The Moderating Role of Firms Characteristics on the Relationship between Working Capital Management and Financial Performance

Hasan Zalaghi*, Maryam Godini, Kefsan Mansouri

[a]*Department of Accounting, Faculty of Economic and Social Sciences, Bu-Ali Sina University, Hamedan, Iran*

ARTICLE INFO	**ABSTRACT**

Optimal working capital management can positively effect on the Firm performance, but this relationship can be affected by major characteristics of the firm, making an important subject for research. This research investigates the moderating role of firm characteristics on the relation between working capital management and financial performance of the firms listed in TSE during 2008 – 2017 period. Based on existing researches, three characters are considered as moderating variables in this research include firm size, debt ratio, and Governmental ownership. Financial performance and working capital management are measured using return on assets (ROA) and cash conversion cycle (CCC), respectively. We use from multivariate regression model with panel data for test of research hypotheses. The Results of this study show that, firm size affects the Relation between CCC (as a measure of working capital management) and ROA (as a measure of firm performance). However, debt ratio and Governmental ownership don't any significant effect on the relationship between working capital management and financial performance of firms

1 Introduction

In some sense, profitability is a measure of health of a firm and liquidity is a vital sign that indicating the firm is economically alive. In other words, a firm may be deemed as sick should it fails to be profitable, while if not have liquidity, its survival is at stake. An effective management of working capital, positioning and controlling of present assets and debts in a way that executes the danger of letdown to meet due here and now assurances from one perspective and keep away from over the top interest in these benefits then again. Many overviews have confirmed that mangers spend remarkable time on everyday matters that include working capital decisions. So the Firm Liquidity is more important [1]. Excessive levels of current asset may end up with less than common return on investment (ROI). Nevertheless, the firms which have small amounts of current asset are susceptible to particular shortcomings and problems along normal flow of their operation. Efficient working capital management encompasses planning and asset and liability management in such a way to eliminate the risk of

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* Corresponding author Tel.: *+989185402847*
E-mail address: *zalaghi@basu.ac.ir*

inability to fulfil short-term commitments while avoiding overinvestment on current assets [2]. High debt ratio means that the company's internal financial resources are low and the firm needs at foreign financial resources to finance operations. Firms with low working capital tend to finance their operation via external cash funds. The higher the debt ratio, the lower will be the required working capital for routine operation of the organization. Therefore, debt ratio can affect the quality of working capital management and finally profitability and firm financial performance. Upon economic growth and development of commercial units and enforcement of Article 44 of the Constitution of the Islamic Republic of Iran (privatization), the ownership structure was further extended, so that minor shareholders comprised the majority of owners; however, the minor shareholders lacked the required motivation for surveilling the management. Commonly, small firms are sensitive to changes in economic conditions and so they are riskier and hence there is a negative relationship between firm size and returns. On the other hand, the firms with higher return will exhibit superior performance over those with lower return. As such, it can be concluded that, there is a negative relation between firm size and firm performance. Debt ratio is a measure of reliance on external resources for acquiring assets. The value of this ratio indicates the extent to which financial management of the firm has been willing to use debts as a source of capital. As such, this ratio can be used to evaluate and judge about the working capital management policies set by the firm [3]. Previous researches have investigated the relation between working capital management and financial performance, indicating a negative relationship between working capital management and financial performance; that is, any improvement in working capital management (through reducing the cash conversion cycle (CCC)) resulted in an increase in profitability in the studied firms. Financial performance, however, is not affected by working capital only, but rather firm size and ownership arrangement can disturb such relationship. As such, given that more factors affect the relation between working capital management and financial performance, it is necessary to investigate and test the relationship. Considering the great importance of working capital and performance of firms, and since a research on the effect of firm characteristics along three dimensions, namely firm size, debt ratio, and governmental ownership, on the relation between working capital management and financial performance is performed, while many managers are seeking for information of working capital, financial performance, firm properties, and effects of these characteristics on working capital management and financial performance, then we decided to study the effects of frim properties (firm size, debt ratio, and Governmental ownership) on the relation between working capital management and financial performance of firms. Therefore, we are seeking for an answer to this question that, do firm characteristics has any significant effect on the relation between working capital management and financial performance of the firms listed in Tehran Stock Exchange (TSE)?

This contribution can be used by actual and potential investors on evaluation of stock price of the firms listed on TSE, financial analysts, stock brokers, financial and credit institutes, and researchers.

2 Literature Review

Working capital is a result of the lag time between occurrences of a cost for raw materials purchasing and the time of collection of cash from the sale of the finished goods. Continuous flow of converting cash to good inventory, then the good inventory to receivable accounts, and finally the receivable accounts to cash is referred to as cash conversion cycle (CCC). The cash conversion cycle

is referred to as an essential element of working capital management [4]. Palombini and Nakamura [5] believed that, except for two theories, namely pecking order theory and representation theory, no other theory can independently explain the working capital. According to the pecking order theory, firms tend to use their internal resources and cash surplus rather than external financing (via borrowing or issuing new ordinary shares). As such, cost of the capital invested on working capital is expected to be higher for firms with higher financial leverage [6]). The other theory in this respect is the representation theory which provides a basis for accountability and presentation of clear information. According to this theory, in the firms which has low surveillance, managers are expected not to invest on projects with positive net present value (NPV) (but rather act to obtain personal benefits), and thus fail to practice proper inventory management, duly collect receivable accounts, and pay debts timely, thereby attenuating the working capital management [7]. Schilling [8] suggest that, working capital management refers to determination of the volume and composition of sources and usages of working capital in such a way to increase shareholders' wealth. In all organizations, especially smaller ones, accounts as a large part of the resources of the organization [9]. Existence of Surplus of financial resources in a firm is of valuable as it ensures availability of enough funds for investing on profitable opportunities a company [10]. A high debt ratio is an indication of inadequate of the internal resources, so that the firm may need to external resources to finance its operations. Such firms require greater deals of cash flow to reimburse or renew their debts [11]. They found a negative significant relationship between debt ratio and working capital management (measured by net liquidity balance or NLB). In other words, firms that tend to finance their operations via external resources when those are shortage in working capital, then ends to an increase in the debt ratio. As such, the debt ratio can affect the quality of working capital management and, ultimately, profitability and financial performance of a firm. Regarding the factors affecting working capital management, Chiou and Cheng [12] presented evidences that indicating a negative significant relationship between debts to net liquidity balance ratio and working capital requirements. Accordingly, the higher the debt ratio, the lower the will be the required level of working capital for routine operation of the firm. The creditors and investors who finance smaller firms tend to be more conservative. This is because they are facing with higher levels of risk, as compared to other firms, increasing their need to internal finance or external credit. This adds to cost of borrowing for smaller firms. Therefore, when it comes to smaller firms, efficiency of cash conversion cycle management is very important [13]. Firm size affects working capital management, because larger firms enjoy larger negotiating power than smaller firms. On the other hand, larger firms can negotiate their vendors on higher discounts and longer payment periods [14]. Nilsson [15] showed that, the firm size influences cash conversion cycle, because larger companies tend to have shorter cash conversion cycle. Considering the mentioned theoretical foundations and available research background, similar to the researches presented by Deloof [14], Uyar [27], and Nilsson [15] firm size is expected to affect the relationship between working capital management and financial performance, as larger firms tend to have shorter cash conversion cycle. Currently, the study of the relationship between ownership structure and financial performance is one of the key issues in corporate governance literature. Various researches have been performed on the ownership structure, where its relationship with firm performance is studied. This traditional thinking and perspectives that the distribution of ownership of a firm stock has no effect on the value of the company was challenged by Jensen and Mckling's studies [16]. In that study, predicted that, firm value is a function of the way the

firm's shares are distributed between internal agents (e.g. managers) and external shareholders (e.g. institutional investors such as government) [17]. Investigation of the role of ownership structure in settlement of the agency problems and improvement of the firm performance roots in the research presented by some authors. They were the first time to discuss a relationship between ownership structure and firm performance [18]. Ownership and control are rarely separated entirely from firms. Most of controllers own some percentages of the firms that control, while some owners have a degree of effective authority which is proportional to their share of the firm. The overlap between ownership and control leads to a reduction in the conflict of interest and, as a result, increases in the value of the firm. At the same time, ownership can be employed to align manager's and shareholders' interests. Minor shareholders do not have any motivation toward surveilling the managers, whereas major shareholders can affect the firm in such a way to enhance shareholders' values [19]. Moss and Stine [20] believed that, larger firms tend to have a shorter cash conversion cycle. They also showed that, a short cash conversion cycle may translate into higher cash flows for the firm. Econometric results showed, highly positive significant effects of private ownership on labor productivity growth; the point estimates imply an increased 1.0 to 1.7% growth for a 10% rise in private shareholding [22]. Xu and Wang [22] found that, individual shareholders do not have the required motivation and capability for surveilling and affecting the firm management; as such, a certain level of ownership concentration is required for management control. The results also showed that, with increasing the level of Governmental ownership, then the productivity of labor will be reduced. In a research titled investigate the relation between working capital management and profitability of firms, Deloof [14] showed a there is a negative relation between working capital management and profitability Akimova and Schwodianer [23] showed that type of ownership has a significant effect on performance. Internal owners have a non-linear and significant effect on firm performance, while external owners do not impose such significant impact on the performance [23]. In a study, results reflect a negative and significant effect of SMEs profitability, tangible fixed assets, and leverage. Also, the industry type represents a significant factor in determining the level of working capital in the Egyptian SMEs. Moreover, the effect of working capital management and SMEs profitability and capital structure decisions has been examined. The results showed that the Egyptian SMEs follow an aggressive policy as businesses hold low level working capital which leads to high return and high degree of risk [24]. In a research conducted in Greece, Lazaridis and Tryfonidis [25] concluded that, cash conversion cycle has a negative and significant relationship with profitability and that payables accounts and profitability have a negative relationship. Chiou and Cheng [12] found that, debt ratio and Cash flow from operation (CFO) has a negative effect on working capital, while firm size positively affects the working capital; furthermore, commercial cycle, industry, and sales growth were having no effect on the working capital. Abeyratna et al. [26] investigated the effect of governmental ownership and ownership concentration on firm performance and concluded that, extensive Governmental ownership has a negative effect on the firm performance. Raheman and Nasr [2] found that there is a significant and negative relation between working capital management and profitability of firms. Uyar [27] suggested that there is a negative relation between firm size and profitability, in one hand, and cash conversion cycle. In a research, Nilsson [15] demonstrated that, among firm characteristics, only profitability, CFO, firm size, and sales growth affect working capital management.

Niaz et al. [28], found that there is a significant and positive relation between firms' aggressive investing policies and conservative financing policies. They found that length of CCC have negative

relation with sales revenue, return on equity (ROE) and financing policies of the firms and has positive relationship with total assets, return on assets (ROA) and investing policies of firms. The practical implications of this study were for the management of the firms which consider the importance of the length of CCC in formulating their policies because the length of CCC is closely related to aggressive and conservative Working Capital approaches. In a study, Ogundipe et al. [29] concluded that, there is a significant and negative relation between cash conversion cycle, market value, and performance of the firm. They showed that, debt ratio has a positive relation with market value and also negative relation to firm performance. Mun and Jan [30] showed a U-shaped negative relationship between working capital and profitability of firms, showing optimal level of working capital for firms. In a study, Shariatpanahi [31] found that there is no significant difference between the performance of governmental and non-governmental firms. Beatriz and Ignacio [32] shows that family control positively affects performance, primarily when family members serve on the board and when the founder is still influential. These findings hold when they control for the general block holder effect and they are robust to a battery of tests. They conclude that the impact of ownership concentration on firm value differs across family firms. Setayesh et al. [33] showed that, profitability is negatively and significantly relation with cash conversion cycle, receivable accounts turnover period, and inventory turnover period. Rejaul et al. [34] showed that, there is a significant relationship between efficiency of working capital management and firm's profitability. Those study also showed Square Pharmaceuticals Limited is more efficient in working capital management than Beximco Pharmaceuticals Limited. The financial performance of Beximco Pharmaceuticals Limited should be improved immediately through the efficient management of working capital so that firm profitability will be increase. Yazdi and Mohammadi [45] showed that, there is an inverse and significant relationship between firm profitability in one hand, and payout time, and cash conversion cycle. What drives shareholders' motives toward investing on a particular activity is good performance of which it will increase of the firm value and, ultimately, higher wealth for the shareholders [36]. Rahmani et al. [17] found that, ownership structure effects on firm's performance, so that the firms owned mainly by quasi- governmental public sectors tend to outperform other groups of firms, followed by public sectors, public non-governmental sectors, and finally the private sector. Hormozi and Aliahmadi [37] show that there is no significant relationship between percentage of Governmental ownership, institutional ownership, and working capital management. In order to achieve optimal working capital management, firm managers shall establish a compromise between maximum profitability and liquidity power [38]. Therefore, good management practices in terms of working capital management and liquidity control can protect many firms against bankruptcy and even to improve of financial performance. This is demonstrated by the fact that, failure of many bankrupted firms had roots in inappropriate working capital management. Dastgir and Honarmand [39] showed that, corporate governance can improve the efficiency of working capital management to some extent. Abuzayed [40] found that there is positive relation between profitability and cash conversion cycle. This indicates that more profitable firms are less motivated to manage their working capital. In addition, financial markets failed to penalize managers for inefficiency in working capital management. Mashayekh et al. [41] found that, there is a significant relationship between working capital and firm efficiency. This indicates that investors pay attention to the working capital of firms when making decisions. Decision-making about investments, increasing firm capital and many other decisions are all based on performance evaluation.

3 Proposed Methodology

This study is an applied research which is correlation- descriptive nature. A post-event research design has been used. The data used in this study was extracted from financial statements of firms listed on Tehran Stock Exchange (TSE). The research Assumptions are tested using a multivariate regression model based on panel data. The required data is collected in two stages. In the first stage, in order to develop theoretical foundations of the research and investigate previous literatures, library studies were performed. In the second stage, the required information and quantitative data were extracted from audited financial statements of the considered firms and other financial data about the firms as well as Rahavard-Novin Software.

3.1 Models and Hypotheses

In this research, firms listed on Tehran Stock Exchange (TSE)during 2008 – 2017 gathered through panel data, this data was sorted and classified on an Excel worksheet and then analyzed using EViews. In order to take a statistical sample or available Statistical population, systematic elimination method was used, so that firms with the following conditions were selected as sample:

- In order to increase comparability, their financial year end should be March 20th.

- The firm should be listed on TSE at any time before 2007, and had remained active until no earlier than the end of 2006-2007 financial year.

- Information of the company is available.

- The firms should not be subsidiaries of banks, financial institutions (investment firms, financial mediating, holding corporations, and leasing agencies).

- During the considered period of time, the firm should undertake no change of financial year or scope of activity.

With the application of the aforementioned conditions, among the 535 firms listed on the Tehran Stock Exchange during the research period, the available Statistical population is 142. This Research is based on the following research hypotheses:

Hypothesis 1: The Firm size has a significant effect on the relationship between working capital management and financial performance.
According to the pecking order theory as well as Padachi [43], it is expected that an increase in debt ratio results in intensification of the inverse relationship between working capital management and financial performance. According, second hypothesis of the research is expressed as follows:

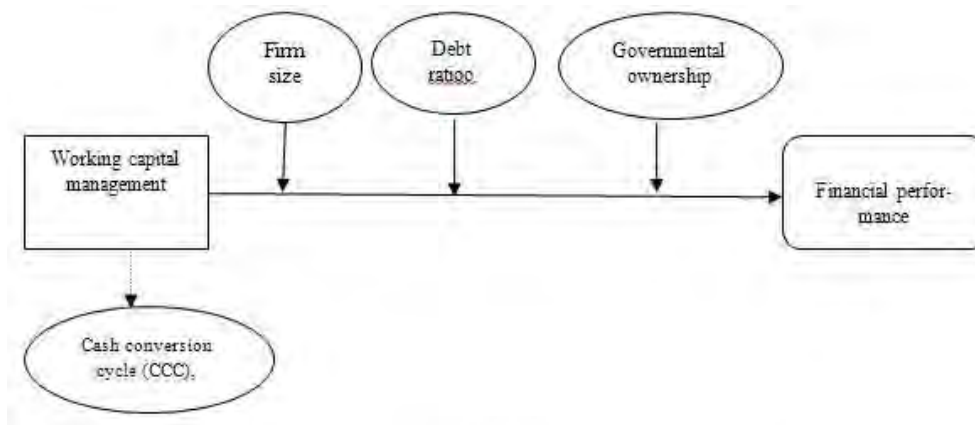Conceptual model of the research is presented in the following:

Fig.1: The proposed conceptual model

Hypothesis 2: Debt ratio has a significant effect on the relationship between working capital management and financial performance.

According to the corporate governance theory, in this research, the working capital management is expected to be implemented in a more efficient way in governmental firms and hence to impose further positive impact on financial performance of such firms. Governmental ownership is indicated by some percentage of total shares of the firm which is the total share held by governmental sector. As such, a third hypothesis is declared as follows:

Hypothesis 3: Governmental ownership has a significant effect on the relationship between working capital management and financial performance.

3.2 Variables of the Research

In this section, the independent variable, dependent variables, and moderating variable that are described.

Firstly, we introduce the dependent variables. In this study, we used from return on assets to express the financial performance. Return on assets provides a measure of financial performance and obtained upon dividing net profit by total assets. This is an index of profitability which has been widely used for performance measurement. The index was developed by DuPont in the 1980s, since when it has been regarded as a basis for evaluating performance of firms. ROA determines the ability of a firm to use its assets [43]. Balouei et al [44] showed that positive relation between financial structure and the banks' ROA and ROE. Moreover, the results show that capital intensity and the size significantly

moderate the relation between financial structure with ROA and ROE. Independent variables are stated as follows:

SIZE: The firm size affects the company's risk and, as a result, debt costs. Also, the firm size reflects the resources available to the firm and, on the other hand, large firms need to efficient management of working capital. This variable is measured through Natural logarithm of book value of the assets of the sample firms.

Debt ratio: the firms with higher debt ratios also have a higher risk, and an increase in debt ratios also increases the supervision of the creditors, and this affects the firm's debt cost. Also firms with higher growth opportunities are more inclined to manage profits and invest and therefore have more demand for financing, and this affects the working capital. Vazdi and Mohamadial [45] showed that there is a significant inverse relationship between indicators of profitability and capital structure. Also, there is a significant inverse relationship between short-term and long-term profitability and debts. This variable is measured through Book value of debts divided by book value of assets of the sample firms

CC: This refers to the number of days for which resources of the firm are invested in Moderating variables.

Secondly, we state the moderating variables. In this study, we used from Governmental ownership as moderating variable that indicated percentage of total shares of the firms which is owned by Governmental sector.

3.3 Statistical Models

The statistical models used to test the research hypotheses:
The model used to test the Hypothesis 1:

$$ROA_{it}= \alpha_0+\beta_1 CCC_{it}+ \beta_2 \, Size_{it}++ \beta_3 Size_{it}* CCC_{it}+ \beta_4 \, Growth_{it}+ \beta_5 \, CR_{it}+ \beta_6 \, QR_{it}+ \varepsilon_{it} \tag{1}$$

The model used to test the Hypothesis 2:

$$ROA_{it}= \alpha_0+\beta_1 CCC_{it}+ \beta_2 \, DR_{it}++ \beta_3 DR_{it}* CCC_{it}+ \beta_4 \, Growth_{it}+ \beta_5 \, CR_{it}+ \beta_6 \, QR_{it}+ \varepsilon_{it} \tag{2}$$

The model used to test the Hypothesis 3:

$$ROA_{it}= \alpha_0+\beta_1 CCC_{it}+ \beta_2 \, GOV_{it}++ \beta_3 GOV_{it}* CCC_{it}+ \beta_4 \, Growth_{it}+ \beta_5 \, CR_{it}+ \beta_6 \, QR_{it}+ \varepsilon_{it} \tag{3}$$

In these models, ROA refers to the return on assets for the firm i in period t, CCC is the cash conversion cycle of the firm i in period t, SIZE is the size of the firm i in period t, DR is debt ratio of the firm i in period t, GOV is the Governmental ownership of the firm i in period t, GROWTH is the sales growth of the firm i in period t, CR is the current ratio of the firm i in period t, and QR is the quick ratio of the firm i in period t.

Cash conversion cycle is the most popular index for working capital management [1]. CCC is a dynamic measure of working capital management which provides a time-based scale using the values in balance sheet and income statement at the same time [42]. In this research, CCC is taken as an index of working capital management. The following relation is used to determine CCC:

CCC=DIO+DSO-DPO (4)

Where:
DIO: materials and goods inventory turnover period
DSO: receivable accounts turnover period
DPO: payable accounts turnover period

Materials and goods inventory turnover period: Refers to average number of days it takes for the firm to process and sell good inventory. The value of this parameter is obtained by dividing the materials and goods inventory by finished cost of sold goods per day.

Receivable Accounts turnover period: Refers to average number of days it takes to collect funds from customers. The value of this parameter is obtained by dividing average value of commercial accounts receivable by credit sale per day.

Payable Accounts turnover period: Refers to average number of days it takes for the firm to payout the required funds to vendors and creditors in purchasing of materials inventory. The value of this parameter is obtained by dividing average value of commercial accounts payable by credit sale per day.

GROWTH: Sales growth is obtained by dividing the difference between sales in the current year and that in the preceding year by the sales in the preceding year.

CR: Current ratio, which is obtained by dividing current assets to current debts.

QR: Quick ratio, which is obtained by dividing current assets of high liquidity (total current assets less goods inventory and prepayments) by current debts.

GOV: According to Article 4 of Chapter 1 of general calculations law (Supreme Audit court), Governmental ownership refers to particular organizational units which are established as firms upon legal permissions, or nationalized based on a statuary order or verdict by a competent court, or confiscated, and then recognized as a Government-owned firm with more than 50% of its capital belonging to government. Any commercial firm established upon investment by governmental firms will be deemed as a governmental firm as long as more than 50% of its shares are owned by governmental firms.

4 Main Results and Analysis

Table 1 shows the descriptive analysis of the variables used in our study, including the mean, median, maximum, minimum, and standard deviation of variables.

Table 1: Descriptive Statistics of Research Variables

Variables	Average	Median	Maximum	Minimum	Standard Deviation
ROA	0.155	0.137	0.386	0.007	0.09
LCCC	2.232	2.287	2.255	1.473	0.248
DR	0.606	0.612	875.0	0.312	0.148
SIZE	6.019	5.992	273.7	5.244	0.143
GOV	0.201	0.155	0.61	0.01	0.164
CR	1.3	1.268	2.453	0.631	0.372
GROWTH	0.17	0.153	0.785	-0.303	0.219
QR	0.798	0.797	1.603	0.278	0.285

Mean (median) of ROA was found to be 0.15 (13), indicating that, on average, sample companies have been able to get around 0.15 Rials for per Rials of investment in assets. Mean (median) of CCC was found to be 195.95 (193.59). It means that in the firms surveyed, it takes an average of 195.59 days to return the cash used in commercial operations in cash to the firm. Mean (median) of the logarithm of cash flows was found to be 2.232 (2.87). Mean (median) of the debt ratio is calculated to be 0.606 (0.612), indicating that, on average, 61% of each of the sample firms were financed by debts. Mean (median) of the firm size was 6.019 (5.992), while mean (median) of the governmental ownership is 0.201 (0.155). It shows that the percentage of government ownership in the sample companies has been low, which can be indicative of economic growth and expansion of business units, and privatization policy in the study period, which reduced the power of controlling governmental shareholders in practice and dispersed. In the structure of ownership. Correlation coefficients of the research variables are reported in Table 2.

Table 2: Correlation coefficients of the research variables

Variables	ROA	CCC	DR	SIZE	GOV	CR	GROWTH	QR
ROA	1							
LCCC	0.061	1						
DR	-0.258	-0.024	1					
SIZE	-0.017	-0.185	-0.017	1				
GOV	0.006	0.101	-0.223	0.074	1			
CR	0.216	0.246	-0.372	-0.058	-0.007	1		
GROWHT	0.256	-0.04	0.159	-0.008	0.001	-0.001	1	
QR	0.134	0.06	-0.247	0.07	-0.068	0.662	0.015	1

Results showed that debt ratio, current ratio, and sales growth are significantly correlated to ROA, and the firm size and current ratio are significantly correlated to CCC (at 0.01 level) and Governmental ownership, current ratio, and quick ratio are significantly correlated to current ratio. Furthermore,

quick ratio and sales growth were found to be correlated to ROA and debt ratio, respectively (at 0.01 level).

In order to test the first Hypothesis, we began with the Chow test for choosing the model to be used for data analysis and to determine whether to use panel or combined data. In case the obtained significance level by this test was above 5%, null Assumption of this test implying the use of panel data was not rejected, and hence panel data was used. The obtained value from the Chow test (9.506 (0.00)), indicated the rejection of the null Assumption implying the constrained pattern, as such, fixed-effect pattern was found to be the appropriate pattern for evaluating the model. Then, Hussmann test was used to compare random-effect and fixed-effect patterns.

Table 3: Results of model evaluation for the first Hypothesis

Variables	Coefficient	t- Statistic	Significance Level	VIF
C	1.872	3.844	0.000	-
CCC	-0.693	-3.266	0.001	1.115
SIZE	-0.286	-3.543	0.000	1.032
CCC*SIZE	0.105	2.987	0.003	1.065
CR	0.106	6.587	0.000	1.004
GROWTH	0.072	7.920	0.000	2.115
QR	-0.003	-0.15	0.881	2.021
F-statistic(Prob)		11.288(0/000)	Chow test (Prob)	9.506(0.000)
Hausman test (Prob)		24.88(0/000)	Adjusted R-squared	0.638
Significance level less than 0.05.				

As showed in Table 3, obtained value from Hussmann test (24.88 (0.000)) indicates that, the null Hypothesis implying the superiority of the random-effect pattern over fixed-effect one is hereby rejected at 5% significance level. As such, the fixed-effect pattern was found to the appropriate approach to test of the research model. The results of test of the model for the first Hypothesis revealed that, logarithm of CCC (-0.693), firm size, firm size-CCC interaction, current ratio, and sales growth are significant at 5%.

The value of variance inflation factor (VIF) showed that, the independent variables are free from collinearity problem. Positive and significant nature of the moderating variable of firm size multiplied by CCC (0.01) shows that, firm size affects the relationship between CCC (as a measure of working capital management) and ROA (a measure of performance) of the firm. Therefore, the first Hypothesis of the research not rejected. The value of Adjusted R-square shows that, variables of this model can explain some 63% of variations in ROA. Fisher statistic (F-value) was found to be significant at 5%, showed general significance of the model.

In order to test the second Hypothesis, we began with the Chow test for choosing the model to be used for data analysis and to determine whether to use panel or combined data. In case the obtained significance level by this test was above 5%, null Assumption of this test implying the use of panel

data was not rejected, and hence panel data was used. The obtained value from the Chow test, i.e. 8.853 (0.00), indicated the rejection of the null Assumption implying the constrained pattern, as such, fixed-effect pattern was found to be the appropriate pattern for evaluating the model. Then, Hussmann test was used to compare random-effect and fixed-effect patterns. As reported in Table 5, obtained value from Hussmann test (23.728 (0.001)) indicates that, the null Assumption implying the superiority of the random-effect pattern over fixed-effect one is hereby rejected at 5% significance level. As such, the fixed-effect pattern was found to the appropriate approach to the evaluation of the research model. Others results test of the model showed that, VIF indicates absence of collinearity among the research variables.

Table 4: Results of model evaluation for the second Hypothesis.

Variables	Coefficient	t- Statistic	Significance Level	VIF
C	0.474	4.56	0.000	-
CCC	0.124	-2.559	0.011	1.083
DR	0.498	-2.64	0.009	1.283
CCC*DR	0.12	1.337	0.182	1.028
CR	0.072	7.08	0.000	2.407
GROWTH	0.073	3.495	0.001	1.012
QR	0.001	0.069	0.945	1.968
F-statistic(Prob)		11.85(0.000)	Chow test (Prob)	8.853(0.000)
Hausman test (Prob)		23.73(0.000)	Adjusted R-squared	0.645
Significance level less than 0.05.				

According to the results showed in table 4, the variables CCC (-0.124), debt ratio (-0.498), current ratio (0.072), and sales growth (0.073) were significant at 5%. Despite the positive and direct relationship between cash flows and rate of ROA, the debt ratio was found to have no direct and significant effect on this relationship. Negative and significant nature of the debt ratio indicates that, with decreasing the debt ratio, ROA increases. However, the moderating variable debt ratio multiplied by CCC was not significant; Therefore, the second Hypothesis of the research is rejected. The value of Adjusted R-square could explain some 64% of variations in ROA. Obtained value of Fisher statistic (F-value, 11.853) indicated overall significance of the model. Results of test this model indicating of significance of the Chow statistic, i.e. fixed-effect pattern was superior over the constrained pattern. Moreover, insignificance of Hussmann test implied that the first results (superiority of random-effect pattern on fixed-effect pattern) was not rejected. As such, the random-effect model represented the model of choice for evaluating the research model. Results of collinearity test on the model data were indicative of no collinearity among variables of this model.

Table 5: Results of model evaluation for the third Hypothesis

Variables	Coefficient	t- Statistic	Significance Level	VIF
C	0.128	2.006	0.046	_
CCC	-0.055	-1.959	0.051	1. 189
GOV	-0.228	-0.934	0.000	1.102
CCC* GO	0.126	1.081	0.281	1.087
CR	0.106	5.491	0.000	2.093
GROWTH	0.088	5.273	0.0000	1.007
QR	0.001	0.054	0.957	1.963
F-statistic(Prob)	17.13(0.000)		Chow test (Prob)	8.51(0.000)
Hausman test	10.93(0.000)		Adjusted R-squared	0.251
Significanc level less than 0.05.				

According to the results showed in table 5, the variables of current ratio (0.106) and sales growth (0.088) are significant at 5% significance, while the moderating variable of Gov*CCC were not significant. Insignificance of Governmental ownership (-0.228) and Governmental ownership*CCC (0.126) indicates that there is no relation between Governmental ownership and financial performance of the firm and that this variable may not affect the relationship between working capital management and financial performance of the company. As such, the third Hypothesis of the research also rejected. The obtained value of Adjusted R-square explained some 25% of ROA. The obtained value of Fisher statistic (17.128) indicated general significance of the model.

5 Discussion and Conclusion

Large firms face less financial problems due to their lower risk profile than small firms. Working capital management is performed better in larger firms, thereby shortening CCC while increasing the liquidity rate which end up increasing profitability. On the other hand, On the other hand, the higher the ratio of debt, the amount of working capital required for the company's daily operations decreases. Whenever a firm succeeds to invest the funds raised upon burrowing at higher rate of return, it will gain higher ROA by increasing the financial leverage; in the meantime, should the level of debt increases excessively, the risk of the firm failure to reimburse the borrowings in due time will increase, thereby increasing probability of bankruptcy of the company [38]. Therefore, the debt ratio can affect the working capital management and finally profitability and financial performance of the firm. Moreover, upon economic growth and development of commercial units and enforcement of Article 44 of the Constitution of the Islamic Republic of Iran (privatization), the ownership structure was further extended, so that minor shareholders comprised the majority of owners; however, the minor shareholders lack the required motivation for surveilling the management. Based on the first Hypothesis, it was predicted that firm size has a significant effect on the relationship between working capital management and financial performance of firms. Results of evaluating the research model for the first hypothesis (Table 3) verified the prediction in this research, with the coefficient of this mod-

erating variable being (at 0.01 level) positive and significant. In other words, the larger the firm size, the stronger will be the inverse relationship between working capital management and financial performance. This finding is in agreement with the results of the research by Nilsson [15], Ahmed [24] and Uyar [27] which means that firm size has a significant effect on the relationship between working capital management and financial performance of the firm. Based on the second Hypothesis, it was predicted that debt ratio has a significant effect on the relationship between working capital management and financial performance of companies. However, the results of evaluating the research model for the second hypothesis (Table 4) indicated that there is no significant association between debt ratio and the relationship between working capital management and financial performance. According to the third hypothesis, it was predicted that governmental ownership has a significant effect on the relationship between working capital management and financial performance of companies. However, the results of evaluating the research model for the third Hypothesis (Table 5) indicated that there is no significant association between governmental ownership and the relationship between working capital management and financial performance. Accordingly, an increase or decrease in governmental ownership may not change the relationship between working capital management and financial performance. This finding is in agreement with the results of the research done by Akimova and Schwodianer [23]. That is, governmental ownership has no significant effect on the relationship between working capital management and financial performance of firms. Results of this research indicated positive and significant effect of firm size on the relationship between working capital management and financial performance. As such, investors and creditors are herein recommended to invest on larger firms which enjoy lower levels of risk along with better management of current assets. A limitation of this research is that, the studied sample encompasses a limited number of the firms listed on TSE, so that care shall be taken in generalizing the obtained results to all firms already listed on TSE or other firms whose stocks are not traded in TSE. Given that the research variables were calculated based on the information extracted from financial statements prepared based on historical cost, then different results may be obtained if one adjusts the mentioned information for the effect of inflation. Considering the findings of this research and given that banks and financial institutions (investment and financial mediation firms and leasing institutions) were omitted from the research sample, future researchers are herein recommended to investigate the effect of ownership structure on the quality of working capital management and its effect on the relationship between working capital management and financial performance. They are further recommended to study the effect of public sector ownership (Non-governmental public institutions) on the relationship between working capital management and financial performance. Given that the present research used CCC as a measure of working capital management, other measures may be used to measure working capital management.

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