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The Effect of the Cash Flow Sensitivity to Institutional Ownership on the Level of the Companies' Cash Holding in Iran

Amir Rahmani[1*], Vahab Rostami[2], Behzad Ghorbani[1]
[1]Department of Accounting, Takestan Branch, Islamic Azad University, Takestan, Iran;
[2]Department of Economics and Social Science, Payame Noor University, Tehran, Iran
*E-mail: vahab.rostami@gmail.com

Abstract

The main purpose of this study is to study the influence of the cash flow sensitivity to the institutional ownership on the level of cash holding among listed companies in Tehran Stock Exchange. Accordingly, to test the research hypotheses, financial data of 69 companies which published their financial statements during a five years period 2008-2012, were selected by using the systematic classified sampling. The variation of cash in the current year to the previous year was used as cash flow and level of the cash holding upon the past study of Bao et al. (2012). The selected approach was based on the mixing of the modulated data and the regression method of the merged least squares. The results from the research hypothesis test shows that the sensitivity of the cash flow to the institutional ownership has a reverse effect on the variations of the level of cash holding.

Keywords: Sensitivity of the cash flow, Institutional Ownership, Cash holding, Combined data.

Introduction

The way internal fund used, is considered an important decision to be made in settling the dispute between shareholders and managers. When the company is developing, cash reserve increases, and the managers shall decide whether to distribute the cash among the shareholders, use it for internal expenditures, spend it on external goals or just keep it by the company? The ways the managers seek to maintain their self-interest and choose either to hold the cash or consume it are an ambiguous topic. The managers must choose whether to achieve their own interests by spending the ordinal expenditure or achieve sufficient flexibility by holding the cash. Moreover, the profit-seeking managers must consider the probability of enhancement of their interests in comparison to the expenses caused from holding a high amount of cash. The cash flow plays an important role in a lot of financial decisions, securities valuation models and methods through which the investment plans are evaluated. The managers look for best condition of cash holding based on its advantages and disadvantages. The personal interests of the managers make them hold a high amount of cash which consequently reduces the shareholders' wealth. Indeed, cash holding may enable the companies not to use expensive external finances for the oncoming investment opportunities. When the cost of a wrong decision in regard with using an external fund, or that of the financial crises proves higher, the companies try to retain a high amount of cash in order to resist unexpected cash shortages while they may also choose to provide funds of positive net values for the company (Ozkan & Ozkan 2004). On the other hand, evidently, companies have different structures. A certain part of the companies' ownership is kept by a minority of shareholders while institutional shareholders have the other part of ownership in their possession. The institutional owners are professional investors with long-term goals. Considering both their share of investment and their dominance, they supervise over the managerial performance. This condition- instead of focusing on

short-term objectives- leads to the long-term maximization of the company's value (Bao et al. 2000). Therefore, considering the importance of cash flow for the institutional owners of companies, and considering the fact that it is one of the major indexes in the financial markets according to which the organizational improvement in the stock markets is assessed, this study investigates the significance of the cash flow sensitivity for the institutional owners in companies listed in Tehran Stock Exchange. Accordingly, the main point addressed by the research is to find a clear answer to this question: "Does the significance of the cash flow Sensitivity to the institutional owners affect the levels of companies' cash holding or not?"

Literature review and the research background

One of the significant mechanisms of the external control that influences the way a company is governed is the conversion of institutional investors into company owners. According to the definition presented by Bushee (1998), the institutional investors are large investors such as banks, insurance companies, investment companies, etc. He maintains that the institutional investors control the company through collecting information and by judging managerial decision implicitly; and through evaluating the manner of the company's performance explicitly. In other words, the institutional investors have certain right to have influence on and to control managers and whether they apply their powers to supervise over the managers' performance or not, are determined by level of their ownership. Considering the significance of cash sufficiency for various economic conditions and since it is necessary for companies to enhance their financial capacity , the managers are required to define the scope of their authority in controlling the cash, just as they are required to study the factors that affect cash holding.

Accordingly, the sensitivity of the cash flow implies fluctuation of cash-holding which corresponds to the cash flow fluctuations. In other words, the size of the cash reserves of a company must be determined proportionally to the cash flows resulted from its operational activities. As a result, the amount of cash reservation is termed as the sensitivity of the cash flow. A company with more problems in having access to external capital market resources, supplies further proportion of its required financial resources internally. In order to determine the optimal amount of cash to be held and to actualize the destination cash flow in addition to the cash accessible at the beginning of the period, the managers pay attention to the factors mentioned in their plans in order to make a proper decision. Moreover, since the existing cash balance makes the considerable part of the company's assets, it seems necessary to investigate the significance of the cash flow for the institutional owners and on the level of cash holding.

Investigating the relation exists between the positive / negative cash flows and the level of cash holding, implies that, when being exposed to positive and negative flows of cash, companies tend to adjust the amount of cash that they hold. Accordingly, Riddick et al. (2009) demonstrated that there is a negative relation between the cash flows fluctuation and the amount of the held cash. In other words, when a company's cash flow is positive, cash holding variation is negative. On the other hand, if a company faces a negative cash flow, the variations in the retained cash will be positive.

Almeida et al. (2004), in their study, conducted on "the cash flow sensitivity of the cash" explored the relation between the operational cash flow and the cash reserves, from 1971 to 2000 in the New York Stock Exchange. The main goal was to make a comparison between "the cash flow sensitivity of the cash holding" and "the cash flow sensitivity of investment". The results revealed that the cash flow sensitivity of cash holding is a more suitable criterion to identify the financial constraints.

Harford et al. (2008) conducted a study to reveal the relation between cash holding and the company's corporate governance structure. The results proved that the companies with more internal ownership and higher percentage of institutional ownership hold higher cash amounts.

Huang et al. (2011) studied the influence of the managers' self-confidence on the sensitivity of the investment and cash flows along with investigating the effect of the costs of the agency on the mentioned relation. The results from this study demonstrated that in average, it's the managers' over-confident approach that causes an increase in the sensitivity of investment – cash flows and in companies where the cost of agency is higher this sensitivity is considerably higher.

Gill and Charul (2012) studies the determinant factors of cash in Canada. The results exhibit that there is a positive correlation between the amount of cash holding and cash conversion cycle, financial leverage and the board size, while it was revealed to have a negative correlation with the working capital.

Al-Najjar (2013) studied the cash holding of companies in some developing countries. In this regard, the influence of the capital structure and the dividend policy on cash holding of the sample companies which included 1992 companies from Russia, India and China were investigated, from 2002 to 2008 and the results were compared to those of the U.K and the Unites States' companies. The results revealed that the capital structure and the dividend payment policy have a significant influence on cash holding in those companies in which the minority shares the held cash. Moreover, it revealed a similarity between the determinant factors of cash holding in those are developing and developed countries.

Gracia and Mira (2014) investigated the importance of external financing of the cash flow in companies with and without financial constraint. The results revealed that the importance of the cash flow in external financing acts as an inverse proxy among the companies with and without financial constraint.

Research Hypothesis development

The present research has been conducted based on the importance of cash flow for the institutional owners and the variations of the level of cash holding in the newly emerging stock market of Iran. It is expected to justify the shareholders' behavior and their method of dealing with cash sensitivity as far as the companies' institutional owners are concerned and the strategies made in regard with cash holding. The research hypothesis is stated as follows:

The sensitivity of the cash flow to institutional owners of the sample companies affects the levels of cash holding of those companies.

Research Methodology

The research is conducted based on Descriptive – Ex post facto method which investigates the cash flow sensitivity to the institutional ownership and the impact it has on the level of cash holding in companies listed in Tehran Stock Exchange. In order to test the research hypothesis, Multi variant Linear Regression was used based on the data achieved both from sectional study and time series and econometric and statistical methods used to determine the correlation between the research variables. The statistical society of included all companies listed in Tehran Stock Exchange. Aiming at generalization of the research findings to all other companies listed in Tehran stock markets, the systematic elimination sampling method was applied. The previous studies were also reviewed with the intention of eliminating intervening variables. The elected sample companies were from industries with sufficient members and with manner similar to those of the companies listed in Tehran stock exchange. Ultimately, the statistical sample - in the period along 2008to 2012- contained those companies with the following condition:

- The fiscal year of the company ends on the 31thDecember
- The companies who were listed in Tehran Stock Exchange before 2008 and their shares are traded.
- The companies do not have any change in their fiscal year during the study period and their required information to test hypostasis is accessible.
- The company's operation is of manufacturing type and the companies are not neither Bank nor financial institutions, investment companies, insurance companies nor Holdings, nor Leasing, because the manner of financial reporting of their incomes and costs are different.
- Within a deadline to be profitable without any operational losses.

Considering the criteria mentioned in selecting statistical society, following to considering such limitations, 69 companies active between 2008 to 2012 were selected based on systematic classified sampling method and were considered as the statistical samples. Considering the fact that the study had a time limit of 5 years, the total observations equals actually 345 year – company.

To collect the information, library method was applied. The information required to prove the research hypothesis was collected through financial statements of the companies that exist in the statistical society and were gathered from the financial statements accessible in the database and website of Tehran Stock Exchange. To analyze the data, the Eview7 software was used.

Hypothesis testing Model

As was with the study conducted by Bao et al. (2012), here, to test the hypothesis and to analyze the data, the following regression equations were used:

$$\Delta CashHoldings_{i,t} = \alpha_0 + \alpha_1 CashFlow_{i,t} + \alpha_2 Inst_{i,t} + \alpha_3 CashFlow_{i,t} * Inst_{i,t} + \alpha_4 Q_{i,t} + \alpha_5 Size_{i,t} + \alpha_6 Expenditure_{i,t} + \alpha_7 \Delta Ncwc_{i,t} + \alpha_8 ShortDebt_{i,t-1} + \text{Ɛ}$$

Where:

$\Delta CashHoldings_{i,t}$:Fluctuation of cash holding in company i , for period "t"

$CashFlow_{i,t}$: Cash flow of company I, for period "t"

$Inst_{i,t}$: Institutional ownership of company i for period t

$Q_{i,t}$: Tobin's Q ratio

$Size_{i,t}$: the size of the company i for the period t

$Expenditure_{i,t}$: the capital expenses of the company i for the period t

$\Delta Ncwc_{i,t}$: the net variations of the non-cash working capital of the company i for the period t

$ShortDebt_{i,t-1}$: The short-term debt of the company i for the period t

Ɛ: The estimation error

In the above models, the significance and positive(negative) α coefficients imply that when the sensitivity of the cash flow increases (or decreases) for the institutional ownership, the fluctuation of holding cash will be increased (or decreased) by the company.

Research variables and Measurement Methods

Variations of cash holding ($\Delta CashHolding$) : The variations cash holding is considered here as a dependent variable. In order to measure this variable, the cash of the previous year (t-1) was deducted from the cash in the current year (t) and the product was divided by the total assets at the end of the period. This was deployed in all similar previous researches as well (Riddick, Whited 2009).

The cash flow: The cash flow is considered as independent variable in this research. To measure it, the net value of the cash flow obtained due to the operational activities is divided by all assets at the end of the period. This is the same as what was done in all similar previous researches.

Method of Calculating Institutional Ownership

The institutional ownership is considered as an independent variable. In order to measure it, the double-value variable used in previous research (Riddick, Whited 2009) was applied here. So, it equals to 1 if the company which is the subject of this study has an institutional ownership, while otherwise, it will be 0.

Such calculations can be used in regard with all research variables and samples. Table 1 presents the summary of research variables and the manner of computing them.

Table 1: Research variables and their measurement

Variables	Symbol	Variable Type	Calculation method	Refrance
Cash Holding Fluctuation	ΔCashHolding	Dependant	The cash in the current year (t) minus the cash in the previous year (t-1) divided by the total assets of end of the period	Riddick& Whited (2009)
The cash flow	CashFlow	Independent	The net value of the cash flow due to the operational activities divided by the sum of all the assets related to the end of the period	Dechow et al(1995) Yang (1999) Bauwhede et al.(2003) Bao et al. (2012) Almeida et al.(2004)
The institutional ownership	Inst	Independent	If the studied company has the institutional ownership equals 1 otherwise equals to 0.	Riddick and Whited (2009) Bao et al. (2012)
Tobin's Q	Q	Control	The total of the value of the dividends of the shareowners and book value of the assets minus the book value of the dividends of the shareowners divided by the book value of the assets	Almeida et al.(2004) Chan et al. (2012)
The company's size	Size	Control	The natural logarithm of the summation of the assets corresponding to the end of the period	Almeida et al.(2004) Gerayli et al. (2011)
The capital expenses	Expenditure	Control	The company's capital expenses divided by the summation of the assets corresponding to the end of the period	Almeida et al.(2004) Zhang et al.(2012)
The net variations in the non-cash working capitals	ΔNcwc	Control	Non-cash working capital of the year t minus the non-cash working capital of the year t-1 divided by the total assets	Almeida et al.(2004) Bao et al. (2012)
The short-term debts	ShortDebt	Control	The summation of the current debts of the beginning of the period divided the total assets of the beginning of the period	Almeida et al. (2004) Chan et al. (2012)

Research Findings

Descriptive Statistics

The research data is a mixture of timed and sectional series of a 5 year period of the research, the number of the year – company and they are based on the balanced combined data. The study includes 345 observations. To reveal the manner of the research data, their descriptive statistics are presented in table 2.

Table 2: The descriptive indices of the research variables

Variable	N	Mean	MD	Max	Min	SD
ΔCashHolding	345	0.004291	0.002000	0.197100	-0.158100	0.031898
CashFlow	345	0.143577	0.124600	0.651700	-0.282700	0.139471
Inst	345	0.359420	0.00000	0.981257	0.000000	0.480527
Q	345	1.509874	1.313400	4.366800	0.798900	0.586179
Size	345	13.58332	13.42030	18.54967	11.58970	1.208369
Expenditure	345	14.35257	14.00115	19.24585	11.76492	1.626423
ΔNcwc	345	0.022296	0.005043	0.743248	-0.268808	0.022296
ShortDebt	345	0.421531	0.435738	0.816354	0.142941	0.168163

Considering table 2, the descriptive indexes of the research variables demonstrate that the descriptive analysis of "cash holding fluctuation" as a variable , have 345 observations, exhibit that the minimum is -0.158100 and the maximum is 0.197100 which mean 0.004291 with the standard deviation of 0.031898. Furthermore, for all of research variables specified above, these descriptions can be provided.

Normality Test of the Data

One of the most important assumptions of the linear regression is that used data be normal. In this study, to test the normality of the data, the residual expressions have been used based on the computations of Eviews software. In this regard, the "Jarque - Bera" test at 0.95 confidence level was applied. The diagram (1) demonstrates normality of the distribution of the residual regression expressions.

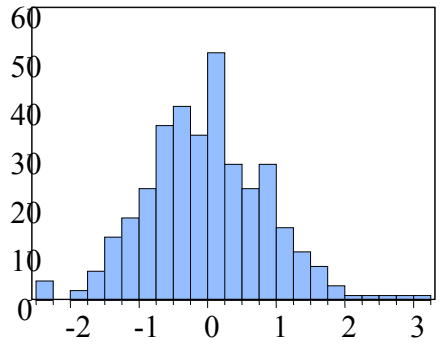

Figure 1: Results of the normality test of the residual parts

The test results show that the probability of the Jarque – Bera statistic is equal to 0.052653 which is greater than 0.05. Thus, the residual regression expressions are normally distributed. Therefore, one of the main presumptions in using regression models is correct and the achieved results are reliable.

Colinearity Test

One of the indices important in studying linear dependency between the independent variables is the Tolerance test. The smaller tolerance (near zero) indicates that the information is less and certain problems can occur in the application of regression and if it is lower than 0.01 then there is a serious issue between the involved variables in the research regression model. Of course, one can also use other indexes such as the Variance Inflation Factor (VIF) to identify the multi aspect co-linearity. The minimum value that the VIF can take is 1 and this when there is not co linearity between the independent variables. In table 3, the results presented corresponding to the co-linearity investigation between the independent variables of the research.

Table 3: The co-linearity between the independent research variables

Variable	Tolerance	VIF
CashFlow	0.647	1.545
Inst	0.967	1.034
Q	0.635	1.575
Size	0.762	1.278
Expenditure	0.818	1.222
ΔNcwc	0.999	1.001
ShortDebt	0.756	1.323

Considering the above tests results, it was observed that the VIF statistic is a bit higher than 1 which exhibits weak co-linearity. In one hand, this value is located within the optimized default interval with 1 as its minimum and with a maximum less than 5. Generally, this demonstrates the lack of co-linearity between the independent variables in the regression models. Moreover, the amount of the tolerance statistic is greater than 0.4, and not close to zero, which implies that we should accept the absence of co-linearity.

Testing Homogeneity of Variance

Another default assumption of the linear regression model was that the residual expressions have homogenous variance. Amongst the numerous methods to discover heteroscedasticity in this research the Bartlett test has been applied.

Table 4: The results of dissimilarity test

Test name	Test statistic	(df)	(Prob)	test result
Bartlett	0.887476	3	0.2739	heteroscedasticity doesnot exist

The obtained results demonstrate that, considering the level of significance in this test which is higher than the error 0f 0.05, thus it exhibits the homogeneity of variance and it was observed that the heteroscedasticity does not exist.

Stability of the Research Variables

Prior to estimating of the model, the stability of the variables should be studied. The stability means that the average and the variance of the variables in time and the covariance of the variables in various years have been constant. The stability test is an important test conducted to estimate the regression with reliable coefficients. To determine the paneled data, different tests can be applied. To study the variables stability, “Levin, Lin & Chu test” has been deployed. The test findings demonstrate that all research variables have been stable at the error level of 0.05 throughout the research. Thus, it can be inferred that the results obtained from the statistical method of the regression models are reliable.

Table 5: The stability test results of the research variables

Variables	The Levin, Lin & Chu (LLCH) statistic	(LLCH) probability
ΔCashHolding	-33/0347	0.000
CashFlow	-17.7623	0.000
Q	-74.04	0.00
Inst	-2.15283	0.000
Size	-14.8900	0.000
Expenditure	-116.223	0.000
ΔNcwc	-30.0768	0.000
ShortDebt	-11.8458	0.000

Model Identification Test

The statistical information of the present research is a mixture of the local and time series. Therefore, considering the mixed nature of the research data, initially the F-Limer test is applied to select the suitable estimating model from the two approaches of Pooling and Panel. The H_0 hypothesis of this test implies that the investigated cross-sections are not non-homogenous and that it is more proper to use pooling data. Table 6 shows the findings of model identification test and the suitable model selection.

Table 6. Findings of model identification test

Model 1				
Test type	Test statistic	df	(Prob)	The test result
F-Limer (Cross-section F)	0.797349	(68 , 268)	0.8670	Using the pooling data

The model identification test results demonstrate that the probability of the F test statistic is 0.86670 and is larger than the error level 0.5. Therefore the results from this test reveal that the studied cross-sections are homogenous and there are not enough reasons to decline hypothesis H_0 and thus using the data pooling method is more suitable.

Results of Hypothesis Test

Table 7: The coefficients and the regression model estimation of the research hypothesis

variables	Symbol	Coefficients	Statistic t	probability
constant coefficient	C	-0.052241	-2.128029	0.0241
cash flow	CashFlow	0.065547	3.551722	0.0004
institutional ownership	Inst	0.007591	1.486448	0.1381
sensitivity of the cash flow to the institutional ownership	CashFlow*Inst	-0.060115	-2.451227	0.0147
Tobin's Q	Q	0.0027768	1.038243	0.2999
company's size	Size	0.002462	1.555082	0.1209
capital expenses	Expenditure	-0.111409	-1.070755	0.2850
net variations of the non-cash working capital	ΔNcwc	-0.642709	-0.301427	0.7623
short-term debts	ShortDebt	0.020280	1.746593	0.0816
R^2	adjusted R^2	Durbin – Watson	F statistic	F probability
0.059276	0.026980	2.452546	2.651220	0.007844

After investigation of the identification of the optimized model and the selection of the estimative regression research model using the method of data pooling, the estimation results and the linear regression test of the research hypothesis are presented in table 7.

The test of the significance of the research regression model

In addition to the classic assumptions of the linear regression, for the significance of the whole regression which is one of the main assumptions for using the regression, the F test has been used. Considering the results obtained in the above table, it is observed that the probability value of the F statistic is 0.007844 which is less than the error level 0.05 and it indicates the significance of the research regression model and exhibits that the model is significant with 95 % reliability. In this regard, the adjusted determinant coefficient R^2 of the research regression model reveals the amount of correspondence between the independent and dependent variables. According to the results from the above table, the adjusted determinant coefficient is 0.036980 and this demonstrates that the variations of the dependent variables are not defined well by the independent variables included in the regression model template of the research almost 3% of the variations of the dependent variable is described by the independent research variables which is weak.

The observation independence test

The results from studying the autocorrelation between the research variables reveal that the value of the Durbin – Watson statistic equals 2.452546 which exhibit the relative independence and non-autocorrelation of the research variables. Moreover, this value is between the upper bound and its difference from 4 (according to the table of Durbin – Watson) which suggests that there is no problem of autocorrelation between the residuals.

The result of the research hypothesis test

Hypothesis: The sensitivity of the cash flow to the institutional ownership has influence on the variations of the level of holding cash.

To investigate the significance of the correlation coefficient between the response variable (dependent) and independent variables in the research regression model from the t statistic at the error level of 0.05 was used. The results obtained from this test on the table 3 exhibit that the correlation coefficient of the cash flow in the estimated regression model is significant at a 95% level. In this regard, the coefficient corresponding to the significance of the sensitivity of the cash flow to the institutional ownership (α_3) equals -0.060115 and the value of the t statistic equals -2.451327 which with reliability of 95% is positioned in the region of assumption decline that it exhibits its significance and the obtained level of significance is equal 0.0147 and because this value is smaller than the error level 0.05, therefore the test hypothesis H_0 is rejected and the research hypothesis is confirmed. In other words, the sensitivity of the cash flow to the institutional ownership has influence upon the variations of holding cash. On the other hand, because the Coefficient related to the significance between these two variables is negative ($\alpha_3 = -0.060115$) therefore the sensitivity of the cash flow to the institutional ownership has a reverse effect upon the variations of the level of cash holding. This means that with an increase of the sensitivity of the cash flow to the institutional ownership, the variations of the levels of holding cash decreases.

The effect of controlling variables on the variations of the level of holding cash in the research regression model

Considering the test results, it can be observed that because the relative significance level between the control variables and the dependent variable is higher than the error level of 0.05, therefore none of the control variables included in the research regression model at a 0.95 reliability level has no influence on the level of holding cash.

Conclusion

Considering the fact that the main objective of this study was to investigate the effect of the sensitivity of the cash to the institutional ownership on the level of holding cash regarding the companies that have been listed in Tehran Stock Exchange, the influence of the sensitivity of the cash flow with the consideration of the size of the institutional investors is confirmed.

The findings from the research hypothesis demonstrate that the sensitivity of the cash flow to the institutional ownership has an inverse influence on the variations of cash-holding. This finding is in conformance with the results from the research of Bao et al. (2012) who had shown that there is a significant relation between the sensitivity of the cash flow to the institutional ownership and the variations of the levels of cash-holding. Therefore, the point that can be retrieved from the findings due to the research hypothesis is that it seems that according to the existing theories and considering the obtained results, by effective supervision the institutional investors can prevent the company from accumulating cash which the results of the this research validates it. Thus the alteration in the sensitivity of the cash flow to the proportion of the institutional investors, justifies the variations in the level of cash holding in the companies listed in Tehran Stock Exchange which demonstrates that with the increase of one, the other decreases and their relation is inverse.

Recommendations

The findings of the present study imply that the criticality of cash flows in Tehran Stock Exchange acts as a reveres proxy as far as cash retain is concerned. It has been observed that companies whose cash flows shows sensitivity towards institutional ownership, have encountered to hold low levels of cash and this is not considered good news for such companies because they may face cash shortage when facing with bankruptcy condition. Thus, financial managers and investors who deal with the capital market are recommended to consider this case when analyzing the status of companies especially those who face loss.

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