



The effects of outside board on firm value in Tehran Stock Exchange from the perspective of information transaction costs

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Abstract

The aim of this study is to investigate the effects of outside board on firm value in Tehran Stock Exchange (TSE) from the perspective of information transaction costs. To do so, a sample of 96 firms listed in TSE is selected to be studied during the period of 2003-2012. Tobin q ratio is used to measure firm's value and bid-ask spread for information transaction costs. In addition to these variables, four control variables are adapted namely firm's characteristic, age, size and duality. The results of the study show that there is not a significant relationship between outside board and firm's value. Investigating the relationship between outside board and firm's value, the results indicate that only in food and non-metal industries, there is a negative relationship between outside board and firm's performance. Therefore, it can be concluded that not in all of industries outside board affects firm's value. Further, results do not prove the effects of outside board on information transaction cost. In addition, the results do not support that information transaction cost affect firm's value. Finally, the results also suggest that independence and presence of outside board of director member does not affect firm's value in firms with lower information transaction cost.

Keywords : Outside Board; Firm Value; Information Transaction Costs and Tehran Stock Exchange.

1 Introduction

With the separation of ownership and management, managers work as a representative of owners. This situation leads to the formation of agency relationship in which managers may work for their self-interest. In this case,

the need for good corporate governance is more than ever to monitor the manager's tasks. It is believed that some attributes of corporate governance such as outside board in the combination of board of directors can reduce the interest conflict between managers and owners [23]. Recent regulations have required some companies to increase the number of outside directors on their boards to generate estimates of the effect of board independence on performance that are largely free from endogeneity problems [7]. At least 18 countries governments mandated minimum standards between 1993 and December 2000 for outside director representation on boards of publicly

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traded companies that result in increase in outside board membership in these countries relative to the early 1990s and before [5]. Linn and Park [21] argue that board compensation policy is designed to: attract directors whose marginal productivity interacts with the investment opportunities of the firm to produce the maximal gain, mitigate agency problems and firms pay more and emphasize incentive-based compensation to motivate outside directors to act in the interests of shareholders when the costs of monitoring are high. The empirical results also supports that outside board reduces agency cost. For example, Linck et al. [20] argue that when information asymmetry costs is low, board independence is high. Therefore, it is expected that good corporate governance lead to increasing firm value through information asymmetry cost reduction. However, given the importance of corporate governance and its mechanisms such as outside board, in this study the effects of outside board on firms value from the perspective of information transaction costs is investigated.

2 Literature review

Pombo and Gutierrez [22] investigated the relationship between outside directors, board interlocks and firm performance and find a positive relation between both the ratio of outside directors, and the degree of board interlocks, with firm return-on-assets. They also find that outside busy directors are key drivers of improved firm performance. Their further results show that appointments of outsiders are endogenous to firm ownership structure and blockholder activism becomes an internal mechanism that improves director monitoring and ex-post firm valuation.

Linn and Park [21] investigated the relation between outside director compensation and the investment opportunities of firms. They find that elements of outside director compensation are significantly related to the investment opportunity set in which firms with more investment opportunities pay a higher level of compensation to their outside directors than firms with fewer investment opportunities. They also document a

positive relation between total compensation of outside directors and firm size.

Joh and Jung [16] using data on publicly listed firms and their directors between 1999 and 2006 in Korea find that independent directors are correlated with higher corporate value when the firm has lower information transaction costs. Their results suggest that the monitoring role of independent directors is limited when transferring firm-specific information is costly.

Duchin et al. [7] find effectiveness of outside directors depends on the cost of acquiring information about the firm: when the cost of acquiring information is low, performance increases when outsiders are added to the board, and when the cost of information is high, performance worsens when outsiders are added to the board. They also find that firms compose their boards as if they understand that outsider effectiveness varies with information costs.

De Miguel et al. [6] and Lefort and Urzua [19] find that there is positive relationship between outside board and firm's performance.

Cheng [3] investigated the relationships between board size and change in firm's performance and find that there is a negative relationship between board size, monthly stock return, annual assets return, Tobins q, accruals, extraordinary items and research and development expenses.

Galibaf Asl and Rezaee [11] studied the impact of board combination on firms performance in firms listed in TSE. They show that there is not a significant relationship between outside board and return on equity, gross income margin, average growth of income and sale as proxy for firm's performance.

Fe'le [9] investigated the relationship between corporate governance and firms value and show that there not a significant relationship between institutional ownership and firms value. However, he finds a significant relationship between outside board and firm's value.

Gaemi and Shahriari [10] investigated the relationship between corporate governance mechanisms and firms performance. They show that there is not a significant relationship be-

tween board combination, ownership structure and firms performance. However, they find a positive significant relationship between information discloser and firm's performance.

Vakilifard and Bavandpour [25] studied the relationship between corporate governance mechanisms and financial information quality and firms performance. They find a positive significant relationship between institutional ownership and firm's performance. However, they show that block holders in firms ownership structure does not affect firms performance. In addition, they show that outside board has a negative significant effect on firm's performance.

Ahmed and Duellman [1] investigated the relationship between accounting conservatism and board of director characteristic. Their results document that (i) the percentage of inside directors is negatively related to conservatism, and (ii) the percentage of outside directors' shareholdings is positively related to conservatism.

Kim and Lim [17] examined the relationship between the diversity of independent outside directors. They find consistent positive relationships between firm valuation and the proportion of independent outside directors with government experience, but negative relationships between firm valuation and the proportion of independent outside directors who are accountants. In addition, they find that the diversity of independent outside directors' academic majors or age has consistently positive effects on firm valuation. Their result implies that not only the quantity but also the quality of independent outside directors affects the company's valuation.

Gul and Leung [12] studied the relationship between board leadership, outside directors expertise and voluntary corporate disclosures and show that CEO duality is associated with lower levels of voluntary corporate disclosures. However, the negative CEO duality/voluntary disclosure association is weaker for firms with higher proportion of expert outside directors on the board suggesting that the expertise of non-executive directors moderates the CEO duality corporate disclosures relationship.

Cai et al. [2] examined the impact of a firm's

asymmetric information on its choice of three mechanisms of corporate governance: the intensity of board monitoring, the exposure to market discipline, and CEO pay-for-performance sensitivity. They find that firms facing greater asymmetric information tend to use less intensive board monitoring but rely more on market discipline and CEO incentive alignment.

3 Research Hypotheses

1. Independence and presence of outside board of director affects firm's value.
2. Independence and presence of outside board of director affects firm's value in different industries.
3. Independence and presence of outside board of director affects information transaction cost.
4. Information transaction costs affects firm's value.
5. Independence and presence of outside board of director affects firm's value more in firms with lower information transaction costs.

4 Methodology

The research method of this study is post hoc research. This type of research is applied for the investigation of certain relationships which occurred in past. In addition, the research can be considered as descriptive-correlation research since it tries to find a relationship between variables. To collect research data, TSE database, Tadbirpardaz and Rahavardnovin softwares are used. Obtained data is gathered in Excel worksheets and then it is transmitted to Eviews software to be analyzed using panel data methods.

5 Population and data collection

The population of the study includes all firms listed in Tehran Stock Exchange for the period

of 2003-2012. However, following conditions are put to reach a reasonable sample to be studied:

1. Firms must be listed before 2003.
2. Transaction intervals must not be more than 6 month.
3. Sample firms must not have changed their fiscal year during 2003-2012.
4. Information must be available.
5. Sample firms must not be brokerage, investment, banks and financial institutions.

As a result of these conditions, a sample of 96 firms is obtained to be studied during 2003-2012, giving 960 firms-year observation.

6 Models and variable definition

To test the first and second hypotheses, following regression model is conducted:

$$Qtobin_{it} = \alpha_{it} + \beta_1 OB_{it} \quad (6.1)$$

$$+ \beta_2 SIZE_{it} + \beta_3 AGE_{it} + \beta_3 DUALITY_{it} + \epsilon_{it}$$

Where:

- $Qtobin_{it}$: Tobins q in i firm at t period,
- IB_{it} : Outside board in i firm at t period,
- $SIZE_{it}$: Firms size in i firm at t period,
- AGE_{it} : Age size in i firm at t period,
- $DUALITY_{it}$: CEO duality in i firm at t period,
- ϵ_{it} : Error term in i firm at t period.

To test third hypothesis, following regression model is used:

$$BAS_{it} = \alpha_{it} + \beta_1 OB_{it} \quad (6.2)$$

$$+ \beta_2 SIZE_{it} + \beta_3 AGE_{it} + \beta_3 DUALITY_{it} + \epsilon_{it}$$

BAS_{it} : Bid-ask spread i firm at t period.

Other variables as above.

To test fourth hypothesis, following regression model is conducted:

$$Qtobin_{it} = \alpha_{it} + \beta_1 BAS_{it} + \beta_2 SIZE_{it} + \beta_3 AGE_{it} \quad (6.3)$$

$$+ \beta_3 DUALITY_{it} + \epsilon_{it} + \beta_1 BAS_{it} + \beta_2 SIZE_{it}$$

$$+ \beta_3 AGE_{it} + \beta_3 DUALITY_{it} + \epsilon_{it}$$

Variables description as above.

To test fifth hypothesis, following regression model is conducted:

$$Qtobin_{it} = \alpha_{it} + \beta_1 OB_{it} + \beta_2 SIZE_{it} \quad (6.4)$$

$$+ \beta_3 AGE_{it} + \beta_3 DUALITY_{it} + \epsilon_{it}$$

Definition of variables as above.

7 Research variables

Outside board: the ratio of outside board members to all members of board in previous year.

Information transaction cost: to measure information transaction cost, bid-ask spread is used which is calculated as following [27]:

$$BAS = \sum \left(\frac{P_A - P_B}{\frac{P_A + P_B}{2}} \right)$$

Where:

RS =Bid-ask spread

P_A=Ask price

P_B=Bid price

Firm's value: Tobin's q ratio is used to measure firm's value, which is calculated as following:

$$Q_{tobin} = \frac{(TB + MV)}{TA}$$

Where:

Qtobin is Tobin's q ratio

TB is firm's total book value

MV is firm's total market value

TA is firm's total assets value

If the result of this ratio is more than 1, there is a motivation to for investment and if the ratio is less than 1, investment stops [26]. To measure firm's market value, market value of ordinary stock plus total debt is calculated.

8 Control variables

Firm's characteristics: industries which have 5 firms at least in studied period is considered in hypothesis test.

Firm's size: considering the complexity of bigger firm's structure and owners problems in obtaining firms information, it is expected that these firms has more agency costs. In addition, bigger firms has much more relationships with government and society, however, these firms are likely to have bigger board and more outside board to have better supervision and also communication with government and society. To measure firm's size, natural logarithm of sales is used.

Firm's age: it is expected that aged firms have bigger board and more outside board members because of development of their activities. To

measure this variable, the number of firm's activity years from its establishment is calculated.

Duality: considering that in Iran, many of firm's president is also boards chair and in this case, often boards chair is outside. However, in this study, presence of firm's president as boards chair is considered as control variable.

In the case that firm's president is also boards chair, CEO duality variable (a dummy variable) takes 0, otherwise 1.

9 Variables persistency

To determine the persistency of research variables Levin, Lin and Chu test is used. The results indicate that research variables are persistent. Persistency of these variables shows that mean, variation and covariation of variables are fixed during different years. It worth to notice that determination of dummy variable of duality and firms age are not accessible because if having trend. The results of persistency test are shown in Table 1.

According to Table 1, all variables are persistent since significance of variables is less than 5 percent.

10 Empirical results

10.1 Descriptive statistic

To show an image of data distribution in research sample, descriptive statistic is shown in Table 2. The results indicate that information transaction cost has the most and duality has the least coefficient of variation as a measurement of variables distribution dispersion. This simply indicates that information transaction cost is varying among TSE firms.

Other interesting result is that the composition of the boards of directors in TSE is outside directors like US firms.

10.2 Correlation

Correlation between research variables is shown in Table 3. According to the results of Table 3, the most correlation is between firm's age and

Table 1: Variables persistency results

Variables	Value	Sig.
<i>Qtobin</i>	-80/43	0/0000
OB	-10/56	0/0000
BAS	-11/46	0/0000
SIZE	-16/73	0/0000

Table 2: Descriptive statistic

	Observation	Mean	Median	Max	Min	Standard Deviation	Coefficient of variation
<i>Qtobin</i>	960	1.67	1.26	12.68	0.56	1.3	0.78
OB	960	0.63	0.6	1	0	0.2	0.32
BAS	960	-0.12	-0.12	1.87	-2.12	0.5	4.17
SIZE	960	12.54	12.4	17.58	5.68	1.34	0.11
AGE	960	37.85	39	77	5	11.57	0.31
DUALITY	960	0.96	1	1	0	0.15	0.15

Table 3: Correlation matrix

	<i>Qtobin</i>	OB	BAS	SIZE	AGE	DUALITY
<i>Qtobin</i>	1.000000					
IB	0.059721	1.000000				
BAS	-0.124331	0.032208	1.000000			
SIZE	-0.080426	-0.091092	-0.019191	1.000000		
AGE	-0.125683	-0.023942	0.075365	0.112303	1.000000	
DUALITY	-0.007481	0.047542	0.023759	-0.017119	0.042213	1.000000

Tobins q which is negative showing that with increasing firms age, its value deteriorates. In addition, the least correlation is between duality and Tobins q. The result highlights duality has a very little effect on firm's value. The low correlation between the most of variables shows that there is no collineary problem.

11 Hypotheses test

11.1 First main hypothesis test

Independence and presence of outside board of director affects firm's value.

Model 6.1 is regressed for testing this hypothesis. The results of this hypothesis test are shown in Table 4. First, F-limer test is conducted to determine if the data is pooled or panel. The result of F-limer test that data is panel. Then,

Hausman test is conducted to determine whether the panel data has fixed effect or random effect. The results of Hausman test indicates that it has fixed effect. Therefore, the model is regressed using fixed effect.

The results of model regression show that there is a negative significant relationship between firms size and firms age with firm's value. However, there is not a significant relationship between duality and outside board with firm's value. Durbin-Watson result shows that there is no autocorrelation problem in models residual. Also, significance of F-statistic proves that the whole model is significant. Adjusted R^2 is 0.39 indicating that outside board and control variables explain 0.39 percent of changes in firm's value.

Table 4: Summary results of first hypothesis test

Variable	β	t-statistic	significance
Constant	8.87	10.15	0.0001
OB	-0.18	-0.51	0.6099
SIZE	-0.33	-4.58	0.0001
AGE	-0.08	-6.04	0.0001
DUALITY	0009.0	0.003	0.9977
R^2	Adjusted R^2	F-statistic	Durbin-Watson
0.45	0.39	0.001	1.71
F-limer	Sig	Hausman	Sig
99.6	0.001	52.49	0.001

11.2 Second main hypothesis test

Independence and presence of outside board of director affects firm's value in different industries.

Model 6.1 is regressed for eight industries namely vehicle parts, pharmaceutical, non-metal minerals, cement, chemical, tile and ceramic, food and metal. The results of this hypothesis test are shown in Table 5.

First, for all industries, F-limer test is conducted to determine if the data is pooled or panel. If significance is less than 5 percent, it is concluded that data is panel. Then, if data is panel (significance less than 5 percent), Hausman test is conducted to determine whether the panel data has fixed effect or random effect. If result of Hausman test is less than 5 percent, it has fixed effect, otherwise has random effect.

The results of fixed effect regression for vehicle parts industry show that firm's age and firm's value has a negative significant relationship. However, outside board and firm's size have not significant relationship with firm's value. For pharmaceutical industry, the results of fixed effect regression show that none of variables of firm's age, outside board and firm's size has significant relationship with firm's value. In non-metal minerals, only firms size and firms value have not significant relationship and there is a negative significant relationship between outside board, firm's age with firm's value and duality has a positive relationship with firm's value. In addition, there is no significant relationship between outside board, firm's age and size, and

duality with firm's value in cement industry. The results of fixed regression model for chemical industry show that there is a positive significant relationship between firms size and firms value. However, in this industry, there is no relationship between firm's age, outside board and duality with firm's value. In tile and ceramic industry, only firm's age positively affects firm's value and there is not a significant relationship between outside board and firm's size with firm's value. In food industry, there is a negative significant relationship between outside board and firm's size with firms value and there is a positive significant relationship between firms age and firms value. Finally, in metal industry, the results of random effect regression show that none of variables of firm's age, outside board and firm's size has significant relationship with firm's value. Durbin-Watson result in all regression models is between 1.5 and 2.5, which shows that there is no autocorrelation problem in models residual. Also, significance of F-statistic proves that the whole models is significant except for metal industry which is 0.688.

However, as it is shown, only in food and non-metal industries, there is negative relationship between outside board and firm's value. Therefore, it can be concluded that not in all of industries outside board affects firm's value.

11.3 Third main hypothesis test

Independence and presence of outside board of director affects information transaction cost.

Model 6.2 is regressed for testing this hypothe-

Table 5: Summary results of second hypothesis test

Industry	Observation	F-limer	Housman	Constant	OB
Vehicle parts	130	4.66**	35.83**	7.66**	-0.56
pharmaceutical	120	5.95**	12.91**	2.56*	-0.45
Non-metal minerals	60	2.35	-	2.32*	-5.11**
Cement	80	14.1**	64.7**	7.25**	0.51
Chemical	130	4.73**	21.3**	4.96**	0.3
Tile and Ceramic	80	3.52**	18.03**	1.99*	0.96
Food	70	14.56**	19.13**	4.35**	-3.18**
Metal	50	5.26**	2.11	1.3	-1.05

continue Table 5

SIZE	AGE	DUALTY	Adjusted R^2	Sig (model)	Durbin-Watson
-1.24	-4.71**	-	0.31	0.001	1.53
-0.17	-1.2	-	0.32	0.001	1.67
1.34	-3.34**	0.88*	0.38	0.001	1.61
-1.96	-6.48	0.51	0.69	0.001	1.55
3.48**	0.24	1.31	0.46	0.001	1.84
-0.3	-3.39**	-	0.30	0.001	1.98
-4.62**	5.13**	-	0.62	0.001	1.76
0.28	0.42	-	0.03	0.688	1.9

Table 6: Summary results of third hypothesis test

Variable	β	t-statistic	significance
Constant	-1.76	-4.42	0.0001
OB	0.14	0.9	0.3695
SIZE	-0.007	-0.21	0.8354
AGE	0.04	7.31	0.0001
DUALITY	-0.007	-0.05	0.9562
R^2	Adjusted R^2	F-statistic	Durbin-Watson
0.24	0.15	0.001	2.33
F-limer	Sig	Hausman	Sig
2.28	0.001	60.11	0.001

sis. The results of this hypothesis test are shown in Table 6. First, F-limer test is conducted to determine if the data is pooled or panel. The result of F-limer test that data is panel. Then, Hausman test is conducted to determine whether the panel data has fixed effect or random effect. The results of Hausman test indicate that it has fixed effect. Therefore, the model is regressed using fixed effect.

The results of fixed effect regression model show that there is a positive significant relation-

ship between firm's age and information transaction cost. However, there is not a significant relationship between duality, firm's size and outside board with information transaction cost. Durbin-Watson result shows that there is no autocorrelation problem in models residual. Also, significance of F-statistic proves that the whole model is significant. Adjusted R^2 is 0.15 indicating that outside board and control variables explain 0.15 of changes in firm's value.

11.4 Fourth main hypothesis test

Information transaction cost affects firm's value.

To test this hypothesis, model 6.3 is conducted. The result of this hypothesis test is shown in Table 7.

First, F-limer test is conducted to determine if the data is pooled or panel. The result of F-limer test that data is panel. Then, Hausman test is conducted to determine whether the panel data has fixed effect or random effect. The result of Hausman test indicates that it has fixed effect. Therefore, the model is regressed using fixed effect.

The results of fixed effect regression model show that there is a negative significant relationship between firm's age and size with firm's value. However, there is not a significant relationship between duality and outside board with firm's value. Durbin-Watson result shows that there is no autocorrelation problem in models residual. Also, significance of F-statistic proves that the whole model is significant. Adjusted R^2 is 0.39 indicating that outside board and control variables explain 0.39 of changes in firm's value.

11.5 Fifth main hypothesis test

Independence and presence of outside board of director affects firm's value more in firms with lower information transaction cost.

Before hypothesis test, descriptive statistic for firms with lower information transaction cost (firms in first quarter of absolute value of information transaction cost during the studied period) is presented. According to Table 8, information transaction cost has the most coefficient of variation as a dispersion criteria and firm's size has the least indicating that firm's size has much more normal distribution than other variables.

To test the hypothesis, regression model 6.4 is conducted. The result of this hypothesis test is shown in Table 9.

First, F-limer test is conducted to determine if the data is pooled or panel. The result of F-limer test that data is panel. Then, Hausman test is conducted to determine whether the panel data has fixed effect or random effect. The results of

Hausman test indicate that it has random effect. Therefore, the model is regressed using random effect.

The results of random effect regression model show that there is a negative significant relationship between firm's size and duality with firm's value. However, there is not a significant relationship between firm's age and outside board with firm's value. Durbin-Watson result shows that there is no autocorrelation problem in models residual. Also, significance of F-statistic proves that the whole model is significant. Adjusted R^2 is 0.1 indicating that outside board and control variables explain 0.1 of changes in firm's value.

12 Conclusion

The aim of this study was to investigate the effects of outside board on firm value in the in Tehran Stock Exchange (TSE) from the perspective of information transaction costs. To do so, a sample of 96 firms listed in TSE is selected to be studied during the period of 2003-2012. Tobin's Q ratio is used to measure firm's value and bid-ask spread for information transaction costs. In addition to these variables, four control variables are adapted namely firm's characteristic, age, size and CEO duality.

In this study five hypotheses were developed. In the first hypothesis, it is argued that outside board of director affects firm's value. The results do not prove the expectation that means outside board of director has no significant effect on firm's value. These results are against the findings of Hossain et al. [15], Fama and Jensen [8], De Miguel et al. [6], Lefort and Urzua [19], Choi et al. [4] and Kim [17] and it is according to Hermalin and Weisbach [13], Vafeas and Theodorou [24] and Hermalin and Weisbach [14]. To detail the first hypothesis, the second hypothesis is developed based on the first hypothesis considering the effect of outside board of director on firm's value in different industries. The results indicate that, there is negative relationship between outside board and firm's performance only in food and non-metal industries. Therefore, it can be concluded that not in all of industries

Table 7: Summary results of fourth hypothesis test

Variable	β	t-statistic	significance
Costant	8.71	10.07	0.0001
OB	-0.04	-0.55	0.5816
SIZE	-0.33	-4.58	0.0001
AGE	-0.08	-5.75	0.0001
DUALITY	-0.02	-0.07	0.9452
R^2	Adjusted R^2	F-statistic	Durbin-Watson
0.45	0.39	0.001	1.71
F-limer	Sig	Husman	Sig
6.81	0.001	50.19	0.001

Table 8: Descriptive statistic for firms with lower information transaction cost

	Observation	Mean	Median	Max	Min	Standard Deviation	Coefficient of variation
$Qtobin$	240	1.52	1.18	6.89	0.61	0.8	0.53
OB	240	0.61	0.6	1	0.2	0.2	0.33
BAS	240	0.005	-0.025	1.61	-1.61	0.41	82
SIZE	240	12.23	12.19	15.29	9.73	1.05	0.09
AGE	240	39.33	40.5	77	18	11.52	0.29
DUALITY	240	0.99	1	1	0	0.11	0.11

Table 9: Summary results of fifth hypothesis test

Variable	β	t-statistic	significance
Constant	6.52	6.4	0.0001
OB	0.19	-0.47	0.6359
SIZE	-0.26	-3.68	0.0003
AGE	-0.004	-0.52	0.6005
DUALITY	-1.84	-4.24	0.0001
R^2	Adjusted R^2	F-statistic	Durbin-Watson
0.45	0.1	0.001	1.78
F-limer	Sig	Hausman	Sig
6.56	0.001	3.16	0.5311

outside board affects firm's value. The results is inconsistent with Fama and Jensen [8], Hosain et al. [15], De Miguel et al. [6], Lefort and Urzua [19], Choi et al. [4], and Kim [17] and consistent with Hermalin and Weisbach [14], Vafeas and Theodorou [24] and GalibafAsl and Rezaee [11]. To investigate the effect of outside board on information transaction cost, the third hypothesis was posited. However, the evidence does not support this expectation. The fourth hypothesis deals with whether information transaction cost affects firm's value but we failed to find such a re-

lationship. Finally, to include information transaction cost in the relationship between outside board of director and firm's value, final hypothesis suggest that independence and presence of outside board of director affects firm's value more in firms with lower information transaction cost. However, the results do not support this suggestion, which is against with Duchin et al. [7] results.

Suggestion remarks

Considering the negative and significant relationship between outside board and firm's value in non-metal minerals and food industry, it seems that outside board has not effective monitoring role in these industries, which should be considered by their stockholders. In addition, considering negative effect of duality on firm's value in firms with low transaction costs, it is suggested that firm's governors take into account this issue and avoid duality in their board structure. The results also bring the case that Kim and Lim [17] argued: "not only the quantity but also the quality of independent outside directors affects the company's valuation".

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