

The Relationship between Working Capital Management, Financial Constraints and Performance of Listed Companies in Tehran Stock Exchange

Ali Kowsari¹ & Mohammad Reza Shorvarzi¹

¹Department of Accounting, Neyshabur Branch, Islamic Azad University, Neyshabur, Iran

Correspondence: Mohammad Reza Shorvarzi, Department of Accounting, Neyshabur Branch, Islamic Azad University, Neyshabur, Iran. E-mail: m_r_shoorvarzi@yahoo.com

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Abstract

The main objective of this study was to investigate the relationship between working capital management, financial constraints and performance of listed companies in Tehran Stock Exchange. To verify this financial information from 148 companies listed on the Tehran Stock Exchange during the period 2009- 2013 were studied. Information required extracted from Rah Avard Novin 3 software, and then summarized, classified, and calculated by Microsoft Excel, and finally through Eviews 8 and Stata 12 software were analyzed. According to the statistical procedures conducted in 95/0 reliability, the assumptions are tested. Methods of the study are inductive reasoning and in terms of time are cross-sectional and in terms of relationship between variables is correlation. The results showed that ROA has a negative impact on working capital management. While financial constraints affect the relationship between working capital management and return on assets. Better management of working capital can improve companies' performance. On the other hand, effect of working capital on companies' performance would be increased when facing financial constraint.

Keywords: working capital management, financial management, return on assets volume

1. Introduction

Iran's economy suffered from stagflation during 2012 to 2013, which its consequences still affects the economy. Taking economical measurement and reforms in order to support production and investment, the government tried for noninflationary exit from recession. In the same time, business enterprises that probably had limited access to external-organization financing during recession focused on internal-organization resources including working capital and management optimization as a result.

This article is an example of effort motivated by need to deal with new situation.

One of the fundamental issues of financial management is the control of current assets and liabilities. Most people who are involved in industry has realized to the importance of the subject but mostly tried to find solution out of the company, in other words they think that giving loans and low price and enough facilities to companies is the best solution.

Capital market has a significant role in increasing investment volume and then endogenous and stable economic growth contributing to providing long term financial resources for companies (Talebniya and Sabeti, 2006, p. 12). The success of a company's depends on the ability of management to identify and make use of investment opportunities ahead the company. Because the final productivity of company's capital investments that guarantee the survival and failure in today's competitive world.

Working capital is one of important asset items that economic units have which has a leading role in financial decision (Abbas zade et al, 2013, p 1) and its growing importance has led to emergence of financial management field of study.

One of the most important issues in the daily running of the institutions, is working capital management. Working capital can be defined as all short-term assets used in the daily operations. The assets are cash, marketable securities, receivables accounts and inventory form. Current assets are called working capital expenses, which include: cash, securities, payable accounts and inventory. Management must take care of any of

these items to be able to meet the company's lack of coordination between payments and receipts (Rehman and Naser, 2007).

Working capital management is to determine the size and composition of sources and uses in ways that increase shareholders wealth (Garcia Teruel and Martinez Solano, 2007). Working capital management depends on corporate management of its Short-term capital. The short-term capital refers to capital that companies employ in daily operations and includes assets and current liabilities. A good manager of a company increases working capital during periods of liquidity in the market and also considers the growth of shareholder value. Current assets include investment in cash, short-term financial investment, inventories, receivable accounts and other current assets. Current assets can be defined as used asset in the company's daily operations with the expectation (expected) for providing cash in the short term, almost a year. In short-term periods, investors can quickly find a security for the company over the rapid change of cash (Tavassoly et al., 2013, p. 12).

The literature on investment decisions has evolved through many theoretical and empirical contributions. A number of studies show that there is a direct relationship between investment and corporate value. In addition, Modigliani and Miller (1958) showed that investment and financing decisions are independent from each other. Extensive literature has emerged on capital market imperfections that support the relationship between these two decisions (Kabaler Banos et al., 2014, p. 1). Financing and investment decisions in companies are decisions that both are made forward-thinking. In financial decisions, the company currently employs funds to meet its obligations against sponsors in future.

One of the fundamental issues of financial management is the control of current assets and liabilities. Most people who are involved in industry has realized to the importance of the subject but mostly tried to find solution out of the company, in other words they think that giving loans and low price and enough facilities to companies is the best solution (Rahman and Naser, 2007).

In fact, the main reason for lack of liquidity, is the gap between incoming and outgoing cash flows of the company. Companies are not facing to this lack of funds whole year, but just in specific times of the year and this problem is not the same through different companies. Thus the only resource to provide liquidity is not bank facilities and there are other solutions. On one hand, solving this problem requires optimal management of working capital in companies and on the other hand needs monetary market deficiencies be removed (Delof, 2003). Management of working capital is more involved in the organization of current assets and current liabilities and is part of capital budgeting and can affect the profitability, risk and performance (Garcia Teruel and Martinez Solano, 2007).

From many years ago, performance evaluation of companies has created much of the discussion related to accounting, management, economics, etc. Basically, performance has a direct relationship to the goal. The performance evaluation measure the fact that to what extent the company has achieved the targets set in its programs. The result from performance evaluation is not the goal, but a tool to predict future plans and improvement of strengths and weaknesses of the company and evaluation of company's performance without considering commercial features and situation dominated the goods and services market. In terms of performance evaluation the question is usually proposed that which criteria for performance evaluation is of greater value.

Management of capital items in order to choose the best strategy that will lead to increased efficiency, the liquidity, the solvency and continuity of its profit. The mode of financing in working capital management has also effects on profits and shareholder wealth. A good combination of assets including temporary and permanent which are under effect of sale and production volume with appropriate financing by managers of working capital helps them to provide an ideal limit of current assets through current liabilities. Therefore, better management of working capital can improve corporate performance.

In this study, it is necessary, data, variables and method of calculation be presented that these cases are shown in **(Table 1)** In this table, type of variable, variable name, measure and symbol are presented.

Table 1. Investigated variables list

Variable type	Variable name	Measurement criterion	Symbol
Independent variable	Management of working capital	$NTC_{i,t} = (AR_{i,t}/S_{i,t}) * 365 + (I_{i,t}/S_{i,t}) * 365 - (AP_{i,t}/S_{i,t}) * 365$	$NTC_{i,t}$
Dependent variables	performance	Tobin's Q	$Q_{i,t} = (MVE_{i,t} + PS_{i,t} + DEBT_{i,t}) / TA_{i,t}$
		Returns on assets	$ROA_{i,t} = \frac{NI_{i,t}}{TA_{i,t}}$
Mediating variable	Financial constraint	$KZ_{IR} index = +2.85351 \frac{C_{i,t}}{A_{i,t-1}} - 0.02605 \frac{CF_{i,t}}{A_{i,t-1}} + 4.11475 \frac{Div_{i,t}}{A_{i,t-1}} + 2.22050 Lev$	$KZ_{i,t}$
Control variables	Financial leverage	$Lev = \frac{TD}{TA}$	Lev
	Company's size	The natural logarithm of market value	$Size$
	Company's age	The natural logarithm of the number of years listed in Stock Exchange	$AGE_{i,t}$

The theoretical framework of conceptual models are based on theoretical relationships between several factors that are important for research problems. This theoretical framework flows logically in the realm of problem by examining research literature. According to past research, the researcher has presented conceptual model in (figure 1) in order to study how financial limitation affects the relationship between working capital and performance.

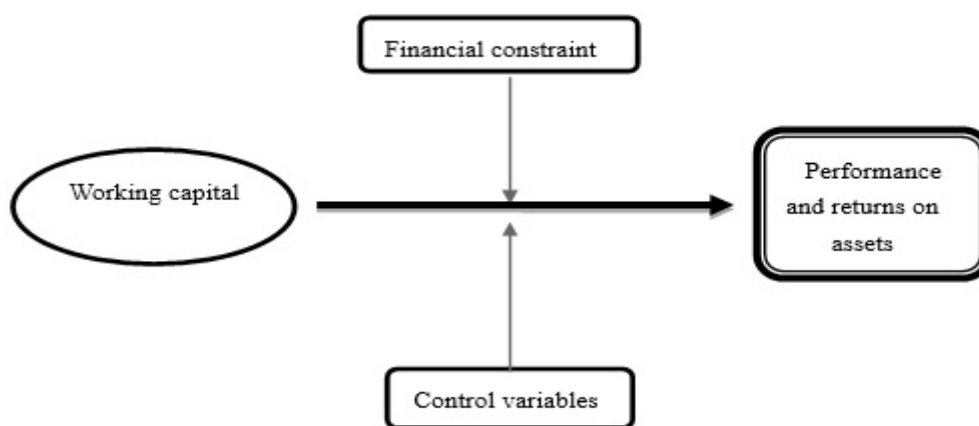


Figure 1. Conceptual framework of the research

2. Method

Methods of the study are inductive reasoning and in terms of time are cross-sectional and in terms of relationship between variables is correlation. The study is based on information contained in the financial statements, notes attached to the financial statements and reports of corporate bodies. In order to gain information and

implementing the research, Rah Avard Novin software and all websites related to stock exchange are used. After selection of sample companies and their classification. Microsoft Excel was used. And hypotheses were tested with least squares (OLS) regression using Eviews software.

In analyzing the data, the Pearson correlation coefficient for significant relationship between independent variables and the dependent variable was applied. For Significant regression model Fisher (F) statistic and to make sense of variables the statistics t were used. To analyze the results of study, the coefficient of determination and adjusted coefficient of determination was used. To determine the accuracy of regression model and effectiveness of the proposed model two conditions are investigated about the residuals.

3. Results

Working capital is one of the main issues in supply chain management in term of financial and if well managed benefits are huge for the companies. Especially for smaller companies with current capital and liabilities comprise huge part of their capital. In general, the increasing importance of working capital management has led it to become a specialized field of financial management. In very large companies, there are executives who spend all their time and energy exclusively managing the working capital of the company. This shows the importance of working capital and its management. Working capital management is divided into the management of current assets and current liabilities management. **(Table 2)**

Table 2. Descriptive statistics of research variables

Variable	Tobin's Q	Return on assets	Management of working capital	Financial constraint	Financial leverage	Company's size	Company's age
Symbol	Q	ROA	NTC	KZ	LEV	SIZE	AGE
Average	<i>1.8204</i>	<i>0.1199</i>	<i>187.9651</i>	<i>1.5474</i>	<i>0.6275</i>	<i>5.9285</i>	<i>2.6572</i>
Mean	<i>1.5100</i>	<i>0.1100</i>	<i>166.6100</i>	<i>1.5300</i>	<i>0.6200</i>	<i>5.8800</i>	<i>2.7100</i>
Maximum	<i>7.6700</i>	<i>0.6300</i>	<i>1621.890</i>	<i>6.9300</i>	<i>3.0600</i>	<i>8.2200</i>	<i>3.8500</i>
Minimum	<i>0.6600</i>	<i>-0.3900</i>	<i>-1575.440</i>	<i>0.2600</i>	<i>0.1000</i>	<i>4.3200</i>	<i>0.6900</i>
Standard deviation	<i>0.9823</i>	<i>0.1337</i>	<i>169.4726</i>	<i>0.6220</i>	<i>0.2745</i>	<i>0.7324</i>	<i>0.5308</i>
Coefficient of skewness	<i>2.2503</i>	<i>0.3734</i>	<i>-0.4904</i>	<i>3.0301</i>	<i>3.0104</i>	<i>0.7610</i>	<i>-0.0099</i>
coefficient of Kurtosis	<i>10.1131</i>	<i>4.8404</i>	<i>27.1081</i>	<i>22.6335</i>	<i>23.6076</i>	<i>3.6523</i>	<i>2.9942</i>
Number of observations	<i>740</i>	<i>740</i>	<i>740</i>	<i>740</i>	<i>740</i>	<i>740</i>	<i>740</i>

Inferential analysis:

Results of the research model in the first hypothesis as shown in **(Table 3)**.

Table 3. Results summary of the first statistical hypothesis testing

Variable	Coefficients	Standard deviation	T statistics	Significance level
C (Width from origin)	-6.7480	0.1936	-34.847	0.000
Management of working capital	7.55E-06	0.0001	0.0739	0.941
Financial leverage	1.0883	0.0728	14.9321	0.000
Company's size	1.3620	0.0293	46.4502	0.000
Company's age	-0.0989	0.0205	-4.8257	0.000
Virtual variable (1)	0.6668	0.0732	9.1065	0.000
Fisher's F statistics (significance level)	47.219 (0.000)	Dorbin – Watson statistics		1.997
Determination coefficient	0.924	Modified Determination coefficient		0.904

After ensuring of the classical hypothesis, to estimate the model according to volatility variance, generalized least squares regression and panel data methods were used.

Before research hypothesis test based on the results obtained should make sure of the accuracy of the results. In order to determine the significance of whole model, the F-test was used. According to the calculated probability statistic F (0.0000), it can be argued that the fitted regression model is significant.

According to the determination coefficient of the fitted model can be claimed that about 92 percent of the variation in the dependent variable (the Company), is explained by the independent variables.

The Durbin-Watson test value 1.997 which is between 1.5 and 2.5, indicates that independence of errors in the research model is suitable.

Since the P-Value for working capital management coefficient is equal to 0.9411, the first research hypothesis is rejected at the 5% significance level and working capital management had no significant effect on firm performance. But in this model, control variables of the company's financial leverage, size and age have a significant effect on corporate performance, because the level of significance test is less than 0.05.

Results of the research model in the second hypothesis is as described in **(Table 4)**.

Table 4. Summary of the statistical results of the second hypothesis test

<i>Variable</i>	<i>Coefficients</i>	<i>Standard deviation</i>	<i>T statistics</i>	<i>Significance level</i>
C (Width from origin)	-5.2785	0.1986	-26.5745	0.0000
Management of working capital	-0.0435	0.0374	-1.1645	0.134
Financial constraint	-0.1447	0.0683	-2.1174	0.024
Financial constraint * Management of working capital	0.0001	8.8363	1.1763	0.167
Financial leverage	1.1087	0.1620	6.8413	0.001
Company's size	0.6927	0.0299	23.1412	0.000
Company's age	-0.0839	0.02041	-4.1116	0.000
Virtual variable (2)	0.2550	0.0566	4.5039	0.000
Fisher's F statistics	34.653	Dorbin – Watson statistics		2.354

(significance level)	(0.000)		
Determination coefficient	0.836	Modified Determination coefficient	0.785

After ensuring of the classical hypothesis, to estimate the model according to volatility variance, generalized least squares regression and panel data methods were used.

Before research hypothesis test based on the results obtained should make sure of the accuracy of the results. In order to determine the significance of whole model, the F-test was used. According to the calculated probability statistic F (0.0000), it can be argued that the fitted regression model is significant.

According to the determination coefficient of the fitted model can be claimed that about 82 percent of the variation in the dependent variable (the Company), is explained by the independent variables.

The Durbin-Watson test value 2.354 which is between 1.5 and 2.5, indicates that independence of errors in the research model is suitable.

Since the P-Value for working capital management coefficient is equal to 0.167, the second research hypothesis is rejected at the 5% significance level and financial constraint had no significant effect on working capital management and firm performance. But in this model, financial constraint variables and financial leverage, size and age of the company have a significant effect on corporate performance, because the level of test significance is less than 0.05.

Results of the research model in the third hypothesis is as described in **(Table 5)**.

Table 5. Summary of the statistical results of the third hypothesis test

<i>Variable</i>	<i>Coefficients</i>	<i>Standard deviation</i>	<i>T statistics</i>	<i>Significance level</i>
C (Width from origin)	0.0868	0.0336	2.5819	0.010
Management of working capital	-0.0001	2.3324	-5.2786	0.000
Financial leverage	-0.4483	0.0204	-21.87256	0.000
Company's size	0.0488	0.0044	10.0856	0.000
Company's age	0.0163	0.0026	6.1624	0.000
Virtual variable (1)	0.0436	0.0109	3.9764	0.000
AR (1)	0.0695	0.0424	1.6370	0.102
Fisher's F statistics (significance level)	50.384 (0.000)		Dorbin – Watson statistics	2.335
Determination coefficient	0.946		Modified Determination coefficient	0.927

After ensuring of the classical hypothesis, to estimate the model according to volatility variance, generalized least squares regression and panel data methods were used.

According to bigger statistics of the third model, random effects method was used and in order to remove the autocorrelation, AR was used.

Before research hypothesis test based on the results obtained should make sure of the accuracy of the results. In order to determine the significance of whole model, the F-test was used. According to the calculated probability statistic F (0.0000), it can be argued that the fitted regression model is significant.

According to the determination coefficient of the fitted model can be claimed that about 94 percent of the variation in the dependent variable (the Company), is explained by the independent variables.

The Durbin-Watson test value 2.335 which is between 1.5 and 2.5, indicates that independence of errors in the research model is suitable.

Since the P-Value for working capital management coefficient is equal to 0.000, the third research hypothesis is

accepted at the 5% significance level and working capital management had a significant effect on the returns on assets. Also, in this model, control variables of financial leverage, size and age of the company have a significant effect on corporate performance, because the level of test significance is less than 0.05.

Results of the research model in the fourth hypothesis is as described in **(Table 6)**.

Table 6. Summary of the statistical results of the fourth hypothesis test

Variable	Coefficients	Standard deviation	T statistics	Significance level
C (Width from origin)	0.5752	0.2136	2.6924	0.046
Management of working capital	-0.0002	3.7723	-7.1052	0.000
Financial constraint	0.0291	0.0080	3.6186	0.004
Financial constraint * Management of working capital	0.0009	2.0946	4.3402	0.000
Financial leverage	-0.4432	0.0217	-20.3583	0.000
Company's size	0.0514	0.0039	13.0632	0.000
Company's age	0.0131	0.0024	5.3768	0.000
Virtual variable (1)	-0.0059	0.0083	-0.7073	0.342
Fisher's F statistics (significance level)	42.362 (0.000)	Dorbin – Watson statistics		2.032
Determination coefficient	0.893	Modified Determination coefficient		0.846

After ensuring of the classical hypothesis, to estimate the model according to volatility variance, generalized least squares regression and panel data methods were used.

Before research hypothesis test based on the results obtained should make sure of the accuracy of the results. In order to determine the significance of whole model, the F-test was used. According to the calculated probability statistic F (0.0000), it can be argued that the fitted regression model is significant.

According to the determination coefficient of the fitted model can be claimed that about 89 percent of the variation in the dependent variable (the Company), is explained by the independent variables.

The Durbin-Watson test value 2.032 which is between 1.5 and 2.5, indicates that independence of errors in the research model is suitable.

Since the P-Value for working capital management coefficient is equal to 0.000, the fourth research hypothesis is accepted at the 5% significance level and financial constraint had effect on the relationship between working capital management and the returns on assets of Tehran companies. Also, in this model, financial constraints and control variables of financial leverage, size and age of the company have a significant effect on corporate performance, because the level of test significance is less than 0.05.

4. Discussion

In relation to the first hypothesis, results showed that management of working capital (Tobin's Q) had no significant effect on performance. The results indicate that working capital management could create investment opportunities for companies. Total results from this hypothesis are consistent to the findings of Abbas Zade et al (2013), Mohammad & Saed (2010) and contradict with results from research conducted by Bahar Moghaddam et al (2012), Fahimi (2012), Vaez et al (2013), Ogandip et al (2012), and Banos Caballero (2014).

In relation to the second hypothesis, the results showed that financial constraints had no effect on management of working capital and the performance (Tobin's Q). Total results from this hypothesis contradict with results from research conducted by Banos Caballero et al (2014).

In relation to the third hypothesis, results showed that management of working capital had significant effect on

returns on assets and reverse relationship between management of working capital and returns on assets means that managers can provide value for the company by management of working capital and shortening of the conversion to liquidity optimally. Total results from this hypothesis are consistent to the findings of Setayesh et al (2008), Mohammadi (2009), Jan nesari (2012), Afza & Nazir (2008), Zeriavti et al (2009), mohammad & Saed (2012), Saghir et al (2011), Ogandip et al (2012) and Banos Caballero et al (2014) and contradict with results from research conducted by Bahar Moghaddam et al (2011), Bahar Moghaddam et al (2012).

In relation to the third hypothesis, results showed that interactive relationship between financial constraint and management of working capital had an effect on returns on assets, it means that when companies have financial constraint, can manage their working capital better because accessing to financial resources is harder for them. Total results from this hypothesis are consistent to the findings of Banos Caballero et al (2014).

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