

Research Article

WORKING CAPITAL, FIRMS PERFORMANCE AND FINANCIAL DISTRESS IN FIRMS LISTED IN TEHRAN STOCK EXCHANGE (TSE)

Alireza Delavar, *Saeid Jabbarzadeh Kangarluei and Morteza Motavassel
Department of Accounting, Urmia Branch, Islamic Azad University, Urmia, Iran
**Author for Correspondence*

ABSTRACT

This study examines the relationship between working capital management, company performance and financial constraints of companies listed in Tehran Stock Exchange. To achieve the objectives of the study, 71 firms listed in Tehran Stock Exchange is studied for the period 2004 to 2012. In this study, to measure firm performance, Tobin's Q-ratio has been used. In addition, for measuring financial constraints, Zscore index, and for performance of the company the net trade cycle is applied. To test the hypothesis, multiple regression model using SPSS software has been used. The results indicate that there is no significant relationship between working capital management and firm performance. The results also indicate that there is no significant relationship between working capital management and firm performance. The results further indicate that financial constraints have no effect on the relationship between working capital management and financial performance of companies listed in Tehran Stock Exchange.

Keywords: *Working Capital Management, Financial Constraints Performance of Company*

INTRODUCTION

The recent economic downturn of 2007–2008 has brought renewed focus on working capital policies. Working capital management is one of critical scopes in financial management because of its influence in liquidation and profitability. There is a possibility of bankruptcy even through profitability in the case of mismanagement of working capital. Working capital deals with current assets and current liability which consists a large part of total assets in firms. Extra investment in current assets leads to lower investment. However, firms with low current assets may encounter difficulties in their business process. Efficient working capital management is in a way which trades off between risk of short term debt default and avoiding from overinvestment in current assets (Raheman and Nasr, 2007). In sum, increasing of receivables and inventories as working capital needs more costly funding and decreases firms return because these assets are low return generating assets. Similarly, decreasing of receivables and inventories as working capital may result in mitigating firm's sale which itself lowers firms value. Both above situation may result in inefficient firm's performance and firm's financial distress (Baños-Caballero *et al.*, 2013). Firms may have optimal working capital leading to their value maximizing (Deloof, 2003). Significance of this issue for both firms managers and also investors have derived attentions to research its impact on firm's performance and possible financial distress. With respect to a fore mentioned importance of working capital for firms going concern and financial distress, in this research two main questions are answered: 1-What is the relationship between working capital management and firm's performance? 2- What impact financial distress will have on this relationship? However, this study examines the relationship between working capital management, company performance and financial constraints of companies listed in Tehran Stock Exchange. The findings will be helpful for firms in recognition of possible mismanagement of working capital implications.

Conceptual Framework and Literature

Developed investment decisions literature indicates a positive relationship between capital and firms value (Chung *et al.*, 1998). In addition, Miller and Modigliani show that investments decisions and financing are independent. After then, researches confirm the relationship between investments decisions and financing (Fazzari *et al.*, 1988; Hubbard, 1988). However, empirical research as to investment impact on working capital and its potential financing impact on this relationship is rare (Kim and Chung, 1990).

Research Article

Pervious researches as to working capital include two aspects. High working capital allows firms to increase sale while it burdens extra expenses leading to firms' bankruptcy (Kieschnick *et al.*, 2011). Mismanagement of working capital results in negative impact on firm's value. Investment in working capital may be an obstacle in order to increase projects with value added.

Mohammadi (2007), Rezazadeh *et al.*, (2010), Tagizadeh *et al.*, (2012) investigated the effects of working capital management on firm's profitability. Their results indicate that there is a negative significant relationship between firm's profitability and receivables turnover, inventory turnover, settlement period, cash conversion. They confirm that low working capital is associated with firm's profitability.

Deyaniti *et al.*, (2012) investigated the effects of working capital management based on cash conversion on stock price risk dropping. They find evidence supporting the view that working capital decreases stock price dropping risk.

Rezaee *et al.*, (2013) investigated the effects of working capital management on firm's performance based on Adjusted Economic Value Added (AEVA) and Market Value Added (MVA). Their results indicate that there is not a significant relationship between working capital management and AEVA. In addition, they indicate that there is not a significant relationship between working capital management and MVA.

Enqvist *et al.*, (2014) examined the role of business cycles on the working capital–profitability relationship using a sample of Finnish listed companies over an 18-year period. They find the impact of business cycle on the working capital–profitability relationship is more pronounced in economic downturns relative to economic booms. They further show that the significance of efficient inventory management and accounts receivables conversion periods increase during periods of economic downturns. Their results demonstrate that active working capital management matters and, thus, should be included in firms' financial planning.

Ukaegbu (2014) examined the relationship between working capital efficiency and corporate profitability and in particular, to determine their significance across countries with differential industrial levels. The study reveals that there is a strong negative relationship between profitability, measured through net operating profit, and cash conversion cycles across different industrialization typologies. The negative association implies that, when the cash conversion cycle increases, the profitability of the firm declines.

De-Almeida *et al.* (2014) analyzed the impact of financial leverage on the relationship between working capital and company value and how financial constraints on access to financing affect this relationship. In addition, we they analyzed the relationship between working capital and company value. They found evidence for the following conclusions: an extra of investment in working capital is significantly less worth, on average, than an extra of investment in cash; and, on average, increasing the level of working capital at the beginning of a fiscal year reduces company value.

Baños-Caballero *et al.*, (2013) examined linkage between working capital management and corporate performance for a sample of non-financial UK companies. Their findings provide strong support for an inverted U-shaped relation between investment in working capital and firm performance, that is, companies have an optimal working capital level that maximizes their performance. Additionally, they also analyze whether this optimum is sensitive to alternative measures of financial constraints. Their findings show that the optimal level of working capital is lower for firms more likely to be financially constrained.

Taghizadeh *et al.*, (2012) studied the effect of working capital management over the performance of firms Listed in Tehran Stock Exchange (TSE). Average Collection Period, Inventory Turnover in days, Average Payment Period, Cash Conversion Cycle, and Net Trading Cycle were used to assess working capital management, and Net Operating Profitability was used to assess firms' performance. The findings of studying 50 different companies during the time period between 2006 and 2009 by using a multi-regression model showed that there is a negative and significant relationship between the variables of Average Collection Period, Inventory Turnover in day, Average Payment Period, Net Trading Cycle and the performance of firms Listed in Tehran Stock Exchange (TSE). There were no evidences to prove the existence of a significant relationship between Cash Conversion Cycle and the company's performances (NOP). The results showed that the increase in Collection Period, Payment Period, and Net Trading will

Research Article

lead towards the reduction of profitability in the company. In other words, managers can increase the profitability of their companies reasonably, by reducing Collection Period, Inventory Turnover, and Payment Period.

Hypotheses Development

H₁: there is a significant relationship between working capital management and firm's performance in firms listed in Tehran Stock Exchange.

H₂: there is a difference between relationship between working capital management and firm's performance in constrained firms than unconstrained ones in firms listed in Tehran Stock Exchange.

MATERIALS AND METHODS

Methodology

This study is semi-empirical correlation research in the positive accounting research filed using information of financial statements and notes to financial statements of TSE firms. In addition, the research can be classified as quantitative, inductive, and applied and post facto study which aims to find a relationship between variables.

The Population and Statistical Sample

The statistical population of study contains all firms listed in TSE. However, to reach homogenous statistical sample, following conditions are considered:

- 1- Required information for the period of 2004 to 2012 must be available.
- 2- Fiscal year must be ended at the end of year and must not have changed its fiscal year during the period of 2004 to 2012.
- 3- Firms stock must be traded continually during the period of 2004 to 2012.
- 4- Sample firms must not be financial, investment, bank or holding firms.

As a result of putting these conditions a sample of 71 firms is obtained to be studied during the period of 2004 to 2012.

Variables and Model

Baños-Caballero *et al.*, (2013) model is used to investigate the relationship between working capital management, company performance and financial constraints of companies listed in Tehran Stock Exchange. To capture the first hypothesis, following model is specified:

$$Q_{i,t} = \beta_0 + \beta_1 NTC_{i,t} + \beta_2 NTC_{i,t}^2 + \beta_3 SIZE_{i,t} + \beta_4 LEV_{i,t} + \lambda_t + \eta_i + \varepsilon_{i,t}$$

Where $Q_{i,t}$ is the corporate performance. Corporate performance is calculated as the ratio of the sum of the market value of equity and the book value of debt to the book value of assets.

NTC is calculated by the following expression:

$NTC = (\text{accounts receivables} / \text{sales}) * 365 + (\text{inventories} / \text{sales}) * 365 - (\text{accounts payable} / \text{sales}) * 365$. Hence, it is a dynamic measure of ongoing liquidity management that provides an easy estimate for additional financing needs with regard to working capital, with a shorter NTC meaning a lower investment in working capital. This variable is used to avoid the deficiencies of traditional liquidity ratios such as current ratio and quick ratio.

Firm size (Size) is measured as the natural logarithm of sales; leverage (LEV) by the ratio of total debt to total assets; growth opportunities (GROWTH) is calculated by the ratio (book value of intangibles assets / total assets); and return on assets (ROA) is measured by the ratio earnings before interest and taxes over total assets (Baños-Caballero *et al.*, 2013).

To capture the second hypothesis, following model is specified:

$$Q_{i,t} = \beta_0 + (\beta_1 + \delta_1 DFC_{i,t}) + NTC_{i,t} + (\beta_2 + \delta_2 DFC_{i,t}) + NTC_{i,t}^2 + \beta_3 SIZE_{i,t} + \beta_4 LEV_{i,t} + \beta_5 GROWTH_{i,t} + \beta_6 ROA + \lambda_t + \eta_i + \varepsilon_{i,t}$$

DFC in this model is financial constraints captured through *Z-score*. We also consider *Z-score* in order to capture the probability of financial distress of firms, which can also influence a firm's access to credit and, therefore, might limit its investment. It is calculated according to the re-estimation of Altman's (1968) model carried out by Begley, Mings, and Watts (1996), given by the following expression (Baños-Caballero *et al.*, 2013):

$$ZSCORE_{it} = 0,104 * X1 + 1,010 * X2 + 0,106 * X3 + 0,003 * X4 + 0,169 * X5$$

Research Article

Where X1 = Working capital / Total assets; X2 =Retained earnings / Total assets; X3 =Net operating profits /Total assets; X4 = Market value of capital / Book value of debt; and X5 = Sales / Total assets. A higher ZSCORE implies a lower probability of insolvency. Thus, firms with below-median scores (low Zscore) are classified as financially constrained, while above-median firms (high Zscore) are categorized as financially unconstrained (Baños-Caballero *et al.*, 2013).

RESULTS AND DISCUSSION

Empirical Results

Descriptive Statistic

To demonstrate a view of variables distribution descriptive statistic is presented in Table 1.

Table 1: Descriptive statistic

Variables	Observation	Min	Max	Mean	St. Dev
Firms size	639	2.82	6.88	5.48	0.58
Growth opportunity	639	0	0.096	0.002	0.008
Financial leverage	639	0.11	3.64	0.72	0.42
Return on assets	639	-0.59	6.54	0.14	0.39
Tobin’s Q	639	0.71	11.80	1.83	1.45
Business operating cycle	639	-3044	23794	218.76	997

According to table 1, among the variables, growth opportunity maximum is 0.096, minimum is 0 and mean is 0.002 which indicates that sample firms have very low intangible assets recognized in financial statements. Financial leverage mean are 0.72 indicating that TSE firms finance through debt more that capital market. Return on assets mean is 0.14 which shows that TSE firm’s productivity is 14 percentages.

Correlation

Table 2 indicates the correlation between research variables.

Table 2: Correlation

	Firms size	Growth opportunity	Financial leverage	Return on assets	Tobin’s Q	Business operating cycle
Firms size	1					
Growth opportunity	0.051	1				
Financial leverage	0.036	-0.061	1			
Return on assets	-0.038	0.059	-0.307	1		
Tobin’s Q	-0.152	-0.012	0.096	-0.148	1	
Business operating cycle	-0.138	-0.016	-0.038	-0.016	-0.039	1

Research Article

According to Table 2, the most correlation is between return on assets and financial leverage (-0.307) which is negative indicating that the correlation between these variables is negative and with increase of one of them, the other decreases. The least correlation is between growth opportunity and Tobin’s Q (-0.012). Low correlation between research variables shows that there is not a collineary problem variable.

Normality Test

One of the preconditions of applying regression models is having normal dependent variable. To test about normality of dependent variable Kolmogorov–Smirnov test is applied.

Table 3: Kolmogorov–Smirnov test (K–S test)

	Firms size	Growth opportunity	Financial leverage	Return on assets	Tobin’s Q	Business operating cycle
K-S	2.537	9.446	6.022	5.370	5.746	9.145
Sig	0.000	0.070	0.000	0.000	0.060	0.000

The results indicate that the dependent variable is normal considering its significance (0.060).

Hypotheses Test

H₁: there is a significant relationship between working capital management and firm’s performance in firms listed in Tehran Stock Exchange.

The results of this hypothesis are indicated in Table 3.

Table 3: First hypothesis test

	Standardized coefficient	Unstandardized coefficient	t statistic	Sig.	
	Beta	Std. Div	Beta		
Constant		0.573	3.774	6.582	0.000
Firms size	-0.169	0.100	-0.425	-4.266	0.000
Growth opportunity	-0.010	6.723	-1.663	-0.247	0.805
Financial leverage	0.145	0.141	0.493	3.500	0.000
Return on assets	0.186	0.150	0.689	4.608	0.000
Business operating cycle	-0.211	0.000	0.000	-1.755	0.080
Business operating cycle ²	0.167	0.000	0.000	1.401	0.162
D-W	R ²	Adjusted R ²	F-Statistic	Sig.	
1.943	0.072	0.064	8.212	0.000	

The results of Table 3 shows that there is not significant relationship between working capital management and firm’s performance in firms listed in Tehran Stock Exchange considering the significance of business operating cycle²(0.162). Further results indicate that firm’s size has a negative impact on firm’s performance and financial leverage and return on assets have a positive impact on firm’s performance. Durbin Watson (DW) value indicates that there is not an autocorrelation problem among models residual and F-Statistic significance shows that the whole model is significant. Adjusted indicates that 6 percent of dependent variable is explained by independent and control variables.

H₂: there is a difference in relationship between working capital management and firm’s performance in constrained firms than unconstrained ones in firms listed in Tehran Stock Exchange.

Research Article

The results of this hypothesis are indicated in Table 3.

Table 3: Second hypothesis test

	Standardized coefficient	Unstandardized coefficient		t statistic	Sig.
	Beta	Std. Div	Beta		
Constant		0.548	3.496	6.383	0.000
Firms size	-0.150	0.097	-0.378	-4.266	0.000
Growth opportunity	-0.060	6.728	-1.041	-0.155	0.877
Financial leverage	0.149	0.142	0.509	3.588	0.000
Return on assets	0.194	0.150	0.718	4.798	0.000
Business operating cycle* Financial constraint	-0.073	0.001	-0.001	-1.056	0.291
Business operating cycle* Financial constraint ²	0.052	0.000	3.386	0.773	0.440
D-W	R ²	Adjusted R ²		F-Statistic	Sig.
1.943	0.072	0.064		8.212	0.000

The results of Table 3 shows that there is no difference in relationship between working capital management and firm’s performance in constrained firms than unconstrained ones in firms listed in Tehran Stock Exchange considering the interaction variable of business operating cycle* Financial constraint²(0.440). Further results indicate that firm’s size has a negative impact on firm’s performance and financial leverage and return on assets have a positive impact on firm’s performance. Durbin Watson (DW) value indicates that there is not an autocorrelation problem among models residual and F-Statistic significance shows that the whole model is significant. Adjusted indicates that 6 percent of dependent variable is explained by independent and control variables.

Discussion and Conclusion

This study examines the relationship between working capital management, company performance and financial constraints of companies listed in Tehran Stock Exchange. To achieve the objectives of the study, 71 companies listed in Tehran Stock Exchange is studied for the period 2004 to 2012. In this study, to measure firm performance, Tobin's Q-ratio has been used. In addition, for measuring financial constraints, Zscore index, and for performance of the company the net trade cycle is applied. To test the hypothesis, multiple regression model using SPSS software has been used. In this research two hypotheses are developed. First hypothesis demonstrates that there is a significant relationship between working capital and firm’s performance. It is expected that high working capital may result in firm’s weak performance.

The results are against with this expectation showing there is not a significant relationship between working capital and firm’s performance. This finding is not according to the finding of Baños-Caballero *et al.*, (2013), Mohammadi (2007), Reza-zadeh *et al.*, (2010), Tagizadeh *et al.*, (2012). To investigate the relationship between working capital and firm’s performance more precisely, interaction variable of financial constraint is introduced. However, the relationship between working capital and firm’s performance is regressed once again with taking financial constraint into account. The finding indicates that financial constraint does not have an impact on the relationship between working capital and firm’s performance. This finding is also not according to the finding of Baños-Caballero *et al.*, (2013). Further, the finding indicates that firm’s size, financial leverage, return on assets have a significant relationship with firms performance. Although the results indicate that working capital may not have an impact on

Research Article

firm's performance, it is suggested to researchers to incorporate other proxies to measure firm's performance considering its possible impact. In addition, taking these results into consideration, with respect to this fact that working capital management may be different in different firm, it is suggested that the relationship between working capital management and firm's performance is investigated with considering industry impact.

REFERENCES

- Baños-Caballero BC, Pedro JG and Pedro Martínez-Solano T (2013).** Working Capital Management, Corporate Performance, and Financial Constraints, *Journal of Business Research* 1-7.
- Baños-Caballero S, García-Teruel P and Martínez-Solan P (2014).** Working Capital Management, Corporate Performance, and Financial Constraints, *Journal of Business Research* **67**(3) 332–338.
- Ben Ukaegbu B (2014).** The Significance of Working Capital Management in Determining Firm Profitability: Evidence from Developing Economies in Africa, *Research in International Business and Finance* **31** 1-16.
- De Almeida JR and Eid Jr W (2014).** Access to Finance, Working Capital Management and Company Value: Evidences from Brazilian Companies Listed on BM&FBOVESPA, *Journal of Business Research* **67** 924-934.
- Deloof M (2003).** Does Working Capital Management Affect Profitability of Belgian Firms?, *Journal of Business Finance & Accounting* **30**(3) 585.
- DyanitiDylami Z, Lotfi M and AzadBakhsh K (2012).** The Effects of Working Capital Based on Cash Conversion Period on Decreasing of Stock Price Dropping, *Quarterly Research Journal of Accounting Knowledge and Management Auditing* **1**(4) 55-64.
- Enqvista J, Grahamb M and Nikkinen J (2014).** The Impact of Working Capital Management on Firm Profitability in Different Business Cycles: Evidence from Finland, *Research in International Business and Finance, Business and Finance* **32** 36-49.
- Kieschnick R, LaPlante M and Moussawi R (2011).** Working Capital Management and Shareholder Wealth. Working paper (SSRN: <http://ssrn.com/abstract=1431165>).
- Kim YH and Chung KH (1990).** An Integrated Evaluation of Investment in Inventory and Credit: a Cash Flow Approach, *Journal of Business Finance and Accounting* **17** 381-390.
- Mohammadi M (1388).** The Effect of Working Capital on Firms Profitability in Firms Listed in Tehran Stock Exchange, *Management Journal* **6**(14) 80-91.
- Raheman A and Nasr M (2007).** Working Capital Management and Profitability – Case of Pakistani Firms. *International Review of Business Research Papers* **3**(1) 279 – 300.
- RezaieAhmadabadi M, Mehrabi E and FazalYazdi E (2013).** Impact of Working Capital Management on the Performance of the Firms Listed on the Tehran Stock Exchange, *International Journal of Academic Research in Accounting, Finance and Management Sciences* **3**(3) 352–364.
- RezaZadeh J and Hydariyan J (2010).** The Effect Working Capital on Iranian Firms Profitability, *Journal of Accounting and Auditing* **7** 20-33.
- Taghizadeh V, AkbariKhosroshahi M and Ghanavati E (2012).** The Investigation of the Relationship between Working Capital and Firm's Performance, *10th Iran National Accounting Conference*.
- Taghizadeh V, Ghanavati E, Akbarikhosroshahi M and Mohammadreza M (2012).** Working Capital Management and Corporate Performance: Evidence from Iranian Companies, *World Conference on Business, Economics and Management* 1313–1318.

Research Article

YaghoubNejad A, Vaklifard H and Babae A (2010). The Relationship between Working Capital and Profitability in Tehran Stock Exchange, *Journal of Financial Engineering and Portfolio Management* 2(2) 113-137.