

The Effect of Competition on Relation of Corporate Governance Parameters and Cash Holding Level

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Abstract: In companies with weak supervision mechanisms, managers have incentives and opportunities in order to use company resources for their own benefits paid by stake holders. In this situation due to its high liquidity, company's cash, faces a high risk of misuse and views being imposed by managers such as expansionism, providing compensations and welfare benefits and other resource wasting activities. The main objective of this research is to focus on the level of competitiveness in product markets, as an indicator of corporate governance and examining its effect on cash holding policies by public corporate managers. The research period is 5 consecutive years from 2006 to 2010 and the research statistical sample is consists 102 of companies enlisted in Tehran stock exchange. In the main hypotheses of the current research, it is asserted that comparing with other companies, there is a weak relationship between corporate governance mechanisms and cash holding level in companies with high competitive power in product market. Results show that claims are only objective about of board independency and expected results of institutional ownership mechanisms and the size of board was not verified. In general, it seems that the competition in product market has had a great effect in consolidation of monitoring and controlling role of board and specifically it has prevented the company from cash excess.

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1. Introduction

Product Market Competition (PMC) is considered as one of the mechanisms of corporate governance. In fact, managers of corporations acting in more competitive environments are less likely to spend corporate cash to reach their self-benefiting objectives. It is argued that holding cash reserves in corporations is goal-oriented and based on the management's objectives. In this regard, corporations need cash to finance new projects, pay stakeholders in cash, to fulfill their commitments, etc. Therefore, it appears that cash balance is a basis and criterion for cash reserves holding policies, since the balance has been reserved according to the will and intention of the management to be used for their intended spending. With respect to the evidences which exist on the relationship between the mechanisms of corporate governance and cash holdings policies, it is expected that corporations with high levels of corporate governance mechanisms hold less cash reserves. In addition, it seems that competition factor in product market can be a suitable and powerful alternative for corporate governance mechanisms to encounter cash flow related agency problems. Jensen (1986) was the first one to analyze this problem within the framework of his well-known theory. He considered the costs resulted from surplus cash

balance as the costs invested for the projects with a negative net present value. To Jensen, managers of firms with high excess cash and slow growth try to meet their short-term interests through improper investment of cash flows [12].

Evidence shows that governance mechanisms potentially provoke some changes in cash-holding policies. In the present research, the features of the relationship between PMC and corporate governance will be quantified effectively using some criteria which are simple yet suitable for the Iranian capital market. Development of theoretical foundations of measurement and quantification of managerial forecasts is one of the research rationales.

Cash management of a corporation depends on the demand for cash. Cash management aims to maximize the wealth of stakeholders through limiting cash levels in the corporation. Cash should be held at a level that allows for a balance between cash holdings cost and the cost of insufficient cash. In addition, cash management affects the value of a corporation, because cash investment levels require increase of other costs, which are under the influence of level of net working capital. Both the increase and decrease of net working capital require a balance of

free cash flow in the future and, in turn, changes in corporation valuation. [12]

The competitive pressures of product market force corporations to minimize production cost and improve productivity. If a corporation fails to adjust its operational activities on this basis, it will be excluded from the competitive market. Therefore, PMC can be considered as one of the mechanisms of corporate governance. In fact, managers of corporations acting in more competitive environments are less likely to spend corporate cash to reach their self-benefiting objectives. It is argued that holding cash reserves in corporations is goal-oriented and based on the management's objectives. In this regard, corporations need cash to finance new projects, pay stakeholders in cash, fulfill their commitments, etc. Therefore, it appears that cash balance is a basis and criterion for cash reserves policies, since the balance has been reserved according to the will and intention of a manager to use for their intended spending. With respect to the evidences which exist on the relationship between the mechanisms of corporate governance and cash holdings policies, it is expected that corporations with high levels of corporate governance mechanisms hold less cash reserves. In addition, it seems that competition factor in product market can be a suitable and powerful alternative for corporate governance mechanisms to encounter cash flow related agency problems. On the other hand, it seems that the level of optimum investment and corporation's operational efficiency is a function of the cash management in the corporation. This research focuses on the effect and level of competition as an index of corporate governance, and the study of its effect on cash holdings policies made by corporate managers of stock companies as part of the information which plays a key role in illustrating corporation's vision for investors. It also discusses the effect of different features of these forecasts on cash holdings policy of the companies listed in Tehran Stock Exchange. The main question of the research is that whether the relationship between the mechanisms of corporate governance and the level of cash holdings in corporations with a high competitive power in product market is weaker as compared with that of other corporations.

2. Literature Review

Opler et al. (1999) studied the factors influencing the cash balance of corporations in the United States for the period 1971–1994 and realized that the corporations with higher growth opportunities and cash flows with higher risk hold more cash than total non-cash assets [11]. Ozkan

(2004) studied a sample of English corporations during 1984–1999 and showed particularly that there is a significant relationship between the level of corporate ownership by management and the amount of cash holdings of a corporation. He also showed that, generally, growth opportunities, cash flows, liquid assets, financial leverage, and bank liabilities are important factors in determining a corporation's cash holdings [8]. Lee (2009) stated that if the board of directors plays the role of corporate governance, it is forecasted that corporations with stronger managerial structures (higher percentage of unaffiliated (outside) members in the board, etc.) will have lower cash holdings after controlling other factors. The analyses were started with a test of the relationship among cash holdings, the structure of the board of directors, and managerial ownership structure. After controlling other determinants of cash holdings, it was concluded that corporations with more share of non-executive managers in the board of directors, separate general manager and chief of the board positions, and smaller the board of directors have less cash holdings [9].

Harford et al. (2008) proved that corporations with more domestic ownership and more percentage of institutional ownership have more cash holdings, whereas corporations with higher quality of corporate governance and larger and more independent the board of directors have less cash holdings. Izadinia and Rasaeian (2010) studied the relationship of some of the mechanisms of corporate governance, including the percentage of unaffiliated members of the board of directors and Q-Tobin to the percentage of institutional investors, and the level of cash holdings as independent variables and as the criterion of corporation value, and the dependant variable in Tehran Stock Exchange. The results of the research indicate that there is a positive and significant relationship between ownership percentage of institutional investors and the value of the companies listed in Tehran Stock Exchange; however, there is no significant relationship between the percentage of unaffiliated members of the board of directors and the value of the companies listed in Tehran Stock Exchange. The level of cash holdings has also a positive and significant relationship with value of the companies listed in Tehran Stock Exchange [2].

PMC, as an external mechanism, may lead to a change in the behavior of stock companies with respect to determining the policies of current assets management. Whereas, conducting research on this variable is an issue which has not been discussed much in earlier studies, especially in Iran. One of the requirements of the present research is applying some

criteria to measure competition in the product market of the sample corporations to promote theoretical foundation of the issue. In addition, studying PMC as a factor of corporate governance through explaining its effects on cash holdings is another requirement of the research. This research uses the framework presented by Alchian (1950), Stigler (1958), Fama and Jensen (1993), and Hart (1983) to evaluate how the differences in the characteristics of forecasting management benefit affect the corporations' capital cost. The framework of Alimo (2010) is based on the principle that there is a significant relationship between corporate governance and the level of cash holdings of corporations acting in competitive environments. These researchers point out that extra cash leaves adverse effect on the efficiency of corporations.

3. Research Hypotheses

Primary Hypothesis: The relationship between the features of corporate governance and the level of cash holdings in highly competitive corporations in product market is weaker as compared with that of other corporations.

Secondary hypothesis (1): The relationship between the percentage of institutional ownership and the level of cash holdings in highly competitive corporations in product market is weaker as compared with that of other corporations.

Secondary hypothesis (2): The relationship between the size of the board of directors and the level of cash holdings in highly competitive corporations in product market is weaker as compared with that of other companies.

Secondary hypothesis (3): The relationship between the independence of the board of directors and the level of cash holdings in highly competitive corporations in product market is weaker as compared with that of other corporations.

4. Research Method

4.1. Dependent Variable

Dependent variable of the present research is the cash balance of the sample corporations which reflects the policies of the managers of these corporations regarding the required cash reserves for the intended activities. In this research, cash balance is defined as cash and deposits in banks which are extracted from the audited balance sheet of the sample corporations.

4.2. Independent Variables

The independent variables of the present research include corporate governance criteria and PMC. Earlier studies has considered a group of factors as the mechanisms of corporate governance,

which are mainly based on the policies of the company's governing body and are considered as the governance internal mechanisms. Based on this and following Ditmar et al. (2003), two major and common factors of corporate governance are considered as follows:

4.2.1. Control and Ownership Factors (Percentage of Institutional Ownership)

With this respect, the percentage of the share of institutional stakeholders in each corporation is studied. To measure this variable, the number of shares of institutional stakeholders is divided into the total shares issued by the corporation. Institutional stakeholders are institutes such as insurance companies, banks or investing corporations which are able to own a major part of a stock company due to having major financial resources and to gain governance power due to having high levels of voting right. Therefore, an institutional stakeholder is considered as the largest stakeholder of each company. The governance of this group of stakeholders is realized not only through the power they exercise in decision-making in assemblies and electing the board of directors, but also through taking a monitoring role, as the institutional nature provides them with special monitoring tools which enables them to put a manager under pressure to achieve their objectives.

4.2.2. Corporate Governance Factor (Size and Independence of the board of directors)

Here, the size and independence of the board of directors are considered. In stock companies, the board of directors is elected by stakeholders to manage the corporation. The strategies of the board and their governance procedures play a major role in the success or failure of enterprises. The number of board members is considered to estimate its size. In addition, to standardize this variable and to include it in a regression model, following is employed:

$$Bsize = Ln(1 + BoardNumber)$$

The nature and role of each member of the board of directors are considered to quantify the independence of the board of directors. On this basis, the ratio of the number of unaffiliated members of the board to the affiliated members is considered as a criterion for its independence. The more the ratio is, the more the independence of the board of directors would be, because the unaffiliated members have a monitoring role over the rest of members [5]. PMC is the second factor of the independent variables:

Due to increasingly complex business environment, growth in the number of producers of a certain product, expansion of corporate advertising

policies, gaining success in business environment requires application of special competitive procedures by managers. The pressures caused by PMC potentially influence the decisions of stock companies' managers and they are required to react against such pressures, as these reactions determine their survival or exclusion from the field of competition. In the present research, PMC is considered as an external corporate governance mechanism and the criterion of Price Cost Margin is used to measure it. This criterion is calculated by Lerner index, which was used by Aghion et al. (2005) as follows:

$$PCM = \frac{Sales - TotalCost}{Sales}$$

Where Sales is "sales price" and TotalCost is "the total cost of goods or services" (Alimo, 2010).

For this purpose, the virtual variable of D-PCM is defined and the mean of PMC of all the sample corporations is used to divide them into highly and less competitive companies.

Hypotheses Testing Method: To test hypotheses, regression models are used in which cash balance is a function of corporate governance mechanism and control variables. These models are derived from the studies of Opler et al. (1999) and Alimo (2010) and are as follows:

4.3. Research Models

Model No (1) is used as follows to test the first hypothesis:

Model (1):

Cash_{i,t} = β₀ + β₁ INST_{i,t} + β₂D-INST + β₃PCM_{i,t} + β₄D-PCM_{i,t} + β₅ D-PCM*PCM_{i,t} + β₆D-PCM*INST_{i,t} + β₇ D-PCM* D-INST_{i,t} + β₈Size_{i,t} + β₉Lev_{i,t} + β₁₀CF_{i,t} + β₁₁ NWC_{i,t} + ε_{i,t}

In above regression model, coefficients β₁ and β₂ show the relationship between institutional ownership and the level of cash holdings, coefficients β₃ and β₄ show the relationship between PMC and the level of cash holdings, and coefficients β₆ and β₇ show the relationship between institutional ownership and the level of cash holdings in highly competitive corporations in PMC.

Model (2):

Cash_{i,t} = β₀ + β₁ Bsize_{i,t} + β₂D- Bsize + β₃PCM_{i,t} + β₄D-PCM_{i,t} + β₅ D-PCM*PCM_{i,t} + β₆D-PCM*Bsize_{i,t} + β₇ D-PCM* D- Bsize_{i,t} + β₈Size_{i,t} + β₉Lev_{i,t} + β₁₀CF_{i,t} + β₁₁ NWC_{i,t} + ε_{i,t}

In above regression model, coefficients β₁ and β₂ show the relationship between size of the board of directors and the level of cash holdings, coefficients β₃ and β₄ show the relationship between PMC and the level of cash holdings, and coefficients β₆ and β₇ show the relationship between size of the

board of directors and the level of cash holdings in highly competitive corporations in product market. Coefficients β₈ and β₁₂ show the relationship between control variables and the level of cash holdings.

Model (3):

Cash_{i,t} = β₀ + β₁ OUTDIR_{i,t} + β₂D- OUTDIR + β₃PCM_{i,t} + β₄D-PCM_{i,t} + β₅ D-PCM*PCM_{i,t} + β₆D-PCM*OUTDIR_{i,t} + β₇ D-PCM*D-OUTDIR_{i,t} + β₈Size_{i,t} + β₉Lev_{i,t} + β₁₀CF_{i,t} + β₁₁ NWC_{i,t} + ε_{i,t}

In above regression model, coefficients β₁ and β₂ show the relationship between independence of the board of directors and the level of cash holdings, coefficients β₃ and β₄ show the relationship between PMC and the level of cash holdings, and coefficients β₆ and β₇ show the relationship between independence of the board of directors and the level of cash holdings in highly competitive corporations in product market.

In the above models:

Cash: cash balance divided by all assets (cash is ready money and deposits in banks divided by assets book value. These figures are obtained from the audited balance sheets of sample corporations).

INST: INST is the percentage of institutional ownership (number of shares belonging to the largest stakeholder divided by the total number of distributed shares of the corporation. Information on ownership and governance variables of corporations is obtained from the notes accompanied by financial statements and minutes of the board of directors, which are available for different years and for each corporation at Stock Exchange Organization website.)

D-INST: D-INST is a virtual variable. If the percentage of institutional ownership of a corporation is higher than the mean of total institutional ownership percentage of sample corporations, the value of virtual variable will be one, otherwise, it will be zero.

Bsize: The size of the board of directors (the number of members of the board of directors)

D-Bsize: D-Bsize is a virtual variable. If the number of members of the board of directors of a corporation is higher than the mean of the number of the board of directors of the entire sample corporations, D-Bsize value will be one, otherwise, it will be zero.

OUTDIR: OUTDIR is the criteria of independence of the board of directors (i.e. the ratio of the unaffiliated members of the board of directors to the affiliated members)

D-DUTDIR: D-DUTDIR is a virtual variable. If the general manager of a corporation is also a member of the board of directors of the corporation, the value of

D-DUTDIR will be one, otherwise, it will be zero. (Violation of independence of the board of directors)

PCM: PCM is the criterion for PMC (calculated by the method mentioned in 2-11)

D-PCM: D-PCM is a virtual variable. If the competition level of a corporation is higher than the mean of total competition of sample corporations, D-PCM value will be one, otherwise, it will be zero.

Size: The size of a corporation as a control variable (Normal logarithm of total book value of all assets)

Lev: It is the financial leverage of a corporation as a control variable (The ratio of total book value of debts to total book value of assets)

CF: Net cash flows of the corporation (extracted from cash flows statement) divided by all assets as control variable

NWC: The ratio of working capital to total assets as a control variable (working capital is calculated from the difference between current assets and current liabilities.)

To make decisions on acceptance or rejection of the main hypothesis in the present research, the test model for secondary hypotheses is fitted and decisions are made based on the obtained results.

4.4. Sample Selection

Data were collected through desk research and the required data for the test of research hypotheses have been extracted from the annual financial statements and explanatory notes of the companies listed in Tehran Stock Exchange Organization, and through informative software of Stock Exchange Organization, including Tadbir Pardaz and Rahavard Novin software, and Stock Exchange Organization websites, especially WWW.RDIS.IR and circulars of the Central Bank. In the present study, the classified and audited financial data of manufacturing companies listed in Tehran Stock Exchange were used to test the hypotheses of the research. The systematic elimination sampling method was used to select the suitable sample. This method was used to standardize the sample with respect to the whole population and to make it possible to generalize the obtained results about the statistical population. The inclusion criteria for selecting the sample are as follows:

- 1) The corporation should not be of the investment and financial intermediation corporations.
- 2) The corporation's fiscal year should be ended on 20 Mars.
- 3) The corporation should not have a change in the fiscal year during research period.
- 4) Trading symbol of the corporation should not be transferred to the stock exchange unofficial board.

By applying the conditions and considerations in systematic elimination sampling, 102 corporations were selected from the statistical population to conduct the tests. The research was conducted on the data of five consecutive years from 2006 to 2010; therefore, the final volume of the sample is 510 (5*102) firm- year. Judgment about the test result is made based on the error level that is calculated. In the present research, acceptance or rejection of the hypotheses was judged according to the significance level. If the calculation error is less than 5%, the null hypothesis is rejected and the alternative hypothesis is kept as the sound hypothesis and in case it is bigger than 5%, the null hypothesis is not rejected.

5. Research Findings

In the first secondary hypothesis of the research, it is forecasted that the relationship between the percentage of institutional ownership and cash holdings level in highly competitive corporations in product market is weaker than that in other corporations. To test this hypothesis, a regression model was used in which the cash balance was a function of the percentage of institutional ownership. In addition, a virtual variable was used in hypotheses testing model to separate highly competitive corporations from other corporations. The results obtained from the tests include the results of the statistical analysis, summary of the regression model, and the analysis of the independent variables coefficients. Table 1 shows the results obtained from the statistical analysis for the summary of the test model of the research's first secondary hypothesis.

Table 1: The results of the statistical analysis for regression model of the first secondary hypothesis test

R ²	Durbin-Watson Statistic	F Statistic	Significance Level of F
0.167	1.649	4.319	0.000

Table 2: The results of the statistical analysis for the coefficients of the first secondary hypothesis test

Variable	Factor Magnitude (Standardized β)	t Statistic	Significance Level (P-value)	Collinearity Tests	
				Tolerance	Variance Inflation Factor
INST	0.03	0.296	.0767	0.784	1.429
D-INST	-.0056	-0.549	0.583	0.778	1.615
PCM	0.202	2.017	0.044	0.883	1.278
DPCM	0.034	0.138	0.89	0.83	1.475
D-PCM*PCM	0.489	3.381	0.001	0.887	1.235
D-PCM*INST	0.239	0.805	0.421	0.821	1.277
D-PCM* D- INST	-0.053	-0.444	0.657	0.829	1.236
Lev	-0.008	-0.099	0.921	0.815	1.171
Size	0.043	0.935	0.35	0.881	1.135
NWC	0.238	3.459	0.001	0.888	1.578
CF	0.003	2.047	0.031	0.974	1.027

The results of the statistical analysis show that the coefficient of determination of regression model is 0.167 and this model could explain 16.7 percent of the changes of dependant variable through changes of independent variables. Durbin statistic is between 1.5 and 2.5; therefore, there is no autocorrelation among the errors of regression models. According to the results, the significance level of statistic F is less than the level of test error¹ ($\alpha = 0.05$). Consequently, the estimated model is statistically significant and the relationships between the research variables are linear. Table 2 shows the results of the statistical analysis for the independent variables coefficients of the first secondary hypothesis test.

The results of the collinearity tests show that there is not a strong collinearity between the variables of the fitted regression model because the statistics of the tests for collinearity are close to 1 for all the variables. The results show that the coefficient obtained for INST variable, which reflects the relationship between institutional ownership and cash balance, is not significant, so there is no significant relationship between the pertinent variables. The coefficient estimated for PCM variable is 0.202 at the significance level of 0.044. This finding indicates that

there is a direct and significant relationship between PMC and the level of cash holdings, whereas the coefficient of PCM*DPCM, which shows this relationship for highly competitive corporations, is 0.489. This finding shows that the highly competitive corporations in product market might hold cash at a high level to confront market's competitive pressures. The results related to the control variables indicate that there is a significant relationship between working capital and net cash flows and cash balance. No significant results are seen for the rest of control variables. Generally, as the coefficients obtained for the variable of institutional ownership percentage and its variables interacting with competition intensity are not significant, the first secondary hypothesis cannot be accepted and it is rejected at the confidence level of 95 percent. Table 3 shows the results obtained from the statistical analysis for the summary of the test model of the second Secondary hypothesis.

¹ All of statistical tests are performed with confidence level of 95%

Table 3: The results of the statistical analysis for the regression model of the second secondary hypothesis test

R ²	Durbin-Watson Statistic	F Statistic	Significance Level of F
0.174	1.642	4.703	0.000

The results of the statistical analysis show that the coefficient of determination of the regression model is 0.174. This model could explain 17.4 percent of the changes of the dependent variable by the changes of the independent variables. Durbin statistic was between 1.5 and 2.5; therefore, there is

no correlation between the errors of its regression models. The significance level of statistic F is less than the error level of the test; therefore, the estimated model is not statistically significant and the relationship between the research variables is linear.

Table 4: The results of the statistical analysis for the coefficients of the test model of the second secondary hypothesis

$$\text{Cash}_{i,t} = \beta_0 + \beta_1 \text{Bsize}_{i,t} + \beta_2 \text{D- Bsize} + \beta_3 \text{PCM}_{i,t} + \beta_4 \text{D-PCM}_{i,t} + \beta_5 \text{D-PCM*PCM}_{i,t} + \beta_6 \text{D-PCM* Bsize}_{i,t} + \beta_7 \text{D-PCM* D- Bsize}_{i,t} + \beta_8 \text{Size}_{i,t} + \beta_9 \text{Lev}_{i,t} + \beta_{10} \text{CF}_{i,t} + \beta_{11} \text{NWC}_{i,t} + \epsilon_{i,t}$$

Variable	Standardized β	t-Statistic	Significance Level (P-value)	Collinearity Tests	
				Tolerance	Variance Inflation Factor
Bsize	0.061	2.482	0.013	0.615	1.677
D- Bsize	0.107	0.917	0.36	0.633	1.535
PCM	0.207	2.07	0.039	0.782	1.687
DPCM	0.625	1.664	0.097	0.613	1.573
D-PCM*PCM	0.403	2.725	0.007	0.683	1.554
D-PCM* Bsize	-0.483	-2.234	0.018	0.712	1.804
D-PCM* D- INST	0.003	0.064	0.949	0.716	1.396
Lev	0.009	0.121	.904	0.813	1.197
Size	0.032	0.696	0.487	0.87	1.15
NWC	0.257	3.753	0.000	0.688	1.579
CF	0.0015	2.332	0.014	0.948	1.054

The results of the statistical analysis for the independent variables show that the coefficients obtained for Bsize variable, which reflects the relationship between the size of the board of directors and cash balance, is 0.061 at a significance level of 0.013. This finding indicates that there is a direct and significant relationship between cash balance and the number of members of the board of directors. The coefficient estimated for PCM variable is also positive and significant which shows that the relationship between PMC and cash holdings level is direct. In addition, the value of PCM*DPCM variable is higher than the value of PCM variable coefficient which shows that in corporations with higher competition, the effect of competitive pressures on cash holdings policies have been more strong. The coefficient obtained for D-PCM* Bsize, which shows the relationship between the size of the board of directors and cash holdings in the corporations with a high competitive power, is -0.483 at a significance level of 0.018. This finding specifically shows the difference of highly competitive corporations. It also indicates that by including D-PCM variable and separating these corporations in the model, the direction between the size of the board of directors

and cash holdings become reversed. In other words, in highly competitive corporations in product market, with the increase of members of the board of directors, the level of cash holdings decreases. At the same time, there has been a direct relationship in the whole sample.

Regardless of the direction and type of the relationship, the results show that in highly competitive corporations, the relationship between the size of the board of directors and the level of cash holdings was more stronger as compared with the other corporations. According to the above results, the second secondary hypothesis of the research is rejected at the confidence level of 95%. In total, as the coefficient obtained for the variable of the board of directors in highly competitive corporations is not smaller than the coefficient of this variable in other corporation, the claim made in the second secondary hypothesis cannot be accepted. The third secondary hypothesis concentrates on the relationship between the independence of the board of directors and level of cash holdings in highly competitive corporations in product market as compared with other corporations. Table 5 shows the results obtained from the statistical analysis for the summary of this model.

Table 5: The results of the the statistical analysis for the regression model of the third secondary hypothesis test

R ²	Durbin-Watson Statistic	F Statistic	Significance Level of F
0.174	1.634	4.679	0.000

Coefficient of determination of the regression model is 0.174 and this model could explain 17.4 percent of the changes of the dependent variable by the changes of the independent variables. Durbin statistic is between 1.5 and 2.5; therefore, there is no correlation between the errors of its

regression models. The significance level of statistic F is lower than the level of test error and consequently the estimated model is not statistically significant and the relationship between the research variables is linear.

Table 6: The results of the statistical analysis for the coefficients of the third secondary hypothesis test model

Cash _{it} = β ₀ + β ₁ OUTDIR _{it} + β ₂ D-OUTDIR + β ₃ PCM _{it} + β ₄ D-PCM _{it} + β ₅ D-PCM*PCM _{it} + β ₆ D-PCM*OUTDIR _{it} + β ₇ D-PCM*D-OUTDIR _{it} + β ₈ Size _{it} + β ₉ Lev _{it} + β ₁₀ CF _{it} + β ₁₁ NWC _{it} + ε _{it}					
Variable	Standardized β	t Statistic	Significance Level (P-value)	Collinearity Tests	
				Tolerance	Variance Inflation Factor
OUTDIR	0.103	1.994	0.043	0.556	1.797
D-OUTDIR	-0.005	-0.103	0.918	0.766	1.306
PCM	0.197	1.976	0.049	0.884	1.448
DPCM	0.236	1.927	0.055	0.721	1.258
D-PCM*PCM	0.548	3.917	0.002	0.887	1.432
D-PCM*OUTDIR	0.02	0.216	0.829	0.509	1.776
D-PCM*D-OUTDIR	0.042	0.874	0.383	0.77	1.299
Lev	-0.004	-0.048	0.926	0.71	1.222
Size	0.044	0.96	0.338	0.879	1.138
NWC	0.244	3.573	0.000	0.891	1.259
OUTDIR	0.103	1.994	0.043	0.556	1.797

The results of the statistical analysis for the independent variables show that the coefficients obtained for OUTDIR variable, which reflects the relationship between the independence of the board of directors and cash balance is 0.103 at the significance level of 0.043. This finding indicates that there is a direct and significant relationship between the cash balance and independence of the board of directors in the sample corporations. The results show that the forecast made in the third secondary hypothesis – the relationship between the independence of the board of directors with the level of cash holdings in highly competitive corporations in product market is weaker than other corporations - can be true and from this perspective, the third secondary hypothesis is accepted at the confidence level of 95 percent.

6. Discussion and conclusion

The overall objective of the research was to discuss the relationship between PMC and corporate governance and cash holdings policies in the corporations listed in Tehran Stock Exchange. In the present research, the percentage of institutional ownership, size of the board of directors and

independence of the board of directors were considered as the features of cash holdings policies and for each of which a hypothesis was proposed. The research hypotheses were tested using regression models. Based on the results, it was proved that the power to compete in product market does not play an effective role in the governance system of the sample corporations. In addition, it was proved that the relationship between the percentage of institutional ownership and level of cash holdings in highly competitive corporations in product market is stronger than that in other corporations. This finding is inconsistent with the theoretical foundations of the research, as a significant relationship was expected between institutional ownership and the level of cash holdings and it was expected that the competition level of product market would affect this relationship. Theoretical foundation pertaining to the monitoring role of institutional stakeholders is based on the principle that this group of stakeholders find the required motivation to supervise and assume respective costs due to their long-term perspective on their investments. Such a theoretical foundation might not be realized for the institutional stakeholders of the statistical population corporations

of the study and their incentive to invest on corporations' stock might not be long-term interests. If so, active monitoring hypothesis will not be applicable. Consequently, institutional stakeholders would not play their governance role with respect to explaining cash holdings policies as stated in the theoretical foundation of the present research. In the second perspective, it was claimed that the relationship between the size of the board of directors and level of cash holdings in highly competitive corporations in product market is weaker than the other corporations. This relationship indicates that in highly competitive corporations, the level of cash holdings decreases with an increase in the number of the members of the board of directors. In this regard, Lee (2009) and Alimo (2010) realized that PMC had a significant effect on reinforcing the monitoring and controlling role of the board of directors; particularly, it has prevented cash accumulation in corporations. It seems that in highly competitive corporations, there is no significant relationship between the independence of the board of directors and level of cash holdings, whereas this relationship is direct and significant for all the sample corporations. In this concern, Harford et al. (2008) and Lee (2009) found a reversed relationship between the independence of the board of directors and level of cash holdings. It is likely that, similar to institutional stakeholders, unaffiliated members of the board of directors do not particularly exercise their authorities to control managers' policies with respect to cash holdings and/or they are not sufficiently aware of the effect of cash balance on the overall performance and efficiency of the corporation. Such an approach reduces the power of other governance mechanisms through increasing the number of members of the board of directors and especially through increasing the number of unaffiliated members, because, relying on the unaffiliated members of the board of directors to play their role favorably, investors and creditors may use their monitoring tools less frequently.

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