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EFFECTS OF WORKING CAPITAL MANAGEMENT TO THE PROFITABILITY OF ENTERPRISES LISTED IN HO CHI MINH STOCK EXCHANGES

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Abstract

This paper has examined the effect of working capital management on firm's profitability. Panel data of 255 firms listed in Ho Chi Minh stock exchange was chosen. Our paper indicates that working capital management have a statistically significant impact on earnings of enterprises. We use multiple proxies for working capital management, including inventory turnover (INV), current ratio (CR), debt ratio(D/E), account receivable turnover (AR), fixed-asset turnover (FATA) and log of sales (Ln(Sale)). Firm's ability to generate profits is proxies by return on sales (ROS and return on assets (ROA)). This paper emphasizes the importance of the working capital management process within an organization in terms of its influence on profitability.

Keyword: working capital management, profitability

Introduction

In the process of production and business, enterprises have the biggest concern is the increase value of the business owners. Before achieving its objectives, every business should have a certain amount of capital. Using and managing capital efficiently will determine the survival and healthy growth of the business in future. Business capital of the enterprises has two main components: working capital and fixed capital. Each type of capital has different characteristics and functions. If the business is considering a live organism, in which the fixed capital is regarded as pillars, the working capital is like the lifeblood. The capital flows are always moving, continuously recirculating cycle associated with business activities of enterprises. Therefore, the management working capital is always considering as one of the most important tasks of financial management business.

In Vietnam, management working capital is essential, but businesses still focus on product development, sales and marketing that no overview as well as adequate attention to governance issues working capital and its relationship to the profitability of the business. When businesses have expanded in scale, issues of governance arise gradually, affecting negatively on the profitability of businesses. Simultaneously with the continuous development of the economy today, the issues raised in the working capital become hot issues, attracted the attention not only of businesses but also many scientists.

Worldwide, many studies also learn about the relationship between liquidity and profitability of the business. Featured is the study of Mihir Dash and Ravipati Rani (2009) propose a model building management objectives for working capital. The observation



shows that the results of the proposed model is very sensitive to changes in accounts receivable, followed by inventory, short-term debt securities that can be sold, fixed assets and less especially cash. Other studies like Katerina Lyroudi, Dan McCarty (1993); Tu Thi Kim Thoa, Nguyen Thi Uyen Uyen (2014) also found similar results. However, the coefficient of the short-term solvency ratio and fast, this study suggests an interrelation between the current ratio and profits of the business.

Meanwhile, in Vietnam, management working capital is an important content in financial management that helps businesses use capital efficiently and avoid bankruptcy. The volatility of the business context requires the working capital management as to closely and comprehensively. The previous studies in developed countries and the developing country also show that the relationship of the management working capital and the profitability of the business. However, management working capital issues is relatively new to businesses in Vietnam, no bases authentic basis for comparison, compare to the implementation process still be confusing and inefficient. Some studies offer models impact analysis in general, not collated and applications into a business or specific sectors to consider these impacts can adjust how appropriate and can be widely applied to companies or other industries.

Specifically, as in the study of Huynh Phuong Dong and Jyh-hand Su (2010), there is exists a problem that the period for this study is no longer compare to some previous research studies on the relationship between working capital management and profitability of the business. Therefore, there is not much point pattern changes in firm size. Moreover, the study only refers to the internal factors, but do not consider the external factors such as: competition, suppliers, economic situation... Additionally, like research Tu Thi Kim Thoa, Nguyen Thi Uyen Uyen (2014), this research stops at analyzing the relationship between the management working capital and the rate of operating profits of the enterprise which is just a representative indicator reflecting the profitability and there are many indicators reflecting profitability, each indicator shows the different meanings depending on the intended use. In the future, research may expand the study this relationship with the market value and liquidity of the company for a longer time period and larger companies.

Derived from the actual situation as well as the gaps mentioned above, the study of the impact of working capital management to the profitability of the business is essential.

Method

Data Analysis

Research focuses on clarifying the impact of the administration of working capital to the profitability of enterprises in Vietnam, using data from the financial statements audited for the period 2007 - 2016 of 255 enterprises nonfinancial main headings different business sectors, listed on Ho Chi Minh City stock exchange.



Variables

Dependent Variable: Profitability of the business

To analyze the profitability of the business, it is possible to use many different indicators (Table 1)

Table 1: Some studies on the measure of profitability

STT	Measure	Research
1	The return on the assets (ROA)	H. Jamal Zubairi, "Impact of Working Capital Management and Capital Structure on Profitability of Automobile Firms in Pakistan"
2	The return on Equity (ROE)	Lyroudi, Katerina, McCarty and Dan, "An Empirical Investigation of the Cash Conversion Cycle of Small Business Firms"
3	The return on Sale (ROS)	Dr. Hong Yuh Ching, MSc. Ayrton Novazzi, Dr. Fábio Gerab, "Relationship between working capital management and profitability in Brazilian listed companies"
4	Net of profitability (NOP)	Ioannis Lazaridis, Dimitrios Tryfonidis "Relationship Between Working Capital Management and Profitability of Listed Companies in the Athens Stock Exchange"

The above indicators reflect a different aspect of the profitability and value of different uses. Based on the level of the common and the situation of the economy of Vietnam, the study only focuses on analyzing two targets simultaneously selected as the dependent variable for three models of the effects of administration of working capital to ability profitability of the enterprise is: ROA and ROS.

Independent Variable:

Current Ratio (CR)

The higher the current ratio, the better the ability to payment short - term debt obligations can be ensured, this may be due to short-term debt was reduced or current assets increased (elements of which also increased as cash, accounts receivable, inventory). From the results of some previous studies, this study temporarily expects, CR fluctuations same way with profitability. This is taken from the grounds of the research results Zubairi Jamal H. (2010), similar to the results of Katerina Lyroudi, Dan McCarty (1993); Tu Thi Kim Thoa Thi, Nguyen Thi Uyen Uyen (2014); ... This study suggests hypothesis 1 of impact of CR to Profitability.

The ratio of the Debt to the Equity (D/E)

When demand for capital for production expansion of enterprises increasing, equity does not meet. The business will use the loan to finance the majority of its assets, a also known as leverage finance because the debt ratio has elements of debt including short-term debt, it should be certain to affect the solvency of the business. And assumptions as above, solvency impacts with KNSL, so that the study assumed that the debt D/E will impact KNSL opposite. At the same time, it is also the result of the study of Deloof (2003); Lazaridis, Tryfonidis (2006); Tu Thi Kim Thoa Thi, Nguyen Thi Uyen Uyen (2014); Dash, Ravipat (2009) about the influence of D/E to KNSL.



The number of days of accounts receivable (AR)

There have been many studies on the impact of accounts receivable (AR) on companies operating in non-crisis period (Deloof (2003); Lazaridis & Tryfonidis (2006); Kesseven Padachi (2007); H. Jamal Zubairi (2011); Tu Thi Kim Thoa & Nguyen Thi Uyen Uyen (2014)). The majority of the findings, both in the developed markets and emerging markets, have shown a negative relationship between AR and performance of the company. The reason is that in times of crisis, the company is considered to be performing better while minimizing risk by maintaining a minimum level of AR to the operation of the company.

The exception is the evidence found in the Indian market, Sharma and Kumar's research (2011) shows a positive relationship between AR and the performance of the company. This means when a company loosens control their AR, this will improve the performance of the company. They give two explanations for this discrepancy. Firstly, India is an emerging market, and the company's reputation is a minor factor and most of the companies select to loosen control their AR. Secondly, most companies have profit, and they tend to loosen their control AR. This study accepts the hypothesis that AR has the opposite effect on KNSL as a result of previous studies.

The number of days of inventory (INV)

Like the other major components of the WC, the relationship between inventory (INV) and activities of the company were studied by Deloof (2003); Lazaridis, Tryfonidis (2006); Karaduman et al, (2011); Sharma, Kumar (2011). Findings of these studies have shown that the number of days of inventory negatively affects the performance of the company. Opposite results were found by Mathuva (2010) in Kenya, showed a positive result. He argued that companies maintain higher inventory levels to reduce production costs and prevent the maximum ability to inaccessible materials compared with price volatility of raw materials due to the change of economic factors macro.

The ratio of fixed assets to total assets (FATA)

Fixed assets (fixed assets) or a kind of long-term assets, which are assets with low liquidity, so solvency is not high. The increase in fixed assets may require additional equity borrowing to finance additional fixed amount, adding to pressure to pay principal and interest to the enterprise. Besides, fixed assets increased will lose the part financing for short-term assets. increasing the debt of the business while reducing TSNH reduce the solvency ratio. This has been recognized from research results of Lazaridis, Tryfonidis (2006); Dash, Ravipati (2009); Huynh Phuong Dong, Su Jyh-hand (2010);

Logarit Sale (Ln(Sale))

The size of a business can be evaluated by many different criteria such as: total revenue, number of employees, equity, ... However, to analyze the impact of governance working capital to the profitability of total assets, the research only focuses to company 's size in terms of total revenue. Company 's size is measured by the logarithm of revenue.

Company 's size in terms of revenue usually has a certain level corresponding to total assets and profits of a business. In addition to, company 's size also affects the ability to pay. Therefore, it also impacts on the profitability of assets (ROA). For example, a large business can reserve more cash than other enterprises and this can help them easily grasp the investment opportunity such as: concedes payment discount when paying

early, buying at discount when purchased in bulk, ... Moreover, these enterprises are also easily accessible sources of capital to invest in other projects, make good use of the resources of the business to maximize profits, while improving profitability.

One of the clauses of the order theory is that when a company operates in an industry with growth demand; it will require more capital to operate. Otherwise it may face a dilemma situation called the withdrawal unqualified or 1-time consumption, but a healthy company should stay away. This also means that a company needs more financial resources commensurate with growth opportunities by building inventories and trade accounts receivables. Therefore, researchers like Lazaridis, Tryfonidis (2006); Huynh Phuong Dong, Su Jyh-hand (2010); Marc Deloof (2003); Hill et al (2010) found a positive relationship between revenue growth and profitability.

In summary, the theoretical basis and the results of experimental studies have shown the relationship between the dependent variable is the profitability with the independent variables are quantitative variables reflecting the effectiveness of governance working capital, that is the basis for the research team to make hypotheses and regression model which are expected to be synthesized in table 2.

Table 2: The research hypothesis and regression models

Factors	Sign	Research	Impact
Current Ratio	CR	H. Jamal Zubairi (2010); Lyroudi, Katerina; McCarty, Dan (2010); Tu Thi Kim Thoa and Nguyen Thi Uyen Uyen (2014)	+
Debt/Equity	D/E	Deloof (2003); Lazaridis & Tryfonidis (2006); Tu Thi Kim Thoa and Nguyen Thi Uyen Uyen (2014); Dash and Ravipat (2009)	-
The number of days of accounts receivable	AR	Deloof (2003); Lazaridis & Tryfonidis (2006); Kesseven Padachi (2007); H. Jamal Zubairi (2011)	-
The number of days of inventory	INV	Deloof (2003); Lazaridis and Tryfonidis (2006); Karaduman and partner,(2011); Sharma and Kumar (2011)	-
The ratio of fixed assets to total assets	FATA	Lazaridis và Tryfonidis (2006); Dash and Ravipati(2009); Huynh Phuong Dong and Jyh-tay Su (2010)	+
Logarit Sale	Ln(Sale)	Lazaridis and Tryfonidis (2006); Huynh Phuong Dong and Jyh-tay Su (2010); Marc Deloof (2003); Hill and partner, (2010)	+

Source: Author's calculation

Conclusion and Discussion

Matrix of correlation

Matrix correlation coefficient between variables showed that several variables the variables have relatively small correlation with each other.



Table 3: Matrix of correlation

Variable	CR	DE	AR	INV	LnSale	FATA	ROA	ROE	ROS
CR	1.000								
DE	-0.064	1.000							
AR	0.008	0.001	1.000						
INV	0.013	0.0176	0.0614	1.000					
LnSale	-0.149	0.106	-0.166	-0.094	1.000				
FATA	-0.007	-0.003	-0.003	-0.004	-0.018	1.000			
ROA	-0.002	-0.2152	-0.048	-0.045	0.069	0.005	1.000		
ROE	-0.010	-0.2112	-0.029	-0.028	0.094	0.007	0.599	1.000	
ROS	0.006	-0.0074	0.075	-0.0003	-0.221	-0.002	0.161	0.1254	1.000

Source: Author's calculation

Selecting an appropriate model

Initially, the authors used the Hausman test to select either the fixed-effects model (FEM) or the random-effects model (REM) for the data set to be studied. In addition, the author also uses the Hausman test with the sigmamore option (extended standard deviation of the residue) to ensure more selective results.

** Modeling with ROA is a dependent variable:

$$ROA_{it} = \alpha_0 + \alpha_1 CR_{it} + \alpha_2 D/E_{it} + \alpha_3 AR_{it} + \alpha_4 INV_{it} + \alpha_5 Ln(S)_{it} + \alpha_6 FATA_{it} + u_i + \epsilon_i$$

Table 4: Hausman test results with sigmamore option

ROA	Coefficient			
	(b) FE	(B) RE	(b-B)	Sqrt(diag(V_b- V_B) S.E
CR	-0.0006	-0.00005	-9.5e-06	0.00002
DE	-0.0037	-0.0052	0.00157	0.00039
AR	-7.94e-07	-9.93e-07	1.99e-07	1.83e-07
INV	-4.25e-07	-5.77e-07	1.52e-07	1.63e-07
LnSale	0.0031	0.00438	-0.0013	0.00186
FATA	-0.00015	-0.0001	-0.00005	0.000029

Ho: no correlation between u_i and the independent variables

$$Chi2(6) = 23.89$$

$$Prob>chi2 = 0.0005^*$$

Source: Author's calculation

As a result, the FEM model is chosen.

- Check the error variance change of FEM model (1) _ xtest test3

Table 5: Results of testing the variance of change

Ho: $\sigma(i)^2 = \sigma^2$ for all i	
Chi2 (255)	8.9e+05
Prob> chi2	0.000*

Source: Author's calculation

So error variance changes that appear in this FEM model, to a more sustainable model we choose the fixed effects model with optional cluster (IDD).

Table 6: The results of the fixed effects model

ROA	Estimation coefficient	Robust S.E	t	p> t
CR	-0.00006	0.00005	-1.3	0.193
DE	-0.0037	0.00292	-1.26	0.210
AR	-7.94e-07	7.37e-07	-1.08	0.282
INV	-4.25e-07	3.13e-07	-1.36	0.175
LnSale	0.0031	0.0057	0.54	0.591
FATA	-0.00014	0.000013	-11.19	0.000*
c	-0.0043	0.1567	-0.03	0.978
Sigma_u	0.0669	F(6,254) = 61.5		Prob>F = 0.00
Sigma_e	0.0884	R_sq (within)= 0.0092		

Source: Author's calculation

Test the multicollinearity in the FEM model

Table 7: Test the multicollinearity in the model

Variable	VIF
ROA	1.06
CR	1.03
DE	1.07
AR	1.03
INV	1.01
Ln(Sale)	1.08
FATA	1.00
Mean	1.04

Source: Author's calculation

VIF model coefficients is less than 10, so there is no phenomenon model multicollinearity.

Research results

Table of random effects models showed the regression results for the impact of governance WC to KNSL of enterprises in the sample. With 95% reliability, the regression results from random effects models showed the impact of all these factors are greater than 0.05 and no statistically significant variables except FATA. The estimated coefficients α corresponding to variables and obtained from research result, respectively, showed that the variables CR, D/E, AR, INV, FATA impact inversely to ROA, i.e. effects opposite to the profitability of enterprises. This means that when the coefficient of solvency increases (CR increases), the ratio of the debt to the equity (D/E increases), the number of days of account receivables increases (AR increases), the number of days of inventory increases (INV increase) and the ratio of fixed assets to

total assets increases (FATA increase) will make the profitability of total assets decreased or reverse. Only a variable - Ln(Sale) impacts the same way with ROA. Corresponding to the size of the company increases (Ln (Sale) increases), the ROA will reduce or reverse.

When the size of the company increased by 1 unit, ROA increased by 0.307%. This shows the company model is improved, scalable greater market, the ability to better manage costs as profits increase. In contrast, the ratio of fixed assets to total assets has relationships with ROA in the opposite direction, when the rate increased by 1%, ROA will decrease by 0.1498%. Besides, the ratio of the ratio of the debt to the equity (D/E) also has relationships inversely to ROA, debt ratios increases by 1% will make ROA decrease by 0.367%. When too focused on financial leverage, credibility and profitability of the company will decrease, which causes profitability - ROA to decrease. Variables such as the number of days' account receivables, the number of days of inventory turnover despite any meaningful impact on ROA but not significantly.

**** Modeling with ROS is a dependent variable**

The equation has the general form is:

$$ROS_{it} = \alpha_0 + \alpha_1 CR_{it} + \alpha_2 D/E_{it} + \alpha_3 AR_{it} + \alpha_4 INV_{it} + \alpha_5 Ln(S)_{it} + \alpha_6 FATA_{it} + u_i + \epsilon_i$$

- Choose model

Table 8: Hausman test results with sigmamore option

ROS	Estimation coefficient			
	(b) FE	(B) RE	(b-B)	Sqrt(diag(V_b- V_B) S.E
CR	-0.00076	-0.00087	0.00011	0.00011
DE	-0.00718	-0.00884	0.00166	0.00187
AR	-0.000016	-0.00001	-3.53e-06	8.41e-07
INV	-4.69e-06	-4.82e-06	1.28e-07	7.43e-07
LnSale	-0.0927	-0.1021	0.0094	0.0094
FATA	-0.00019	-0.00024	0.00004	0.00013

Ho: no correlation between u_i and the independent variables
Chi2(5) = 20.9
Prob>chi2 = 0.0008*

Source: Author's calculation

- The result of variance of change

Table 9: The result of variance of change

Ho: $\sigma(i)^2 = \sigma^2$ for all i	
Chi2 (255)	1.3e+08
Prob> chi2	0.000*

Source: Author's calculation

- Final model that the research chooses is the FE model with optional cluster

Table 10: Fixed Effect Model with ROS - dependent variable

ROS	Estimation coefficient	Robust S.E	t	p> t
CR	-0.00076	0.00071	-1.07	0.287
DE	-0.0072	0.00679	-1.06	0.292
AR	-0.000016	0.00001	-1.16	0.246
INV	-4.69e-06	3.5e-06	-1.34	0.183
LnSale	-0.0927	0.0602	-1.54	0.125
FATA	-0.00019	0.0001	-1.89	0.060**
c	2.6883	1.640	1.64	0.102
Sigma_u	0.564		F (6,254) = 2.44	
Sigma_e	0.541		Prob>F = 0.0262	
Rho	0.5206		R_sq (within)= 0.0148	

Source: Author's calculation

- Test the multicollinearity in the FEM model

Table 11: Test the multicollinearity in the model

Variable	VIF
ROS	1.06
CR	1.03
DE	1.02
AR	1.03
INV	1.01
LnSale	1.12
FATA	1.00
Mean	1.04

Source: Author's calculation

VIF model coefficients is less than 10, so there is no phenomenon model multicollinearity.

Research results:

Table of random effects models showed the regression results for the impact of governance WC to KNSL of enterprises in the sample. With 95% reliability, the regression result from random effects models shows that the impact of all these factors is less than 0.05 and has statistical significance. The estimated coefficients α corresponding to variables and obtained from research result, showed that the variables CR, Ln (Sale) impact the same way with ROS, i.e. the impact the same way with the profitability of the business. This means that when the solvency ratio increased (CR increase) and increased cash flow cycle (CCC increase) will make the profitability of total assets increase or vice versa. The variable D/E, AR, FATA, INV opposite effects of ROS. Corresponding to the



ratio of the debt to the equity increases (D/E increases), the number of days of account receivables increases (AR increases), the number of days of inventory increases (INV increases), the ratio of fixed assets to total assets increases (FATA increase), the ROS will reduce or reverse.

Results

From the results of the analysis outlined above, the study gives some perspective as follows:

The results of the study are similar to results of previous studies on the impact of the trend component of management working capital to KNSL. However, in terms of this study sample, the results have shown clear differences in variables CR - short-term solvency and FATA - the ratio of fixed assets to total assets.

Like the previous studies, the results indicate that CR impacts KNSL in same direction, those are the study results of H. Jamal Zubairi (2010), similar to the results of Katerina Lyroudi, Dan McCarty (1993); Tu Thi Kim Thoa, Nguyen Thi Uyen Uyen (2014). But the results of this study showed that, CR opposite impacts and not significant for the variables representing profitability. Considering in Vietnam, from the described results can find that the current ratio of the enterprises in the sample is very high, this can lead to wasteful use of capital, reduce profitability. Enterprises need to have appropriate policies to adjust liquidity at a reasonable level (approximately 2) to take advantage of the entire amount of idle assets.

As for variable FATA, the authors of the previous studies as: Lazaridis, Tryfonidis (2006); Dash, Ravipati (2009); Huynh Phuong Dong, Su Jyh-hand (2010) concluded that FATA affects the same trend as profitability. But in this study, FATA variables affects unstable, both positively and negatively to indicators which represent profitability. Based on the situation of enterprises in Vietnam in the study sample, the ratio between current assets and fixed assets using a balance. The research result demonstrates that the variable FATA have significant impact to profitability, but now each business adjusts this ratio depending on the characteristic, the business cycle of the business to avoid waste and improve the efficiency of capital use enterprise.

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