

Impact of Working Capital Management on Profitability and Market Evaluation: Evidence from Tehran Stock Exchange

Abbasali Pouraghajan

Assistant Professor and member of the faculty
Department of Accounting
Qaemshahr Branch, Islamic Azad University
Qaemshahr, Iran

Milad Emamgholipourarchi

MA student
Department of Accounting
Babol Branch, Islamic Azad University
Babol, Iran

Abstract

The main objective of this study is providing empirical evidence about the impact of working capital management on profitability and Market evaluation of the companies listed in Tehran Stock Exchange. For this purpose, we studied a sample of companies listed in Tehran Stock Exchange during the years 2006 to 2010. And from these companies we collected 400 years-company as data and analyzed them. In this study we use variables of return on assets ratio and return on invested capital ratio to measure the profitability of companies, variable of Tobin Q ratio to measure the market value of companies and variables of cash conversion cycle, current ratio, current assets to total assets ratio, current liabilities to total assets ratio and total debt to total assets ratio as working capital management Criteria. The results of the research indicate that there is a significant relationship between the working capital management and profitability criteria of company but there is no significant relationship with the criterion of market value of company. Also the results of research show that management can increase the profitability of company through reducing cash conversion cycle and total debts to total assets ratio.

Keywords: working capital management, profitability, return on assets, return on invested capital, Tobin Q

1. Introduction

One of the most important components of finance affairs in companies is working capital management, which has a direct impact on profitability and liquidity of company. Profitability and liquidity are both the same coin. The company that isn't profitable is patient and even if it continues its activity, it will lose its value in stock market of company, but the company without liquidity is not able to continue his life and is in death. Liquidity shows the ability of company in performing short-term obligations. In other words, company's liquidity is the relationship between the cash that company will have in the short term and the cash that the company will need to perform their obligations (Asadi and Azizi Basir, 2008). Thus, working capital is concerned with the liquidity and profitability of a company.

Working capital approved the company's ability to continue its activities without endangering liquidity. Working capital management is very important due to its affect on risk and profitability of company and thus the value of the company (Izadinia and Taki, 2010; Binti Mohamad and Binti Mohd Saad, 2010; Mobeen Alam et al., 2011). Working capital management can be accessed in several ways. from its main components (in this study) can be noted to cash conversion cycle (inventory management, accounts payable and accounts receivable management), current assets to current liabilities ratio (current ratio), current assets to total assets ratio, Current liabilities to total assets ratio and total debts to total assets ratio.

Most research in finance affairs of companies usually is in relation to long-term financing decisions and dividend policy. But short-term financial decisions in developing a financial strategy in companies are not less important that among short term Strategies, working capital management has a vital role in increasing shareholder value of a company and the balance between two purpose of a company that is profitability and liquidity.

In all Companies, the main purpose of management accounting practices is control of critical sectors and control of companies' performance and also hopes to improve the performance of the company. One of the main sectors that require control and management is current assets and liabilities sectors. The research conducted in developed countries, suggests that most companies have a separate unit called working capital management unit, which indicates dominant characteristic of the current part of balance sheet. Working capital management indicates policies and decisions that are applied in working capital sector in order to change in kinds of current assets and short-term financing. Proper control of this sector can have significant impact on company profitability (Izadnia and Taki, 2010).

Efficient working capital management include planning and control of current assets and current liabilities in destroying risk of company's ability to meet short- term commitments in one hand, and in the other hand prevention at excess investing of assets.

In fact, present study pays to this issue that what impact working capital management has on profitability and market value of listed companies in Tehran Stock Exchange and it is examined by using the relationship between main components of working capital with Tobin Q ratio, return on assets ratio and return on invested capital. The background research and analysis methods and research findings will be provided in the following.

2. Literature Review

Working capital management in the financial literature is not new issue and review of previous literature shows that there is a significant relationship between the performance and working capital management by using different variables for the analysis. Researchers have stated concept of working capital management in different ways that it is efficient management of cash assets and liabilities (Eljelly, 2004).

Binti Mohammad and Binti mohd saad (2010) reviewed the impact of working capital management on profitability and evaluation of companies listed on the Malaysia Stock Exchange during 2003 to 2009. In this study, 172 companies were selected as samples. The results suggest that there is a negative and significant relationship between variables of working capital with market value and profitability of company, and stated that Malaysian companies for maximizing profits are correlated to current assets.

Mobeen Alam et al. (2011) in a study that performed in direction with the Binti Mohammad and Binti mohd saads' study (2010), examined 65 companies in Pakistan between 2005 and 2009. in this study they used from cash conversion cycle, current assets to current liabilities ratio (current ratio), current assets to total assets ratio, current liabilities to total assets ratio and total debts to total assets ratio as working capital management criteria, Tobin Q ratio as a criterion of market value, and return on assets ratio and return on invested capital ratio as a criterion of company's profitability. The evidence showed that there is significant correlation between the components of working capital with market value and profitability of the company and concluded that Pakistani companies correlated heavily on current assets to maximize profits. And be approved the result of Binti Mohammad and Binti mohd saads' study (2010).

Mohammadi (2009) in their study investigated the impact of working capital management on profitability of listed companies in Tehran stock exchange between the years 1996-2005 in 92 companies as the sample. Research results suggest that there is a significant inverse relationship between the profitability of the companies and cash conversion cycle and its components (inventory turnover period, receivables collection period and creditors' settlement period). It also states that companies that are profitable, have shorter term creditors' settlement period.

Gill et al. (2010) in their study Surveyed the relationship between working capital management and profitability for the 88 U.S. companies listed on the New York Stock Exchange during the years 2005 to 2007. The results suggest that statistically there is a significant relationship between the cash conversion cycle (evaluation criterion of working capital management) and gross operating profit (a measure of profitability in companies), and management can also make profits for companies by using from the cash conversion cycle and the maintenance of accounts receivable in appropriate level.

Rezazadeh and Heydarian (2010) in their study examined the impact of working capital management on profitability of Iranian companies. In this study, they investigated the 1365 year-company of observed number among the companies listed in Tehran Stock Exchange during the years 1998-2007.

The research results show that there is a significant relationship between the profitability of companies with receivables collection period and maintenance of inventories; also, the results suggest that management can make value for the company by reducing inventory levels and days of receivables collection period. So, by shorting the cash conversion cycle can be improved profitability of company.

Izadinia and Taki (2010) in their study investigated the impact of working capital management on profitability potential companies listed in Tehran Stock Exchange during the period 2001-2008. In this study, the dependent variable, return on total assets considered as a criterion of measure for profitability potential. The results showed that there is a significant negative relationship between the cash conversion cycle with return on assets. Also, they expressed that high investment in inventory and accounts receivable will lead to lower profitability of companies. Dong and Su (2010) in a study that performed in direction with the Gill, Biger and Mathurs' study (2010) investigated 130 companies in Vietnam during 2006 and 2008. In this study they use cash conversion cycle, receivables collection period, inventory turnover period and the creditors' settlement period as working capital management criteria, and gross profit to total assets ratio as a measure of company profitability and also firm size, total debts to total assets ratio and financial assets to total assets ratio as control variables. Research results that were performed based on Pearson correlation and multiple regression analysis indicates that there is a significant inverse relationship between the cash conversion cycle and its components with profitability of companies.

Chawla et al. (2010) in their study investigated the relationship between working capital management and liquidity of companies with profitability of companies. In this study, three companies of the petrochemical industry in India between 2004 and 2009 were investigated. In this study they used from cash conversion cycle, inventory turnover, receivables collection period, the creditors' settlement period and current ratio. Research results that were performed based on Pearson correlation and linear regression analysis, indicates that there is a significant inverse relationship between the cash conversion cycle and its components including inventory turnover period, receivables collection period and creditors' settlement period with company's profitability that indicated by increasing the cash conversion cycle, profitability of company are reduced and management can make a positive value for the shareholders by reducing the cash conversion cycle at the lowest possible level. Also the research results showed that statistically there is a significant inverse relationship between liquidity and profitability of companies.

3. Research Hypotheses

In order to examine the impact of working capital management on profitability and evaluation of companies, we test the hypotheses as follows:

Hypothesis A: there is relationship between the market value (Tobin Q) and components of working capital.

Hypothesis B: there is relationship between the market performance (return on assets) and components of working capital.

Hypothesis C: there is relationship between the financial performance (return on invested capital) and components of working capital.

4. Research Design

4.1. Statistical society and sample

Statistical society of the study includes all companies listed in Tehran Stock Exchange during the period 2006 to 2010. For selecting the desired sample, the following criteria are considered:

- 1 - The end of financial period of companies lead up to December 31 of each year.
- 2- The operations are not interrupted during the study period.
- 3- It shouldn't be investment and financing and leasing companies.

The desired sample is selected by elimination (purposive) method. Thus selected sample include all companies which were the member of population and had above circumstances. Finally, 80 companies have been selected from these companies as the sample and for data collection.

4.2. The data collection method

In this study, we used from documents analysis method to collect data.

Therefore, the needed data about member companies of sample in study during the 2006-2010 have been collected by the site of Tehran Stock Exchange¹ and CDs of financial data in companies listed in Tehran Stock Exchange.

4.3. Data analysis Methods and hypotheses testing

For data analysis and hypotheses testing are used from linear multiple regression analysis and two-sided Pearson correlation, that is first we calculated needed data for doing test and then performed regression tests for studying impact of working capital management on profitability and evaluation of companies market. Also we used from SPSS.18 and EXCEL software for data processing and statistical tests.

For test of hypothesis, first we investigated the accuracy of the obtained regression model assumptions and then by using the F and t test we investigated the effect of independent variables on the subordinate variable(dependent).

4.4. Measurement of Research Variables

In the present study, to investigation the impact of working capital management on profitability and evaluation of companies, variables is used according to the study of Mobeen Alam et al. (2011) and Binti Mohammad and Binti mohd saad (2010) Where the dependent variables, Tobin Q ratios (TQ) is used as a measure of market value and return on assets ratio (ROA) and return on invested capital (ROIC) as a measure of profitability of company and independent variables, cash conversion cycle (CCC), the current ratio (CR), current assets to total assets ratio (CATAR), current liabilities to total assets ratio (CLTAR) and total debts to total assets ratio (DTAR) also is used as working capital management measures. And the formula for calculating each of these variables is summarized in Table 1.

The present study is tested using the following regression model. and, in order to test hypotheses 1 to 3, 1 to 3 models has been implemented respectively:

- (1) $TQ_{it} = \beta_0 + \beta_1 CCC_{it} + \beta_2 CACLR_{it} + \beta_3 CATAR_{it} + \beta_4 CLTAR_{it} + \beta_5 DTAR_{it} + \varepsilon$
- (2) $ROA_{it} = \beta_0 + \beta_1 CCC_{it} + \beta_2 CACLR_{it} + \beta_3 CATAR_{it} + \beta_4 CLTAR_{it} + \beta_5 DTAR_{it} + \varepsilon$
- (3) $ROIC_{it} = \beta_0 + \beta_1 CCC_{it} + \beta_2 CACLR_{it} + \beta_3 CATAR_{it} + \beta_4 CLTAR_{it} + \beta_5 DTAR_{it} + \varepsilon$

In these models:

TQ_{it} = market value of firm i for time period t

ROA_{it} = return on assets of firm i for time period t

$ROIC_{it}$ = return on invested capital of firm i for time period t

CCC_{it} = cash conversion cycle of firm i for time period t

$CACLR_{it}$ = current assets to current liabilities ratio of firm i for time period t

$CATAR_{it}$ = current assets to total assets ratio of firm i for time period t

$CLTAR_{it}$ = current liabilities to total assets ratio of firm i for time period t

$DTAR_{it}$ = total debt to total assets ratio of firm i for time period t

ε = error term of the model

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Table 1. calculate the used variables in research

the variable name	Calculating method
<i>Dependent variables</i>	
Tobin Q	(market value of equity + book value of liability)/ total asset
Return on asset	earnings before interest and taxes/ total asset
Return on invested capital	net profit/ total capital* * Total capital consists the number of shares in the end of each year multiplied by nominal value of per share.
<i>The independent variables</i>	
Cash conversion cycle	days sales in inventory (DSI)* + days sales outstanding (DSO)** + days payables outstanding (DPO)*** *DSI= inventory of goods and materials/ (cost of goods sold/ 360) **DSO= business accounts and notes receivables/ (net sales/ 360) *** DPO= business accounts and notes payables/ (cost of goods sold/ 360)
Current Assets to Current Liabilities Ratio	current assets/ current liabilities
Current Assets to Total Assets Ratio	current assets/ total assets
Current Liabilities to tTotal Assets Ratio	current liabilities/ total assets
Total Debt to Total Assets Ratio	total debts/ total assets

5. Results and Analysis

5.1. Correlation Analysis

Table 2 shows the correlation matrix among variables. The obtained results have quantitative value, so shows no multicollinearity among variables, if the correlation coefficient exceeds 0.80, it is considered as multicollinearity indicator. Correlation results show the negative and significant correlation between the company's market value (Tobin Q) with CATAR, CLTAR and DTAR respectively at 5%, 1% and 1% levels, but the negative and insignificant correlation with the CCC while CACLAR at 1% level has positive and significant correlation.

Also the results of correlation show negative and significant correlation between financial performance of company (ROA) with CLTAR and DTAR at 1% level, but negative and insignificant correlation with CATAR and CCC while CACLAR at 1% level has positive and significant correlation.

Also the results of correlation show negative and significant correlation between financial performance of company (ROIC) with CCC, CLTAR and DTAR at 1% level, but negative and insignificant correlation with CATAR while CACLAR at 1% level has positive and significant correlation.

Among independent variables, we can observe considerable correlation between total debt to total assets ratio with current liabilities to total assets ratio (0.83) and current assets to current liabilities ratio (-0.61).

Table 2. The Pearson correlation matrix

	DTAR	CLTAR	CATAR	CACLR	CCC	ROIC	ROA	TQ
TQ	1	.607** .000	.557** .000	-.032 .544	.199** .000	-.119* .022	-.281** .000	-.265** .000
ROA	.607** .000	1	.739** .000	-.077 .137	.426** .000	-.075 .151	-.490** .000	-.521** .000
ROIC	.557** .000	.739** .000	1	-.166** .001	.307** .000	-.029 .578	-.306** .000	-.362** .000
CCC	-.032 .544	-.077 .137	-.166** .001	1	.146** .005	.068 .191	-.104* .046	-.084 .106
CACLR	.199** .000	.426** .000	.307** .000	.146** .005	1	.282** .000	-.569** .000	-.614** .000
CATAR	-.119* .022	-.075 .151	-.029 .578	.068 .191	.282** .000	1	.462** .000	.175** .001
CLTAR	-.281** .000	-.490** .000	-.306** .000	-.104* .046	-.569** .000	.462** .000	1	.825** .000
DTAR	-.265** .000	-.521** .000	-.362** .000	-.084 .106	-.614** .000	.175** .001	.825** .000	1

** Correlation is significant at 1% level (2-tailed).

* Correlation is significant at the 5% level (2-tailed).

5.2. Regression Analysis

However, the different samples of correlation test in contractual matrix are not considered as correlation of any variable with other explanatory variables. For examining the impact of working capital on the value and profitability of company, we used a correlation analysis from 400 year-company and obtained results of this test is provided in table 3. As can be seen that the cash conversion cycle (CCC) has negative and significant relationship with the return of assets (ROA) and return on invested capital (ROIC) at 1% level but because the Tobin Q (P-Value) is greater than 5% ,indicates that it has no significant relationship. This result for return on assets and return on invested capital confirmed the research results of Mobeen Alam et al. (2011) and Binti Mohammad and Binti mohd saad (2010), but Tobin Q value disproved the findings of their research. The findings of this research indicate that an increase in return on assets and return on invested capital can not be explained by a reduction in the cash conversion cycle and this fact implies that more profitable companies have shorter cash conversion cycle. Companies with shorter cash conversion cycle correlated less to borrowing for financing, in result these companies will have less financial costs and more profitability. So management of the components of cash conversion cycle (accounts receivable, accounts payable and inventory) will lead to more profitability for the company. Also the negative and significant relationship of cash conversion cycle with return on assets confirms the research results of Rezazadeh and Heydarian (2010) and Izadinia and Taki (2010).

The results also show that there is positive and significant relationship between current assets to current liabilities ratio (CACLR) and return on invested capital (ROIC) at 5% level but for Tobin Q and return on assets (ROA), because (P-Value) is greater than 5% ,indicates that it has no significant relationship. This result for return on invested capital and Tobin Q confirmed the research results of Mobeen Alam et al. (2011) and Binti Mohammad and Binti mohd saad (2010), but return on assets value disproved the findings of their research. This result can indicate that an increasing change in return on invested capital can be explained by increasing in current assets to current liabilities ratio, therefore we conclude that the increase in this ratio indicates that companies maintain more liquidity for the current commitment of company and also indicates that companies invested amount of hold liquidity in current assets. Our research is the opposite of the findings of Mobeen Alam et al. (2011) and Binti Mohammad and Binti mohd saad (2010).

Regression results for current assets to total assets ratio (CATAR) and current liabilities to total assets ratio (CLTAR) shows that these ratios haven't significant relationship with the Tobin Q (TQ), return on assets (ROA) and return on invested capital (ROIC) that disproves the Findings of Mobeen Alam et al. (2011) and Binti Mohammad and Binti mohd saad (2010).

The regression results also indicate that total debt to total assets ratio (DTAR) has negative and significant relationship with the return on assets (ROA) and return on invested capital (ROIC) at 1% but because the Tobin Q (P-Value) is greater than 5% indicates that it hasn't a significant relationship with total debt to total assets ratio. This result implies that reduction in liabilities ratio will impact on company performance and it means that reduction in liabilities ratio would increase return on assets and return on invested capital assets. This result confirmed the findings of Mobeen Alam et al. (2011) and Binti Mohammad and Binti mohd saad (2010) for return on asset but the return on invested capital and Tobin Q amounts disproves the findings of their research.

Table (3). Multiple linear regression coefficients with dependent variables

Dependent variable →	TQ		ROA		ROIC	
Independent variable ↓	t	p	t	p	t	P
CCC	-1.205	0.229	-3.339	0.001	-4.431	0.000
CACLR	1.198	0.232	1.791	0.074	2.182	0.030
CATAR	-0.923	0.357	0.583	0.560	-0.348	0.728
CLTAR	-0.720	0.472	-1.883	0.061	0.170	0.865
DTAR	-1.112	0.267	-3.232	0.001	-3.017	0.003
R	0.299		0.564		0.433	
R Square	0.090		0.318		0.188	
F-Value	7.168 0.000		33.944 0.000		16.835 0.000	

6. Conclusion

Empirical results of this study, states that Iranian companies could increase company profitability by reducing the cash conversion cycle (CCC) and total debt to total assets ratio (DTAR). with regard to the multiple regression analysis, components of working capital management in this study including cash conversion cycle (CCC), the current ratio (CR), current assets to total assets ratio (CATAR), Current liability to total assets ratio (CLTAR) and total debt to total assets ratio (DTAR) statistically aren't significant with Tobin Q, because (P-Value) of them is greater than 5%. With regard to this fact that determination coefficient of model equal to 0.09 and it means that 9% changes of Tobin Q variable can be described by independent variables. Thus, first hypothesis can be rejected, that indicate there is no significant relationship between working capital management and market value.

But second and third hypotheses with regard to their determination coefficient that are 32% and 19% respectively, show the correlation of independent variables(components of working capital) with dependent variables and also significant coefficient at the level lower than 1%. Therefore hypotheses 2 and 3 are accepted, and the result of research suggests that statistically there is significant relationship between working capital management with return on assets (ROA) and return on invested capital (ROIC), and management can also increase profitability of company by reducing the cash conversion cycle (CCC) and total debt to total assets ratio (DTAR).

7. Suggestions

We should study further in this context. Since this research is the primary level of research, area of more research should be including:

- 1) Research should be focused on any part of the economy rather than random selection, because research have important documents that show working capital ratios are different in front of industry changes and it can be one of the limitations of the study, that results may be different in different industries.
- 2) Each component of working capital separately should focus on its role in company, industry and economy. This effort will lead to the formation of a similar type of theory.

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