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Study of the relationship between ownership structure and inventory management in firms accepted in Tehran stock exchange

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ABSTRACT- If directors of firm able to increase efficiency of firm it is expected that its benefits transfer to shareholders directly. Corporate governance is the most important tool of owners to control and monitor directors. In order to obtain the purpose of research, a sample including 135 firms among firms accepted in Tehran stock exchange was selected and data needed to research during 1387- 1391 according to information of sample firms were extracted this research in terms of purpose is applied and for it correlation method is used. Also, from perspective of time, is a post – even research .Statistical analysis of data was done by software Eviews and in confidence level of 95 percent and for test of hypothesis, combined and panel statistical method and linear regression pattern in terms of defined variables was used the findings of research show that managerial ownership doesn't affect the relationship between institutional ownership and inventory management and also CEO duality doesn't affect the relationship between institutional ownership and inventory management and board size doesn't affect the relationship between institutional ownership and inventory management. *© 2014 Bull. Georg. Natl.Acad. Sci.*

***Key words**: institutional ownership, managerial ownership, CEO duality, inventory management, board size.*

According to studies of Ameer (2010) and Tribo (2007), the relationship between institutional ownership and inventory management in prior studies, has evaluated trough two different methods; cash low and control. With respect to cash canal, existence of institutional ownership may be important to increase trust and also cash power of firm in the face of creditors that in turn facilities process of borrowing of required cash money. Consequently, tendency of firm to accumulate cash holdings and therefore, inventory decrease. In the other hand, with respect to control canal, institutional shareholders may play the effective and active roles in monitor managerial behavior and its decisions. So, inventory to a fault, as a sign of mismanagement ownership. As a result, main subject of cash canal and control canal is that institutional ownership and inventory management are positively related (Elsayed and veheba; 2013, 207).With respect to the findings of Bainbridge study (2008), it is assumed that institutional investors in order to monitor and control responsibility, are always active or passive, and this is classified as a linear relationship which has considered as an ideal content. Instead, it is more rational to expect that the relationship between institutional ownership and inventory management is nonlinear which has may adjusted with different motives. This happens when institutional investors are beneficial and don't follow an activity that its cost is more than its benefits and make their decisions with respect to expected return. (sparkes; 1998, matterson; 2000). In addition to, their influence may be different in all over the country. (Elsayed and veheba; 2013, 208).Alongside of minor investors and institutional investors in long term, there is possibility of asymmetry of information among shareholders. This means that institutional investors more likely play active (passive) roles in control of managerial behavior and make-decision against profit-seeking acts of management. profit-seeking acts of management occur when directors obtain much power to use firm in order to promote their benefits instead of benefits of shareholders. (visbakh; 1998, 435).

Opportunism of directors is not only different from national culture and mechanisms of corporate governance (short and keasey; 1999), but is different from managerial ownership, ownership structure of board and board size (finkelestein and D'Aveni; 1994, Elsayed; 2011). The general discussion is that increase of managerial ownership is very likely related to opportunism of directors negatively, because directors with having shares in firms that are managed by them, will have motivation to invest in projects that their expected net profit is positive. (Jensen and Makling; 1976, 308).Also, managerial ownership and board size can be a substitute for governance of big firms that play the important roles in decrease benefits who control resources of organization and owners who their shares often don't justify costs of monitoring. When a board becomes large, ability of board to do its main duties will be limited. Specially, since a big group (board size) has less coherence, probably has coordination and communication problems that may increase existent difficulties, costs of information exchange and possibility of control of bored behavior by executive director of firm. In addition to, there is less possibility that new ideas and full opinions in big groups are expressed and process of monitoring is disseminated. (Dalton et al 1999; 677). According, big size of board stimulates institutional investors to monitor and control managerial behavior actively and make decisions to decrease profit- seeking of directors. Considering this issue, present research tries to answer this question: how is the relationship between ownership structure of firm and inventory management?

2. theoretical principles of research

2.1. corporate governance

corporate governance is one of the most important commercial titles in he beginning of 21th century. In fact, expression of corporate governance has had considerable importance only during two past decades. This expression has taken from Greek work “keberman” that means to guide or to govern. This expression transferred from this Greek word to latin word “Gubernare” that means to guide and in old France, it transferred to “Governor” which means to Govern.Corporate governance includes laws, regulations, structures, processes, cultures and systems that are used to obtain purposes of justice transparency and the exercise of beneficiaries rights. Governance traditionally reminds to govern, but its new concept includes processes and actors outside of government domain.corporate governance indicates a structures that through it, purposes of firm are determined and methods of obtaining objectives and criteria of monitoring performance are specified. In other words, corporate governance is a structures of duty of a firm in relation to beneficiaries and specially its shareholders. The correct corporate governance must provide suitable incentives for board and management and leads them to follow purposes that supply benefits of firm and its shareholders. corporate governance is important not only for directors of firms who interest in awareness of corporate structure and its adaptation to best way and regulations, but it is attractive for participants in market who interest in investment, because the purpose of corporate governance is existence of a framework which through it, a suitable balance between discretion of directors and benefits of different beneficiaries including shareholders is created. Controllers by analysis of crisis in Asia and in some similar cases in the south of America and Russia, have recognized often corporate governance as an important solution to solve this problems. (Ariff et al; 2007).

2.2. theoretical framework of corporate governance

The poor governance of firms like Anroon and workd.com and surprising falling of stock markets in the beginning of present century have led to review of discourse of corporate governance; what is existential purpose of firm? And whose its benefits are? The view of neoclassic expresses that purpose of commercial unit is to maximum shareholders value. The rationale of corporate governance generally suggests substitution view. The focus of governance is to create value – added foe many institutional beneficiaries. This reflects more social responsibility for firms and they concentrate on concept of corporate citizen. The rational tension between benefits of shareholders and beneficiaries is not new. This indicates two opposite concepts of governance that have created since modern governance system of firm in 19 century. (Moir et al;2007).

3. Background of research:

3.1. The research conducted abroad:

Watz and zimerman (1978): they represented new theory, positivism accounting theory to describe accounting methods of real world. This theory included selection policies of accounting methods such as part of production decisions, finance and investment of firm. Selection policy of accounting method will lead to re-distribute wealth among directors, shareholders and bonds holders and consequently change of stock price. According to this hypothesis, it is assumed that anybody works to optimize his/her personal benefits and accounting field is not exceptional. (those who codify criteria or those who have financial problems). But important issue is that increasing welfare of persons who have financial problems whether investors, directors,… is accompanied by increase of firm value and firm value is increased through stock price. (jafari; 1390).Bidel (1980); he studied the relationship between selection of accounting method of Faifoo and Laifoo through prediction of directors for cash flows. He compared 105 pairs of firms that changed their method to laifoo method with firms which didn't have this change. The findings of his research showed that firms which changed their method had relatively high growth rate of investment from perspectives of Rial and physically. Also, there is a meaningful relationship between change of method to laifoo and amount of tax saving, firm size and the type of industry.Zemijooski and Hogerman (1981): they used the relationship between accounting method of laifoo and depreciation methods as methods of income increase and compared them with variables of firm size, management reward plans, ratio of sum of depts. To sum of assets, risk and capital –intensity of firm. The findings of research indicated that method of income increase have meaningful relationship with variables of firm size, management reward plans, and sum of debts to sum of assets, but are not related to variables of risk and capital –intensity of firm. (Jafari; 1390).Naihoos (1989): He studied the relationship between managerial and non-managerial ownership structure by selection of inventory accounting methods. His assumption was probable presence of contradiction between directors and shareholders to select inventory accounting method.He selected 456 firms as a statistical sample and divided ownership structure of any firm to two groups of managerial and non-managerial ownership structure. The findings of his study reveal that by increase of non-managerial ownership structure in firms, use of laifoo accounting methods is increased too. (Jafari; 1390).Mavissi and Naiker (2006): In a research by use of pond theories, they studied the relationship between institutional ownership and firm value in Newzealand. The findings of their study indicate that institutional investors have more motivation to monitor management and therefore their presence has positive relationship with firm value, but in high levels of ownership, institutional investors may encourage board to make non-optimal decisions. In other words, possession of shares through institutional investors in lower level of ownership, has positive relationship with firm value that this finding corresponds to hypothesis of effective monitoring. Nevertheless, the relationship between firm value and institutional in a certain level of shares possession has positive effect on firm value and shares ownership beyond it has negative effect on firm value. Suntruruk (2009): He studied the relationship between board structure and institutional ownership as aspects of corporate governance. This research is among active firms of Thailand during 2000-2007. The important trait of this research is that for performance criterion, accounting index and also market index have been used. In this research, ROI was used as accounting criterion and Q-Tobin was used as market index. The findings of research show that here is a positive and meaningful relationship between presence of principal shareholders and ROI, ie concentration of ownership improves ROI. Also, presence of institutional shareholders has similar effect on ROI, too.Bahaacheria and Graham (2009): In a research under title of the relationship between institutional ownership and firm performance, they studied Finn firms.A systemic trend included using potential size of two-way cause and effect relationship between firm performance and ownership structure. The evidence show problem of endogenous between firm performance and institutional ownership. They concluded that more than an equal distribution of power of voting among the biggest institutional shareholders may have positive effects on performance. They also found considerable difference in relation to firm performance and equality of ownership between two groups of institutional investors. (Shahiki Tash et al; 1391).Dichoo e a; (2012): they studied asymmetric cash flow sensitivity of cash holdings in China firms between 1972 to 2006. And found that cash flow sensitivity of cash holdings, is negative, especially when a firm encounters a positive cash flow medium. As Ridick and Wited believed, cash flow sensitivity of cash holdings is positive when a firm faces negative cash flow.They classified firms to two groups; firms which their financial ability is limited and firms that their financial ability is not limited and concluded that cash flow sensitivity of cash holdings in both groups is asymmetric. When they used institutional shareholders as controllers of organization agency problems, concluded that firms with outside strong monitoring, unable to attract suitable investment opportunities.Sayed and Vaheba (2013): In their research, they studied the effect of managerial mechanisms of corporate governance (for example; managerial ownership, structure of board leadership and board size) on the relationship between institutional ownership and inventory management. Using a sample including

Egyptian firms, concluded that when amount of ownership of directors is high or executive director is director of board or board size is big, the percent of institutional ownership has positive effect on inventory management and vice versa.

3.2. The research concluded inside county

Ali asghar Aivazy Heshmat (1385): In this research, the relationship between selection selection of accounting methods of inventory (Faifoo, rhythmical mean and moving mean) used in firms accepted in Tehran stock exchange with variables of firm size, ratio of debt to capital, floating capital and type of industry has studied. For test of hypotheses, test of k-square distribution independence among 64 firms accepted in Tehran stock exchange has been used. The result of hypotheses test showed that there is no relation in these firms between selection of accounting methods of inventory and above-mentioned variables. This indicates lack of awareness or insufficient knowledge of Iranian directors about benefits and costs of selection of accounting methods of inventory and its effect on financial reports. (Jafari; 1390). Feli (1387): She studied the relationship between corporate governance and firm value. In this research, the roles of institutional shareholders and percent of not duty-bond directors on firm value were studied. So, four – year information of 97 firms during 1381-1384 was studied and for operational dependent variable of research, ratio of Q-Tobin and ROA was used. The findings of research indicated that institutional shareholders and not duty-bound directors have meaningful relationship with firm value. Poorhussaini, MahmoodAbadi (1389): they studied the relationship between inventory and disturbance in flow of transportation and distribution. In this research, the relationship between inventory of ingredients in Iran Khodroo company and disturbance in flow of transportation and distribution of these inventories has been studied. The division of inventories in to two internal and external inventories was important point that was studied in this research. This subject that weather the relationship between inventory of firms and disturbance in flow of transportation can decrease costs or not, is a subject that must be studied in detail. The result obtained from this research confirm that division of inventories is very effective for secondary planning.Piri (1390): He studied the effect of corporate governance, cash flow and capital structure on firm value and to test the effect of corporate governance on firm value, he used mechanisms of duality, percent of shares in hands of principal shareholder, concentration of shares and percent of shares in hands of institutional shareholders and found that corporate governance has meaningful effect on market value of firms.Jafari (1390): He studied the effective factors of selection of accounting methods of inventory and its effect on profitability quality of firms accepted in stock exchange. A framework for analysis of accounting policies of inventory selected by directors and the effect of this selection on profitability quality in firms accepted in stock exchange was used and the relationship between special traits of firm like size, ratio of debt to capital, floating capital and type of industry and policies selected by directors and times were described that increase or decrease quality of profit. The result of analysis of hypotheses show that there is no meaningful relationship between special of accounting methods of inventory and firm size, ratio of debt to capital and amount of current capital. Also, the findings indicate the relationship between selection of accounting method of inventory and type of industry and finally there is no meaningful relationship between special of accounting methods of inventory (Faifoo) and profitability.Brothers Hassanzadeh et al (1391):The purpose if this research is to study the relationship between some mechanisms of corporate governance and created shareholders value and economic value-added. In this research, created shareholders value and measured using Fernandz model and economic value-added following Stewrat. For test of listed hypotheses, multiple regression has used. The result of research demonstrate that among eight mechanisms of corporate governance under study in this research, four mechanisms (rate of influence and state ownership, rate of ownership of institutional shareholders, capital structure and rate of free float stock) are related to created shareholders value. Also, among eight mechanisms corporate governance under study in this research, three mechanisms (rate of influence and state ownership, rate of ownership of institutional shareholders and rate of free float stock) are related to economic value added. Shahiki tash et al (1391):The purpose of this research is to study the relationship between structure and firm performance according to new criteria of performance, Q-Tobin and economic value-added in firms accepted in Tehran stock exchange. The hypotheses of research are based on the relationship between type of ownership structure and firm performance. The statistical technique used to test presented hypotheses in this research in data panel of combined data. The findings of research in terms of both models, economic value-added and Q-Tobin show that there is a positive and meaningful relationship between institutional ownership and firm performance and there is a negative relationship between real ownership and firm performance. In relation to concentration of ownership that expresses percent of shares of the biggest shareholder of firm, there is a positive and meaningful relationship with firm performance.

Khodadadi and Taker (1391): they studied the effect of traits of corporate governance including concentration of ownership, institutional investors, state ownership, managerial ownership, CEO duality and percent of not duty – bound directors in board on performance and value of stock exchange firms and concluded that concentration of ownership and state ownership have positive and meaningful relationship with performance and value of firms. Investor has positive relationship with firm value and has negative relationship with firm performance. CEO duality had negative and meaningful relationship with firm performance. Also, structure of corporate governance that included all structural traits under study in this research has positive and meaningful relationship with firm value and firm performance.

4. The hypotheses of research

1. in order to answer main question of research, the following main hypotheses have been obtained:
2. first hypotheses: managerial ownership affects the relationship between institutional ownership and inventory management.
3. second hypotheses: CEO duality affects the relationship between institutional ownership and inventory management.
4. third hypotheses: board size affects the institutional ownership and inventory management.

5. The method of research:

In terms of nature and method, scientific research divide in to five groups; historical, descriptive, correlation or congruence, casual (post-event) and empirical (experimental) research. (Hafeznia; 1385).The method of research from three different perspectives are as follow as:

5.1. The method of research in terms of nature and content of variables

In this research, since we must find a meaningful relationship between variables of research and study limit of variations of dependent variables with respect to limit of variations of independent variables, meanwhile correlation research are done, so the method of research in terms of nature and content, is a correlation research that to discover correlation between variables, post-event method will be used.

5.2. The method of research in terms if purpose:

The research from perspective of purpose is applied that its results can be used for wide spectrum including inventors in financial markets, authorities of stock exchange, directors, shareholders, brokers of stock exchange, financial analysts and capital market researchers in order to provide transparent space of information, to optimize design of stock basket, to help make optimal decisions of investment in stock exchange and to provide new lines of study.

5.3. The method of research in terms of execution

This research through statistical analysis of data of 135 firms by statistical software Eviews was conducted. Also, through library studies of articles and sites, background of research was obtained.

6. The variables of research:

6.1. Dependent variable:

Inventory management (IVS): to study this variable. Average division of inventories to sale rate of firm will be used, which in many research (for example; Ameer 2010; koumanakos 2008; Barcos et al 2012; Alsayed and vaheba 2013), this variable has been used to study inventory management. This ratio shows that whether firm able to keep suitable inventory level with respect to statistics of its current sale or not. An increase of this ratio can be a sign of poor management of inventory.

6.2. Independent variable

Institutional ownership: institutional owners include state institutional, retirement funds and investment firms which theoretically, have desirable expertise in stock investment and in some cases, buy shares in order to influence on investing firm.

$$INS\ OWN = \frac{number\ of\ shares\ of\ institutional\ shareholders}{sum\ of\ number\ of\ firm\ shares}$$

6.3. Adjuster variables:

1. Managerial ownership: firms for correspondence of directors benefits with firm benefits may transfer some shares to directors who shape managerial ownership structure and potentially affects leadership system. To measure amount of managerial ownership, at first by studying notes along with financial lists, board structure of any firm is specified. Then, ownership structure is considered and amount of ownership of any members of board is percent of managerial ownership.

$$MANOWN = \frac{number\ of\ shares\ of\ directors}{sum\ of\ number\ of\ firm\ shares}$$

2. CEO duality: to measure this variable, presence or absence of special conditions about CEO is considered. According, CEO duality (DUAL) is a two-state variable if CEO is director of board, its value one and otherwise is zero.
3. board size: to estimate board size, number of its members is considered. Also, to standardize this variable and introduce it to regression pattern, its natural logarithm is used.BROSIZE- Ln (number of board members)

6.4. Control variable of research

1. firm size: researchers have used different criteria for size of firms. In this research, to introduce size of firms in hypotheses test pattern, natural logarithm of book value of sum of assets is used.
Size= Ln (Assets $_{i,t}$)
2. Growth of firm (GRO):
Natural logarithm of ratio of market value to book value as a criterion of evaluation of firm growth has used.

$$GRO = \frac{stock\ market\ value}{book\ value}$$

3. profitability (PRO): Ratio of profit before deduction fo tax to all assets to study profitability of firm has used.

$$PRO = \frac{profit\ before\ deduction\ of\ tax}{all\ assets}$$

4. financial lever (LEV): Financial lever reflects financial and credit policies if firm that show amount of financial facilities used by firm and is obtained from following equation:

$$LEV = \frac{some\ of\ debts}{some\ of\ assets}$$

5. AGE: this variable is obtained from logarithm of number of activity years of firm.
AGE: Ln (number of activity years of firm)
6. HOL: percent of state of ownership
Percent of state ownership is the number of shares of state organizations and institutional divided by total number of issued shares of firm (Noorsh and Ibrahimi, 1384). This information is extracted from capital division and notes along with financial lists of statistical sample firms:

$$HOL = \frac{number\ of\ shares\ of\ state\ organizations}{total\ number\ of\ issued\ shares\ of\ firm}$$

7. The findings of research

7.1. Descriptive statistics

In descriptive analysis, researcher describes collected data of research using tables and indices of descriptive statistics like central tendency and measures of variation this helps transparency and explanation of research data the results of descriptive analysis of data are shown in tables (1-4), (2-4), (3-4) and (4-4).

The number of observations of percent research is 675 year-firm. These observations are resulted from combination of data of 135 firms accepted in stock exchange as sectional data during 5 years (1387-1391) and as period under study.

He main central tendency is mean that shows balance point and gravity center of distribution. Median indicates that half data is less than this value and other half is more than this value. Generally, measures of variation are criteria to determine amount of variation from each other of their variation relative to mean.

Among the most important measures of variation, standard deviation is mentioned. Asymmetry of frequency curve is called skewed. If skewed coefficient is zero, universe is completely asymmetric and if is positive. Skewed is to right and if it is negative, skewed is to left. Kurtosis coefficient shows kurtosis of frequency curve relative to standard normal curve. If kurtosis is near to zero, that is, frequency curve has balance and normal status in terms of kurtosis, if his value is positive, curve is raised and if it is negative, curve is flat. Jaraque-Bara statistic and probability level related to it shops normality of data distribution. If probability level related to this statistic for observations related to a variable is more than 0.05 or (p-value>0.05), this finding indicates normality of variable distribution. For example, with respect to table (1-4), average of inventory management of sample firms is 0.283. mean for this variable is 0.253. the least and most value of this variable in studied total time interval is 0.000 and 1.295 respectively. Standard deviation that is a criterion to determine amount of data variation is 0.176 with respect to kurtosis coefficient (7.618), curve is more raised than normal distribution and with respect to skewed coefficient (1.678), curve is skewed to right.

Table 1: descriptive analysis of dependent variable

Dependent variable / Descriptive statistics	Inventory management IVS
Mean	0/283
Median	0/253
Series maximum value	1/295
Series minimum value	0/000
Standard deviation	0/176
Kurtosis	1/678
Skewed	7/618
Jarque-Bara statistic	918/963
Probability level	0/000
Number of observations	675

Table 2: descriptive analysis of independent variable

independent variable / Descriptive statistics	Inventory management IVS
Mean	71/396
Median	80/420
Series maximum value	100/00
Series minimum value	0/000
Standard deviation	26/313
Kurtosis	-1/295
Skewed	3/685
Jarque-Bera statistic	202/116
Probability level	0/000
Number of observations	675

Table 3: descriptive analysis of adjuster variable

variable / Descriptive statistics	Percent of directors ownership	CEO duality	Board size
Mean	70/396	0/201	1/609
Median	73/100	0/000	1/610
Series maximum value	100/00	1/000	1/950
Series minimum value	13/00	0/000	1/100
Standard deviation	17/580	0/401	0/033
Kurtosis	-0/755	1/488	-4/880
Skewed	3/019	3/215	116/465
Jarque-Bera statistic	64/173	250/566	363692/2
Probability level	0/000	0/000	0/000
Number of observations	675	675	675

Table 4: descriptive analysis of control variables

variable / Descriptive statistics	Percent of state ownership	Firm size	Growth of firm	Profitability	Financial level	Number of activity years of firm
Mean	0/436	13/691	0/248	0/216	0/623	1/484
Median	0/495	13/528	0/193	0/116	0/628	1/556
Series maximum value	0/962	18/549	1/411	15/609	2/209	1/785
Series minimum value	0/000	10/031	-0/612	-0/352	0/096	0/778
Standard deviation	0/331	1/432	0/332	0/858	0/195	0/203
Kurtosis	-0/062	0/796	0/714	14/158	0/951	-0/699
Skewed	1/567	4/130	3/461	231/11	9/453	2/672
Jarque-Bera statistic	58/129	107/35	63/392	1477327	1269/332	58/077
Probability level	0/000	0/000	0/000	0/000	0/000	0/000
Number of observations	675	675	675	675	675	675

Jarque-Bera test statistic with having chi-2 distribution and degree of freedom 2, studies the following hypotheses. If Jarque-Bera statistic is bigger than chi-2 table with degree of freedom 2, hypothesis H_0 is rejected.

Distribution is normal: H_0

Distribution is not normal: H_1

Probability level in above table expresses the least probability of confirmation of hypotheses H_0 for charque-Bera statistic. If it is less than 5 percent, hypothesis H_0 is rejected. (in confidence level of 95%).Introduction of variables and specification of model:In present study, method of estimation of model is based on integrative data. This method is obtained from information of time – series (1387-1391) and sectional data (135 firms accepted in Tehran stock exchange). The used software program in this research is Eviews 6.First hypotheses: managerial ownership affects the relationship between institutional ownership and inventory management.

H_0: managerial ownership doesn't affect the relationship between institutional ownership and inventory management.

H_1: managerial ownership affects the relationship between institutional ownership and inventory management.

First model:

IVS: $\alpha+\beta_1$ INS OWN_{it} + β_2 MAN OWN_{it} + β_3 INS OWN_{it}+ MAN OWN_{it}+ β_4 $SIZE_{it}$+ β_5 GRO_{it}+ β_6 PRO_{it}+ β_7 LEV_{it}+ β_8 HOL_{it}+ β_9 AGE_{it}+ε_{it}
IVS: inventory management (dependent)
INSOWN: percent of institutional ownership (independent)
MANOWN: percent of ownership of directors (adjuster).
Control variables: SIZE: firm size, GRO: the growth of firm, PRO: profitability, LEV: financial lever, Hol: percent of state ownership, AGE: number of activity years of firm.
ε_{it}: component of error.
Second hypotheses: CEO duality affects the relationship between institutional ownership and inventory management.
H_0: CEO duality doesn't affects the relationship between institutional ownership and inventory management.
H_1: CEO duality affects the relationship between institutional ownership and inventory management.

Second model:

IVS: $\alpha+\beta_1$ INS OWN_{it} + β_2 $DUAL_{it}$ + β_3 INS OWN_{it}+ $DUAL_{it}$+ β_4 $SIZE_{it}$+ β_5 GRO_{it}+ β_6 PRO_{it}+ β_7 LEV_{it}+ β_8 HOL_{it}+ β_9 AGE_{it}+ε_{it}
IVS: inventory management (dependent)
INSOWN: percent of institutional ownership (independent)
DUAL: CEO duality (adjuster).
Control variables: SIZE: firm size, GRO: the growth of firm, PRO: profitability, LEV: financial lever, Hol: percent of state ownership, AGE: number of activity years of firm.
ε_{it}: component of error.
third hypotheses: board size affects the relationship between institutional ownership and inventory management.
H_0: board size doesn't affect the relationship between institutional ownership and inventory management.
H_1: board size affects the relationship between institutional ownership and inventory management.

Third model:

IVS: $\alpha+\beta_1$ INS OWN_{it} + β_2 $MANOWN_{it}$ + β_3 INS OWN_{it}+ $MANOWN_{it}$+ β_4 $SIZE_{it}$+ β_5 GRO_{it}+ β_6 PRO_{it}+ β_7 LEV_{it}+ β_8 HOL_{it}+ β_9 AGE_{it}+ε_{it}
IVS: inventory management (dependent)
INSOWN: percent of institutional ownership (independent)
BRDsize: board size (adjuster).
Control variables: SIZE: firm size, GRO: the growth of firm, PRO: profitability, LEV: financial lever, Hol: percent of state ownership, AGE: number of activity years of firm.
ε_{it}: component of error.

7.2. Estimation of models:

1. managerial ownership affects the relationship between institutional ownership and inventory management.

According to test F limer in table (6) in first hypotheses, considering p-value in confidence level of 95% equals 0.0000, in other words is p-value <0.05, so null hypotheses based on pooling of model is rejected (that is hypotheses of equality of ordinate from origin for all sections) and opposite hypotheses is accepted. Therefore, for any sections under study (firms), and ordinate from origin must be considered separately. So, to estimate, panel method can be used. Also, according to result of Haman test for first model, considering for α= 0.05, value of Hasman statistic is 26.384 and p-value<0.05, null hypotheses is rejected. The rejection of null hypotheses H_0 shows that method of random effects is maladjusted and method of fixed effects must be used.

Table 5: the result of limer F test and Hasman test

type of test	Limer F test	Hasman test
Value of statistic	14/676	18/795
P-value	0/0000	0/0270
Type of model	Panel	Fixed effects

Source: research calculation

Table 6: the result of fixed effects model (first hypothesis)

Fixed effects model	coefficients	Standard	T statistic	P- value
C	0/95	0/0791	12/110	0/000
$INSOWN_{it}$	-0/00006	0/0003	-1/696	0/090
$MANOWN_{it}$	5/94	0/0004	0/142	0/886
$INSOWN_{it} \times MANOWN_{it}$	-3/17	5/53	-0/573	0/566
HOl_{it}	0/056	0/010	5/423	0/000
$SIZE_{it}$	-0/025	0/005	-4/344	0/000
GRO_{it}	-0/068	0/006	-11/240	0/000
PRO_{it}	0/001	0/002	0/475	0/634
LEV_{it}	0/099	0/017	5/602	0/000
AGE_{it}	-0/228	0/040	-5/566	0/000
R^2	0/95			
$\bar{R}^2$	0/93			
D.W	1/85			
Fisher F	71/09(prob=0/0000)			

Source: research calculation

Table 7: the result of limer F test and Hasman test

type of test	Limer F test	Hasman test
Value of statistic	14/611	18/525
P-value	0/0000	0/0295
Type of model	Panel	Fixed effects

Source: research calculation

Table 8: the result of fixed effects model (second hypothesis)

Fixed effects model	coefficients	Standard	T statistic	P- value
C	0/966	0/075	12/740	0/000
$INSOWN_{it}$	-0/00007	0/000	-5/202	0/000
$DUAL_{it}$	0/015	0/014	1/080	0/280
$INSOWN_{it} \times DUAL_{it}$	-0/0002	0/000	-1/209	0/226
HOl_{it}	0/0551	0/010	5/235	0/000
$SIZE_{it}$	-0/027	0/006	-4/410	0/000
GRO_{it}	-0/068	0/006	-11/113	0/000
PRO_{it}	0/001	0/002	0/367	0/713
LEV_{it}	0/101	0/017	5/698	0/000
AGE_{it}	-0/220	0/040	-5/378	0/000
R^2	0/95			
$\bar{R}^2$	0/93			
D.W	1/86			
Fisher F	71/04(prob=0/0000)			

Source: research calculation

With respect to presented results in table (7) in firms under study, according to calculated statistic t (-0.573) and related probability level (0.566), hypotheses H_0 in confidence level of 95% is accepted and indicates that managerial ownership affects the relationship between institutional ownership and inventory management. Therefore, first hypotheses of research in confidence level of 95% is rejected. The obtained correlation coefficient (R^2) shows that explanatory variables able to explain 95% variations of dependent variable of statistical sample firms through independent and control variables. With respect to adjusted determination coefficient (93%), it is specified that value of this coefficient and it means ability of suitable explanation of model. D.W=1.85 shows absence of self-correlation among errors as one of main assumptions of regression in model. And according to test statistic F (71.09) and prob= 0.0000. fitness of whole regression is valid and estimated regression is meaningful statistically.

2. CEO duality affects the relationship between institutional ownership and inventory management.

According to result of fixed effects model in table (8), and with respect to statistic t (-1.209) and probability level (0.226), CEO duality doesn't affects the relationship between institutional ownership and inventory management. Therefore, this hypothesis is rejected. Other statistics of model indicate suitability of fitness of whole regression.

3. Board size affects the relationship between institutional ownership and inventory management.

As table (11) shows, p-value related to variable of institutional ownership× board size is more than 0.05 (0.706). therefore, hypotheses H_0 in confidence level of 95% is accepted and board size doesn't affect the relationship between institutional ownership and inventory management.

Table 9: the result of limer F test and Hasman test

type of test	Limer F test	Hasman test
Value of statistic	14/888	18/879
P-value	0/0000	0/0270
Type of model	Panel	Fixed effects

Source: research calculation

Table 10: the result of fixed effects model (third hypothesis)

Fixed effects model	coefficients	Standard	T statistic	P- value
C	1/565	1/5630	1/023	0/306
$INSOWN_{it}$	-0/007	0/018	-0/423	0/672
$BRDSize_{it}$	-0/388	0/950	-0/408	0/683
$INSOWN_{it} \times BRDSize_{it}$	0/004	0/011	0/376	0/706
HOl_{it}	0/056	0/010	5/305	0/000
$SIZE_{it}$	-0/026	0/005	-4/429	0/000
GRO_{it}	-0/067	0/006	-11/16	0/000
PRO_{it}	0/001	0/002	0/489	0/625
LEV_{it}	0/106	0/017	5/942	0/000
AGE_{it}	-0/208	0/043	-4/842	0/000
R^2	0/95			
$\bar{R}^2$	0/93			
D.W	1/87			
Fisher F	70/60(prob=0/0000)			

Source: research calculation

Table 11: the summary of the result of hypothesis test

Summary of hypothesis	Independent variable	Main independent variable coefficient	Meaningful level of test	Result
Managerial ownership affects the relationship between institutional ownership and inventory management	INSOWN×MANOWN	-3/17	0/566	Rejection of hypothesis
CEO duality affects the relationship between institutional ownership and inventory management	INSOWN×DUAL	-0/0002	0/226	Rejection of hypothesis
Board size affects the relationship between institutional ownership and inventory management	INSOWN×BOA	0/004	0/706	Rejection of hypothesis

8. Conclusion:

8.1. Interpretation of the results of first hypotheses test

The result of first hypotheses test of research showed that managerial ownership doesn't affects the relationship between institutional ownership and inventory management. These findings don't correspond with theoretical principles of research and presented claim in first hypotheses.Also, the findings of first hypotheses contradict the result of Elsayed and veheba research (2013). The study of empirical and theoretical principles indicates that if agent or director of firm is owner of a percent of firm, many agency problems are solved and it seems that these firms have more efficiency from perspective of efforts of management to supply is benefits in firm. In this regard, capopoolos et al (2007) showed that in firms having managerial ownership, directors have motives to more effort and to increase efficiency of firm. So, it seems that probably, directors have not used their corporate governance mechanisms to adjust opinions and views of institutional shareholders.

8.2. Interpretation of the result of second hypotheses test

The result of second hypotheses test of research indicated that CEO duality doesn't affect the relationship between institutional ownership and inventory management. These findings are not adaptable with theoretical principles of research and presented claim in second hypotheses and also the results of Elsayed and veheba research (2013).

These researchers deduced that CEO duality endangers potentially efficiency and independence of board and weakens methods of monitoring managerial behavior. It seems that institutional shareholders in reaction to such conditions and more control on decisions of directors. (Elsayed and veheba; 2013).For interpretation of the result of second hypotheses, we must consider that inventory management includes desirably benefits of all shareholders. The management of firm by control of decision of institutional shareholders can protect benefits of all shareholders and regardless of personal benefits, protects benefits of shareholders. The shareholders of firms which their leadership system has CEO duality problem, feel more danger about threat of their benefits in firm, because with respect to multiplicity of duties, director fails in performance of his/her duties and can't have sufficient control on institutional shareholders. While it seems that in Iranian firms, multiplicity of duties of directors has caused that they don't affect views and opinions of institutional shareholders.

8.3. Interpretation of the result of third hypotheses test

The result of third hypotheses test of research showed that board size doesn't affect the relationship between institutional ownership and inventory management. These finding are not adaptable with theoretical principles of research and presented claim in third hypotheses and also the results of Elsayed and veheba research (2013). Lipton and Lorsch (1992) were first persons who assumed that board size is an independent control mechanism. Specially according to them, big board's probably have less effects relative to small boards. Except for size, coordination of the bigger boards is more difficult.

In these conditions, noncooperation problems among members of boards increase costs of monitoring and asymmetry of information and limit control of directors. (Elsayed and veheba; 2013). Jensen suggests 7 or 8 persons as optimal size of board. The importance of board size to improve performance of firms has studied extensively, but consensus has not obtained. Yermack (1996) obtained a converse relationship between board size and firm value (Q-Tobin). For interpretation of the result of second hypotheses, it can be said that number of members of board in Iranian firms doesn't firms doesn't affect their decisions.

9. The suggests from the result of research

9.1. Applied suggestions:

1) according to the result of first hypotheses of research that show ownership of directors doesn't affects the relationship between institutional ownership and inventory management, we advise shareholders and users of financial information that don't consider ownership of directors a stimulating mechanism of institutional owners to protect their benefits and try to study and consider other methods of monitoring in order to evaluate firms.
2) With respect to the result of second hypotheses of research. We suggest that owners of joint stock firms try to separate CEO duties from duties of director of board. Also, we advise minority shareholders and market activists that don't consider CEO duality in their investment decisions in firms and if they invest in these firms, must be confident of presence of institutional owners having effective methods of monitoring.
3) with respect to the results of third hypotheses of research, we advise minority shareholders and users of financial information that don't consider board size as a mechanism of effective leadership to control opportunistic behaviors of directors.

9.2. The suggestions for future research

1) The effect of inflation on inventory management in firms accepted in Tehran stock exchange.
2) The relationship between competition in product market and inventory management in firms accepted in Tehran stock exchange.

10. The limitations of research:

1) Given the fact that method of sampling has been screening, one of the most important limitations of research is generalization of their result to whole statistical society in different times and places.
Therefore, for generalization of the results of this research and practical loading of these results, we must be cautious.
2) The research data have not adjusted in terms of inflation.

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