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## RELATIONSHIP BETWEEN CASH FLOW MANAGEMENT AND FINANCIAL PERFORMANCE OF COMPANIES LISTED ON THE TEHRAN STOCK EXCHANGE

### ОДНОС ИЗМЕЂУ УПРАВЉАЊА НОВЧАНИМ ТОКОВИМА И ФИНАНСИЈСКОГ УЧИНКА ПРЕДУЗЕЋА НА ТЕХЕРАНСКОЈ БЕРЗИ

**Summary:** *Purpose*—Cash is one of the most important assets to business firms. To evaluate a business firm, the competencies of a firm in creating and increasing the cash are of great importance for investors, creditors, and other beneficiaries. So, the main objective of the current study is to evaluate the relationship between cash flow management and firm financial performance in Iran. *Design/methodology/approach* – In the present study, using the data of 155 companies listed on the Tehran Stock Exchange during 2009-2016, panel data, and multivariable regression, we tried to analyze the relationship cash flow management and financial performance. *Findings* –The results obtained indicated that there is a relationship between the decrease (increase) of cash conversion cycle and operational cash conversion cycle and the improvement (debilitation) of financial performance. Moreover, the pending period for collection of sales revenue, cash conversion cycle, and operational cash conversion cycle is the Granger Cause of return on assets. *Originality/value* – Since a few studies have been conducted on cash flow management in Iran, the current study has covered the topic in Iran.

**Keywords:** cash flow management, working capital, financial performance.

**JEL classification:** G10

**Резиме:** *Намјенски новац је једно од најважнијих средстава компанија. Код процјене фирме, њене способности у креирању и повећању готовине су од великог значаја за инвеститоре, кредиторе и друге кориснике. Дакле, главни циљ овог истраживања је да се процјени однос између управљања новчаним токовима и финансијских учинка предузећа у Ирану. Дизајн/методологија /приступ - У овом истраживању, користећи податке о 155 компанија које су котиране на Техеранској берзи у периоду од 2009. до 2016. године, панел податке и вишеструку регресију, покушали смо да анализирамо везу између управљања новчаним токовима и финансијског учинка. Сазнања - Добијени резултати указују да постоји веза између смањења (повећања) циклуса конверзије готовине и оперативног циклуса конверзије готовине и побољшања (слабљења) финансијског учинка. Штавише, период чекања за прикупљање прихода од продаје, циклуса конверзије готовине и циклуса оперативне конверзије готовине је Гренџерова узрочност приноса на имовину. Оригиналноост / вриједност - будући да је спроведено неколико студија о управљању новчаним токовима у Ирану, ова студија покрила је тему у Ирану.*

**Кључне ријечи:** управљање новчаним токовима, радни капитал, финансијски учинак  
**JEL класификација:** G10

## 1. INTRODUCTION

Business firms require cash to perform their operational activities and investment. The required cash should be generated through financing activities. A broad spectrum of financing sources is in the hand of economic firms, for which different classification methods are suggested (Shabahang 2008). Financing may be conducted using different resources. Each source of financing has its particular impact on the return and risks of for-profit firm owners. In general, financing theories can be divided into three major sections of capital budgeting, capital structure, and the management of working capital. The first two sections are all about the financing and long-term management of investments. However, most of the decisions on the working capital is about the management of financing, short-term investments, and at the same time about the current assets and debts. Hence, to generally name the short-term financing management as “the management of working capital” seems logical (Samiloglu and Demirgunes 2008). Using the available literature as well as the data of listed companies on

Tehran Stock Exchange, in the present study, we attempted to evaluate and analyze the potential relationship between cash flow management and financial performance.

## 2. REVIEW LITERATURE AND THEORETICAL PRINCIPLES

The increasing significance of working capital in the continuity of business firm activities has led to the emergence of various strategies for managing working capital. By applying different strategies on working capital management, for-profit companies would be able to influence the amount of liquidity of the company. Each strategy has different risk and return. Given the status of the company and their personal characteristics, financial managers choose either the bold (risky), conservative (risk aversion), or a combination of the two (Rahnama Roodposhti et al. 2010). In such cases, confidence, sales, costs, payment time, etc., are obvious and all companies hold the current assets only at the lowest level. Maintaining working capital more than what is needed may increase the cost of financial supply and decrease the profit. Any kind of maintenance less than the minimum may cause a delay in paying the obligations to suppliers and loss of a fraction of sales due to the shortage of inventory and limitation in using credit facilities. Given that, cash flow management is the conscious measures of management in order to manipulate the cash flows to make them favorable and to obviate the fluctuations. Using the cash flow management, managers would be able to achieve their objectives, like gaining bonus, more benefits, or maintaining and stabilizing their positions. The common literature on working capital management predicts that companies may be able to improve their liquidity and consequently their competitive positions using the manipulation of cash flows (Farris 2002; Hutchison 2003). Moreover, the capabilities of a company in converting the materials to cash from sales is indicative of the competencies of that company in creating an effective return from its investments (Gunasekaran et al. 2004). A company is concerned about its operational activities when it should sustain a balance between liquidity and profitability. Liquidity is a prerequisite guarantying the firm is able to satisfy all requirements and it is, in fact, a sign showing that there is a permanent flow running in the firm. Liquidity and profitability are two significant issues for scholars and executives of financial management. To define the position of each term, we could say that a non-profitable firm is sick and if there is no liquidity, the firm is dying. Many academics believe that two leading sections able to create the profitability are capital structure and working capital management, both of which have been manipulated in many cases to produce the profit. Working capital management, due to its influence on risk and profitability and consequently on firm value, is of great importance. Working capital management is available in many ways. Among its main components, we could refer to inventory management, management of accounts receivable, management of accounts payable, and cash conversion cycle. In fact, many scholars conducted major studies on these components and explored their favorable effect on firm profitability. Muhammad et al. (2015) noticed the direct and significant relationship between the average period of collection of claims, the current ratio, and firm size and its profitability as well as an inverse and significant relationship between the period of inventory turnover and the average period of paying debts and profitability. Umoren and Udi (2015) carried out a study on the effect of working capital management on the liquidity and profitability of selected Nigerian deposit banks and found an inverse and significant relationship between cash conversion cycle and profitability as well as an inverse and significant relationship between debt payment period and liquidity. This is while the period for collection of claims has a direct and significant relationship with liquidity. In Iran, Jahromi et al. (2014) stated that the analyses of conditional data distribution indicating the common criteria for the evaluation of working capital management, including a period for collection of claims and sales course, have a significant relationship with stock's adjusted return. Moreover, the results of regression analyses revealed that there is a positive

and significant relationship between working capital components and the optimality criterion of working capital and stock's adjusted return. Moradi et al. (2014) also performed a study on the effect of various working capital strategies on market value added as the evaluation criterion for firm value in Tehran Stock Exchange. In general, the results of the study are indicative of the effect of management policies on adopting different approaches to working capital so as to maximize the wealth of shareholders and firm value.

### 3. RESEARCH METHODOLOGY

#### 3.1. Research hypotheses

Given the proposed details in theoretical principles and the literature, the research hypotheses are formulated as follows:

1. There is a relationship between cash flows and financial performance.
  - 1.1. There is a relationship between the decrease (increase) of pending days for receipt of sales revenue and the improvement (debilitation) of financial performance.
  - 1.2. There is a relationship between the decrease (increase) of pending days for inventory sales and the improvement (debilitation) of financial performance.
  - 1.3. There is a relationship between the decrease (increase) of cash conversion cycle and the improvement (debilitation) of financial performance.
  - 1.4. There is a relationship between the decrease (increase) of operational cash conversion cycle and the improvement (debilitation) of financial performance.

To be more ensured that financial performance is a function of cash flow management and financial performance does not lead to a change in the cash flow status, we evaluate the Granger relationship between measures and metrics of cash flow and financial performance.
2. There is a relationship between cash flow management, financial performance and the Granger relationship, which involves the following sub-hypotheses:
  - 2.1. Any change in pending days for accumulating sales revenue is a granger cause for changes in the financial performance.
  - 2.2. Any change in pending days for inventory sales is a granger cause for changes in the financial performance.
  - 2.3. Any change in cash conversion cycle is a granger cause for changes in the financial performance.
  - 2.4. Any change in operational cash conversion cycle is a granger cause for changes in the financial performance.

Since the results of the present study could be used in the decisions of managers, investors, analysts, capital market practitioners, Stock and Securities, and auditors, in terms of objective the article is practical. Further, in terms of inference concerning the research hypotheses, the study is descriptive-correlational in that regression and correlational techniques will be employed for exploring the relationship between research variables, so argumentatively this paper has an inductive argument. Moreover, since our final results will be based on testing of available data, the study will be placed in the group of affirmative theories.

#### *Research models and variables*

To test the sub-hypotheses 1.1 and 1.2 model one, sub-hypothesis 2.1 model two, and sub-hypothesis 1.4 model three were used.

$$\Delta \text{PERFit} = \beta_0 + \beta_1 \text{Ln SALESit} + \beta_2 \text{DEBTit} + \beta_3 \Delta \text{DSOit} + \beta_4 \Delta \text{DSOit-1} + \beta_5 \Delta \text{DSOit-2} + \beta_6 \Delta \text{DSOit-3} + \beta_7 \Delta \text{DSOit-4} + \beta_8 \Delta \text{DIOit} + \beta_9 \Delta \text{DIOit-1} + \beta_{10} \Delta \text{DIOit-2} + \beta_{11} \Delta \text{DIOit-3} + \beta_{12} \Delta \text{DIOit-4} + \beta_{13} \Delta \text{DPOit} + \beta_{14} \Delta \text{DPOit-1} + \beta_{15} \Delta \text{DPOit-2} + \beta_{16} \Delta \text{DPOit-3} + \beta_{17} \Delta \text{DPOit-4} + \varepsilon_{it}$$

(1)

$$\Delta \text{PERFit} = \beta_0 + \beta_1 \text{Ln SALESit} + \beta_2 \text{DEBTit} + \beta_3 \Delta \text{CCCit} + \beta_4 \Delta \text{CCCit-1} + \beta_5 \Delta \text{CCCit-2} + \beta_6 \Delta \text{CCCit-3} + \beta_7 \Delta \text{CCCit-4} + \varepsilon_{it}$$

(2)

$$\Delta \text{PERFit} = \beta_0 + \beta_1 \text{Ln SALESit} + \beta_2 \text{DEBTit} + \beta_3 \Delta \text{OCCit} + \beta_4 \Delta \text{OCCit-1} + \beta_5 \Delta \text{OCCit-2} + \beta_6 \Delta \text{OCCit-3} + \beta_7 \Delta \text{OCCit-4} + \varepsilon_{it}$$

(3)

Where:

- PERF is firm performance, for which the Tobin's Q index (sum of equity market value and book value of debts divided by assets book value) is used. It is worth mentioning that within a re-estimation, in all of the above models the return on assets (net profit to total assets ratio) is also used;
- Ln SALES is the natural logarithm of firm sales;
- DEBT is debt to assets ratio;
- DSO is a mean index of pending days for collecting sales revenue, which is equal to accounts receivable to sales income ratio multiplied by the period days;
- DIO is a mean index of pending days for inventory sales, which is equal to inventory to cost of goods sold ration multiplied by the period days;
- DPO is a mean index of number of days required for a firm to incur its debts to the creditors, which is equal to accounts payable to purchase ration multiplied by the period days. Purchase is the cost of goods sold plus change in the inventory;
- CCC is cash conversion cycle, which is equal to DSO+DIO-DPO; and
- OCC is operational cash conversion, which is equal to DSO+DIO.
- It is worth mentioning that in the above models, t is current year, t-1 is the previous year, t-2 the past two years, t-3 the past three years, t-4 the past four years. Moreover, according to the second hypothesis and consequently its related sub-hypothesis, the granger casual test should be used.

### 3.2. Statistical population and sample

The statistical population of the study is all listed companies on the Tehran Stock Exchange during 2009-2016. The sample used is selected through the systematic elimination method from the statistical population, so that the sample includes all companies involved in the statistical population with the following qualifications:

1. Do not change their financial period during the course of study;
2. Not being affiliated with active companies in finance section, including investment, banks, insurance, and financial firms;
3. Their required data for research variables be available during 2007-2014; and
4. Their financial yearend be on March 20 to make the data collection and if necessary the panel data, possible. A total of 155 companies was selected after performing the above-said process.

## 4. RESEARCH FINDINGS

### 4.1. Descriptive statistics

In this section, the mean, median (central criteria), standard deviation, maximum, and minimum (dispersion criteria) of variables used is calculated and shown in Table 1.

*Table 1. The descriptive indexes of variables under study*

Variables	Symbols	Mean	Median	Maximum	Minimum	Standard deviation
Return on assets	ROA	0/11	0/087	1/682	-0/386	0/171
Tobin's Q index	QTOBINS	1/342	1/176	3/788	0/541	0/527
Natural logarithm of sales	LNSALES	12/875	12/714	18/492	8/899	1/433
Debt to assets ratio	DEBT	0/62	0/639	0/958	0/181	0/176
Pending period for collection sales revenue	DSO	117/311	95/178	498/38	1/193	90/019
Pending period for sales of inventory	DIO	169/167	153/728	593/614	9/098	100/000
Debt settlement period	DPO	50/59	37/701	265/793	0/34	44/545
Cash conversion cycle	CCC	235/523	218/907	823/847	12/379	138/171
Operational cash conversion cycle	OCC	283/285	264/588	897/162	20/172	143/995

Source: Author Calculation

Mean is the main and most important central index, which is indicative of balance point and center of gravity of distribution and median is a point dividing a sample into two equal parts. As can be seen in the table, the mean and the median value of return on assets is 0.11 and 0.087, respectively.

Generally, dispersion criteria are those elements evaluating and comparing the distribution of observations around the mean. Standard deviation is one of the leading dispersion criteria. According to this table, this criterion is equal to 0.171 for return on assets.

It is noteworthy that the maximum value for return on assets is 1.682 and the minimum value is -0.386. The features of other variable are also observable in the table.

### 4.2. Inferential statistics

Table 2 displays the results of model one using the fixed effects model and the estimated generalized least squares method.

Table 2. The results of estimate of model (1) coefficients

Dependent variable →	Return on assets		Tobin's Q index	
	Independent variable ↓	Coefficients	Level of significance	Coefficients
Fixed value	-0/305	0/003	0/163	0/678
Ln SALESit	0/032	0/000	0/076	0/014
DEBTit	-0/042	0/262	0/209	0/062
ΔDSOit	-0/0001	0/003	-3/57*10 <sup>-5</sup>	0/86
ΔDSOit-1	-8/95*10 <sup>-5</sup>	0/154	-0/0004	0/077
ΔDSOit-2	-2/47*10 <sup>-5</sup>	0/67	-0/0002	0/434
ΔDSOit-3	-1/75*10 <sup>-5</sup>	0/731	-0/0002	0/222
ΔDSOit-4	6/06*10 <sup>-5</sup>	0/022	-0/0002	0/022
ΔDIOit	0/0001	0/001	0/0001	0/425
ΔDIOit-1	8/17*10 <sup>-5</sup>	0/147	0/0001	0/482
ΔDIOit-2	-6/23*10 <sup>-5</sup>	0/278	7/09*10 <sup>-5</sup>	0/69
ΔDIOit-3	-7/02*10 <sup>-5</sup>	0/144	8/37*10 <sup>-6</sup>	0/954
ΔDIOit-4	-3/59*10 <sup>-5</sup>	0/203	-5/34*10 <sup>-5</sup>	0/569
ΔDPOit	0/0001	0/107	-0/0001	0/6
ΔDPOit-1	-1/73*10 <sup>-5</sup>	0/833	-6/15*10 <sup>-5</sup>	0/801
ΔDPOit-2	-0/0001	0/028	8/87*10 <sup>-5</sup>	0/737
ΔDPOit-3	-0/0001	0/071	-0/0003	0/183
ΔDPOit-4	-0/0001	0/006	-0/0001	0/384
<b>Dependent variable: return on assets</b>				
F statistic		33.706	Generalized coefficient of determination	0.909
Level of significance of F statistic		0.000	Durbin-Watson value	2.467
<b>Dependent variable: Tobin's Q index</b>				
F statistic		13/748	Generalized coefficient of determination	0/795
Level of significance of F statistic		0/000	Durbin-Watson value	2/215

Source: Author Calculation

Given the results proposed in Table 2, since in case of using the variable of return on assets as the dependent variable the level of significance of the variable of pending period for collecting sales revenue of the current year would be less than 0.05 and its coefficient is negative, there is an inverse and significant relationship between the pending period for collecting sales revenue and return on assets. However, the level of significance of the variable of pending period for collecting sales revenue of the past four years has also been less than 0.05 and its coefficient is positive, so there is a direct and significant relationship between the pending period for collecting sales revenue of the past four years and return on assets of the current year. In addition, since in case of using the variable of return on assets as the dependent variable, the level of significance of the variable of pending period for sales of inventory of the current year would be less than 0.05 and its coefficient is positive, there is a direct and significant relationship between the pending period for sales of inventory of the current year and return on assets. For other variables, there is also an inverse and significant relationship between debt payment period of the past two and four years and return on assets of the current year and sales revenue has a direct and significant relationship with return on assets of the current year. Additionally, in case of using the variable of Tobin's Q index as the

dependent variable, the level of significance of the variable of pending period for collecting sales revenue of the past four years would be less than 0.05, so there is an inverse and significant relationship between the pending period for collecting the sales revenue of the past four years and the Tobin's Q index of the current time. However, there is no significant relationship between the pending period for sales of inventory, debt payment period, and the Tobin's Q index. The variable of sales revenue has also a direct and significant relationship with the Tobin's Q index. Given the contradiction in the effect of the pending period for collecting sales revenue on dependent variables (the presence of positive and negative effects), the hypothesis 1.1 concerning the relationship between the decrease (increase) of the pending days for collecting claims and the improvement (debilitation) of financial performance is rejected. On the other hand, given the direct and significant effect of pending period for sales on inventory on the dependent variable, we could say that the hypothesis 1.2 concerning the relationship between the decrease (increase) of pending days for sales of inventory and the improvement (debilitation) of financial performance is also rejected. Given the significant effect of the latent variable (the past four years) of pending period for collecting sales revenue on performance criteria (return on assets and Tobin's Q index), we will be concerned about its granger relationship with the performance criteria based on the second hypothesis.

Table 3 shows the results of model two using the panel data and estimated generalized least square method.

Table 3. The results of estimate of model (2) coefficients

Dependent variable →	Return on assets		Tobin's Q index		
	Independent variable ↓	Coefficients	Level of significance	Coefficients	Sig.
Fixed value		0/676	0/000	1/678	0/000
Ln SALESit		-0/004	0/45	-0/004	0/863
DEBTit		-0/004	0/898	-0/489	0/005
ΔCCCit		-4/79*10 <sup>-5</sup>	0/171	-6/37*10 <sup>-5</sup>	0/771
ΔCCCit-1		-4/76*10 <sup>-5</sup>	0/257	-0/0001	0/678
ΔCCCit-2		-6/10*10 <sup>-5</sup>	0/116	-0/0001	0/474
ΔCCCit-3		-7/32*10 <sup>-5</sup>	0/015	-0/0004	0/015
ΔCCCit-4		-3/27*10 <sup>-5</sup>	0/042	-0/0001	0/204
AR(1)		0/676	0/000	-	-
<b>Dependent variable: return on assets</b>					
F statistic			82/442	Generalized coefficient of determination	0/707
Level of significance of F statistic			0.000	Durbin-Watson value	2/236
<b>Dependent variable: Tobin's Q index</b>					
F statistic			11/97	Generalized coefficient of determination	0/218
Level of significance of F statistic			0/000	Durbin-Watson value	1/518

Source: Author Calculation

Given the results proposed in Table 3, since in case of using the variable of return on assets as the dependent variable the level of significance of cash conversion cycle of the past three and four years would be less than 0.05 and its coefficient is negative, there is an inverse and significant relationship between cash conversion cycle of the past three and four years

and return on assets. However, in case of using the Tobin's Q index as the dependent variable, the level of significance of the variable of cash conversion cycle of the past three years is also less than 0.05 and its coefficient is positive, so there is an inverse and significant relationship between the cash conversion cycle of the past three years and the Tobin's Q index. In addition, there is an inverse and significant relationship between cash conversion cycle and performance criteria (return on assets and the Tobin's Q index), so the hypothesis 1.3 concerning the decrease (increase) of cash conversion cycle and the improvement (debilitation) of the financial performance is accepted. Given the significant effect of the latent variable (the past three and four years) of cash conversion cycle on performance criteria (return on assets and Tobin's Q index), we will be concerned about its granger relationship with the performance criteria based on the second hypothesis. It is noteworthy that the use of the first step self-reactivation variable could lead to the improvement of Durbin-Watson Statistic and elimination of negative effects of autocorrelation.

Table 4 shows the results of model three using the panel data and estimated generalized least square method.

Table 4. The results of estimate of model (3) coefficients

Dependent variable →	Return on assets		Tobin's Q index	
	Coefficients	Level of significance	Coefficients	Sig.
Fixed value	-0/243	0/001	1/633	0/000
Ln SALESit	0/027	0/000	-0/004	0/84
DEBTit	-0/026	0/383	-0/402	0/018
$\Delta$ OCCit	$-2/82*10^{-5}$	0/305	-0/0001	0/422
$\Delta$ OCCit-1	$-6/02*10^{-5}$	0/018	-0/0001	0/466
$\Delta$ OCCit-2	-0/0001	0/000	-0/0001	0/397
$\Delta$ OCCit-3	$-9/3*10^{-5}$	0/000	-0/0004	0/007
$\Delta$ OCCit-4	$-2/29*10^{-5}$	0/019	-0/0001	0/169
<b>Dependent variable: return on assets</b>				$-2/29*10^{-5}$
F statistic		56.62	Generalized coefficient of determination	0/938
Level of significance of F statistic		0.000	Durbin-Watson value	2/496
Dependent variable: Tobin's Q index				
F statistic		11/889	Generalized coefficient of determination	0/216
Level of significance of F statistic		0/000	Durbin-Watson value	1/512

Source: Author Calculation

Given the results proposed in Table 4, since in case of using the variable of return on assets as the dependent variable the level of significance of operation cash conversion cycle of the past one, two, three and four years would be less than 0.05 and its coefficient is negative, there is an inverse and significant relationship between operational cash conversion cycle of the past one, two, three and four years and return on assets. However, in case of using the Tobin's Q index as the dependent variable, the level of significance of the variable of the operational cash conversion cycle of the past three years is also less than 0.05 and its coefficient is negative, so there is an inverse and significant relationship between the operational cash conversion cycle of the past three years and the Tobin's Q index of the



current year. In addition, there is an inverse and significant relationship between the operational cash conversion cycle and performance criteria (return on assets and the Tobin's Q index), so the hypothesis 1.4 concerning the decrease (increase) of the operational cash conversion cycle and the improvement (debilitation) of the financial performance is accepted. Given the significant effect of the latent variable (the past one, two, three and four years) of operational cash conversion cycle on performance criteria (return on assets and Tobin's Q index), we will be concerned about its granger relationship with the performance criteria based on the second hypothesis. It is noteworthy that the use of the first step self-reactivation variable could lead to the improvement of Durbin-Watson Statistic and elimination of negative effects of autocorrelation.

Since all three major criteria of cash management (pending period for collection of claims, cash conversion cycle, and operational cash conversion) had a significant relationship with return on assets and the Tobin's Q index, we will put them in a granger estimation. It is noteworthy that due to the insignificant impact of the pending period for sales of inventory on the firm's financial performance this variable is excluded from the evaluation, so the hypothesis 2.1, which says "the change of pending days for sales of inventory is the granger cause of financial performance changes" is rejected. Table 5 shows the result of granger relationship between three main criteria of cash management (pending period for collection of claims, cash conversion cycle, and operational cash conversion cycle) and performance criteria (return on assets and the Tobin's Q index).

*Table 5. The results of the second hypothesis*

<b>Null hypothesis</b>	<b>F statistic</b>	<b>Sig.</b>	<b>Result</b>
The average pending period for sales of inventory is not the granger cause of return of assets	10/877	2*10 <sup>-8</sup>	Rejected
Return on assets is not the granger cause of average pending period for the sales of inventory	1/89	0/11	Accepted
The average pending period for sales of inventory is not the granger cause of Tobin's Q index	2/147	0/074	Accepted
The Tobin's Q index is not the granger cause of average pending period for sales of inventory	0/88	0/475	Accepted
Cash conversion cycle is not the granger cause of return on assets	4/437	0/001	Rejected
Return on assets is not the granger cause of cash conversion cycle	0/061	0/992	Accepted
Cash conversion cycle is not the granger cause of Tobin's Q index	0/045	0/996	Accepted
Tobin's Q index is not the granger cause of cash conversion cycle	0/712	0/584	Accepted
Operational cash conversion cycle is not the granger cause of return on assets	6/502	5*10 <sup>-5</sup>	Rejected
Return on assets is not the granger cause of operational cash conversion cycle	0/227	0/922	Accepted
Operational cash conversion cycle is not the granger cause of Tobin's Q index	0/206	0/934	Accepted
Tobin's Q index is not the granger cause of operational cash conversion cycle	1/116	0/348	Accepted

Source: Author Calculation

According to Table 5, the variables of collection of claims, cash conversion cycle, and operational cash conversion cycle are the granger cause of return on assets. However, the granger cause of Tobin's Q index is rejected. Hence, the sub-hypotheses 2.1, 2.3, and 2.4 are accepted.

## 5. CONCLUSION

Sub-hypotheses 1.1, 1.2, 1.3, and 1.4 concerning the relationship between cash management and financial performance have used three multivariable regression models. In model one, where the average pending period for collecting sales revenue and average sales period were the main independent variables, panel data and estimated generalized least square methods were employed. The results indicated that independent variables (average period for collection of claims and average sales period) have some dispersed and unstable relationships with the dependent variables (return of assets and Tobin's Q index). In contrast with the hypotheses designed in this study, they had no stable and consistent relationship with performance criteria, which lead to the rejection of hypothesis 1.1 and 1.2. In model two, cash conversion cycle was used as the independent variable, for which panel data and estimated generalized least square methods were employed. Results revealed that the so-called variable has a latent and inverse relationship with return on assets and Tobin's Q index. The decline of cash conversion cycle could affect the performance of the upcoming years (hypothesis 1.3 is accepted).

In model three, operational cash conversion cycle was used as the independent variable, for which panel data and estimated generalized least square methods were employed. Results indicated that the so-called variable has a latent and inverse relationship with return on assets and Tobin's Q index. The decline of operational cash conversion cycle has an increasing effect on the performance of the upcoming years (hypothesis 1.4 is accepted). We also analyzed the granger relationship between independent and dependent variables for hypothesis 1.1, 1.2, 1.3, and 1.4. The obtained results illustrated that the variables of cash conversion cycle and operational cash conversion cycle are the granger cause of return on assets (hypothesis 2.2, 2.3, and 2.4 are accepted). By analyzing the statistical relationship of variables, one of the main problems is the direction of the cause, which could be assessed using various statistical tests. Moreover, as mentioned previously, granger test is one of the common tests in this area. Since the variable of cash conversion cycle comprises all three criteria of cash management, we could say that in general cash management has a significant effect on a firm's performance criteria.

The results of the first hypothesis concerning better cash flow management could cause the improvement of financial performance to be in line with that of the Muhammad et al. (2015), Umoren and Udi (2015), and Bahar Moghadam and Yazdi (2011). The results of the second hypothesis are also in line with that of the Kross and Manikas (2014). According to the results of the present study, we recommend the managers and decision-makers of companies listed on Tehran Stock Exchange to take into account the long-term/short-term effects of decisions related to cash flow management and not to consider them all as short-term effects. It is also worth mentioning that we have used the accounting and market-oriented criteria for measuring the financial performance, so we recommend the scholars to test and compare the models of the present study using other criteria of financial performance measurement (like, economic value added, return on equity, etc.).

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