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The Effects of Stocks Return Volatility on Working Capital Accruals with Moderating Effects of Life Cycle and Ownership Structure of Firms

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Abstract

In this research using theoretical predictions from a real option-based investment framework, the present study aims to examine the effects of stock returns volatilities on changes of working capital accruals of firms. In addition, the moderating effect of variables such as, life cycle and ownership structure on the relationship between stock return volatilities and working capital accruals is studied. The statistical sample of this research consists of 111 firms accepted in Tehran Stock Exchange from 2004 to 2017.The research hypotheses are also examined by Generalized Least Squares (GLS) regression analysis. The results show that there is a significant negative relationship between volatilities of stock return and changes of working capital accruals of firms in general. On the other hand, results indicated that the effect of stock returns volatilities on firms is not the same in different stages of life cycle. this negative effect is at its highest level for mature companies and lowest level for decline companies and in the end results indicated that both ownership concentration and institutional investors in ownership structure of firms decreases the negative effect of stock returns volatilities on firms working capital accruals.

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Introduction

Economic literature describes financial markets as the channels that direct the financial resources of a community from nonproductive sectors to manufacturing sectors thereby playing a crucial role in investment development, economic growth, job creation, and ultimately better social welfare. In this regard, the important role of the capital market cannot be denied, whereas economic stability is a factor that guarantees ongoing national economic growth. Preferably, investors and policymakers have always sought stability and peace in the capital market. This is so important that attraction of foreign investments in a country depends greatly on the extent of stability in the economy of that country and on the capital market as a result (Abzari et al., 2009).

Relatively known as a newly-emerging market, Iran's capital market has unfortunately experienced periodic volatility and turbulence in recent decades. Bubble-like economic growth and unprecedented recessions have sometimes dominated this market. The stocks return of securities exchange firms and volatility trends can act as indices reflecting the effects of socioeconomic developments on the capital market of a country. Therefore, capital market activists have always seen stocks return volatility as a variable that can reflect stability or instability governing the business spaces of firms. In fact, the players of this market make many of their investment decisions based on the rate of this volatility. In particular, volatility can have instant and immediate effects on the size of working capital, a major part of which comes from the items known as accruals in the accounting literature. Different studies have emphasized the investment nature of working capital accruals. In this study, an investment approach is adopted to these accruals in order to explain the relationship between stocks return volatility and the short-term investment rates of firms and working capital accruals. Hence, this study aims to identify the effect of stocks return volatility (as an index of uncertainty in the operating environment of firms) on the investment of firms in working capital accruals in addition to analyzing the moderating effects of life cycle and ownership structure on the relationship between the two above variables.

Theoretical Foundations and Research Background

The analysis of investment behavior of firms in uncertain conditions is an important area of economic and financial studies, resulting in the emergence of rich and comprehensive research literature. The center of this literature is based on the observations showing that firms are unable to accurately predict their future investment horizons; thus, they make their investment decisions in encounter with environmental uncertainties. In the literature on economics and financial management, the bulk of studies have employed the real options investment theories to evaluate the investment decisions of firms and show that there is a negative relationship between investment and volatility (Bernanke, 1983; McDonald & Siegel, 1986; Dixit & Pindyck, 1994; Schwartz & Trigeorgis, 2004; Grenadier & Malenko, 2010).

In addition, a large number of investment decisions made by businesses focus on working capital investment plans which are crucial to ongoing operations performed by firms. The awareness of this investment behavior is useful for many of the capital market activists, especially investors, because these changes can enlighten the short-term horizon of operations at firms. Thus, the relationship between uncertainty and foreign investments, especially working capital, has become an empirical area of research on accounting in recent years. Working capitals of firms consist mainly of accruals which account for an important component of financial reporting; therefore, they have always attracted researchers. In fact, the study of changeability of accruals and change factors has become an intriguing area of accounting and financial research. Although accruals have been considered a part of return with less sustainability than cash flows in many studies (Sloan, 1996), some studies have focused on other aspects of accruals, *i.e.* the capacity of

accruals for including the fundamental features of an investment (Zhang, 2007). As a result, the quantity and quality of accruals are greatly affected by economic factors (Dechow et al., 2010).

Hence, a new paradigm has been proposed to study accruals and their change trend in recent years. This paradigm emphasizes the investment nature of accruals and tries to explain economic constituents at firms. Relying on the rich literature on investment of firms and using the real options investment theory, this approach analyzes the constituents of accruals, especially in uncertain circumstances, a representation of which is high volatility of stocks return of firms.

The real options investment theory emphasizes investment irreversibility (Brennan & Schwartz, 1985). Investment is costly, and many of the cost items are spent and cannot be reversed. When firms want to make investment decisions, they try to reach a compromise between the returns earned from investing today and the benefits of postponing investment to a time when more information is obtained or conditions have improved. Considering the benefits of postponing investment is known as the option to wait; hence, when volatility is high, the value of the option increases. Consequently, it decreases or stops investments (Dixit & Pindyck, 1994).

Adopting this investment approach to accruals can give a new insight into them and lead to better perception of the nature of these accruals, working capital policies of firms, and market volatility and risk affecting the investment behavior of firms. Relying on the rich literature on investment under uncertain circumstances and following the models proposed by Eisdorfer (2008) and Arif et al. (2016), this study analyzes the effect of stocks return volatility on working capital accruals of the next period at firms. According to the adopted approach, it is expected that firms decrease their investments in their working capital accruals in the future when uncertainty increases in their operating environment (, in which uncertainty is largely reflected in stocks return volatility). Therefore, the first research hypothesis defined as follows:

H1: Stocks return volatility has a negative effect on working capital accruals of the next period at firms.

This study also analyzes whether stocks return volatility has the same effect on working capital accruals of firms in different stages of their life cycles. The life cycle theory states that resources, capacities, strategies, structures, and performance of a firm differ in different stages of growth and development (Miller & Friesen, 1980; Miller & Friesen, 1984; Quinn & Cameron, 1983). According to various empirical studies, investment opportunities and cash flows of firms follow a specific and different pattern in different stages of their life cycles (Miller & Friesen, 1984). In the life cycle theory, the life cycles of firms are divided into different stages, *i.e.* introduction, growth, maturity, and decline. The major challenge facing the firms experiencing the introduction phases is the chance of being known by the market. These firms are young and have an unofficial, simple structure. According to Miller & Friesen (1984), these firms are more often exposed to uncertainty and volatility of cash flows than others. In the growth stage, firms are gradually known and obtain their market shares. Therefore, they experience both an increase in profitability and a decrease in volatility of cash flows (Hasan & Habib, 2017).

Furthermore, mature firms have reached a degree of stability in profitability and cash flows that their investment opportunities decline gradually (Jenkins et al., 2004). These firms usually have stable and balanced sale markets (Adizes, 1989). Given the fact that the growth potentials of these firms have largely been realized, they face reduced investment opportunities and accumulated cash flows as a result.

In the decline stage of the life cycle, firms face the risk of losing their market shares and probability of exiting the market. Presumably, if these firms have proper investment opportunities, they increase their investments to overcome limitations, regain their market

shares, and finally save themselves (Benmelech et al., 2010).

According to the findings of the reviewed studies, the investment policies of firms differ in various stages of their life cycles in proportion to gradual changes in their investment opportunities and cash flows. These policies follow a specific and unique model in each stage (Faff, 2016). Hasan and Habib (2017) indicated that specific volatility levels of firms differed in various stages of their life cycles. According to them, specific volatility levels of the firms experiencing introduction or decline stages were much higher than the firms experiencing growth or maturity stages. In Iran, studies indicate the effectiveness of life cycles of firms on different variables such as investment levels of firms and levels of accruals. For instance, Osta and Gheitasi (2012) showed that the use of accruals differed in various stages of life cycles of firms. In other words, the firms experiencing the growth stage used accruals more than the firms experiencing maturity and decline stages. On the contrary, the firms experiencing maturity stages had the lowest levels of accruals. Abednazari et al. (2013) indicated that the investment opportunities of firms were greatly affected by the stages of their life cycles and that there were significant differences in the relationships between investment opportunities and earnings of firms in various stages of their lifecycles. In addition, Akhgar and Mirzaee (2019) analyzed changes in specific volatility of stocks returns in different stages of life cycles of firms and concluded that specific volatility of stocks return was higher at firms experiencing introduction and decline stages than those experiencing growth and maturity stages.

Accordingly, it is expected that the effectiveness of stocks return volatility on working capital accruals will differ in various life cycle stages of firms and have a moderating effect on this relationship. It is difficult to determine how life cycle affects the relationship between return volatility and working capital accruals of the next period at firms because there are insufficient studies on the subject. The second research hypothesis is defined now to explain this effectiveness:

H2: The firm life cycle affects the negative relationship between stocks return volatility and working capital accruals of the next period.

In the past two decades, increasing attention to corporate governance and its effect on investments of firms have become the motive for analyzing the effect of an important factor of corporate governance, *i.e.* ownership structure, on the negative relationship between stocks return volatility and working capital accruals. Although the ownership structures of firms consist of different dimensions, this study emphasized the aspects of ownership concentration and institutional ownership. The firm ownership structure refers to the composition of shareholders. In other words, different types of shareholders can create different ownership structures, each of which can have different effects on financial policies capital structures of firms (Brailsford & et al., 1999). At the same time, the ownership structure is partially related to the ownership concentration levels of firms. Ownership concentration refers to a situation in which a considerable part of stocks of a firm is owned by major shareholders. It shows that some percentages of stocks are owned by a few individuals.

It is believed that all of the firms listed in the Tehran Stock Exchange will not show similar investment behavior in uncertain conditions when volatility increases. This expectation seems logical with respect to the noncompetitive structure of the Tehran Stock Exchange. Currently, there are high monopolies in some industries in the Tehran Stock Exchange due to the socioeconomic conditions and presence of the firms owned by the public sector or nongovernmental public institutions. As a result, noncompetitive conditions have emerged in the Tehran Stock Exchange (Falahati, 2006). Therefore, knowing the effective of ownership structures of firms on their reactions to stocks return volatility will result in the correct analysis of investment behavior of different firms.

Knowing these effects can help analyze obstacles to development in the Tehran Stock Exchange more accurately. If appropriate solutions are provided, a better environment will be provided for the competition of the private sector.

Institutional investors are more conversant, rational, and have better quantitative skills compared to individual investors. Individual investors are usually noisy traders who have short-term investment horizons and often make their decisions based on Market psychological factors. These specifications cause the price of the firm's stocks to diverge from its intrinsic value and increase price volatilities in the market. Instead, conversant and aware investors cause stock price to get closer to its intrinsic price. On the other hand, these investors having a long term investment horizon, stabilize the market and reduce the volatilities (Ikizlerli, 2020).

Regarding the role of institutional investors in the capital market, results of different studies indicate the effectiveness of ownership structures of firms on stocks return and volatility (Rezaei & Weysihesar, 2014). For instance, Bohl et al. (2009) analyzed the relationship between institutional investors and stocks return volatility. Their findings show that increasing the ownership of institutional investors had a stabilizing effect on stocks return volatility because they quickly adjust the share price to the new information in order to make the stock market more efficient. Che (2018) studied the effects of different types of shareholders on stocks return volatility in the Oslo Stock Exchange. Regarding exchange style, exchange size, and investor horizon as the channels by which investors would usually be able to affect stocks return volatility, Che concluded that foreign investors increased stocks return volatility through their performance. On the contrary, individual investors decreased stocks return volatility. In Iran, different studies have been conducted on the relationship between ownership structure and stocks return volatility.

According to the research results by Fakhari and Taheri (2011) in Iran, the presence of institutional investors increased monitoring on managerial performance, decreased information asymmetry, and finally decreased stocks return volatility by increasing the ownership percentage of this group of shareholders. Aflatooni et al. (2015) analyzed the relationship between institutional investors and stocks return volatility in the Tehran Stock Exchange and concluded that increasing institutional ownership would decrease stocks return volatility. a large part of research literature related to the institutional investors of the stock market has emphasized their role of stabilizing. But regarding the main subject of this research, which is the effect of stock returns volatilities on working capital accruals, there has not been any studies done about the effect of ownership structure of the firms on the negative relationship of volatilities - investment.

Therefore, it is expected that the ownership structures of firms will mitigate the negative effective of stocks return volatility on working capital accruals. In this regard, the third and fourth research hypotheses are defined as follows:

H3: Ownership concentration mitigates the negative effect of stocks return volatility on working capital accruals of the next period.

H4: Institutional ownership mitigates the negative effect of stocks return volatility on working capital accruals of the next period.

In the light of earlier discussions, this study analyzes the effect of stocks return volatility on working capital accruals of the next period as well as the intrinsic and environmental factors affecting this relationship. Therefore, the research question is whether stocks return volatility affects investment levels of firms and their working capital accruals. In addition, firms differ from each other in various aspects such as accessibility to financial resources, ownership structures, and the current life cycle stage. Each of these factors can enhance, mitigate, or even neutralize the effects of uncertainties on investment. It was decided to

analyze the effects of life cycle and ownership structure on the relationship between stocks return volatility and working capital accruals in order to gain an in-depth insight into the relationships of uncertainties and environmental volatility with investment levels of firms in their working capital accruals.

Research Methodology

This is an applied-quantitative and correlational-descriptive study, in which the generalized least squares were used along with a panel data model for data analysis. The research models were estimated in Eviews 9 and Stata 14.

Sample and Data

The statistical population included the firms listed on the Tehran Stock Exchange within a fourteen-year period (2004-2017) which need to have the following conditions:

1) The fiscal years of these firms ended March 19 each year.
2) They were not among financial intermediation industries, investment industries, and banks.
3) They experienced no change in their fiscal years during the research period.
4) Their trading delay did not exceed three months.

With these conditions in consideration, the research sample consisted of 111 firms.

The first research hypothesis analyzes the effect of stocks return volatility on working capital accruals of the next period at firms. Model (1) was employed to test this hypothesis:

Research Models

In this model, EV is the independent variable, *i.e.* stocks return volatility, the coefficient of which is utilized to confirm or reject the hypothesis.

$$_{+1} = \beta_0 + \beta_1 EV_{i,t} + \beta_2 Size_{i,t} + \beta_3 MTB_{i,t} + \beta_4 Lev_{i,t} + \beta_5 CFO_{i,t} + \varepsilon_{i,t+1} \quad (1)$$

The second hypothesis states the effect of life cycle on the relationship between stocks return volatility and working capital accruals of the next period. The Dickinson index (2011) was employed to classify all of the sampled firms as the growth, maturity, and decline categories, for each of which Model (1) was estimated separately. Considering the coefficient of the independent variable (*EV*), the hypothesis testing result was obtained for each category.

The third hypothesis states that ownership concentration mitigates the negative effect of stocks return volatility on working capital accruals of the next period. Model (2) was employed to test this hypothesis:

$$WCA_{i,t+1} = \alpha + \beta_1 EV_{i,t} + \beta_2 EV_{i,t} \times CONC_{i,t} + \beta_3 CONC_{i,t} + \beta_4 CFO_{i,t} + \beta_5 MTBE_{i,t} + \beta_6 LEV_{i,t} + \beta_7 SIZE_{i,t} + \varepsilon_{i,t+1} \quad (2)$$

The coefficient of the interactive variable (EV*CONCE) is utilized to confirm or reject this hypothesis.

The fourth hypothesis states that institutional ownership mitigates the negative effect of stocks return on working capital accruals of the next period. Model (3) was employed to test this hypothesis:

$$WCA_{i,t+1} = \alpha + \beta_1 EV_{i,t} + \beta_2 EV_{i,t} \times INS_{i,t} + \beta_3 INS_{i,t} + \beta_4 CFO_{i,t} + \beta_5 MTBE_{i,t} + \beta_6 LEV_{i,t} + \beta_7 SIZE_{i,t} + \varepsilon_{i,t+1} \quad (3)$$

In Model (3), the coefficient of the interactive variable (EV*INS) is employed to confirm or reject the hypothesis.

Definition of research variables

In the above models, the role and nature of each variable are described as below:

$\boldsymbol{WCA_{i,t+1}}$: This variable shows working capital accruals of firm *i* in year *t+1*. This is a dependent variable obtained from the difference between the sum of current noncash assets and the sum of current assets divided by the sum of the first-period assets (Arif et al., 2016).

$\boldsymbol{EV_{i,t}}$ (Monthly volatility of stocks return): This variable shows the standard deviation of monthly stocks return of firm *i* in year *t* (Chen et al., 2013).

$\boldsymbol{CONC_{i,t}}$ (Ownership concentration): This is a Dummy variable. According to Sinaei et al. (2016), if the sum of stocks percentage owned by individuals or institutions exceeds 10%, then there is ownership concentration; otherwise, ownership is not concentrated.

$\boldsymbol{INS_{i,t}}$ (institutional ownership): According to Sinaei *et al.* (2016), the stocks percentage of a firm refers to the stocks belonging to banks, insurances, financial institutions, holdings, and public organizations, institutions, and firms.

$\boldsymbol{Size_{i,t}}$ (firm size): This variable is obtained from the natural logarithm of sum of assets of firm *i* at the end of year *t*.

$\boldsymbol{MTB_{i,t}}$ (growth opportunities): This variable indicates the ratio of market value to book value of shareholder equity in firm *i* at the end of year *t*.

$\boldsymbol{Lev_{i,t}}$ (financial leverage): This variable shows the sum of debts divided by the sum of assets in firm *i* in year *t*.

$\boldsymbol{CFO_{i,t}}$ (operating cash flows): This variable is extracted from the cash flows statement of firm *i* at the end of year *t*. It is divided by the sum of assets listed at the beginning of the period for homogenization (Arif et al.,2016).

Research Findings Descriptive Statistics of Research Variables

Results of research variables descriptive statistics are presented in table no.1. Mean and median of working capital accruals are 0.018 and 0.016 which show that investment in working capital was positive in average. Mean and median of stock return volatilities were 0.132 and 0.115.

Table 1. The results of the Descriptive Statistics of Research Variables

variables	symbol	mean	med	min	max	St d Dev
Working Capital Accruals	WCA	0.018	0.016	-1.846	1.256	0.203
Stocks Return Volatility	EV	0.132	0.115	-1.846	1.256	0.091
operating cash flows	CFO	0.135	0.119	-0.517	0.776	0.142
financial leverage	LEV	0.615	0.635	0.026	2.078	0.204
growth opportunities	MTB	2.429	1.862	-44.092	40.700	3.368
firm size	SIZE	5.850	5.801	4.246	8.520	0.634

Testing research hypotheses

Before hypothesis testing, the F-Limer test was conducted to determine the appropriate regression model and select one of the pooled data and/or panel data models. In addition, the Housman test was utilized to select fixed effects or random effects solution. Then the heteroscedastic, Collinearity, and autocorrelation tests were conducted in Stata to ensure that the regression assumptions were true. The variance inflation factor (VIF) test results indicated the absence of Collinearity between the research variables. Since the Breusch–Pagan test findings showed the heteroscedastic error, the regression models were estimated through the generalized least squares to modify the models in terms of heteroscedastic. The Wooldridge test results indicated the absence of autocorrelation between model residuals.

The first hypothesis test

Model (1) was fitted to test the first hypothesis stating the effectiveness of stocks return on working capital accruals of the next period at firms. Table (2) shows the results.

Table2. The results of the first hypothesis test

$$WCA_{i,t+1} = \beta_0 + \beta_1 EV_{i,t} + \beta_2 Size_{i,t} + \beta_3 MTB_{i,t} + \beta_4 Lev_{i,t} + \beta_5 CFO_{i,t} + \varepsilon_{i,t+1}$$

Variables	Variable symbol	efficients	ıtistic	·value	VIF
Stock returns volatility	EV	-0/384	-6/938	0/000	1/01
Operational cash flows	CFO	0/072	2/453	0/014	1/07
Financial Leverage	LEV	0/015	0/509	0/610	1/05
Firm size	Size	-0/009	-1/065	0/286	1/01
Investment opportunities	MTB	-0/002	-2/329	0/020	1/03
Constant	C	0/104	29/10	0/000	1/01
R-squared	0/059	Adjusted R-squared		0/056	
f-statistic	18/20	probe (f-statistic)		(0/000)	
Durbin-Wu	2/02				
Breusch–Pagan statistic	41/72	Probe(B-P.statistic)		(0/000)	
Wooldridge statistic	0/878	Probe(W- statistic)		(0/350)	

Since the coefficient of the independent variable (*EV*) was negative and significant, stocks return volatility had a negative, significant effect (-0.384) on working capital accruals of the next period. Therefore, the first hypothesis was confirmed.

4.2.2 The second hypothesis test

The second hypothesis analyzes the effect of the firm life cycle on the negative relationship between stocks return volatility and working capital accruals of the next period. Based on the Dickinson cash index (2011), all of the sampled firms were separately classified as growth, maturity, and decline categories to test this hypothesis. The research model was then estimated for each category of firms separately. Table (3) shows the results

.

Table 3. The results of the second hypothesis test

	Growth stage firms			Maturity stage firms			Decline stage firms		
Dependent variable	Working capital accruals			Working capital accruals			Working capital accruals		
	Coefficients	t-statistic	P-value	Coefficients	t-statistic	P-value	Coefficients	t-statistic	P-value
EV	-0/426	-6/507	0/000	-0/514	-7/712	-0/514	-0/231	-2/856	0/004
CFO	0/176	3/098	0/002	0/088	1/887	0/088	0/042	0/408	0/682
LEV	0/019	0/410	0/681	-0/002	-0/148	-0/002	0/063	1/549	0/122
MTB	-0/003	-1/202	0/229	-0/005	-1/439	-0/005	-0/005	-2/126	0/034
MTB	-0/013	-1/071	0/284	-0/023	-2/929	-0/023	0/006	0/436	0/663
C	0/123	1/607	0/108	0/205	3/518	0/205	0/040	0/433	0/004
Adjusted R^2		0/07			0/07			0/02	
f-statistic		11/38			9/91			2/31	
P-value		0/000			0/000			0/040	

Durbin-Wu	2/11	2/03	2/00

The above table shows that the coefficients of the independent variable, *i.e.* stocks return volatility, were -0.426, -0.515, and -0.231 for growth, maturity, and decline firms, respectively. All of these coefficients were significant at 5%; hence, the intensity of the negative relationship between return volatility and working capital was at the lowest level for the firms experiencing the decline stage; however, it was at the highest level for the firms experiencing the maturity stage.

The Paternoster et al. (1998) test was utilized to determine the significance of difference between the above coefficients. According to Table (4), the test results indicate that there are significant differences between these coefficients, something which is not random. Therefore, the second hypothesis was confirmed.

Table 1.Test the significant difference in coefficients

Differences in model independent variable coefficients	t-statistic	p-value
Model 1 & 2	1/939	0/041
Model 1 & 3	1/878	0/013
Model 2 & 3	2/703	0/020

4.2.3 The third hypothesis test

The third hypothesis states that ownership concentration mitigates the negative effect of stocks return volatility on working capital accruals of the next period. Table (5) shows the results of testing this hypothesis.

Table 5. The results of the third hypothesis test

$$WCA_{i,t+1} = \alpha + \beta_1 EV_{i,t} + \beta_2 EV_{i,t} \times CONC_{i,t} + \beta_3 CONC_{i,t} + \beta_4 CFO_{i,t} + \beta_5 MTBE_{i,t} + \beta_6 LEV_{i,t} + \beta_7 SIZE_{i,t} + \varepsilon_{i,t+1}$$

Variables	Variable symbol	efficients	ıtistic	·value	√IF
Stock returns volatility	EV	-0/087	-3/435	0/001	2/52
Concentration of ownership	CONC	-0/003	-2/559	0/031	3/29
Volatility * Concentration	EVCONC	0/116	6/667	0/000	4/71
Operational cash flows	CFO	0/118	1/848	0/064	1/07
Financial Leverage	LEV	0/008	0/306	0/759	1/05
Firm size	Size	-0/098	-3/137	0/001	1/01
Investment opportunities	MTB	-0/002	-1/877	0/060	1/03
Constant	C	-0/620	3/747	0/000	2/52
Adjusted R-squared	0/08	Durbin-Wu	1/93		
f-statistic	2/16	probe (f-statistic)	0/000		
Wooldridge statistic	0/714	Probe(W- statistic)	0/399		
Adjusted Wald test	7284/14	Probe Wald statistic	0/000		

According to this table, both independent variable (stocks return volatility) and moderating variable (ownership concentration × stocks return volatility) are statistically significant. Although the coefficient of the independent variable was -0.087 per se, it increased to 0.116 when it was multiplied by the concentration variable and entered as a Interactive variable in the model. In other words, ownership concentration mitigated the

negative effect of stocks return volatility on working capital accruals. According to the results, the third hypothesis was confirmed.

Fourth hypothesis test

The fourth hypothesis states that institutional ownership mitigated the negative effect of stocks return volatility on working capital accruals of the next period. Table (6) shows the results of testing this hypothesis.

According to Table (6), the coefficient of the independent variable (stocks return volatility) was statistically significant (-0.016). The coefficient of the Interactive variable (institutional ownership*stocks return volatility) was also statistically significant (0.027). Although the coefficient of the independent variable was -0.016 per se, it increased to 0.027 when it was multiplied by institutional ownership and entered in the model. In other words, institutional ownership moderated the negative effect of the independent variable, and the fourth hypothesis was confirmed.

Table 6. The results of the Fourth hypothesis test

$$WCA_{i,t+1} = \alpha + \beta_1 EV_{i,t} + \beta_2 EV_{i,t} \times INS_{i,t} + \beta_3 INS_{i,t} + \beta_4 CFO_{i,t} + \beta_5 MTBE_{i,t} + \beta_6 LEV_{i,t} + \beta_7 SIZE_{i,t} + \varepsilon_{i,t+1}$$

Variables	Variable symbol	efficients	atistic	-value	VIF
Stock returns volatility	EV	-0/016	-3/096	0/001	1/94
Institutional ownership	INS	0/007	0/402	0/000	3/28
Volatility * Institutional	EVINS	0/027	5/136	0/000	4/05
Operational cash flows	CFO	0/116	1/738	0/082	1/08
Financial Leverage	LEV	0/008	0/317	0/751	1/05
Firm size	Size	-0/096	-3/243	0/001	1/01
Investment opportunities	MTB	-0/002	-1/864	0/062	1/04
Constant	C	0/603	3/607	0/000	2/52
Adjusted R-squared	0/08	Durbin-Wu	1/93		
f-statistic	2/14	obe (f-statistic)	0/000		
Wooldridge statistic	0/923	be(W- statistic)	0/338		
Adjusted Wald test	7834/21	Probe Wald statistic	0/000		

Discussion and Conclusion

The test results indicated that stocks return volatility had negative effects on working capital accruals of firms. Nevertheless, the results show that stocks return volatility can have different effects on working capital accruals of firms with respect to which life cycle state they are in. It means that the negative effect of the independent variable (stocks return volatility) on working capital accruals was at the lowest level for the firms experiencing the decline stage, whereas it was at the highest level for the firms experiencing the maturity stage. This finding can be justified by the fact that maturity firms show high negative reactions to return volatility because they have made the most of their potentials and reached a degree of stability in profitability and cash flows at which their investment opportunities decrease gradually. The low coefficient of decline firms explains the fact that they try to survive and cope with the risk of being eliminated from the capital market by expanding their operations and increasing their working capitals if they encounter appropriate investment opportunities, despite the market volatility and turbulence. This finding is consistent with the predictions made by Benmelech et al. (2010) and Dickinson (2011). Accordingly, declining firms increase their investments to overcome limitations and regain their market shares.

Other research results show that both ownership concentration and ownership of institutional shareholders mitigated the negative relationship between stocks return volatility and investment of firms in their working capitals. These results are consistent with the findings of Yang & Giang (2008) and Bohel et al. (2009), who emphasized the positive roles of ownership concentration and institutional investment in stocks return volatility. According to their findings, increasing the ownership of institutional investors had a stabilizing effect on stocks return volatility. as well as, the findings of this study were consistent with the research results of Fakhari and Taheri (2011) and Aflatooni *et al.* (2015), who concluded that increasing the ownership percentage of institutional shareholders decreased stocks return volatility. This effectiveness is rooted in a wide range of factors such as direct access to organizational information, political relations, and extensive monitoring facilities. In fact, the monitoring role of institutional investors can change the behavior of firms including their investment behavior.

At the same time, the effectiveness coefficients of ownership structures on investment decisions in the capital markets of developing countries such as Iran is higher than those of countries with developed capital markets. This is mainly due to the defects of these markets such as information asymmetry and higher agency costs bringing the inefficiency of investment decisions. Ownership concentration can greatly reduce the information asymmetry and immunize investment decisions against return volatility by applying an accurate monitoring mechanism to managerial performance. As a result, when uncertainty emerges in the market, the value of the option to wait decreases for firms with concentrated ownerships.

The result of testing the first hypothesis demonstrates that investors should not always regard decreasing investment as a negative index in the analysis of financial status of firms. Instead, they should evaluate these decreases with respect to market volatility within the option-to-wait framework of managers of firms. In addition, when financial

analysts and investors are analyzing the quantity and quality of investments of firms, especially short-term investments, they should interpret analysis results with respect to the life cycle stage in which a firm is. As well as, the research results indicated that declining firms showed the lowest negative reaction to return volatilities, and most of the firms experiencing the decline stage of their life cycles were public-owned old firms. Therefore, in line with Article 44 of Constitution of the Islamic Republic of Iran, it is necessary to transfer these firms to the real private sector so that an obstacle will be presented to the elimination of these firms from Iran's economy through an efficient and motivated management effort.

Ownership concentration and institutional ownership are among the mechanisms which can partially mitigate the weaknesses of the corporate governance system in developing countries such as Iran due to the absence of a comprehensive and efficient corporate governance system. Therefore, potential investors can concentrate their investments on the firms with institutional ownership or ownership concentration.

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