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The effect of corporate ownership on inventory management by considering corporate governance as a mediator

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CHRONICLE	ABSTRACT
	In this study, we examine the relationship between corporate ownership and inventory management where corporate governance plays as a mediator. The study selects a sample of 166 selected firms listed on Tehran Stock Exchange using historical data over the period 2009-2013. The study considers the role of managers as shareholder, existence of managers with more than one responsibility and size of board of directors on inventory management. Using regression analysis, the study has disclosed a negative relationship between managers as shareholder and board size on one side and inventory size on the other side. However, the study did not find any evidence on relationship between managers' dual responsibility as a mediator on relationship between corporate ownership and in inventory management.

1. Introduction

Inventory is one of the most important components of current assets in any business units and management of inventory may increase profitability, significantly (Christie & Zimmerman, 1994; Krautter, 1999; Tribó, 2007). Chekili (2012) investigated the effect of some governance mechanisms on earnings management listed on Tunisian firms over the 2000-2009 by considering 200 observations. In this survey, earnings management was operationalized as a function of board of directors' size, presence of external directors within the board, the separation between the manager and president of the board roles, the majority shareholder's capital percentage, managers' shareholdings, presence of financial institutions and appointment of the CEO by the state. They reported that presence of external directors within the board, board size and presence of a CEO appeared to influence on earnings management whereas the other board characteristics were detected to be neutral. Basu and Wang (2011) confirmed a negative relationship between inventory changes and firm performance but reported that the relationship was sensitive to the choice of sample period. In addition, the relationship was somewhat attenuated for companies in the wholesale and retail industry as well as for firms that normally carry low levels of inventory. They indicated that the macroeconomic and industry-specific environments were important moderators of the relationship between inventory changes and firm performance.

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Mansor et al. (2013) provided some support on the idea that corporate governance (CG) mechanisms were capable of overcoming earnings management (EM) activities specifically from the perspective of family owned companies (FOC) and the non-family owned companies (NFOC). They reported that for FOC, only number of board meetings held; while for NFOC, independence of directors, audit committee, non-duality, audit committee size, in-house internal audit function and quality differentiated auditors were the CG mechanisms detected to be able to help in minimizing the EM activities. Maher and Andersson (2000) studied some of the strengths, weaknesses, and economic implications related to different corporate governance systems in OECD countries. They discussed different mechanisms employed in various systems (e.g. the market for corporate control, executive remuneration schemes, concentrated ownership, cross-shareholdings amongst firms) and evaluated the evidence on whether or not they were conducive to company performance and economic growth. For instance, they explained how the corporate governance framework could impinge on the development of equity markets, R&D and innovative activity, and the development of an active SME sector, and thus impinge on economic growth.

Elsayed and Wahba (2013) tried to learn whether or not the relationship between institutional ownership and inventory management could be moderated by other internal corporate governance mechanisms. Econometric analysis, using a sample of Egyptian listed firms, in their survey provided strong evidence for the applicability of this theme and demonstrates that institutional ownership could influence on inventory management positively (negatively) when managerial ownership was high (low), CEO duality (non-duality) was in place, or board size was large (small). Ameer (2010) investigated the role of institutional investors in the inventory and cash management practices of firms in Asia. They examined the role of a particular class of institutional investors, domestic and foreign banks, in corporate decisions that have liquidity implications such as inventory and cash management. They reported that foreign banks could improve inventory and cash management practices, due to their superior monitoring of the managers. The disproportionate numbers of the institutional investors across industrial sectors in these Asian countries appeared to recommend that some industrial sectors had stable demand of their products, such as in consumer goods sector, which is an attraction, for these institutional investors. Moreover, they reported that forward-looking government policies were crucial to entry of these institutional investors in the developing countries.

Ben-Nasr et al. (2012) applied a unique dataset of 233 privatized companies from 38 countries over the period 1985-2008 to find out the relationship between shareholder identity and earnings quality. They reported strong and robust evidence that (residual) state ownership was related to lower earnings quality. In addition, they reported that state ownership was related to higher abnormal accruals and that the adverse impacts of state ownership on earnings quality were less pronounced in countries with strong investor protection. Moreover, they reported some evidence recommending that private ownership could help to mitigate the adverse impacts of state ownership. Finally, they reported that government-controlled firms with lower earnings quality were penalized with a higher cost of equity.

2. The proposed study

In this study, we examine the relationship between corporate ownership and inventory management where corporate governance plays as a mediator. The study selects a sample of 166 selected firms listed on Tehran Stock Exchange using historical data over the period 2009-2013, which yields 830 panel data. The study considers the effects the role of managers as shareholder, existence of managers with more than one responsibility and size of board of directors on inventory management. The study considers the following three hypotheses,

1. There is a meaningful positive/negative relationship between corporate ownership and inventory management when managers' corporate ownership increases.

2. There is a meaningful positive/negative relationship between corporate ownership and inventory management when board of directors maintain more than one responsibility.

3. There is a meaningful positive/negative relationship between corporate ownership and inventory management when size of board of directors increases/decreases.

The following summarizes descriptions of the variables used for the proposed study of this paper.

Dependent variable

IVS: Inventory value to sales, which is measured as a ratio of total inventory on sales of items.

Independent variable

INS: corporate ownership, which is measured as a ratio of totals shares own by institutional firms divided by total outstanding shares.

Control variables

BOA: This is a dummy variable representing the size of the firm, which is one if firm has more than 6 members as board of director and zero, otherwise.

MAN: This variables measure the ratio of management ownership, which is calculated by dividing sum of top management ownership by total outstanding shares.

BLS: This is a dummy variable representing dual responsibility in management and it receives a value one if chief director is also responsible as executive manager and zero, otherwise.

GRO: This variables measures the growth of the firm using Tobin-Q.

Size: This variable determines how big is the size of the firms are.

PRO: This variable measures the profitability of the firms and it is measured based reported earnings before tax.

LEV: This variable is associated with leverage and it is measured as the ratio of total liabilities on total assets.

CAP: This variable measures the amount of investment, which is calculated as the ratio of total equipment on total liabilities.

AGE: This variable measures the age of firms participated in this survey.

SEC: This variable measures the effects of industry using two digit ISIC classification.

PRV: This variable is one when the firm is mostly owned by private sector and zero, otherwise.

HOL: This variable is one when the firm is mostly owned by government and zero, otherwise.

INT: This variable is one when the firm is mostly owned by institutions and zero, otherwise.

The proposed study of this paper uses a two-stage regression technique to examine the hypotheses of the survey. We first estimate the following function

$$IVS_{it} = \alpha_0 + \alpha_1 INS_{it} + \alpha_2 MAN_{it} + \alpha_3 BLS_{it} + \alpha_4 BOA_{it} + \alpha_5 GRO_{it} + \alpha_6 Size_{it} + \alpha_7 PRO_{it} + \alpha_8 LEV_{it} + \alpha_9 \quad (1)$$
$$CAP_{it} + \alpha_{10} AGE_{it} + \alpha_{11} PRV_{it} + \alpha_{12} HOL_{it} + \alpha_{13} SEC_{it} + \varepsilon_{it},$$

and for the second stage, the study uses the following regression function,

$$IVS_{it} = \alpha_0 + \alpha_1 INS_{it} + \alpha_2 MAN_{it} + \alpha_3 INS_{it} \times MAN_{it} + \alpha_4 BLS_{it} + \alpha_5 INS_{it} \times BLS_{it} + \alpha_6 i_{it} + \alpha_7 INS_{it} \times BOA_{it} + \qquad (2)$$
$$\alpha_8 GRO_{it} + \alpha_9 Size_{it} + \alpha_{10} PRO_{it} + \alpha_{11} LEV_{it} + \alpha_{12} CAP_{it} + \alpha_{13} AGE_{it} + \alpha_{14} PRV_{it} + \alpha_{15} HOL_{it} + \alpha_{17} SEC_{it} + \varepsilon_{it}.$$

where $INS_{it} \times MAN_i$, $INS_{it} \times BLS_{it}$ and $INS_{it} \times BOA_{it}$ are used to examine the first, second and third hypotheses, respectively. In addition, α_3, α_5 and α_7 represent the signs of the three relationships, respectively. Table 1 shows the results of some basic statistics associated with the proposed study.

Table 1
The summary of some basic statistics

Variable	Symbol	Mean	Median	Max	Min	Standard deviation	Kurtosis
Inventory efficiency	IVS	1.915	0.465	199.941	0	9.839	5.35
Corporate ownership	INS	49.724	50.54	99.145	0	23.978	-0.124
Profitability	PRO	0.087	0.088	0.676	-0.89	0.168	-0.894
Corporate governance	MAN	23.745	21.1	94.93	0	18.415	0.648
Leverage	LEV	1.227	0.726	58.989	0.041	3.172	1.883
Private ownership	PRV	71.722	77.23	100	0	25.239	-1.485
Firm size	SIZE	5.579	5.583	8.056	3.368	0.78	0.106
Government ownership	HOL	17.002	8.67	89.93	0	21.754	1.752
Growth	GRO	5.356	2.595	151.613	0	8.964	6.162
Capital sensitivity	CAP	0.194	0.136	0.891	0	0.188	1.241
Size of board of directors	BOA	0.193	0	1	0	0.022	-0.832
Management ownership	BLS	0.565	1	1	0	0.496	-0.263
Firm age	AGE	14.106	15	22	4	4.551	-0.481

The results of Table 1 have indicated that the ownership for some firms is well above 50% and there are some data, which are outside the limits. We have decided to remove some out region data to prepare a more suitable data. Table 2 shows the summary of correlation among various variables and the results do not indicate a strong correlation among independent variables. Moreover, Table 3 presents the results of Kolmogorov-Smirnov test.

Table 2
The summary of the correlations among different pairs of data

Var.	PRV	PRO	MAN	LEV	IVS	INS	HOL	GRO	CAP	BOA	BLS	AGE	SIZE
PRV	1												
PRO	0.02	1											
MAN	0.002	-0.006	1										
LEV	-0.23	-0.003	-0.01	1									
IVS	-0.07	-0.023	0.193	0.039	1								
INS	0.046	-0.247	0.004	-0.023	-0.008	1							
HOL	-0.01	-0.023	0.013	-0.13	-0.143	0.018	1						
GRO	0.251	0.037	-0.01	-0.28	-0.018	0.002	0.009	1					
CAP	0.015	-0.017	-0.01	-0.008	-0.03	0.027	-0.062	0.021	1				
BOA	-0.04	0.017	-0.04	0.045	-0.055	0.005	0.048	-0.03	0.014	1			
BLS	-0.08	-0.022	-0.02	0.0416	0.048	0.007	-0.119	-0.15	-0.024	-0.001	1		
AGE	0.021	0.012	0.048	-0.046	-0.283	0.007	0.175	-0.05	-0.025	-0.08	-0.05	1	
SIZE	-0.08	-0.005	-0.27	0.018	0.0506	-0.01	-0.101	0.002	-0.02	-0.043	0.024	-0.15	1

Table 3
The summary of Kolmogorov-Smirnov test

Variable	IVS	INS	BOA	BLS	MAN
Sig.	0.029	0.592	0.089	0.175	0.12
Result	Not normal	Normal	Normal	Normal	Normal

According to the results of Table 3, only IVS is not normally distributed and the other variables are normally distributed. Therefore, Johnson test to convert the data into normal for this variable. Table 4 presents the results of Limer and Hausman. According to the results of Table 4 we use panel data with fixed effect.

Table 4
The summary of Limer and Hausman test

	Limer			Hausman		
F-value	df	Sig.		Chi-Square	df	Sig.
22.43	165	0.0087		5.635	15	0.8966

3. The results

In this section, we present details of our findings on testing the hypotheses of this survey using regression method. We first examine the effects of independent variables on dependent variable before taking into account the effects of control variables and Table 5 shows the results.

Table 5
The summary of regression analysis before taking into account the effects of control variables

Variable	Symbol	coefficient	t-value	Sig.
Corporate ownership	INS	-0.04797	-2.4157	0.020649
Corporate management	MAN	-0.11944	-2.53984	0.022352
Dual responsibility	BLS	0.642209	4.07451	0.050877
Board size	BOA	-0.02839	-2.93312	0.008408
Growth	GRO	0.032306	1.09635	0.338468
Firm size	SIZE	0	4.639163	0.000
Profitability	PRO	-9.29147	-5.51031	0.000
Leverage	LEV	-0.02545	-0.32187	0.819561
Capital sensitivity	CAP	-1.19239	-0.90081	0.439583
Firm age	AGE	0.059718	1.062299	0.355498
Private ownership	PRV	0.045033	1.420421	0.208616
Government ownership	HOL	-0.00294	-0.21532	0.899389
Intercept	C	1.532098	0.652537	0.588594
R-squared		0.815487	Mean	1.895
Adjusted R-squared		0.789	Durbin-Watson	2.125
F-statistic		4.229	Sig,	0.000

According to the results of Table three variables, INS, MAN and BOA maintain meaningful relationships with dependent variable but BLS does not have any meaningful relationship. Table 6 presents the results by considering the control variables.

Table 6
The summary of regression analysis before taking into account the effects of control variables

Variable	Symbol	Coefficient	t-value	Sig.
Corporate ownership	INS	-0.049	-2.199	0.0194
Corporate management	MAN	-0.122	-2.312	0.021
	MAN×INS	0.002	2.374	0.018
Dual responsibility	BLS	0.656	3.709	0.0478
	INS ×BLS	0.014	0.451	0.0652
Board size	BOA	-0.029	-2.67	0.0079
	INS ×BOA	0.003	5.855	0.0393
Growth	GRO	0.033	0.998	0.318
Firm size	SIZE	0	4.223	0.000
Profitability	PRO	-9.491	-5.016	0.000
Leverage	LEV	-0.026	-0.293	0.77
Capital sensitivity	CAP	-1.218	-0.82	0.413
Firm age	AGE	0.061	0.967	0.334
Private ownership	PRV	0.046	1.293	0.196
Government ownership	HOL	-0.003	-0.196	0.845
Intercept	C	1.565	0.594	0.553
R-squared		0. 833	Mean	1.895
Adjusted R-squared		0.816	Durbin-Watson	2.02
F-statistic		3.358	Sig,	0.000

According to Table 6, Adjusted R-Square is equal to 0.816, which means that the independent variables could describe approximately 82% of the changes of dependent variable. In addition, Durbin-Watson

is equal to 2.02, which means there was no auto-correlation among independent variables. Moreover F-value is statistically meaningful, which means the relationships are linear.

4. Discussion and conclusion

As we can observe from the results of Table 6, there is a negative and meaningful relationship between corporate ownership (INS) and inventory management. In addition, the sign of MAN×INS is also positive, which means the relationship is positive.

The second hypothesis of the survey studies the effects of dual responsibility (BLS) on inventory management and as we can observe the coefficient is not meaningful when the level of significance is one percent. Therefore, the second hypothesis of the survey has not been approved.

Finally, the last hypothesis of the survey investigates the relationship between board size (BOA) and inventory management. As we can observe from the results of the survey, there is a negative and meaningful relationship between these two variables.

The results of this study are consistent with findings of Elsayed and Wahba (2013) and Ben-Nasr et al. (2012).

Acknowledgement

References

Ameer, R. (2010). The role of institutional investors in the inventory and cash management practices of firms in Asia. *Journal of Multinational Financial Management*, *20*(2), 126-143.

Basu, N., & Wang, X. (2011). Evidence on the relation between inventory changes, earnings and firm value. *The International Journal of Business and Finance Research*, *5*(3), 1-14.

Ben-Nasr, H., Boubakri, N., & Cosset, J. C. (2012). Earnings quality in privatized firms: International evidence on the role of state and private owners. *Available at SSRN 2161478*.

Chekili, S. (2012). Impact of some governance mechanisms on earnings management: An empirical validation within the Tunisian market. *Journal of Business Studies Quarterly*, *3*(3), 95-104.

Christie, A. A., & Zimmerman, J. L. (1994). Efficient and opportunistic choices of accounting procedures: Corporate control contests. *Accounting Review*, 69(4), 539-566.

Elsayed, K., & Wahba, H. (2013). Reinvestigating the relationship between ownership structure and inventory management: A corporate governance perspective. *International Journal of Production Economics*, *143*(1), 207-218.

Krautter, J. (1999). Inventory theory: New perspectives for corporate management. *International Journal of Production Economics*, *59*(1), 129-134.

Maher, M., & Andersson, T. (2000). Corporate governance: effects on firm performance and economic growth. *Available at SSRN 218490*.

Mansor, N., Che-Ahmad, A., Ahmad-Zaluki, N. A., & Osman, A. H. (2013). Corporate governance and earnings management: A study on the Malaysian family and non-family owned PLCs. *Procedia Economics and Finance*, *7*, 221-229.

Tribó, J. A. (2007). Ownership structure and inventory policy. *International Journal of Production Economics*, *108*(1), 213-220.