

Working Capital Management and Firms' Profitability: Evidence from Vietnam's Stock Exchange

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Abstract

The paper investigates what effect Working Capital Management has on firms' profitability by using the data from listed companies on Vietnamese Stock Exchange. The sample is collected from 127 public companies for the period of 9 years from 2006 to 2014. The research uses four variables to represent Working Capital Management, which are Day of Sales Outstanding (DSO), Day Sales of Inventories (DSI), Day of Payables Outstanding (DPO), and Cash Conversion Cycle (CCC). Moreover, in order to robust the result, the study also takes into the account the following variables: "Leverage, Growth, Tangibility, Size, Industrial Factors, and Macroeconomic Effects", which were proven to have significant effects on firms' profitability. The result implies that there is no correlation between Working Capital Management and firms' profitability. Hence the conclusion is that Working Capital Management can help companies solve the short-term obligations and improve the efficiency by improving the supply chain and credit policies, however it has nothing to do with firms' profitability of the companies in the sample.

Keywords: working capital management, firms' profitability, macroeconomic effects, industrial factors

1. Introduction

First of all, it is important to know what is working capital. Generally, working capital is the difference between current assets and current liabilities. However, when we look deeper into the concept, working capital is the term to measure both liquidity and firms' efficiency. When it comes to the decision making of investment by using financial ratio, the ratios, which relate to working capital play an important role in the progress of making decision. Moreover, the management of working capital could help recovering the performance of firms.

By analyzing the working capital management of a company we can know about the ability to meet short-term obligations, the efficiency of supply chain, and the credit policies, which are all important in the daily operation of a company. For example, to start a business most firms have to purchase tangible asset, and the problems come along with the purchase is the works after receiving the asset. Company needs to pay for the testing process as well as expenditures for operating the asset such raw materials and overhead expenditures. Moreover, in order to meet the requirement of profitability and customers, an appropriate amount of inputs and outputs is required to keep the work in process. Therefore, cash play an undeniable role of keeping the business running smoothly. In addition, the credit policy is also an important part since it determines the amount of debt a company needs to collect. If the credit policy is strict then company can collect their receivable fast and avoid generating bad debt with low probability to collect, however if it is too strict then the volume of sales can be reduced. Additionally, how soon company pay back their payables is also a crucial point of doing business, if company delay to pay an appropriate amount of time, then company can have more resources to make more sales and increase profit. However if the delay is unacceptable, then it would threaten the stability of the supply chain since the suppliers do not appreciate when their customers are taking advantage of their capital for such a long amount of time. Therefore, the management of working capital could have effect on firms' profitability through their impact on fulfilling short-term obligations and efficiency of firms. In order to examine exactly what impact Working Capital Management has on firms' profitability, the paper uses the data from 127 listed firms on

Vietnamese Stock Exchange to investigate the relationship between the two factors.

In addition, it has been proven, that the other factors such as Leverage, Growth, Tangibility, Size, Industrial Factors and Macroeconomic Effects all have significant impact on firms' profitability. Hence it would robust the result of the study when including these factors into the study. Therefore, beside using the indicators of Working Capital Management, the study also adds the variables of Leverage, Growth, Tangibility, Size, Industrial Factors and Macroeconomic Effects to increase the robustness of the results.

2. Literature Review

It has been examined that the profitability of firms can be impacted by many factors, and working capital has been proven to be related to profitability by many empirical reseaches. Working capital is the term to measure both the liquidity and the efficiency of a company. In other word, it exposes not only the financial health in short-term, but also the answer of how efficient is the operation of a company.

There are a lot of empirical reseaches have been conducted in order to examine the impact of Working Capital Management on firm's profitability, and they concluded that Working Capital Management has a significant impact on the performance of firms. However, the relationship between these two factors have been varied in different countries and markets.

There were the cases when Working Capital Management was found to be positive: Such as the study conducted bt Md. Asaduzzaman and Tabassum Chowdhury (2014) in Bangladesh, they built an empirical study based on the data from Bangladeshi Textiles Companies. Consequently, they found out that there is a significant relation between Working Capital Management and profitability, they used four measures to represent Working Capital Management, they were inventory of number of days, numbers of day's accounts receivables, cash conversion period, and numbers of days accounts payable. Among the four measures, only numbers of days accounts payable showed a negative impact on profitability, the rest all indicated a positive correlation with firms' profitability. Similarly, Osundina J. A (2014) had conducted another empirical study from quoted food and beverages manufacturing firms in Nigeria, and he also found out that working capital management is positively related to profitability. Another empirical research from Nigeria, Lawrence Imeokparia (2015) had also found a positive relation between Working Capital Management and firms' profitability. Additionally, Richard Kofi Akoto, Dadson Awunyo-Vitor and Peter Lawer Angmor (2013) had examined the impact by using the data from Ghanaian companies, and the results suggested that Working Capital Management positively influenced firms' profitability. In addition, Charles Kiprotich Yegon, Kirui Joseph Kiprono and Chepkutto Willy (2014) had built up an empirical study in order to find out the relationship between Working Capital Management and firms' profitability.

On the other hand, using the same four measures of Working Capital Management as the previous reseaches, Snober Javid and Velontrasina Prudence Marie Zita (2014) found a negative relation between Working Capital Management and profitability in their study. Similarly, Charles Kiprotich Yegon, Kirui Joseph Kiprono and Chepkutto Willy (2014) conducted an empirical research about companies in Nigeria, and their results indicated that Working Capital Management negatively impact firms' profitability.

In addition, Rafiu O. Salawu, and John A. Alao (2014) found a mixed relations within the Working Capital Management and profitability when it comes to each measure of the working capital used. A mixed result were also found in the study of John Kwaku Mensah Mawutor (2014) between the four variables of Working Capital Management and profitability.

Moreover, in the study of Huy-Cuong Nguyen and Tristan Nguyen (2015) it was indicated that the other factors also have significant relations with profitability of Vietnamese firms, which are Size, Growth, Leverage, Tangibility, Industrial factor, Macroeconomic effects. Therefore it would robust the result of the study if these factors are included.

3. Data and Methodology

The study is conducted based on the data of 127 listed companies on the HCM Stock Exchange for the period from 2006 to 2014. The companies in the data sample belong to 15 Industries, and they are all required to have available financial statements from 2006 to 2014, there is no companies in the financial area or construction field are taken into the data sample due to their special characteristics and primary modes of business. Additionally, the interested components in financial statement are balance sheet, statement of income.

In this study, we run the following regressions:

$$P = \beta_0 + \beta_1.Growth + \beta_2.Leverage + \beta_3.Tangibility + \beta_4.Size + \beta_5.WCM + \varepsilon \quad (1)$$

$$P = \beta_0 + \beta_1.Growth + \beta_2.Leverage + \beta_3.Tangibility + \beta_4.Size + \beta_5.WCM + ME + Industry + \varepsilon \quad (2)$$

P is corporate profitability and alternatively measured by Return on Assets (ROA), Return on Equity (ROE) and Tobin's Q with:

$$ROA = \frac{Net\ Income + Paid\ Interests}{Total\ Assets}$$

$$ROE = \frac{Net\ Income}{Total\ Shareholders' Equity}$$

Debt Ratio (DR) is employed to be the measure of Leverage with:

$$DR = \frac{Total\ Debt}{Total\ Assets}$$

Fixed Assets to Total Assets (FATA) is the measure of with:

$$FATA = \frac{Net\ Fixed\ Assets}{Total\ Assets}$$

The natural logarithm of net sales is used to represent Size, and Growth is represented by the change in net sales.

Working Capital Management (WCM) is alternatively measured by Days of Sales Outstanding (DSO), Days Sales of Inventory (DSI), Days of Payable Outstanding (DPO), and Cash Conversion Cycle (CCC) with:

$$DSO = \frac{Account\ Receivable}{Total\ Credit\ Sales} \times 365$$

$$DSI = \frac{Inventory}{Cost\ of\ Sales} \times 365$$

$$DPO = \frac{Account\ Payable}{Cost\ os\ Sales} \times 365$$

$$CCC = DSO + DSI - DPO$$

Macroeconomic Effects (ME) from 2006 to 2014 are controlled by using the 9 dummy variables, from Y₂₀₀₆ to Y₂₀₁₄ represented for the year from 2006 to 2014 respectively.

Industrial factor (Industry) is measured by using the 15 dummy variables from I₁ to I₁₅, represented for the 15 Industries of the companies in the study, which are the Industries of Rubber, High Technology, Oil Production, Energy Supply, Tourism, Pharmacy, Education, Mining, Plastic Production, Manufacturing, Steel Production, Food Production, Commerce, Seafood Exploitation, Transportation respectively. Finally, ε is the error term.

By observing the results from the aforementioned studies, there are some expectations about the results that the research would like to examine.

Firstly, the study is expected to find a strong correlation between Working Capital Management and firms' profitability in Vietnam.

Secondly, the similar relationships between the other variables and profitability compared to the literature review are expected to be found, which are the negative impact of leverage and tangibility on firms' probability, the positive influence of growth and size, and the strong correlation between macroeconomic effects, industrial factors and profitability.

4. Empirical Result

Table 1. Sample's descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ROA	1143	-0.362	0.730	0.113	0.084
ROE	1143	-0.970	1.780	0.181	0.189
DR	1143	0.008	0.978	0.455	0.214
Growth	1143	-0.706	6.672	0.228	0.529
FATA	1143	0.000	0.939	0.315	0.207
Size	1143	7.809	17.370	13.545	1.319
CCC	1143	-358.049	2803.052	117.713	195.286
DSO	1143	1.356	993.251	55.040	75.613
DSI	1143	0.000	2683.887	101.311	171.436
DPO	1143	1.223	1530.680	38.638	65.906

Table 1 indicates the overall statistics of the sample. In general, considering the mix of 15 industries, the average ROA and ROE of the sample is acceptable, however if we compared them with the average market value then the returns are not as high as the expectation of investors. In addition, the sample has a relatively high growth rate in average at 22.8%, and a conservative Debt Ratio at 45.5% as the mean. Moreover, the companies in the sample has invested quite a lot in Fixed Assets since the mean of FATA is 31.5%, the minimum of zero is explained in the financial statements of Hamico Group that they made all their fixed assets into an investment. In addition, the average size of the companies in the sample is 13.545. Finally, for the Working Capital Management indicators, the means are 55.040 days, 101.311 days, 38.638 days and 117.713 days for DSO, DSI, DPO and CCC respectively. The zero DSI is explained that there are companies which belong to the transportation industry and they tend to have zero Inventory.

We had ran the regressions for each measure of Working Capital Management respectively by applying the first model: DSO, DSI, DPO, CCC. Furthermore, in order to robust the results the study included the macroeconomic effects and industrial factors into the model 2 with CCC as the overall measure for Working Capital Management.

Table 2 indicates the results obtained by taking DSO as the measure of WCM in model 1.

Table 2. The regression from model 1 using DSO

	ROA	ROE
(Constant)	0.057	0.043
Growth	***0.027	***0.067
DR	***-0.136	***-0.102
FATA	***-0.036	***-0.112
Size	***0.010	***0.016
DSO	***0.000	***0.000
R ²	0.171	0.087
F-Statistics	***48.173	***22.651

Note. ***/ **/ * indicate the significant at 1% level, 5% level, and 10% level respectively.

The results obtained from Table 2 give us the following equations for ROA and ROE:

$$ROA = 0.057 + (0.027).Growth + (-0.136).DR + (-0.036).FATA + (0.010).Size + (0.000).WCM$$

$$ROE = 0.043 + (0.067).Growth + (-0.102).DR + (-0.112).FATA + (0.016).Size + (0.000).WCM$$

The results imply that there is no correlation between DSO and firms' profitability, since the coefficients of DSO are 0 for both ROA and ROE, and they all have the significant level of 1%. It means that the movements of ROA and ROE are not impacted by the change in DSO. On the other hand, the remaining variables indicate the similar results with the aforementioned studies. Specifically, Leverage and Tangibility both show negative impact on firms' profitability, in the case of Growth and Size positive relations are found between them and firms' profitability, and they are all significant at 1% level. Overall, the regressions are significant at 1% level and accounted for 17.1% and 8.7% respectively for all the variabilities of ROA and ROE.

Table 3 indicates the results obtained by taking DSI as the measure of WCM in model 1.

Table 3. The regression from model 1 using DSI

	ROA	ROE
(Constant)	0.023	0.000
Growth	***0.028	***0.068
DR	***-0.138	***-0.102
FATA	***-0.034	***-0.114
Size	***0.012	***0.019
DSI	***0.000	***0.000
R ²	0.152	0.078
F-Statistics	***42.063	***20.233

The results obtained from *Table 3* give us the following equations for ROA and ROE:

$$ROA = 0.023 + (0.028).Growth + (-0.138).DR + (-0.034).FATA + (0.012).Size + (0.000).WCM$$

$$ROE = 0.000 + (0.068).Growth + (-0.102).DR + (-0.114).FATA + (0.019).Size + (0.000).WCM$$

The regression coefficients of DSI for ROA and ROE are 0 with the significant level of 1%. The results indicate that the movements of DSI have no effect on ROA and ROE. The remaining variables show the similar results compared to *Table 1* with the significant level of 1%. Finally, the models are significant at 1% level and explain for 15.2% and 7.8% respectively for all the variabilities of ROA and ROE.

Table 4 indicates the results obtained by taking DPO as the measure of WCM in model 1.

Table 4. The regression from model 1 using DPO

	ROA	ROE
(Constant)	0.016	-0.050
Growth	***0.028	***0.070
DR	***-0.136	***-0.109
FATA	***-0.029	***-0.097
Size	***0.012	***0.022
DPO	***0.000	***0.000
R ²	0.151	0.072
F-Statistics	***41.500	***18.715

Note. ***/ **/ * indicate the significant at 1% level, 5% level, and 10% level respectively.

The results obtained from *Table 4* give us the following equations for ROA and ROE:

$$ROA = 0.016 + (0.028).Growth + (-0.136).DR + (-0.029).FATA + (0.012).Size + (0.000).WCM$$

$$ROE = -0.050 + (0.070).Growth + (-0.109).DR + (-0.097).FATA + (0.022).Size + (0.000).WCM$$

According to Table 4, the coefficients of DPO are 0 for both ROA and ROE, and they are significant at 1% level. It means that there is no change in ROA and ROE is caused by the movement of DPO. The similar results are found for the remaining variables compared to *Table 2* and they all have the significant level of 1%. Overall, the models are significant at 1% level, and can be accounted for 15.1% and 7.2% all the variabilities of ROA and ROE.

Table 5 indicates the results obtained by taking CCC as the measure of WCM in model 1.

Table 5. The regression from model 1 using CCC

	ROA	ROE
(Constant)	0.035	0.026
Growth	***0.027	***0.067
DR	***-0.138	***-0.104
FATA	***-0.038	***-0.122
Size	***0.011	***0.018
CCC	***0.000	***0.000
R ²	0.158	0.084
F-Statistics	***43.851	***21.937

Note. ***/ **/ * indicate the significant at 1% level, 5% level, and 10% level respectively.

The results obtained from *Table 5* give us the following equations for ROA and ROE:

$$ROA = 0.035 + (0.028).Growth + (-0.138).DR + (-0.038).FATA + (0.011).Size + (0.000).WCM$$

$$ROE = 0.026 + (0.067).Growth + (-0.104).DR + (-0.122).FATA + (0.018).Size + (0.000).WCM$$

The regressions indicate that CCC has no impact on ROA and ROE, since the coefficients of CCC are 0 for both ROA and ROE with the significant level of 1%. For the remaining variables, the similar results are found compared to *Table 2* with the significant level of 1%. Finally, the models are accounted for 15.8% and 8.4% all

the variabilities of ROA and ROE respectively with the significant level of 1%.

Table 6 indicates the results obtained by taking CCC as the measure of WCM in model 2.

Table 6. The regression from model 2

	ROA	ROE
(Constant)	-0.002	-0.027
Growth	***0.023	***0.056
DR	***-0.128	***-0.090
FATA	***-0.056	***-0.115
Size	***0.014	***0.021
CCC	***0.000	***0.000
Rubber	***0.057	***0.103
HighTech	***-0.028	***0.139
Oil	0.009	***0.071
Energy	0.004	-0.004
Tourism	**-.033	-0.070
Pharmacy	-0.005	0.000
Education	**-.051	***-0.156
Mining	***0.044	*0.045
Plastic	0.000	-0.015
Manufacturing	-0.006	-0.021
Steel	**-.022	-0.027
Food	0.011	-0.004
Commerce	***-0.027	*-0.030
Seafood	-0.003	-0.023
Transportation	-0.002	*-0.029
Y2006	**0.015	**0.059
Y2007	**0.015	***0.038
Y2008	-0.005	-0.010
Y2009	**0.016	***0.046
Y2010	0.007	0.000
Y2011	0.002	-0.021
Y2012	-0.009	***-0.034
Y2013	**-.016	***-0.034
Y2014	**-.026	***-0.044
R ²	0.253	0.193
F-Statistics	***20.710	***14.592

Note. ***/ **/ * indicate the significant at 1% level, 5% level, and 10% level respectively.

By adding the industrial factors and macroeconomic effects, the robustness has been increased. The regressions are now accounted for 25.3% and 19.3% of all the variabilities of ROA and ROE with the significant level of 1%. However, the coefficients of CCC are still 0 for both ROA and ROE. Growth, Size, FATA, and DR show the similar results compared to Table 2. The industries of Rubber, High-Tech, Education, Mining, Commerce have significant impact on both ROA and ROE. On the other hand, the industries of Oil and Transportation show only the significant relation with ROE, and the significant impact on ROA of Tourism and Steel Industries are found. In addition, the year of 2006, 2007, 2009, 2013, and 2014 have significant relation with both ROA and ROE, and the year of 2012 shows only the significant relation with ROE.

5. Discussion

5.1 Working Capital Management

Interestingly, all the variables represent Working Capital Management in the study show a zero coefficient with firms' profitability in the sample. The reason could be that despite being a crucial part of business, however Working Capital Management is just the condition of fulfilling the short-term obligations, or maybe to know how to improve the efficiency of the companies through managing the production stage or credit policies.

Therefore, the conclusion would be: “Working Capital Management could help the firms meet the short-term obligations and improve the performance in term of efficiency but not profitability”.

5.2 Growth

It has been proven that Growth opportunities have positive relation with firms' profitability since the high growth rate is the indicator of the increase in efficiency and the lower cost of capital. Hence, the results are consistent with the previous studies with a positive relation between Growth and firms profitability.

5.3 Leverage

The leverage shows a negative impact on firms' profitability. The result could be explain by the agency conflict, that firms had over leveraged themselves. Another reason could be the poor judgment of creditors in Vietnamese Banking System since the level of non-performing loans in the system was fairly high in the study period.

5.4 Tangibility

Tangibility show the negative relation with firms' profitability. The negative impact could be explained by the fact that the companies in the sample have invested too much into their fixed assets and they could not make use of them in the most efficient way.

5.5 Size

Size indicates a positive impact on firms' profitability. The results are consistent with the previous studies since larger firms can have higher return than smaller firms due to better management, and more diversification in investing, with a larger economic scales.

5.6 Industrial Factors and Macroeconomic Effects

Vietnam is a country, which relies heavily on natural resource industries. Therefore, it is easy to understand that Rubber, Oil, and Mining Industries are significantly and positively related to firms' profitability. The other Industries which have the significant with firms profitability are High-tech, Tourism, Education, Steel, Commerce, and Transportation.

On the other hand, the year of 2006, 2007, and 2009 are significant related to firms profitability. This could be explained by the global financial crisis, due to the policies to encourage the development of the economy before the crisis, and the policies to keep the economy stable and overcome the consequences. The year of 2012, 2013, and 2014 are significant, the reason could be the policies of the government, which prefer to have substantial growth rather than a rapid and unstable growth.

In conclusion, industrial factors and macroeconomic effects do have impact on firms' profitability.

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