

## **Investigating the effective factors the working capital behavior in Tehran Stock Exchange and Iran fara bourse companies (Quantil Regression Approach)**

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### **Abstract**

In this study, using two criteria of the Working capital ratio and Cash conversion cycle to explain the management of working capital, Investigates the effective factors (operating cash flow, sales growth, return on assets, company value, company age, firm size, leverage ratio, economic conditions) On the behavior of working capital in Tehran Stock Exchange and Iran fara bourse, Using financial information of 165 companies during 2010-2018. For this purpose, 8 hypotheses were formulated and quantil regression was used order to examine the subject of the research more precisely at various levels. The results of the research indicate that the behavior of working capital Statistical sample companies Affected the factors related to the company and the economic conditions And the effect of the factors examined on each of the indicators of working capital management in different companies Regarding the policy taken by corporates Managers in relation to working capital, it is different and for the working capital

optimal management, should be Attention to both indicator and factors affecting them.

**Keywords:** Working Capital Ratio, Cash Conversion Cycle, Aggressive Policy, conservative Policy

### **Introduction**

The capital is all the financial resources that are used, and the maintenance of the company's activity is also proper management and optimal allocation of these resources in other words, financial managers face issues related to capital of the business and try to manage optimal resource management and increase the value of the business unit.

Working capital refers to the firm's investment in current assets, current liabilities, cash, short-term securities, accounts receivable and inventory. In the meantime, the decisions about the amount of investment in accounts receivable and inventory, as well as the amount of credit, are key components of working capital management (Skandar Nezhad, Hasan Zadeh & Taheri, 2017;2).

The companies spend the funds they earn in a variety of uses. As a sample of enough inventory and credit policy, it can affect the sales revenue of the firm as adequate inventory maintenance can reduce the risk of inventory loss at the time that demand rise for the market and also prevent delay in production schedule or increase the company's sales by using open credit policy. On the other hand, holding too much inventory or giving too much credit to customers may block large amounts of cash in working capital (Hoshani, 2016; 2).

Working capital management is one of the most important decisions that always challenges managers in optimizing the balance of current assets and liabilities. The

importance of working capital management is due to its continuity in the day-to-day business activities. working capital contributes to the rotation of competitive products and consequently optimal performance of the company on the one hand and reduces the cost of capital on the other (Dolo & Mahmoodi , 2016; 108).

according to the stated literature, managers and users of information and financial statements must be aware of the effective factors on capital turnover to be able to predict the future of the company and make conscious decisions therefore, the effective factors on companies' working capital are essential for both managers and users of financial statements, which is increasing everyday. The present study is unique because it uses two indicators of working capital ratio and cash conversion cycle to explain the behavior of working capital and quantitative regression is used to examine more accurately the subject under study in different quantities.

### **theoretical bases, research history and hypotheses**

Working capital management reflects the policies and decisions that are made in the working capital sector to change the types of current assets and short-term financing resources.

minimization of investment in working capital (bold policy) may positively affect firm profitability.

On the other hand, large investments in the working capital (conservative policy) may also lead to profitability Because preserving the high level of reduces the potential costs of stopping in the firm's production and loss process due to lack of production, reducing production costs and other benefits (Arshian Nezhad, Zamani & Jahanshad, 2017; 94).

According to research on working capital, factors such as financial performance, growth, operating cash flow, company value, company age, size, debt ratio and economic conditions are effective and there is disagreement regarding the type of relationship between some variables with working capital in research.

Studies have reported a positive relationship between firm performance and working capital ratio (Asadi, Nor Eani Sarfaraz, 2017;131; Emami & Farid, 2015; 1; Nazir & Afza, 2009; 28 and Kabaler & Solano, 2014; 332).

However, Moussa (2019) states that in high performing companies, they keep their working capital at lower levels.

According to some studies, operating cash flow has a negative and significant relationship with working capital management (Chiochang, 2006; 153; Moghadam & etal, 2011; 71, Mansuori & Juoria, 2012; 15).

And according to other research, operational cash flow has a direct and significant relationship with working capital management ( Rostami & etal, 2013; 15).

Corporate value is a template that attracts investors to invest in business and enhancing value enhances the company's reputation by enhancing future growth ( Khodamm puor & Huosseini neia, 2013; 51).

And in research there has been a significant negative relationship between the cash conversion cycle and the company value (Ogundipe; Eido & Ogundipe, 2012; 143; Lay, 2012; 1).

Moussa (2019; ٤٦) states that as a result of high growth rates, companies try to manage their capital (working capital and debt) more effectively by keeping them at lower levels, thus lower working capital, which is in line with BaharMoghadam's view is that of Khani and Zafarani (2011; ٧١); also, in other research, growth opportunities have not had a significant impact on working capital (Wiguna and Wasistha; 2018; 97). According to Myers (1984); cost of capital invested in working capital of larger leveraged companies is greater because they have to pay higher risk. In fact, the evidence indicates a decrease in the size of working capital management when companies increase their leverage, and research in the following years confirms the link between corporate leverage and working capital (Olayinka, ٢٠١٢; 40; Wiguna and Wasistha, 2018; 97 and Taheri and Shahchera, 2013; ٨٩٥).

Taheri and Shahchera (2013; 906) state that in times of economic downturn, high volumes of goods are expected to be maintained and usually difficult to obtain liquidity for production, and on the other hand, the downturns impede the continued operation and production activities of firms. It becomes economical in such circumstances to have a high volume of accounts receivable with the aim of reducing the inventory which increases the volume of working capital required, while working capital financing maintains a high level of ordering for stability in daily operations, contrary to research conducted by Wiguna, S., Wasistha (2018; 97) because they suggest that real GDP growth rate has no significant impact on working capital. Also for Mansoori and Jorlah (2012; 15) economic conditions have a negative impact on the cash conversion cycle, the opposite being that of the Vaez, ghalambar and Shakeri (2012; 46) who state that there is a positive relationship between GDP and the cash conversion cycle. There is a significant relationship, and according to research conducted between firm size and the ratio of working capital and cash flow to the cash flow cycle (Uyar, 2009; 186, Mansoori and Jorlah, 2012; 10, Cuong & Nhung, 2017; 284 and Hormozi & Ali Ahmadi, 2012; 31); Also, the age of the company also affects working capital management, and usually foreign financing is easier for older companies and under conditions of Asbtry do (Anvari Rostami, Sajadpour, Yaballuei, 2013; 18). The level of working capital management in different industries varies depending on the nature of the activity of each industry (Anvari Rostami, Sajadpour, Yaballuei, 2013; 19).

### **Research history**

Lazaridis and Trifonidis investigated the relationship between profitability and working capital management of listed companies in the Athens Stock Exchange during 2001-2004. According to their research results, there is a significant negative relationship between profitability and working capital management (cash conversion cycle), so managers can make profit for their company by properly

controlling the cash conversion cycle and keeping its constituent elements at an optimal level (Lazaridis & Trifonidis, 2006; 1).

Baharmoghadam, Khani & Zaferaneih (2011) survey the effect of specific characteristics of firms on working capital management during 2005 - 2009 using multivariate linear regression model. According to their results, there is a significant negative relationship between growth opportunities and operating cash flow with working capital management. Also, there is a positive and significant relationship between capital structure and working capital management. In addition, there was no significant relationship between profitability and the conversion cycle (Baharmoghadam & etal, 2011; 71). In a study, Mansouri and Jouria (2012;1) investigated the determinants of working capital management in Singapore firms during 2003 to 2010 using the Ordinary Least Squares (OLS) method. According to their results, there is a negative relationship between capital expenditure, operating cash flow, firm size, and GDP with the cash flow cycle, and a positive relationship between asset return and firm growth (Mansouri and Jouria, 2012; 16).

Mohamad & Elias (2013), survey the evaluation of determinants of capital management in circulation in companies listed in Malaysia during 2001 - 2011 using OLS method. In this study, the cash and working capital conversion cycle as a proxy for the ratio of working capital and debt, and capital expenditures, free cash flow, GDP, firm size are used as the determining variables. According to their results, there is a significant relationship between working capital and its determinants (Mohamad & Elias, 2013; 225).

Zariyawati, Annuar & Pui\_San have spent research examining the determinants of working capital management in the small and large enterprises in Malaysia during 2009 to 2013. According to their research, leverage, firm performance, capital expenditure, operating cash flow, executive compensation and economic conditions are the most important factors affecting

working capital management (Zariyawati, Annuar & Pui\_San, 2013; 35)

Salawu & Alao study the determinants of working capital management on turnover in manufacturing firms in Nigeria in 2000 to 2009. According to the research results, they are variables of sales growth, size of company, GDP and leverage ratio of factors affecting working capital (Salawu & Alao, 2014; 49).

Vaez, Ghalambar and Shakeri (2012) have examined the factors affecting the management of working capital of Tehran Stock Exchange companies during 2006 to 2011 by using multivariate regression technique with panel data method. According to their results, there is a negative significant relationship between profitability, leverage and capital expenditure with the cash conversion cycle, and there is a positive and significant relationship between GDP and the cash conversion cycle (Vaez, Ghalambar and Shakeri 2012; 46).

Anvare, Sajjadpur and Yabloei (2013) investigated the factors affecting the working capital management of listed companies in Tehran Stock Exchange for 2002 to 2009 by using multivariate regression. According to their results, there is an inverse and significant relationship between variables of debt ratio, return on assets and investment in fixed assets with working capital management, and there is a direct relationship between operating cash flow and working capital management. Companies with longer life and better cash flow have a longer cash cycle than other companies. Also, companies with a higher return on assets, debt ratios, growth opportunities and investment in higher fixed assets have a more comprehensive and better working capital management policy (Anvare, Sajjadpur and Yabloei, 2013; 15-21).

Nuoroz and etal (2014) investigated the factors affecting working capital management in small and medium-sized companies listed on the Tehran Stock Exchange for 2006 to 2012 using the least squares method. According to their research, among the selected factors of firm life, equity return rate and firm size have a

significant relationship with working capital management as measured by cash flow conversion cycle, but between variables of financial leverage, operating cash flow, property Machinery and equipment and opportunities for corporate growth and working capital management were not significantly correlated (Nuoroz and etal, 2014; 1).

Muoslimi (2015) examined the factors affecting the working capital of pharmaceutical companies listed in Tehran Stock Exchange during the 2005 -2010 by using multivariate regression method. According to the results of this study, variables of financial leverage, instant ratio, asset growth ratio have significant effect on working capital, and variables of return on assets and profit before deduction of interest and tax have no effect on working capital (Muoslimi, 2015; 1)

Wiguna & Wasistha In a study, the factors that determine the ratio of working capital to manufacturing companies in Indonesia during 2010-2014 have been investigated. According to their results, the cash flow and profitability cycle has a positive effect on working capital, while leverage has a negative effect on working capital. Also, operating cash flow, firm size, growth opportunities and real GDP growth rates do not have a significant effect on working capital (Wiguna & Wasistha, 2018; 97).

Moussa In a study investigate the determinants of working capital behavior of companies listed on the Egyptian Stock Exchange during 2000-2010 period using the generalized moments method. According to the results of this study, the behavior of working capital is influenced by factors related to firm characteristics, economic conditions and type of industry. There is an inverse relationship between company value and size with working capital management (Moussa, 2019;39-57).

### **Research hypotheses**

According to the stated literature, the following hypotheses are expressed in the present study for analyzing the relation of

some variables with working capital behavior in the company rotation:

**Hypothesis 1: There is an inverse relationship between operating cash flow and corporate working capital management**

Hypothesis 2: There is an inverse relationship between growth opportunities and working capital management.

Hypothesis 3: There is a direct relationship between performance and the management of working capital.

Hypothesis 4: There is an inverse relationship between value and the management of working capital.

Hypothesis 5: There is a direct relationship between age and management of working capital.

Hypothesis 6: There is an inverse relationship between size and capital management of the company.

Hypothesis 7: There is an inverse relationship between leverage ratio and working capital management.

Hypothesis Eight: There is a significant relationship between economic conditions and the management of working capital.

**Research model and variables**

in this study, according to Moussa (2019), two indices of working capital ratio and cash conversion cycle were calculated as explanatory variables of working capital management of companies, and then the regression model (1) was used to investigate the factors influencing capital ratio, and in the next step, the regression model (2) was investigated to examine factors influencing the cash conversion cycle.

$$WCR_{i,t} = \alpha_{i,t} + \beta_1 * WCR_{i,t-1} + \beta_2 * OFC_{i,t} + \beta_3 * GROWTH_{i,t} + \beta_4 * ROA_{i,t} + \beta_5 * TQ_{i,t} + \beta_6 * AGE_{i,t} + \beta_7 * SIZE_{i,t} + \beta_8 * LEV_{i,t} + \beta_9 * GDP_{i,t} + \beta_{10} * INDUSTRY_{i,t} + \epsilon_{i,t} \quad (1)$$

$$CCC_{i,t} = \alpha_{i,t} + \beta_1 * CCC_{i,t-1} + \beta_2 * OFC_{i,t} + \beta_3 * GROWTH_{i,t} + \beta_4 * ROA_{i,t} + \beta_5 * TQ_{i,t} + \beta_6 * AGE_{i,t} + \beta_7 * SIZE_{i,t} + \beta_8 * LEV_{i,t} + \beta_9 * GDP_{i,t} + \beta_{10} * INDUSTRY_{i,t} + \epsilon_{i,t} \quad (2)$$

The definition and calculation of each of the variables used in this study is presented in Table (1).

**Table 1: Definition of research variables**

symbol	Calculation	Reference of counting
WCR	Net working capital/total assets	Moussa, 2019
CCC	Operational cycle - period of payment	Ahmadi & etal, 2013
OFC	Operating cash flows/total assets	Moussa, 2019
GROWTH	Percentage change in sales over the previous year	Moussa, 2019
ROA	Net profit after taxes/total assets	Moussa, 2019
TQ	(Market value of equity + book value of total debts)/total assets	Moussa, 2019
AGE	Natural logarithm of firm's age since the date of its incorporation	Moussa, 2019
SIZE	Natural logarithm of total assets	Moussa, 2019
LEV	Total debts/total assets	Moussa, 2019

GDP	Annual change in the real gross domestic product	Moussa, 2019
INDUSTRY	Dummy variables for each sector	Moussa, 2019

## data analys

### Descriptive statistics of variable

#### Test for normality of variables

In order to use the quantitative regression method, the data must first be proved normal.

As shown in Table (3), with respect to the significance of Jarque-Bera statistic for all variables, except the GDP variable, the null hypothesis is rejected that the expected variable is normalized, so that all research variables, except the GDP variable, have abnormal distribution

**Table 3: Normality test of research variables**

Vareable	Jarque-Bera statistic	prob	Numbers of observations	result
WCR	50448.612	0.000	1320	abnormal distribution
CCC	14010.783	0.000	1318	abnormal distribution
OFC	262.919	0.000	1320	abnormal distribution
GROWTH	37031.416	0.000	1319	abnormal distribution
ROA	2996.832	0.000	1320	abnormal distribution
TQ	4047.858	0.000	1320	abnormal distribution
AGE	174.244	0.000	1320	abnormal distribution
SIZE	83.845	0.000	1320	abnormal distribution
LEV	62533.146	0.000	1320	abnormal distribution
GDP	0.313	0.855	1320	normal distribution

References: Research findings

According to the above, the best method for estimating quadratic regression research model Because in this method, quantiles are used instead of averages.

A static test in econometrics is needed to avoid having a regression with false relationships And if the data are not static, they cannot be used in relation to regression and based on their results; In order to investigate the variables' reliability in this study, tests (Levin, Lin and Chu), (Im, Pesaran and Shin), (ADF Fisher) and (PP Fisher) tests were used.

### Testing research data

#### Static test

**Table 4: Static test results**

Variable	Fisher PP		Fisher ADF		Im, Pesaran and Shin		Levin, Lin and Chu	
	prob	statistic	prob	statistic	prob	statistic	prob	statistic
WCR	0.000	462.109	0.000	522.265	0.000	-4.735	0.000	-21.841
CCC	0.000	433.583	0.000	444.034	0.072	-1.459	0.000	-10.576
OFC	0.000	815.007	0.000	722.444	0.000	-10.790	0.000	-26.902
GROWTH	0.000	714.046	0.000	717.521	0.000	-11.021	0.000	-30.561
ROA	0.005	399.377	0.000	489.608	0.000	-5.784	0.000	-43.040
TQ	0.000	564.604	0.000	638.777	0.000	-9.138	0.000	-32.044
AGE	0.000	1408.61	0.000	1422.53	0.000	-251.58	0.000	-54.146
SIZE	0.000	553.387	0.000	474.688	0.000	-3.726	0.000	-25.999
LEV	0.011	391.296	0.006	398.663	0.468	-0.080	0.000	-7.056
GDP	0.000	580.375	0.000	580.375	0.000	-7.799	0.000	-27.289

## References: Research findings

According to the results of Table (4), the calculation of the calculated statistics and

their probability show that all the variables are at the mana leve

### Estimation of research models

As mentioned earlier, this study seeks to investigate the factors affecting the behavior of capital in companies And quantitative regression is used to estimate the model It is necessary to explain that when quantitative regression is estimated at 5%. Impact of research variables on courses or companies that have adopted bold working capital management policy.

Accordingly, for the convenience of speech, we designate quotas of 5%, 25%, 50%, 75%, and 95%, respectively, of companies with very low, low, medium, high and very high turnover. The following table (5) and table (6) are related to the fitting results of the first and second models of research, respectively.

Variable	%٥	%٢٥	%٥٠	%٧٥	%٩٥
c	0.231 (2.701)*	0.226 (4.319)*	0.280 (5.077)*	0.367 (6.718)*	0.609 (5.860)*
WCR(-1)	0.657 (13.981)*	0.736 (33.014)*	0.719 (30.214)*	0.684 (33.984)*	0.594 (12.919)*
OFC	-0.394 (-4.303)*	-0.256 (-6.428)*	-0.171 (-4.575)*	-0.147 (-5.351)*	-0.150 (-3.759)*
GROWTH	0.043 (2.219)**	0.056 (5.605)*	0.050 (5.396)*	0.040 (3.525)*	0.017 (1.008)
ROA	0.005 (4.511)*	0.005 (12.242)*	0.005 (7.622)*	0.004 (10.361)*	0.003 (7.392)*
TQ	-0.038 (-4.318)*	-0.034 (-6.146)*	-0.021 (-3.014)*	-0.012 (-2.438)**	0.015 (1.649)
AGE	0.023 (2.256)**	0.026 (3.107)*	0.013 (1.661)***	0.002 (0.328)	0.008 (0.520)
SIZE	-0.013 (-3.039)*	-0.012 (-5.297)*	-0.010 (-3.513)*	-0.009 (-3.436)*	-0.021 (-3.892)*
LEV	-0.394 (-19.556)*	-0.227 (-7.076)*	-0.212 (-6.573)*	-0.190 (-7.127)*	-0.179 (-4.245)*

GDP	0.230 (1.598)	-0.084 (-1.137)	-0.130 (-2.055)**	-0.062 (-0.992)	-0.288 (-1.615)
INDUSTRY	0.001 (1.361)	-0.000 (-0.818)	-0.000 (-1.297)	-0.001 (-4.373)*	-0.001 (-2.919)*
Pseudo R-squared	0.755	0.645	0.598	0.566	0.463
Adjusted R-squared	0.753	0.642	0.594	0.562	0.458
Quasi-LR statistic	1953.029	2673.475	2656.807	2239.133	614.711
Prob(Quasi-LR stat)	0.000	0.000	0.000	0.000	0.000

References: Research findings

Variable	% <sub>0</sub>	% <sub>20</sub>	% <sub>40</sub>	% <sub>60</sub>	% <sub>80</sub>
c	148.725 (2.151)**	60.357 (1.895)**	11.285 (0.384)	-21.516 (-0.542)	-45.588 (-0.327)
CCC(-1)	0.564 (23.179)*	0.765 (29.174)*	0.879 (31.700)*	0.942 (32.972)*	1.012 (13.162)*
OFC	-16.851 (-0.479)	-153.212 (-6.211)*	-174.115 (-7.968)*	-231.547 (-7.503)*	-399.512 (-8.157)*
GROWTH	-74.565 (-3.212)*	-96.921 (-8.202)*	-106.594 (-9.223)*	-95.993 (-8.388)*	-119.882 (-6.117)*
ROA	2.308 (8.731)*	2.179 (6.714)*	2.014 (6.721)*	1.742 (4.686)*	0.213 (0.351)
TQ	-36.631 (-3.787)*	-4.370 (-1.048)	1.368 (0.583)	7.862 (2.359)**	55.934 (6.349)*
AGE	27.429 (1.773)**	10.201 (1.830)**	3.791 (0.822)	3.070 (0.590)	-6.085 (-0.342)
SIZE	-7.469 (-3.673)*	-3.603 (-2.248)**	1.035 (0.810)	4.057 (2.059)**	9.951 (1.206)
LEV	-82.801 (-6.832)*	-7.638 (-0.288)	12.209 (1.034)	10.752 (0.830)	-12.505 (-0.393)

GDP	-317.985 (-3.097)*	-132.777 (-3.321)*	-170.250 (-4.680)*	-184.369 (-3.826)*	-440.682 (-1.413)
INDUSTRY	-1.880 (-3.609)*	-0.267 (-1.301)	-0.117 (-0.749)	0.275 (1.311)	1.602 (1.789)***
Pseudo R-squared	0.377	0.466	0.538	0.550	0.541
	0.371	0.461	0.534	0.546	0.537
Adjusted R-squared	525.337	1859.297	3023.987	2377.295	740.085
Quasi-LR statistic	0.000	0.000	0.000	0.000	0.000

#### References: Research findings

How to Judge: If the absolute value of the t statistic is equivalent to that in the Student t table with the same confidence level (In this study, 1%, 5% and 10% are indicated by \*, \*\* and \*\*\*, respectively) The greater the hypothesis, the more relevant it is.

Following on from the results of Tables (5) and (6), each of the research hypotheses is examined.

Hypothesis 1: There is an inverse relationship between operating cash flow and corporate working capital management. According to the results, operating cash flow coefficients are significant in all quantiles And it has a negative impact on the ratio of working capital The lower the ratio of working capital to the company The reverse impact of operating cash flow is greater.

Operating cash flow also has a negative impact at all levels except for companies with very low cash conversion cycle As the cash flow cycle period increases, the reverse effect of operating cash flow increases.

So, it can be stated that the high level of operating cash flow is an indicator of working capital management for managers. Hence, at high levels of operating cash flow, they reduce the ratio of working capital Theoretically, companies with shorter cash flows also have higher levels of operating cash flow And they manage their capital far better than companies with longer cash conversion cycles.

Hypothesis 2: There is an inverse relationship between growth opportunities and working capital management.

According to the results, sales growth has a positive effect on the ratio of working capital and a negative impact on the cash conversion period So that its positive effect on the ratio of working capital is negligible But its negative impact on the cash conversion cycle is enormous And with sales increasing, managers have increased their working capital ratio And try to reduce their cash conversion cycle by reducing the credit sales period and increasing the payables period.

The third hypothesis: there is a direct relationship between the performance and management of company's working capital.

The results show that the return on assets as an indicator of firm performance has a positive effect on the ratio of working capital to cash flow in different quartiles, so that this effect on capital ratio is negligible and significant on cash conversion cycle. And so, with decreasing cash conversion cycle, increase this effect. as a result, it can be stated that the higher the profit of the company and the better performance, the managers will be paid less attention to the management of working capital and will be added to the ratio of working capital and cash conversion cycle.

The fourth hypothesis: there is a reverse relation between the value and

management of in the company's working capital.

According to the results, company value (Q Tobin ratio) negatively affects working capital ratio and this effect is very negative in companies with high cash conversion cycle and high and very high in cash conversion companies.

It can be concluded that, in terms of investors, companies whose balance sheet reflects lower working capital ratios are more valuable, and will decrease as the ratio of working capital to corporate value decreases. Also, since the less cash conversion cycle reflects better working capital management, with the increase in value, companies with very low cash conversion cycles have a significantly reduced cash conversion cycle, but for companies with high and very high cash conversion cycles, Increasing the value of the company, the cash conversion cycle will also have a significant increase, which is contrary to the theoretical foundations, given the Iranian capital market, it can be said that the stock prices of companies with high cash conversion cycles and suffering from weak management will increase with speculative measures.

Hypothesis 5: There is a direct relationship between age and management of working capital.

According to the results, the age of the company has a positive effect only on the levels of the companies with very low, low and medium turnover ratios, and on the levels of the companies with very low and low cash conversion cycles. It can be argued that older firms increase the level of their working capital ratio, thus decreasing the growth rate over the years of their lives and the demand for working capital of companies with low working capital ratio will also increase; Cash and Cash Increase their cash conversion cycle over time. Hypothesis 6: There is an inverse relationship between size and capital management of the company. According to the results, firm size inversely affects the ratio of working capital; it also has a negative effect on the cash flow cycle of companies with very low and low cash flow but on companies with high cash

conversion cycle directly (Positive) affects. The results show that with increasing size of firms, access to financial markets and bargaining power is increased relative to smaller firms, and the ratio of working capital to all queries and cash conversion cycles in companies with low and low cash conversion cycles decreases. It does, but companies with a high cash conversion cycle increase their cash flow, as expected. Consequently, as managers increase in size, managers pay less attention to working capital management.

Considering the significance of the financial leverage coefficients in all the queries studied, it can be concluded that the financial leverage has an inverse effect on the working capital ratio and the more bold the company has a bolder policy on the working capital ratio will be added to the reverse effect. Theoretically, it can be argued that the cost of capital invested in working capital of larger leveraged companies is higher because they have higher risk, as a result of which evidence indicates a decline in working capital management as firms increase their leverage.

Hypothesis 8: There is a significant relationship between economic conditions and company's working capital management.

according to the results of the study, the economic condition only negatively affects the cash conversion cycle of firms; also, the shorter the cash conversion cycle of the company, the reverse effect of economic conditions will be greater, and managers will reduce cash conversion cycle to other companies in the economic boom conditions. As a result, it can be stated that during the economic boom as the sales of companies increase, managers try to reduce the cash flow of the company by reducing the credit sales period and increasing the payables period.

Also, the coefficients of the variables of the ratio of working capital to the previous period and the cash flow cycle of the prior period in each of the fitted models are positive and significant in all estimation quantities, indicating the positive effect of capital management in the previous period

on the management of current working capital. Modified coefficient and coefficient determination coefficients also indicate the suitability of each estimation model.

### Additional tests

after estimating the regression and investigating the estimation coefficients, the tests of equality of the estimated slopes and the symmetry of the estimation coefficients are investigated using the Wald test. The results of the quantile regression slope equality test are presented in Table 7.

Table 7: Quantile slope equality test results

quantile	5%		25%		50%		75%		95%	
	statistic	prob								
Model 1	225/264	0.000	59.980	0.000	59.980	0.000	59.980	0.000	151.838	0.000
Model 2	407/252	0.000	70.720	0.000	70.727	0.000	70.727	0.000	351.114	0.000

According to Table (7), it is observed that there are significant differences in the estimation quantiles (the test statistics are significant); in other words, the estimation coefficients in different quantiles are different and indicate different effects of

independent variables on the dependent variables in different quantiles.

Table (8) presents the test for the symmetry of the quantile values and coefficients in the various quantiles.

quantile	5%		25%		50%		75%		95%	
	statistic	prob								
Model 1	63/734	0.000	11/746	0/383	11/746	0/383	11/746	0/383	63/734	63/734
Model 2	40/416	0.000	7/442	0/762	7/442	0/762	7/442	0/762	40/416	40/416

According to the results obtained for the parent test, it can be seen in Table (8) that the null hypothesis of a test of symmetry between the estimated coefficients for the quantities of 25, 50 and 75% is not rejected. Consequently, there is symmetry between the estimated coefficients in the expressed quantiles; in other words, there is no significant difference in the expressed coefficients.

### conclusion and discussion

The efficient management of working capital and its components is one of the main issues facing any business. Therefore, the success of companies depends largely on the ability of financial managers to obtain optimal levels of working capital

because it satisfies the balance between liquidity and profitability.

In the present study, we tried to study the factors affecting the working capital management of the Iranian Stock Exchange companies during 2010-2016 using two measures of working capital ratio and cash conversion cycle to explain the working capital of companies. In order to better clarify the factors affecting working capital management, the quantile method was used to fit the research models to give users a clearer picture of the research problem. After analyzing the results, the following findings were obtained.

1. Operating cash flow has an adverse effect on both working capital management

indices, so that in companies with higher working capital ratio (cash cycle), the negative impact of operating cash flow is reduced (increased), thereby increasing the operating cash flow of company managers. The cash conversion cycle reduces cash flow and the ratio of working capital, and it seems that reducing the cash conversion cycle is in order to provide sufficient liquidity to continue the business.

2. Sales growth has a positive effect on the ratio of working capital to cash flow and a negative effect on the cash flow cycle, with companies with higher cash conversion cycle adding to the negative impact of sales growth, thereby increasing the sales managers' turnover ratio Data and at the same time reduce the cash conversion cycle, and the more corporate executives have adopted a more conservative working capital policy, the greater the reduction in the cash cycle.

3. Return on assets (performance) has a positive effect on both working capital indicators. If a company uses a lower cash conversion cycle, it will add to the positive impact of return on assets. As a result, better financial performance leads managers to pay less attention to working capital management as the results increase the performance of the cash cycle, and the more bold the policy managers pursue, the greater the cash flow cycle.

4. Company value has an adverse effect on working capital ratio but in companies with low cash conversion cycle, company value has negative impact and in companies with high cash conversion cycle it has significant positive impact.

5. The age of the firm has a positive effect on both indicators of working capital management in the low quartiles, so that in the companies with high working capital ratio and cash flow cycle, it has a positive effect on the companies with medium working capital ratio. This positive effect is also significant.

6. firm size in all the queries examined has a negative effect on the ratio of working capital. This is also a negative effect for companies with low and very low cash

conversion cycles, but the impact of firm size on companies with high cash cycles has been positively evaluated.

7. The leverage ratio has a negative effect on the working capital ratio in all the quantities studied. The lower the ratio of working capital to the company, the greater the reverse effect of leverage ratio; also the ratio of leverage to companies with very low cash conversion cycle has a significant reverse effect and no significant relationship was found in other quantities.

8. Economic conditions have a significant reverse effect on the cash flow cycle ratio, but only in companies with a medium turnover ratio have a significant reverse effect and no significant relationship has been found in other quantities. As a result, conversion cycle managers reduce their cash flow in times of economic boom and increase in times of recession; in other words, managers in an economic downturn try to maintain their customers and market share by increasing the cash flow cycle. This in turn will increase the risk of liquidity shortages.

In general, the present study shows that the behavior of working capital of Iranian Stock Exchange member companies is influenced by the factors related to the company and economic conditions and the effect of each of the factors studied on each of the working capital management indicators in different companies is different. Therefore, financial managers should consider the impact of these factors when determining the optimal working capital strategy. Consequently, corporate managers are suggested to use different working capital indices to determine the optimal working capital strategy because it provides a comprehensive view and according to the present study working capital management based on both the ratio of working capital ratio and cash conversion cycle causes Increased operating cash flow levels; it is also suggested that managers reduce cash flow and cash flow for the firm's operational needs during the recession by reducing the cash flow for the firm's operational needs

because, according to the present study, managers increase cash flow during the recession. Can be in the order Investing in corporate customers and maintaining company market share but this behavior will increase the risk of corporate liquidity shortages; it is also suggested that researchers consider the present study taking into account the country's political conditions (sanctions) and variables such as company risk and managers' financial knowledge. Provide a clearer picture of the impact of factors affecting working capital management.

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