Empirical Testing of Working Capital Administration on firm's Corporate Profitability: Evidence from Chinese Non-Financial Firms

Yaqoob Ahmad[1], Dr Alam Rehman[2], Arif Hussain[3], Iqbal ud din4

Abstract

This study spotlight the impact of working capital management on profitability of Chinese non-financial firms. Panel data of 1213 non-financial firms has been used and obtained from Resset Database for a period 2007-2016. In this study dependent variable was profitability and measured by ROE and ROA while independent variables were average receivables in days, inventory turnover in days, cash ratio, debt ratio, size and growth. The study employed Fixed and Random effect models and concluded that average receivable in days, inventory turnover in days, account payables in days and current ratio has negative effect while sales growth and leverage has a positive effect on profitability.

Keywords: Working capital management, profitability, Chinese non-financial firms

1. Introduction

In corporate finance, working capital management is one of the very important section, which can be defined as investment of a firm in the short-term assets i.e. Cash, Account receivables, inventories and short term market securities etc. The significance of the working capital management can be witnessed from many reasons. The current assets of a manufacturing firm accounts to one half of the total assets while in contrast the distribution enterprises accumulates more current assets to total assets. If the firms has higher level of current assets it can generate a substantial amount of return for investors. However, firm which have lower amount of current assets may suffer from shortages and hindrance in running their operations smoothly. So it is one of the aims of firm to endeavor to avail the balance level of investment in each portion of current assets and liabilities so that to mitigate the risk of inability to meet the demands of the customers on one hand and on the other hand to keep away from excessive investment in these assets.

[1,]School of Accounting, Dongbei University of Finance and Economics, China
[2] Department of Management Sciences, NUML
[3] Department of management science AWK
4 Iqbal ud din, Ms scholar NUML, 5 Zulfiqar ali khan, Ms scholar NUML

The Proper administration of working capital is a challenging task for the management in a sense that the amount of working capital changes across organizations over the periods because it take into account different factors like nature and size of business, credit management, scale of operation, production cycle and raw material availability etc. So in order to have a proper management of working capital sufficient amount of money is should be invested in the form of different permanent current assets.

In business investment working capital play vital role for the successful operation of business. Since every business demands adequate amount of working capital for its survival. Firm needs to maintain an optimal balance among liquidity, solvency and profitability. In case a firm invest significantly in the current assets i.e. more than its requirement, this indicates that the fruits which can be obtained by investing these funds in long term assets will be reduced.

Contrary to this, if a firm invest significantly in the long term assets to obtain dividends by ignoring the requirement of short term resources then it may possible that the firm face bankruptcy due to inadequate funds. So it is necessary that the manager should pay enough attention to the profitability and as well as liquidity while administering the working capital otherwise firm can face the problem of bankruptcy. The improper management of working capital is one of reason of the failure of the small enterprises in different developing and developed countries.

Broadly speaking there are two approaches for managing of working capital. One is aggressive working capital management approach and the other is conservative working capital management approach. An aggressive approach to working capital advocates high investment in long term assets and lower amount of investment in short term assets to generate more return for a firm. While on the other hand, conservative approach to working capital management refers to an investment approach having less investment in fixed assets and heavy investments in short term assets to generate return for a firm.

It has been long to debate that the corporate finance has mainly focused on the long term financial decision concerned with long term assets and firm's financial performance. The main essence of these studies were based on investment, capital structure, company valuation, merger and acquisition, venture capital etc. While short term assets are similarly vital as compare to long term assets, so the efficient utilization of these resources will increase the firm value. In the financial decision making process the working capital management is an important tool because it directly linked with profitability.

WCM is important area of finance because without proper management of working capital it is difficult for organization to run its operations smoothly. In order to explain the relationship between WCM and profitability different researches had been carried out in different parts of the world especially in developing countries. So by keeping in view the study is conducted to find out the relationship between WCM and profitability of the Chinese non-financial firms.

This research paper will mainly focus on the objectives as given below:

i. To evaluate the working capital management practices of Chinese firms
ii. To determine an overall empirical impact of WCM on profitability of the Chinese firms
iii. To ascertain any relationship between average collection period and Corporate profitability of the Chinese firms
iv. To find any relationship between inventory conversion period and corporate profitability sets of the Chinese firms
v. To determine any relationship between average payment period and corporate profitability of the Chinese firms

The significance of empirically doing this present research is it will help corporate managers and executives to stretch their learning curve and to shrink the chance of default, especially in turmoil time; with a view to evaluate and determine the influence of working capital management on the corporate profitability of the Chinese firms. This study will enhance the insight of top management, policy makers and other academicians to know about the importance of working capital management and make best combination of the WCM to enhance the wealth and profitability of the shareholders which is the ultimate object of the firm.

There are five main sections in this paper. Section 1 gives an introductory lines and a brief overview of the working capital and their administration. The previous literature on the topic and research framework is discussed in section 2. Section 3 is regarding research design and methods like regression analysis, correlation analysis and other econometric tools and section 4 explains the data analysis and discussion. And section 5 provides the conclusion of the entire research work.

2. Literature Review

A list of research endeavors has been made to empirically determine the relationship between WCM and firm performance/corporate profitability from various business sectors. Shin and Soenen (1998) investigated US firms from the period 1975-1994 and found a negative relationship between cash conversion cycle and firms earnings. Deloof (2003) investigated the Belgium firms having non-financial nature and predicted that as the level of receivable turn over

increases in Belgium than it effect the financial performance adversely. Wang (2002) conducted a similar study on the Japanese and Taiwanese firms and evidenced that as many as a firm can reduce its CCC, it will be beneficial for the firm and would enhance the firm profitability.

Lyroudi and Lazardis (2000) also predicted positive association between current ratio and quick ratio with the financial performance proxies in the context of Greece. However they predicted negative relationship of receivable period and collection period with the firm financial position. They also evidenced significant relationship between the food industry cash conversion cycle and financial performance.

Tauringana and Afrifa (2013) carried out study regarding the significance of WCM of a sample of 133 SMEs operating in the United Kingdom. In this study they used Panel data regression analysis of these 133 SMEs, their results reveal that SMEs need to focus on the proper policies and administration xof average days payables (ADP) and average days receivable (ADR) in order to gain a substantial amount of profit. Furthermore, the studies also concluded that there is no significant association between CCC and WCM.

Rahman & Nasr (2007) analyzed various Pakistani firms for knowing the relationship between WCM and firm performance and confirmed that most of the working capital management proxies have negative relationship with firm corporate performance.

Ghosh & Maji (2003) has used a different approach to measure the efficiency of working capital management of Indian cement sector from 1992 to 2002. For this purpose they used different indices to measure the overall efficiency of WCM. These indices were utilization index, profitability index and efficiency index. The study reported that the Indian cement industry overall has not a remarkable performance during the period.

Afza (2008) analyzed more than 250 companies listed on KSE by employing panel regression analysis and other descriptive statistics with a view to examine the relationship between working capital management and firm performance. Their findings reveals that there is a significant difference in industries investment level in short term assets in relation with short term financing decision.

Hong Yuh Ching et al., (2011) studied the relationship between WCM and corporate profitability. They divided the sample companies into two categories. One group working capital intensive and the other in fixed or permanent capital intensive. They finally concluded that managing inventory and the cash conversion is reported to be more important and productive. Chiou and Cheng (2006) conducted a research regarding management of working capital in

various sectors. According to their studies working capital measures are not fixed, there are different requirements and criteria of working capital in different industries.

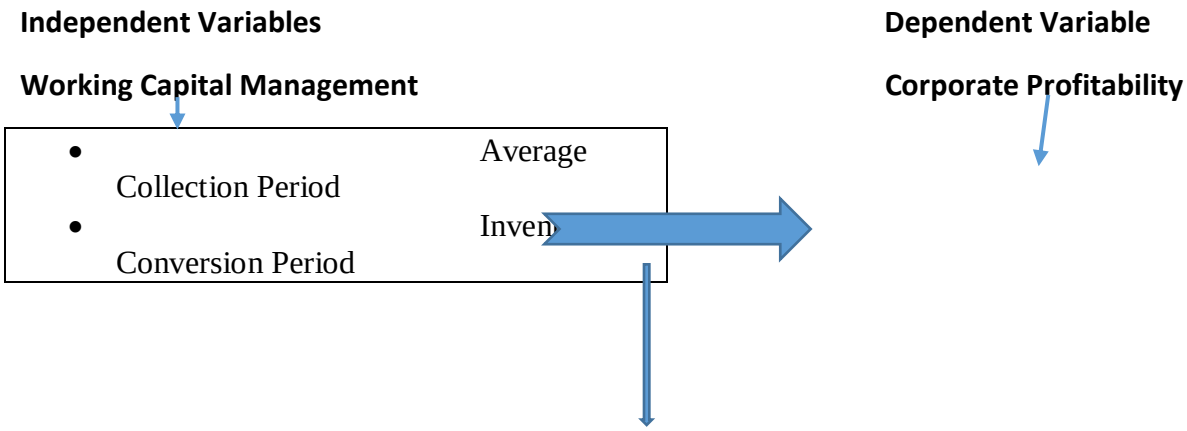
There are main three research hypothesis of this present study which are formulated after developing the key objectives of the study. These hypothesis are listed below:

$H_{1:}$ There is significant relationship between average collection period (ACP) and profitability of the firm.

H_2: There is significant relationship between inventory conversion period (ICP) and profitability of the firm.

H_3: There is significant relationship between average payment period (APP) and profitability of the firm.

Theoretical Framework



- Return on Asset
- Return on Equity

- Average Payment Period
- Current Ratio
- *Firm Leverage

Control Variables

- Sales Growth
- Firm Size

3. Data and Method:

Data and Variables:

Panel data is used in this study and is obtained from the Chinese database i.e. Resset. The study analyzed non-financial firms operating in the Chinese capital markets .i.e. Shenaen and Shanghai stock exchange. The time frame of the study will be from 2007-2016.

Descriptive statistics: The aim of the descriptive statistics is to describe the main summary of the collected data in the form of the mean, median, standard deviation, the minimum and the maximum of the sample.

Correlation analysis: The correlation has been applied for investigating the covariance between dependent and independent variables. This has been used for the prediction of the direction and strength in two variables. Many other researchers have also used the same kind of Pearson correlation in their studies (Deloof ,2003; Kesseven Padachi ,2006; Mathuva ,2009).

Regression analysis: This study is purely based on penal data modeling and fixed effect random effect models have been used for finding the effects of independent variables on dependent variable.

Model Specification:

$$ROA = \beta_0 + \beta_1 ARD + \beta_2 APD + \beta_3 ITD + \beta_4 CR + \beta_5 DER + \beta_6 SF + \beta_7 SG + \varepsilon \quad \text{.....Eq. (1)}$$

$$ROE = \beta_0 + \beta_1 ARD + \beta_2 APD + \beta_3 ITD + \beta_4 CR + \beta_5 DER + \beta_6 SF + \beta_7 SG + \varepsilon \quad \text{.....Eq. (2)}$$

Where, ROA denotes the return on assets, while ROE refers to return on equity, ARD is Average Receivable Days, ITD is inventory turnover in days, CR shows cash ratio, DER is the debt ratio, SF is the company size as measured by natural logarithm of total assets, SG reveals growth.

Table 1: Variables their Measurement and Abbreviations:

Variables	Abbreviation	Measurement/Formula
Return on Asset	ROA	Earnings Before Tax And Interest/Total Assets
Return on Equity	ROE	Earnings Before Tax And Interest/Total Equity
Average Receivable Days	ARD	Accounts Receivable/Net Sales*365
Average Payable Days	APD	Accounts Payable/Cost of Sales*365
Inventory Turnover Days	ITD	Inventory/Cost of Sales*365
Current Ratio	CR	Current assets/Current Liabilities
Debt to Equity Ratio	DER	Total Liabilities/Total Assets
Size of Firm	SF	Log of Total Assets
Sales Growth	SG	Differential of sales

4. Data Analysis and Finding:

Descriptive Statistics

Table 2 represents the mean, median, 25th & 75th percentiles, standard deviation, minimum and maximum values of all nine variables used in this paper. The profitability measure of this study are ROE and ROA and their mean values are 7.5% and 15% with a standard deviation of 7% and 17 % respectively. The mean value of average receivables in days, account payables in days and inventory turnover in days are 72, 84 and 195 with a standard deviations of 70, 72 and 356 days respectively. This shows that Chinese firms take considerable time to convert their inventory. The average sales growth is almost 21% annually with a standard deviation of 46%. The mean leverage ratio is 46% having a standard deviation of 20%. The mean current ratio is 2.07 and standard deviation is 2.11. The mean firms' size log value is 21.41 and standard deviation is 1.35.

Table 2: Descriptive Summary

Variable	Mean	MEDIAN	Sd
ROA	21.419	21.321	1.358
ROE	0.0748	0.0641	0.0744
SF	0.1501	0.1277	0.1698
ACD	72.166	53.626	70.477
APD	84.041	66.844	72.871
SG	0.2148	0.1388	0.4645
CR	2.0734	1.4245	2.110
ITD	195.29	95.451	356.13
DER	0.4639	0.4722	0.2003

Correlation Matrix:

Table 3 presents the correlation matrix of the variables used in the study. Table 3 reports relationship of ROA and ROE with other independent variables. Table 2 demonstrates that ROA has a negative relationship between average collection period, account payable period and inventory turnover in days. The rationale for negative association between ROA and average collection period is that the less the time span used by the customers to pay the bills, hence more cash will be available to refill the inventory and increases sales which will ultimately enhances the profit. The negative relationship between ROA and inventory turnover period can be interpreted by the fact that firm maintaining high level of stocks shows that firms investing too much money in inventory which is more than the requirement. Furthermore, ROA has also negative relation with Size of firm, which indicates that larger firm has lower earnings while smaller firms has a potential higher profitability. The table also reveals a positive relationship between ROA and sales growth and leverage. The result of both tables are in concurrence with each other.

Table 3: Correlation Analysis

	ROA	ROE	SF	ACD	APD	SG	SR	ITD	DER
ROA	1								
ROE	0.3512	1							
SF	-0.1863	-0.068	1						
ACD	-0.1782	-0.1853	-0.1409	1					
APD	-0.1716	-0.1071	0.0893	0.3792	1				
SG	0.2041	0.2465	0.0018	-0.0685	-0.0302	1			
SR	0.0865	-0.0943	-0.1274	0.0974	-0.0959	-0.0402	1		
ITD	-0.1281	-0.0748	0.0947	0.0305	0.4452	-0.0114	0.0330	1	
DER	-0.1938	0.1476	-0.1863	-0.0599	0.1906	0.0798	-0.6467	0.1388	1

Regression Analysis

Panel data techniques such as Fixed and Random effects regression analysis is employed to gauge the effect of working capital management on profitability of Chinese non-financial firms. The results of both models are reported in table 4 and 5. There are two models, in Model-1 the dependent variable is ROA and in Model-2 the dependent variable is ROE while the independent variables are average receivables in days, account payable in days, inventory turnover in days, current ratios, sales growth, firm size and leverage.

In order to know whether Fixed or Random effects regression is suitable for our analysis, the study used Hausman Test. Hausman test results revealed in table 6, and it is noticed that Fixed effect regression is more effective than the Random effect regression for both models.

Table 4 demonstrates the results of Fixed effect regression. According to this table the main working capital management components i.e. average receivables in days and account payable in days are found negative relation with profitability while inventory turnover in days are positively related with profitability. Furthermore, firm size, current ratio and leverage are also observed negatively related to profitability while sales growth is found positively related with profitability.

Table 4:
Fixed –Effect Regressions

	Model -1 Dependent Variable ROA			Model-2 Dependent Variable ROE		
	Coeff.	**T-stat**	**Sig.**	**Coeff.**	**T-stat**	**Sig.**
SF	-0.0180016	-26.27	0.000	-0.0362764	-21.01	0.000
ACD	-0.0002687	-21.56	0.000	-0.0005928	-18.88	0.000
APD	-0.0000579	-5.27	0.000	-0.0001449	-5.24	0.000
SG	0.0274829	25.07	0.000	0.0706763	25.59	0.000
CR	-0.0052714	-13.67	0.000	-0.0052884	-5.44	0.000
ITD	7.34e-06	2.97	0.003	0.0000154	2.47	0.014
DER	-0.0210859	-4.40	0.000	0.2070332	17.13	0.000
C	0.4967304	33.68	0.000	0.8740348	23.51	0.000
R-Square	0.1997			0.2027		
Observations	125996			125996		

Table 5:
Random –Effect Regressions

	Model -1 Dependent Variable ROA			Model-2 Dependent Variable ROE		
	Coeff.	**T-stat**	**Sig.**	**Coeff.**	**T-stat**	**Sig.**
SF	-0.0150272	-25.84	0.000	-0.0247675	-18.57	0.000
ACD	-0.0002419	-21.91	0.000	-0.000493	-18.77	0.000
APD	-0.000044	-4.19	0.000	-0.0001063	-4.21	0.000
SG	0.0284448	25.79	0.000	0.0728639	26.52	0.000
CR	-0.0041434	-11.20	0.000	-0.0023699	-2.65	0.000
ITD	5.66e-07	-0.25	0.800	-8.62e-06	-1.65	0.099
DER	-0.0396496	-8.91	0.000	0.169286	16.00	0.000
C	0.4418447	35.34	0.000	0.6383252	22.33	0.000
R-Square	0.1942			0.1972		
Observations	125996			125996		

Table 6:
Hausman Test

	Model -1 Dependent Variable ROA	Model-2 Dependent Variable ROE
Chi Square	656.22	877.13
Sig.	0.000	0.000

Conclusion:

Working capital management is one of the important dimensions of the firm financial decision making. Efficiently managing the routine financial resources can give edge on competitor and which can ultimately add value to the wealth of the shareholders. Poor working capital management leads to the failure of the companies.

Chinese firms have large amount of cash invested in working capital and it is important to determine the effect of working capital on the profitability of these firms. The study document negative relationship of main working capital components such as average receivables period, account payable period and inventory turnover period with the profitability. However the study found positive correlation with leverage and sales growth of the firms.

The results suggests that managing the receivables period, payable period and inventory turnover period of firms in a balance way can create value for their shareholders. It is suggested that behavioral aspect of the manager can also be investigated to determine the working capital administrations of firms in relation to profitability in the future research.

References:

Afza, T. and M. S. Nazir, (2008). Working Capital Approaches and Firm's Returns. Pakistan Journal of Commerce and Social Sciences. 1(1), 25-36.

Deloof, M. (2003). Does working capital management affect profitability of Belgian firms?. Journal of business finance & Accounting, 30(3- 4), 573-588.

Dong, H., & Su, J. T. (2010). The relationship between working capital management and profitability: a Vietnam case. INTERNATIONAL RESEARCH JOURNAL OF FINANCE AND ECONOMICS, 49, 62-71.

Ghosh SK, Maji SG, 2003. Working capital management efficiency: a study on the Indian cement industry. The Institute of Cost and Works Accountants of India. [http://www.icwai.org/icwai/knowledgebank/fm47.pdf]

John, K. M. M. (2014). Working Capital Management and Profitability of Firms: A Study of Listed Manufacturing Firms in Ghana. Research Journal of Finance and Accounting, 5(22), 122-133.

Lawrence, I. (2015). Working Capital Management and Performance of Food and Beverage Industry in Nigeria. Research Journal of Finance and Accounting, 6(4), 196-205.

Lyroudi, K., & Lazaridis, Y. (2000). The cash conversion cycle and liquidity analysis of the food industry in Greece.

Mathuva, D. M. (2009). Capital adequacy, cost income ratio and the performance of commercial banks: The Kenyan Scenario. The International journal of applied economics and Finance, 3(2), 35-47.

Osundina, J. A. (2014). Working Capital Management and Profitability: Evidence from Quoted Food and Beverages Manufacturing Firms in Nigeria. Research Journal of Finance and Accounting, 5(4), 101-107.

Padachi, K. (2006). Trends in working capital management and its impact on firms' performance: an analysis of Mauritian small manufacturing firms. International Review of business research papers, 2(2), 45-58.

Rafiu, O. S., & John, A. A. (2014). Working Capital Management and the Performance of Selected Quoted Manufacturing Companies in Nigeria (2000-2009). Research Journal of Finance and Accounting, 5(14), 80-92.

Raheman, A. and M. Nasr, (2007). Working Capital Management and Profitability – Case of Pakistani Firms. International Review of Business Research Papers. 3 (2), 275 - 296.

Richard, K. A., Dadson, A. V., & Peter, L. A. (2013). Working Capital Management and profitability: Evidence from Ghanaian listed manufacturing firms. Journal of Economics and International Finance, 5(9), 373-379.

Shin, H. H., & Soenen, L. (1998). Efficiency of working capital management and corporate profitability. Financial practice and education, 8, 37-45.

Snober, J., & Velontrasina, P. M. Z. (2014). Impact of Working Capital Policy on Firm's Profitability: A Case of Pakistan Cement Industry. Research Journal of Finance and Accounting, 5(5), 182-191.

Tauringana, V., & Adjapong Afrifa, G. (2013). The relative importance of working capital management and its components to SMEs' profitability. Journal of Small Business and Enterprise Development, 20(3), 453-469.

Wang, Y. J. (2002). Liquidity management, operating performance, and corporate value: evidence from Japan and Taiwan. Journal of Multinational Financial Management, 12(2), 159-169.