EFFECT OF CASH FLOWS VOLATILITIES ON CURRENT INVESTMENTS IN COMPANIES LISTED ON THE TEHRAN STOCK EXCHANGE

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Abstract

The aim of the present study is to description the role of cash flows volatilities on the extent and level of current investments in companies. Research sample includes companies listed on the Tehran Stock Exchange during 2004-2014. Data have been extracted from financial statements of companies with the use of multiple linear regression and have been studied in the form of panel data. Results obtained from research hypotheses test indicate that cash flows volatilities have a positive and significant relationship with current investments in companies. Also, this relationship has been tested in two groups of companies with positive growth of cash flows and companies with negative growth of cash flows. Findings indicate that in each of these groups also there is a significant relationship between cash flows vitalities and current investments of the companies, while, the size of this relationship is larger in companies with a positive growth.

Keywords: Cash Flows, Investment, Capital Sensitivity, Positive and Negative Cash Flows

1. INTRODUCTION

Cash flows of every business unit provides some information about the financial status of that company for all the stakeholders that enables them to evaluate the ability of the company for creating cash flow and equivalent to cash flow in future and the required conditions for using these cash flows (Zafar & Ali Shah, 2008). Malmendier and Tate (2005a) empirically validate a Heaton (2002) prediction who predicts a sensitivity of corporate investment policies to internal funding sources. Such relationship is dependent on firms' financial constraints. Using the Kaplan and Zingales (KZ) measure of financial constraints, Malmendier and Tate (2005a) find that CEOs' overconfidence increases the sensitivity of investment to cash flow and this will be greater for more constrained firms. The intuition here is that these firms run big difficulties when they want to finance their investment projects by external funds. The cost of external financing will be higher than that of others

less constrained firms. For this reason, optimistic managers should prefer internal funds and the sensitivity of their corporate investment to internal cash flow will be intense when firms also are financially constrained. According to Hovakimian and Hovakimian (2009), financial constraints are defined as firms having restrictive and costly access to external capital markets and so that financially constrained firms should rely more on internal funds to finance their investment policy (Mohamed, Fairchild and Bouria, 2014).

2. THEORETICAL ISSUES AND RELATED LITERATURE

Wei Huang et al. (2011) suppose that there is misalignment of the managerial and shareholders interest investigating how agency cost can affect the relation between top executives' overconfidence and investment cash flow sensitivity using the data on exchange listed companies in China during 2002-2005. In their work, the main objective was to

explore whether investment cash flow sensitivity differs between state-controlled and non-state-controlled companies whose agency costs show significant difference. Wei Huang et al. (2011)' results demonstrate that average top executives' overconfidence leads to increased investment cash flow sensitivity. However, this relation holds only for companies with state owned entities as controlling shareholders and it is not signify-cant for non-state controlled firms. This is because state-controlled companies have significantly greater agency cost than non-state controlled companies when running a regression using a proxy of agency cost. Additional tests on sub-sample show that the positive effect of top executives' overconfidence on investment cash flow sensitivity only holds for companies that exhibit high agency cost (Huang et al. 2011).

The finding that the investment horizon of the marginal investor (and thus the equilibrium price impact in the bond market) responds to changes in market conditions contributes to the theoretical debate on whether transaction costs matter (Lei and Wang, 2012).

Theoretical research provides alternative explanations for the sensitivity of firm investment to cash flows. While there would be no such relationship in a perfect Modigliani and Miller (1958) world, in practice companies operate in imperfect or incomplete capital markets where the cost of external capital exceeds that of internal funds. Myers (1984), Myers and Majluf (1984), and numerous other studies suggest that this wedge between the costs of internal and external funds is due to asymmetric information problems in capital markets that arise because management holds superior information relative to shareholders. These studies argue that adverse selection problems lead shareholders to demand a premium for new equity issues in order to offset losses that arise from funding lemons. Alternatively, agency cost theory (e.g., Jensen, 1986) predicts a positive relationship between investment and cash flows because managers tend to opportunistically invest their firm's free cash flows (overinvestment), plausibly because they perceive internal cash flows as inexpensive capital (Attig et al. 2012).

On the other hand, capital market with its undeniable role in economic growth and development of the country is an intermediate with the help of which companies can finance and obtain their required capital. On the other hand, optimized management requires that companies invest their surplus funds and there is no doubt that making new an investment is the requirement for growth, advancement and competition in today's world. Financing activities and investment decision making are effective of a firm's value and eventually in shareholders wealth and since every shareholder for maintaining and increasing his/her capital requires some information about effective factors on stock return, therefore, it is of great importance for shareholders.

Internal financing resources, including cash flows resulting from operating activities, selling assets and Retained Earnings and external financing resources include obtained funds from financial market such as issuing Participating Bonds, issuing new stock and getting a loan from bank. Managers should decide on how to obtain their required fund and how to use the available financial resources to them (Frank & Goyal, 2003). Based on previous studies, when the stock of companies is being overvalued, they are more likely to make investment and consequently they obtain lower stock returns (Baker *et al.,* 2003).

3. RESEARCH METHODOLOGY

In the present study we have explored the relationship between investment and volatility of Conditional Cash Flow and we seek to answer the below question:

What is the relationship between cash flow volatilities with current investments?

Research conceptual model has been presented below:

$$I = \alpha_0 + \alpha_1 CFV_{i,t} + \alpha_2 SIZE_{i,t} + \alpha_3 AGE_{i,t} + \alpha_4 D/E\ Ratio_{i,t} \quad (1)$$

The methodology of this study in terms of nature and content is a descriptive and correlation method and in terms of applied is an applied study which is based on analysis of the collected data from stock exchange. The study has been conducted in a deductive - inductive reasoning framework.

Figure 1. Research conceptual model
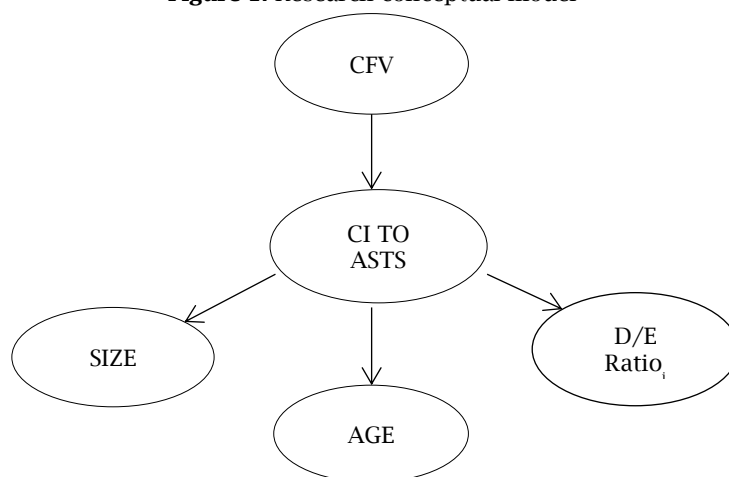
It means that theoretical background and literature have been reviewed with the help of bibliographical studies, other sites, and articles in an inductive framework and information collection which have been used for confirmation or rejection of hypotheses with the help of deductive reasoning. On the other hand, the present study has a Ex-Post Facto design.

The model used in this research is as per below:

$$I = \alpha_0 + \alpha_1\, CFV_{i,t} + \alpha2\, SIZE_{i,t} + \alpha_3\, AGE_{i,t} + \alpha_4\, D/E\ Ratio_{i,t} \quad (2)$$

3.1. Dependent variable

CI = in this study current investment refers to changes in current assets except in cash flow during a financial period which is standard considering the total assets of the company.

In other words: CAPX $/AT_{i,t}$

3.2. Independent variables

$CFV_{i,t}$ (Cash Flow Volatility) is for measuring cash flows volatilities in a short time horizon, percentage of changes in cash flow of each year comparing to the previous year has been used. For measuring the extent of short-term volatilities, the following relationship has been used:

$$CFVOL1_t = \frac{OCF_t - OCF_{t-1}}{OCF_{t-1}} \quad (3)$$

For measuring long-term volatilities, cash flows of a five-year period have been considered. For measuring long-term volatilities coefficient of variations of operating cash flow has been used.

3.3. Control variables

3.3.1. Firm size

Size can be effective on investment sensitivity to cash flows. In general, large companies are faced with fewer problems in attracting investment. For calculating the size of a company different methods are used. For example, in some a company's total assets are used. Sales also in some cases are used as an indication for a company's size. In this study for calculating the size of the company, Natural logarithm of the book value of total assets has been used.

3.3.2. The age of the company

Companies with more age due to benefiting from a better credential status and a faster and easier access to information have fewer limitations in financing financial resources.

3.3.3. Dividend ratio

Companies with higher dividend ratio are less likely to have financial limitations than other companies.

3.4. Data collection

Required data for this study have been collected from computer databases and visiting the library of Stock Exchange as well as with the use of software and visiting the websites of www.rdis.ir (which belongs to Stock Exchange) and www.codal.ir and www.tsetme.ir.

Important statistical features of the model's variables

Model's variables are as per the following:

Table 1. Variables used in this research

Variables	Abbreviation	Variable type
Current investments	I	Independent
Cash flows volatilities	CFV	Independent
Size	SIZE	Control
Age	AGE	Control
Dividend ratio	D/E	Control

Now in the following table statistical features of all variables have been studied.

Table 2. Statistical features of variables under study

Variable	Average	Mean	Standard deviation	Skewness
I	0.62	0.66	0.22	-0.53
CFV	4.9	5.9	22.17	-1.56
SIZE	2915/9	19.21	82532.8	28.92
AGE	22.91	16	21.77	1.26
D/E	372.008	38.16	8441.9	26.69

3.5. Research population and sample

Research population includes listed companies in Tehran Stock Exchange during 2004 - 2014. For the purpose of increasing the comparison power for comparing sample with population, sample selection has been done with the use of screening method and considering the below criteria:

1. The companies' trades and transactions should have been halted during the time period of this study. In other words, stock of these companies should have been active during the years of this study in stock exchange and the halt period, if any, should be more than 6 months (that is there should be no operating halt with a time period more than 6 months).

2. The end of fiscal year for these companies should be 19 Marches in each year and during the time frame of this study there should be no change in fiscal year and activities.

Finally, sample size has been determined with the help of screening method which is equal to 70 companies that has been presented in the following table:

Table 3. Details of sampling stages

Description	Quantity	Quantity
All listed companies in stock exchange till the end of 2014		542
Number of companies that have entered stock exchange during the time period of 2004 - 2014	231	
Number of companies that have exit stock exchange during the time period of 2004 - 2014	49	
The number of companies activities in finical sector of industry	20	
For the purpose of Homogeneity in financial year of the companies, those companies that their fiscal year doesn't end at 19 Marches.	68	
Those companies that in the time period of 2004 - 2014 who have had loss or had retained loss.	62	
Those companies who have lost observations or irrelevant observation in the time period of 2004 - 2014.	42	
Total number of eliminated companies		(472)
The number of companies entered in the study		70

4. RESEARCH FINDINGS

In the following table correlation level between different variables under study in regression model has been presented. Correlation level has been presented in the first row and statistical significance has been presented in parenthesis. If there is significant correlation above 0.7, they we will doubt the existence of co-linearity in the regression model.

In the above table considering the presented descriptions, no high level of correlation is observed which indicates to the probability of co-linearity between model's variables. Therefore, we can assure of lack of co-linearity in the model.

Table 4. Correlation between research variables

Correlation					
Probability	AGE	CFV	DE	I	SIZE
AGE	1.000000				

CFV	0.229200	1.000000			
	(0.0000)	-----			
DE	0.009888	-0.220832	1.000000		
	(0.7769)	(0.0000)	-----		
I	-0.236919	-0.093206	0.027056	1.000000	
	(0.0000)	(0.0074)	(0.4380)	-----	
SIZE	-0.009732	-0.005913	-0.001545	-0.093332	1.000000
	(0.7803)	(0.8654)	(0.9647)	(0.0073)	-----

The results of durability tests of Philips and Person for the model's variables have been presented in the below table:

Table 5. Results of durability tests of Philips & Person

Variable	Value	Sig. level	Result
I	547.41	.000	Durable
CFV	614.29	.000	Durable
SIZE	513.25	.000	Durable
AGE	516.45	.000	Durable
D/E	439.14	.000	Durable

In this test, null hypothesis indicates to lack of durability of variables. Considering the number of observations in this study of durability, if the value obtained in Philips & Perron test is larger than 79.4, then significance level of null hypothesis will become more than 95% for rejecting the null hypothesis (lack of durability) and therefore, null hypothesis is rejected and durability is confirmed. Therefore, considering obtained results all the data under study are durable and estimations can be performed.

Considering the provided explanations above, the below table can be estimated with the help of panel data method.

$$I = \alpha_{0+} \ \alpha_1 \, CFV_{i,t} + \alpha_2 \, SIZE_{i,t} + \alpha_3 \, AGE_{i,t} + \alpha_4 \quad (4)$$
$$D/E \ Ratio_{i,t}$$

Now, first for determining the estimation method, as we mentioned earlier, Chaw test and in case of necessity Hausman test is performed and then regression model will be estimated.

Table 6. Results of F-Limer test (Chaw)

Obtained value	Sig. level	Result
4.7	.000	Data panel model

Considering the fact that Chaw test indicate the use of panel data, in this case Hausman test indicate the selection between fixed effects and random effects.

Table 7. Hausman test results

Obtained value	Sig. level	Result
.000	1.000	Random effects model

Now model estimation is performed with the help of random effect method.

Table 8. Results of estimation for research model (dependent variable: I)

Variable	Coefficient	t-value	P-value	Total regression model		
				F-stat	PROB	DW
Intercept	0.67	55.17	.000			
CFV	2.43	2.55	0.001			
SIZE	-0.002	-4.95	.000	9.58	.000	1.89
AGE	-2.08	-62.80	.000			
D/E	8.93	7.85	.000			

Existence of a statistical significant relationship is testes with t-test that the related formula has been presented below (for each assumed coefficient similar to β):

$$T = \frac{\beta}{SE(\beta)} \quad (5)$$

In case that absolute value of t-value is larger than 2, the given variable has a significant effect on model's dependent variable. In the following table, the main characteristics of the model have been studied:

Table 9. Main features of the regression model

Feature	Value	Result
PROB F-STAT	.000	Good fitness of model
Durbin -Watson	1.89	No probability of consecutive self-correlation

Considering the model estimation which was mentioned earlier, volatility of cash flows has a significant and positive effect on current investments. Therefore, main research hypothesis is confirmed. In the following, secondary research hypotheses will be tested.

Table 10. Estimation results for secondary research hypotheses (dependent variable: I)

Variable	Coefficient	t-value	P-value	Total regression model		
				F-stat	PROB	DW
Intercept	0.67	56.24	.000			
CFV (companies with positive growth)	4.88	3.54	0.001	9.7	.000	1.88
SIZE	-0.002	-4.87	.000			
AGE	-2.08	-64.46	.000			
D/E	7.05	14.32	.000			

Table 11. Results of estimation for secondary research hypotheses (dependent variable: I)

Variable	Coefficient	t-value	P-value	Total regression model		
				F-stat	PROB	DW
Intercept	0.67	55.16	.000			
CFV (companies with positive growth)	1.02	5.23	.000	9.63	.000	1.85
SIZE	-0.002	-4.95	.000			
AGE	-2.08	-63.12	.000			
D/E	7.51	3.75	.000			

The effect of *CFV* on *I* in companies with positive growth is much more than the same effect on companies with negative growth. Therefore, all secondary research hypotheses are confirmed and it can be said that:

1. In companies with positive growth, there is a significant relationship between cash flow volatility with current investments.

2. In companies with negative growth, there is a significant relationship between cash flows volatility with current investments.

3. There is a significant different between the relationship between cash flows volatility with current investments in companies with negative growth of cash flows and the same relationship in companies with positive cash flows growth.

5. CONCLUSION

Investment is one of the important issues in financial economic as well the most important factors in solving economic problems (Hirth & Viswanatha, 2010). Also, Introduction Standard corporate finance literature argues that corporate investment will be sensitive to internal cash flow availability (Fazzari, Hubbard, & Petersen, 1988; Kaplan & Zingales, 1997, 2000; Harris & Raviv, 1990; Stulz, 1990; Hart & Moore, 1995; Zwiebel,1996 and Cleary, 1999). In a rational framework, the causes of such sensitivity can be reduced to information asymmetry problems (Mayers & Majluf, 1984) and agency costs (Jensen & William, 1976, and Jensen, 1986; Mohamed, Fairchild and Bouria, 2014).

Modigliani & Miller (1958) state that in perfect markets (markets without agency problems and information asymmetry), investment decisions and financing in companies are independent from one another. However, in case of not having perfect markets, external and internal fund resources cannot replace one another.

In Iran, a large part of problems companies are facing with are related to financing for their working capital or in other words, investment in current assets. In the other hand, ability and accessibility of every unit for profit to cash flow is the basis of so many decisions and judgments about that unit. In other words, information related to the input and output flow of cash flow in a unit for profit is the basis of so many decisions and judgments of financial information users. Hence, the effect of financial limitations on the relationship between volatilities of cash flows of a company has a great significance for investors in different companies.

In this study we explored the effect of cash flows volatility on current investments in companies listed on Tehran Stock Exchange and results obtained from the study indicate that cash flows volatilities have a positive and significant relationship with current investments of companies. Also, this relationship has been tested in two groups of companies with positive growth and negative growth in cash flows. Findings indicate that in each of these groups also there is a significant relationship between cash flows volatilities and current investments of companies, while, the size of this relationship is larger for companies with positive growth.

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