The reason is perhaps more debt in firm's capital structure increases risk of bankruptcy. This also indicates firm's inability to generate funds from its own operations and pose an extra burden of financial cost on its operations. Consequently Textile firms with high leverage levels have lower ROA in case of China. Interestingly, size has a positive coefficient with performance in ordinary least square and random effect model but it has a significant negative coefficient with performance in fixed effect model. Because Hausman test suggest that results of fixed effect model are more consistent. Therefore, firms with greater size have lower performance measured through ROA. It is logical, large size firms have mostly reached to the peak of their business cycle and assets have already been utilized to the

optimal capacity. Thus, these firms have less potential for extra ordinary growth and performance. On the other hand, firms with smaller size have capacity cushions in fixed assets that can be utilized to accelerate ROA. So, small size firms perform better than large size Textile firms. Production efficiency is used as control variable because it measures the firm's ability to maximize its sales volume and minimize the production cost. Regression models show a strong positive relationship between production efficiency and ROA and results are significant at 1% level. Adjusted R^2 for OLS regression model is 22.7% which is quite reasonable for panel data. Moreover, R^2 between groups for fixed effect and random effect models is 7.3% and 34.2% respectively. Explained variation within group for both these models is 19.2% and 14.6% respectively. Considering fixed effect as the preferred model, it explains larger variation within the group rather than between different groups of firms. Overall R^2 for fixed effect and random effect model is 9.5% and 21.9% respectively. F statistics gives an idea about the overall goodness of fit of a model. Highly significant values of F statistics of all these models express that all the explanatory variables have strong predictive power to explain variation in dependent variable.

Table 4: Huasman Test

| | Fixed | Random | Difference | S.E | Chi Sq. |
|--------------|-----------|-----------|------------|----------|---------------------|
| NTC | -.0066771 | -.003217 | -.0034601 | .0009078 | 43.72 (0.000)*** |
| Leverage | -.0890493 | -.0925557 | .0035064 | .0151798 | |
| Size | -2.183831 | 1.144564 | -3.328395 | .657981 | |
| P.Efficiency | .3219676 | .2420841 | .0798835 | .0261083 | |

Hausman test is a post estimation technique used to test the consistency of panel data models. It helps in selecting the best model based upon the consistency of results they produce. Table 4 reports the Hausman test for fixed effect and random effect model. Null hypothesis of random effect model is appropriate is strongly rejected as apparent from the Chi square test statistics

and level of significance. The results are of the view that fixed effect model is the most appropriate and consistent model for anal

1.4 Conclusion

Working capital management is more important for firms in emerging markets with less access to short term funds. Financial and liquidity crises that started in US increased the importance of short term financial management for companies all around the globe. This study examines the working capital management efficiency and their possible effects on firm performance for panel of listed Textile firms in China. Economy of China experienced consistent economic growth since last few decades. Increase in investment and sales volume brought industrial and structural reforms in this sector. Being amongst the core industries in China, Textile industry is of significant importance from the perspective of working capital management because of its relatively larger manufacturing cycle and seasonal availability of raw material. Empirical findings reveal that efficient management of working capital significantly affects Textile firm's financial performance. Implication is that firms with shorter net trade cycle perform better than their counterparts in term of financial performance measured by ROA. Results of panel fixed effect model are also consistent with the simple regression models. Leverage has significant negative effect on firm performance suggesting that firm shall focus more on their internal financial resources and shall lower the leverage in capital structure to decrease the risk of bankruptcy. In fixed effect model, size has a negative coefficient with performance which signals that firms with larger size have reached maturity stage of their business cycle and have less growth potential than relatively smaller firms. Moreover the significant positive relationship between production efficiency and firm performance means that firms

with better cost control measures performs better in case of Textile sector of China. Finance managers in Textile firms shall put more emphasis to reduce the net trade cycle to an optimal level. Each component of working capital management shall be individually focused to attain an optimal level. Efficient marketing techniques shall be used to increase the inventory turnover. Recovery department shall design special policies and incentives to recover cash from account receivables as soon as possible and payments to suppliers shall be reasonably delayed without affecting firm's image.

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