The Effect of Working Capital Strategies on Performance Evaluation Criteria

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Abstract

The main aim of the present study is to explore the effect of working capital strategies on performance evaluation criteria. To this end, a number of 658 companies were selected during the period of 2007. For testing research hypotheses, multivariate linear regression statistical technique was used. The results indicate that investment strategies have a significant effect on return on assets and Tobin Q indicator. However, these strategies do not have any significant effect on Market Value Added. Financing strategies also have only a significant effect on Return on Assets.

Keywords: working capital strategies, investment strategies, financing strategies, return on assets, Tobin q indicator, market value added

1. Introduction

Working capital management is one of the most important issues that business unites managers are facing and it plays a significant role in growth and survival of a company. Working capital management is the management of current assets such as cash, short-term investment, accounts receivable and balance and current liabilities of business units (Reza Zadeh & Heidarian, 2010). Due to a number of reasons, working capital management is necessary for financial health of business units. First, if the funds invested in working capital, it will be inharmonious, in comparison to total assets of the company, and it is possible that these funds have not been used in an efficient situation. Efficiency in working capital management is of great importance, especially in manufacturing companies. In other words, a good and systematic management of working capital leads to increased market value of the business unit and efficient management of working capital can lead to fundamental outcomes and ignoring it can be dangerous for any company. Second, working capital management directly affects liquidity and profitability of business units and also their net value (Izadinia & Taki, 2010). On the other hand, mangers in companies expect to make a significant effect on company's profitability with the use of working capital management. Therefore, for many companies, working capital management can be one of the most important topics n financial management (Dong & Su, 2010), which plays an important role in managerial structure of an organization and has a great importance in achieving Great economic gains as a main driving force in moving organizations forward (Jannesari, 2012).

Companies, considering the relative benefits of the two major strategies of working capital management including aggressive and conservative strategies, can select one of these strategies. By choosing the aggressive strategy, investment in working capital components is kept at the minimum possible level and by choosing the conservative strategy, a company can only think about increasing its sales and are not concerned about proportion of investment in working capital with profitability (Samson et al., 2012). In other words, it can increase the power of liquidity. By minimizing investment in working capital (aggressive strategy), a positive effect can be created on company's profitability and in this way total assets and proportionally net current assets can be reduced. Of course, if companies reduce the level of their inventory levels of materials and goods overly, it is so much likely for them to lose their customers. Or if they will not pay their accounts payable on time, they might lose the corresponding cash discounts that in some cases, and the cost of lost opportunity related to these cases is considerable (Mwalla, 2012).

Hence, it is necessary for managers to consider these matters at the time of selecting aggressive strategy. Selection of conservative strategy and high investment in working capital can decrease profitability. For example, although keeping materials and goods inventory at a high level, it leads to reduced loss due to shortage of raw material and a halt in production line; however, fluctuations in material prices and losing customers are resulted from lack of having goods to supply (Malekian & Asghari, 2011). However, the return resulting from, generally, is only equal to inflation rate. Also, choosing aggressive strategy with regard to granting credit to customers increases sales, because, on one hand, it is considered as a king of price reduction and encourages customers to make their purchases even at periods of recession and on the other hand, it enhances the relationship between the company and its customers in the long run (Saghir et al., 2011).

In order to manage working capital affairs of a business unit, there are a variety of strategies from which, working capital management of a business unit, should find a proper balance between current assets and current liabilities and secondly , in different situations, considering external and internal factors of a unit for profit and also considering the risk and return should select appropriate strategies for their working capital management in order to be able to efficiently manage current assets and liabilities, enhance company's performance and maximize shareholders' wealth (Padachi, 2006).

Therefore, mangers in companies are expected to be able to make a significant effect on the profitability of their companies through selecting appropriate working capital strategies as a considerable part of the resources of companies is invested in working capital, which in turn increases the importance of working capital management.

Based on actual information and relevant previous conducted studies, selecting the type of working capital strategies can get useful data for predicting the performance of companies and can play an important role in investors' decision-making and other users of financial statements with regard to stock trade. Hence, in line with the work of previous researchers, this study seeks to analyze and explore whether working capital strategies are effective on performance evaluation criteria in the companies listed on Tehran Stock Exchange. Visual form of the relationships between research variables is presented in the following conceptual research model:
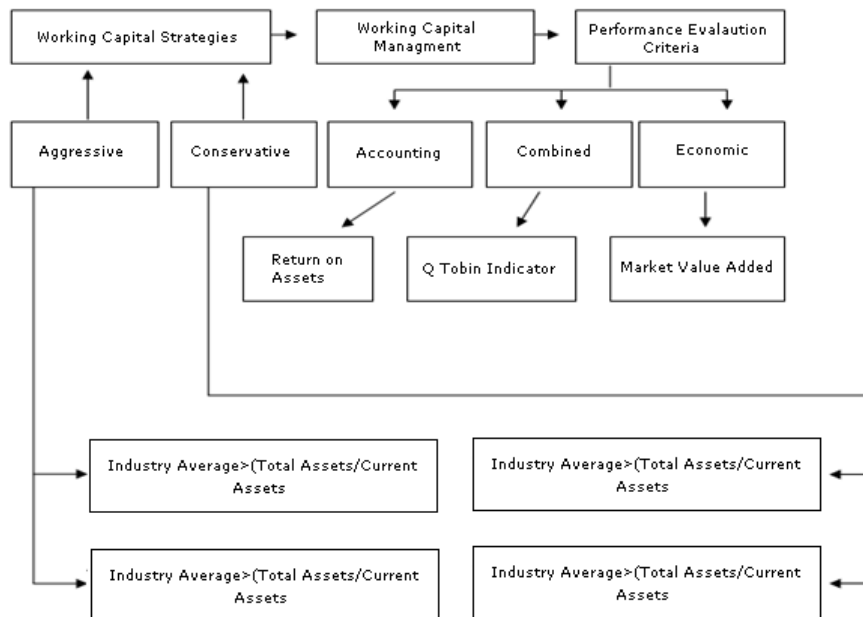

Figure 1. Research conceptual model

2. Research Hypotheses and Related Models

Hypothesis 1: Working capital strategies have a significant effect on accounting performance criteria.

Hypothesis 2: Working capital strategies have a significant effect on combined performance criteria (accounting and economic).

Hypothesis 3: Working capital strategies have a significant effect on economic performance criteria.

In this study, for testing research hypotheses, the following models are used:

(1) $ROA = \beta_0 + \beta_1 \text{ Investment of Strategy} + \beta_2 \text{ Financing of Strategy} + \beta_3 \text{ Size} + \beta_4 \text{ Growth} + \beta_5 \text{ Lvrg} + \beta_6 \text{ Gdogr} + \varepsilon$

(2) $QTobin = \beta_0 + \beta_1 \text{ Investment of Strategy} + \beta_2 \text{ Financing of Strategy} + \beta_3 \text{ Size} + \beta_4 \text{ Growth} + \beta_5 \text{ Lvrg} + \beta_6 \text{ Gdogr} + \varepsilon$

(3) $MVA = \beta_0 + \beta_1 \text{ Investment of Strategy} + \beta_2 \text{ Financing of Strategy} + \beta_3 \text{ Size} + \beta_4 \text{ Growth} + \beta_5 \text{ Lvrg} + \beta_6 \text{ Gdogr} + \varepsilon$

In the above models:

ROA = Return on assets

Investment of strategy = Investment strategy

Dummy variables: for companies having conservative strategy, a value of 1 and for companies having aggressive strategy, a value of 0 is considered.

Financing strategy: Financing strategy

Size: Company size

Growth: Sales growth

Lvrg: Financial leverage

Gdogr: Economic growth of the country

QTobin: Tobin Q indicator

MVA: Market value added

ε: Residual of the model

3. Research Method

The present study is correlational and based on type, its Ex post facto research design. In other words, it is conducted based on analyzing past data (financial statements of companies). Also, the data used in this study are panel data because research variables are both measured and studied among various companies as well as during the time period of this study. In terms of objective, this study is an applied research and in terms of data collection method, it is a bibliographical research. In fact, the researcher has collected the required information and data with exploring available documents and sources in official website of Tehran Stock Exchange Organization and after studying them and performing necessary tests, have interpreted the findings and reported the obtained results.

3.1 Research Population and Sampling Method

Research population of the present study includes all companies listed on Tehran Stock Exchange during the time span of 2007-2013. *Purposeful* sampling was used for this study; which means that research population were filtered by considering a number of conditions and companies having these conditions were analyzed as sample companies. The conditions applied for selecting research sample are presented below:

- Companies being present in Stock Exchange for the total length of research time period.
- Companies whose fiscal year has not changed during research time period.
- Companies whose stock was traded during research time period.
- Companies that are not among investment or financial intermediary companies.

By applying the above mentioned conditions, 94 companies were selected as the main sample.

3.2 Data Collection Method and Tools

In the present study, in order to collect the information related to theoretical principles and research background, bibliographical method was used. Research data also have been collected with the use of Rah Avard Novin software and in the event of lack of availability of information in this database, records of financial statements available in the library of Tehran Stock Exchange organization have been used.

4. Results and Discussion

Descriptive indicators of research variables were presented in Table 1.

Table 1. Measures of central tendency and dispersion for each of research variables

Indicators	Return on assets	Q Tobin	Market value added	Investment strategies	Financing strategies	Size	Sales growth	Leverage	GDP
Average	0.121910	0.861719	639455.9	0.557078	0.465753	13.16267	0.237903	2.051037	1.963927
Mean	0.101661	0.808676	608721.5	1.000000	0.000000	13.12107	0.187571	1.706616	3.160000
Max.	0.426784	1.395740	8.917633	1.000000	1.000000	17.63089	1.338152	4.219150	7.840000
Min.	-0.339995	0.133315	-1.181768	0.000000	0.000000	9.880833	0.435169-	1.163268-	-5.400000
Standard deviation	0.139977	0.229006	194168.9	0.497110	0.499206	1.231684	0.335615	1.585031	4.307258
Skewness	0.265884	0.191350	0.818789	-0.229813	0.137309	0.378189	0.936852	0.14979	0.327552-
Kurtosis	3.244205	3.426912	3.810943	1.052814	1.018854	3.140533	4.695355	3.504925	2.004309
Total	80.09510	566.1491	+084.20	366.0000	306.0000	8647.873	156.3021	1347.531	1290.300
Number of observations	658	658	658	658	658	658	658	658	658

In order to study the normality distribution of data in econometric research, Jarque-Bera test is used. Table 2 indicates the results.

Table 2. Results of Jarque-Bera test

Normality test	Return of assets	Q Tobin	Market value added	Investment strategies	Financing strategies	size	Sales growth	Leverage	GDP
Jarque-Bera	4.158341	4.385334	5.245521	109.5764	109.5097	2.624863	3.745892	5.180147	38.88788
Probability	0.091245	0.089524	0.065234	0.000000	0.000000	0.265258	0.125284	0.072455	0.000000
Number of observations	658	658	658	658	658	658	658	658	658

Results of Jarque-Bera test indicate that probability value (Jarque-Bera) for the variables including return of assets, Q Tobin, market value added, size, sales growth and leverage is larger than 0.05. Therefore, the null hypothesis is not rejected and with a 95% confidence, it can be said that these variables have a normal distribution. However, for investment strategies, financing strategies and also GDP of this value is smaller than 5%, and it means that these variables are not normal. In the following, research hypotheses are tested:

Hypothesis 1: working capital strategies have a significant effect on accounting performance criteria.

Estimation method of the present model is based on panel data method. This method is a combination of "Time series data" and "cross-sectional data". In each of the time series models and cross-sectional data, there are some shortcomings which can be mitigated in panel data model. In panel data method, two Chow and Hausman tests are used for determining one of the methods of fixed effects or random effects and the results of these two tests have been presented in the below Tables.

Table 3. Results of chow test for 1st hypothesis

Description	p-value	Freedom degree	Probability
Cross-section F	11.048175	(557,93)	.0000
Cross-section Chi-square	686.858359	92	.0000

As it is evident form the above table, the results of Chow test indicate that the obtained probability for F-test is smaller than 5%. Therefore, for testing this hypothesis, Panel data should be used.

Table 4. Results of Hausman test for 1st hypothesis

Description	p-value	Freedom degree	Probability
Cross-section F	20.604381	6	0.0022

Since, the probability obtained for Hausman test is smaller than 5%, fixed effects model is selected and finally, the model is estimated with the used of fixed effects model.

Table 5. Regression test for 1st hypothesis

Variable	Coefficient of determination	Estimate deviation	t-value	Sig. level
Constant	0.301449-	0.138953	2.169428-	0.03*
Investment strategies	0.046527	0.009184	5.065889	.000**
Financing strategies	0.065118-	0.010607	6.139289-	.000**
Size	0.031249	0.010505	2.974717	0.003**
Sales growth	0.079340	0.013747	5.771434	.000**
Leverage	0.0011955-	0.001582	1.235439-	0.217
GDP	0.000804	0.000857	0.938043	0.348

* $p < .01$, ** $p < .005$

Considering the obtained significance levels for variables being studied in 1st hypothesis, results can be described as below:

• For the 1st secondary hypothesis, due to the fact that the obtained significance level is smaller than 5% (0.000), the null hypothesis is rejected and with 95% confidence level, it can be concluded that investment strategies have a significant effect on return on assets.

• For 2nd secondary hypothesis, due to the fact that the obtained significance level is smaller than 5% (0.000), therefore, the null hypothesis is rejected and with 95% confidence level, it can be claimed that financing strategies have a significant effect on return on assets.

Table 6. Justification and significance of the whole model

| R | | Durbin-Watson | ANOVA | |
Coefficient of determination	Adjusted coefficient of determination		F	Sig.
0.751094	0.706854	1.742631	16.97773	0.000

** $p < .005$

Considering table 6, since the value of Durbin-Watson test is located in the range of 1.5 to 2.5, the hypothesis indicating to lack of existence of correlation between errors is not rejected and therefore, regression test can be used. Considering that the F-test values (16.97773) is significant at the level smaller than 0.01, it can be concluded that regression model of the present study, a combination of independent, control and dependent variables, is a good model and that independent and control variables together have the ability to explain changes in dependent variable.

Hypothesis 2: working capital strategies have a significant effect on combined performance (accounting and economic) criteria. Results of the two Chow and Hausman are presented in the below tables.

Table 7. Results of chow test for 1st hypothesis

Description	p-value	Freedom degree	Probability
Cross-section F	8.851340	(557,93)	.0000
Cross-section Chi-square	596.161840	93	.0000

As it is clear from the above table, Chow test results indicate that the obtained probability for F-test is smaller than 5%. Therefore, for testing this hypothesis, panel data should be used.

Table 8. Results of Hausman test for 2nd hypothesis

Description	p-value	Freedom degree	Probability
Cross-section F	62.3422340	6	.0000

Since, the probability obtained for Hausman test is smaller than 5%, H0 hypothesis of Hausman test is rejected and for estimating the parameters of multivariate regression equations fixed effects model should be used.

Table 9. Regression test for 2nd hypothesis

Variable	Coefficient of determination	Estimate deviation	t-value	Sig. level
Constant	3.657586-	2.116712	1.727956-	0.084
Investment strategies	0.230263	0.028942	7.956132	0.000**
Financing strategies	049010-	0.056718	0.864093-	0.387
Size	0.335796	0.1611735	2.076216	0.038*
Sales growth	0.225837	0.025176	8.970365	.000**
Leverage	0.031677-	0.006907	4.586239-	.000**
GDP	0.002612	0.011141	0.234443	0.814

* $p < .01$, ** $p < .005$

Considering the obtained significance levels for variables being studied in 2nd hypothesis, results can be described as below:

• For the 1st secondary hypothesis, due to the fact that the obtained significance level is smaller than 5% (0.000), therefore, the null hypothesis is rejected and with 95% confidence level it can be stated that investment strategies have a significant effect on Q Tobin indicator.

• For 2nd secondary hypothesis, due to the fact that the obtained significance level is larger than 5% (0.3879), therefore, the null hypothesis is accepted and with 95% confidence level, it can be stated that financing strategies do not have a significant effect on Q Tobin indicator.

Table 10. Justification and significance of the whole model

R		Durbin-Watson	ANOVA	
Coefficient of determination	Adjusted coefficient of determination		F	Sig.
0.672312	0.614069	1.747979	11.54330	.000

** $p < .005$

Considering table 10, since the value of Durbin-Watson test is located in the range of 1.5 to 2.5, the hypothesis indicating the lack of correlation between errors is not rejected and therefore, regression test can be used. Considering the fact that the f-test values (11.54330) is significant at error level smaller than 0.01, it can be concluded that regression model of the present study , a combination of independent, control and dependent variables, is a good model and that independent and control variables together have the ability to explain changes in dependent variable.

Hypothesis 3: working capital strategies have a significant effect on economic performance criteria. Results of the two Chow and Hausman are presented in the below tables.

Table 11. Results of chow test for 3rd hypothesis

Description	p-value	Freedom degree	Probability
Cross-section F	25.713510	(557,93)	.0000
Cross-section Chi-square	1094.849704	93	.0000

As it is clear from the above table, Chow test results indicate that the obtained probability for F-test is smaller than 5%. Therefore, for testing this hypothesis, panel data should be used.

Table 12. Results of Hausman test for 3rd hypothesis

Description	p-value	Freedom degree	Probability
Cross-section F	16.406648	6	0.0117

Since, the probability obtained for Hausman test is smaller than 5%, H0 hypothesis of Hausman test is rejected and for estimating the parameters of multivariate regression equations fixed effects model should be used.

Table 13. Regression test for 3rd hypothesis

Variable	Coefficient of determination	Estimate deviation	t-value	Sig. level
Constant	10264.51-	0.288519	3.557583-	0.004**
Investment strategies	161421.7	11117107	1.452004	0.147
Financing strategies	13932.55	49519.46	0.281355	0.778
Size	819899.8	217031.7	3.777788	0.002**
Sales growth	17996.6	43582.10	4.125469	0.000**
Leverage	25957.12-	7942.620	3.268080-	0.001**
GDP	12978.45	8682.854	1.494721	0.135

* $p < .01$, ** $p < .005$

Considering the obtained significance levels for variables being studied in 3th hypothesis, results can be described as below:

• For the 1st secondary hypothesis, due to the fact that the obtained significance level is larger than 5% (0.1471), therefore, the null hypothesis is accepted and with 95% confidence level, it is concluded that investment strategies don't have a significant effect on market value added.

• For 2nd secondary hypothesis, due to the fact that the obtained significance level is larger than 5% (0.7785), therefore, the null hypothesis is accepted and with 95% confidence level, it can be stated that financing strategies do not have a significant effect on market value added.

Table 14. Justification and significance of the whole model

| R | | Durbin-Watson | ANOVA | |
Coefficient of determination	Adjusted coefficient of determination		F	Sig.
0.883244	0.862492	1.527839	42.56184	.000

** $p < .005$

Considering table 14, since the value of Durbin-Watson test is located in the range of 1.5 to 2.5, the hypothesis indicating the lack of correlation between errors is not rejected and therefore, regression test can be used. Considering the fact that the F-test values (42.56184) is significant, it can be concluded that regression model of the present study, a combination of independent, control and dependent variables, is a good model and that independent and control variables together have the ability to explain changes in dependent variable.

5. Conclusion

Nowadays, the application of financial management topics has gained a special place in the enhancement of the efficiency of an organization. Hence, making financing and investment decisions as the two main responsibility of financial mangers is of great importance. To this end, working capital management, that is, management of resources and current expenses, has gained a great deal of importance for maximizing shareholders' wealth as a part of The area of financial management topics (Rahman & Nasr, 2007). Mangers of units for profit in different situations considering the internal and external factors and also considering risk and return should select a proper strategy for managing the working capital of their unit. If the strategy type of the management of current assets and liabilities is selected properly in a given time, it will make possible the achievement of the best working capital management strategy (Michalski, 2003). Striking a balance in current assets and current liabilities is of great importance, in a way that decision-making about one will affect the other greatly (Jahankhani & Talebi, 1999).

In managing affairs related to working capital of a business unit, there are various strategies, resulting from combining current assets strategy and current liabilities strategy (Reymond, 2001). Working capital management of a business unit in different conditions should select appropriate strategies for a company so that it can manage

current assets and liabilities efficiently. Currently, most of those who are involved in industries of our country have understood the importance of working capital, however, they are still searching more for external and temporary solutions for solving the existing problems. In other words, they see the solution in granting cheap and sufficient loans to companies, while, with making a proper use of working capital and making the corresponding policies, with the help of internal solutions liquidity can be improved and initial capitals can be supported (Rahnamay-e Roudposhti & Kiaee, 2009).

On the other hand, with the separation of management from ownership and following that, with the emergence of agency theory, performance evaluation has been raised as one of the most important topics in accounting. Evaluation and performance of companies have always attracted the attention of shareholders, investors, financial creditors, such as banks and financial institutes, Creditors and specially managers (Mahdavi & Ghorbani, 2012). One of the effective factors on performance evaluation criteria is working capital strategies.

In the presents study, the effect of working capital strategies on performance evaluation criteria in Tehran Stock Exchange has been explores and results indicate that investment strategies have a significant effect on return on assets and Q Tobin indicator, however, they don't have any significant effect on market value added. Financing strategies, also are only having a significant effect on return on assets.

Based on the obtained results from the present research, the following recommendations are presented:

Considering the effect of investment strategies on return on assets and Q Tobin indicator, companies in this study are recommended to increase their return on investment to some extent with selecting aggressive strategies, although it should be noted that aggressive working capital strategies at the same time increases the risk of default and companies should make their working capital strategies in a way to strike a balance in risk and return which is the foundation of all financial decisions.

Considering the effect of financing strategies on return on assets, companies in this study are recommended to establish and apply appropriate strategies with regards to financing method and current liabilities management in order to reduce their Cost of debt and make use of financial leverages. As an example, diversification of financing methods and the use of methods such as credit in current account, issuing bonds and moving toward using securities for supporting mortgage can be mentioned.

For a larger effect of working capital management strategies on the performance of companies, it is recommended that companies considering the General atmosphere of the industry they are working in, make some initiatives in some areas such as pricing of products, responding to potential demands and consideration of similar industries, which in turn require strategic and long-term planning in these companies.

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