



# The Relationship between Ownership Concentration and Information Asymmetry Considering level of Voluntary Disclosure of Firms Listed in Tehran Stock Exchange

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## Abstract

*The present study determined a measure to explain influence of ownership structure on information asymmetry considering voluntary disclosure. Samples included 104 firms listed in Tehran Stock Exchange. Results showed that ownership concentration positively and significantly influenced on information asymmetry of all firms; moreover, firm size negatively and significantly influenced on information asymmetry. For all the firms, managerial ownership and institutional ownership had negatively and positively significant influence on information asymmetry, respectively. In firms with low voluntary disclosure, ownership concentration positively but insignificantly influenced on information asymmetry; in firms with high voluntary disclosure, while, ownership concentration positively and significantly influenced on information asymmetry. In firms with low voluntary disclosure, managerial ownership negatively but insignificantly influenced on information asymmetry; in firms with high voluntary disclosure, while, managerial ownership positively but insignificantly influenced on information asymmetry. Results also showed that institutional ownership positively but insignificantly influenced on institutional ownership in firms with both low and high voluntary disclosure.*

**Keywords:** Ownership concentration, information asymmetry, voluntary disclosure, Tehran stock exchange.

## Introduction

Capital structure and ownership structure have been always controversial as two effective parameters on development and economic growth of the firms. Different combinations of ownership structure including institutional shareholders and major shareholders can influence on financial policies and strategic guidelines of the firm. During recent decades, the role of institutional investors has become more distinguished, because they have become larger and more influential while gaining a considerable ownership concentration.

There are two general attitudes toward institutional investors. Some consider them as investors focusing on current short-time earnings. Some other consider institutional investors as professional investors with relative advantage in processing and analyzing information who consider earning-related information resulted from long-term economic activities which are not reflected in the current earning (short term)<sup>1</sup>. Therefore, prevalence of this ownership can play an essential role in decreasing 'information asymmetry' of the capital market<sup>2</sup>.

Information symmetry exists when managers and participators in capital market, particularly shareholders, access to identical information on a firm. While, if information asymmetry exists, managers will access to more and better information on the

market because they access particular confidential information on the firm; that is, they access information of the firm before the market inform<sup>3</sup>. An important discussion considered on capital markets particularly stock exchanges is market efficiency according to which available information of the market totally reflect their influences on price of the shares. In terms of efficient market, accounting may exist because of information asymmetry in which a party accesses more information than the other party. This happens due to internal transactions and information<sup>4</sup>.

On the other hand, the literature related to present study shows that transparency of reporting and competency of accounting information disclosure directs behavior of investors for better understanding of the relationship between earning per share and share price whereby lesser over- or underestimation of earning parts. Because, optimal disclosure of accounting information decreases information asymmetry and cost of equity through which it plays an essential role in efficiency of capital market.

Thomas<sup>5</sup> believes that mispriced information of share price and information asymmetry may result from low-quality accounting information disclosure which, under lack of transparent information, causes shareholders not to have a clear understanding of information content of earning and price per share and the relationship between current earnings and future

earnings. Thus, they may over- or underestimate information hidden in the current earnings in relation to future earnings; this, in turn, results in current earnings anomaly.

Accordingly, the present study tries to provide investors with a measure to explain ownership structure by which they can understand information symmetry and decide more confidently on their considered portfolio.

## Methodology

**Participants:** Participants of the present study included all firms listed in Tehran Stock Exchange (TSE). There were 342 firms listed in TSE by the March 2011. Considering determined measures, eventually, 104 firms listed in TSE were selected as samples.

**Variables:** Variables of the present study were classified into four groups including independent, dependent, control and modifier variables to test hypotheses.

**Independent Variables:** Ownership Concentration: To calculate ownership concentration (OC), the present study used Herfindahl–Hirschman Index (HHI) which involves the sum of the squares of the shares belonged to shareholders calculated as follows:

$$HHI_i = \sum_{i=1}^n \left( \frac{P_i}{P} \times 100 \right)^2$$

where,  $HHI_i$  is HHI for the studied firm,  $i$ ;  $\sum_{i=1}^n$  is the sum of the shares belonged to shareholders of the studied firm,  $i$ ;  $P_i$  represents the number of shares belonged to each shareholder of the studied firm,  $i$ ;  $P$  indicates the number of total shares of the studied firm,  $i$ .

To more and better investigation of OC, the present study used two mechanism of OC as follows:

**Institutional Ownership:** To calculate institutional ownership (IO) of a firm, the number of IO shares divided into total number of common shares at the end of the period.

**Managerial Ownership:** To calculate managerial ownership, total number of shares available for the board and manager divided into total number of distributed shares of the firm.

**Dependent Variables:** The dependent variable of the present study is information asymmetry which was defined based on relative price gap (bid-ask spread) index which was calculated and extracted by Jiang<sup>6</sup> model. Spread index was calculated as follows:

$$Spread_{it} = ((AP_{it} - BP_{it}) / (AP_{it} + BP_{it}) \div 2)$$

where,  $Spread_{it}$  is the range of difference between suggested price of bid and ask for shares of the studied firm,  $i$ , during year  $t$ ;  $AP_{it}$  refers to mean suggested ask price for shares of the studied firm,  $i$ , during year  $t$ ;  $BP_{it}$  refers to mean suggested bid price for shares of the studied firm,  $i$ , during year  $t$ .

**Control Variables:** The present study considered firm size (natural logarithm of equity market value) and natural logarithm of share price as control variables which were calculated as follows:

**Firm Size:** Firm size was calculated by natural logarithm of equity market value at the end of the year.

$$Size_{it} = Ln(MV_{it})$$

where,  $Size_{it}$  is the size of the studied firm,  $i$ , during year  $t$ ;  $MV_{it}$  represents equity market value of the studied firm,  $i$ , during year  $t$ .

**Share Price:** Share price was calculated by natural logarithm of the share price at the end of a year.

**Modifier Variable:** The modifier variable of the present study was voluntary disclosure measured by Jensen. Voluntary disclosure was quantitatively calculated in two ways: 1) relative method, 2) quantitative method.

**Relative method:** By relative method, the number of disclosed information in terms of Jensen index divided into total number of information to be disclosed which finally obtained a number between 0 and 1. The relation is as follows:

$$Dscore_{it} = DIS_{it} / DIS_j$$

where,  $Dscore_{it}$  is the score of voluntary disclosure of the studied firm,  $i$ , during year  $t$ ;  $DIS_{it}$  is the sum of voluntary disclosure of the studied firm,  $i$ , during year  $t$  based on Jensen model;  $DIS_j$  is the sum of scores in terms of Jensen index (62 scores).

**Data Analysis:** To find the relationships between variables of the interviewed participants, descriptive indices were extracted from regression analysis tests, t-test, classic regression assumptive tests, Spearman correlation test and F significance tests. SPSS software, V. 16, was used for analysis and above tests.

## Results and Discussion

Table 1 reports mean, standard deviation, minimum and maximum score, variations (standard deviation divided by mean) and information asymmetry of variables. OC was the least distributed and thus the most stable variable; in contrast,

MO was the most distributed and thus the least stable variable; while, information asymmetry was the most distributed and the least stable dependent variable compared to independent variables during the studied period. This indicates that independent variables have relatively low influence on information asymmetry during studied period. Variations show that firm size was the least distributed and thus the most stable variable compared to share price.

Results from Kolmogorov – Smirnov test showed that no studied variable were normally distributed during this period except for share price. Thus, a non-parametric statistic such as Spearman's rank correlation coefficient was used to determine the correlation between studied variables during this period.

Table 2 shows results from Spearman correlation test between variables of all firms during an eight-year period. Results from correlation between studied variables indicated a positive significant correlation (0.096) between OC and information asymmetry and a positive significant correlation (0.083) between IO and information asymmetry. There was also a negative significance correlation (-0.142) between firm size and

information asymmetry. It is noteworthy that there was a positive significant relationship between MO and IO and a negative significant relationship between MO and OC during studied period and a negative correlation between share price and MO.

Table 3 reports results from regression models to test the influence of OC on information asymmetry. Reports for dimensions of OC on information asymmetry and information disclosure were discarded from the table. Therefore, the results were summarily listed in the table.

Table 3 shows that OC positively influenced on information asymmetry. Firm size negatively and significantly (-0.033) influenced on information asymmetry of all firms. Results related to F-statistic show that the model is generally significant without self-regression regarding Durbin-Watson statistic. Moreover, the results related to adjusted coefficient of determination show that variations of information asymmetry was 0.033 influenced by OC and control variables particularly firm size.

**Table-1**  
**Description of variables for all firms**

variables Measures	OC	MO	IO	Firm Size	LnP	BAS
Number	832	832	832	832	832	832
Mean	0.68	0.1	0.45	26.6	8.47	-0.09
Standard deviation	0.19	0.22	0.18	1.58	0.93	0.26
Minimum	0.07	0	0.03	23.11	5.99	-1.24
Maximum	1	0.96	0.99	30.97	11.21	0.56
Variations	0.28	2.2	0.4	0.06	0.11	2.89

**Table-2**  
**Spearman's rank correlation between variables for all firms**

variables	Variables	OC	MO	IO	Firm size	LnP	BAS
OC	Correlation	1	-0.236	-0.766	0.060	0.070	0.096
	Sig.		0.000	0.000	0.083	0.043	0.005
MO	Correlation		1	0.177	-0.343	-0.178	0.054
	Sig.			0.000	0.000	0.000	0.122
IO	Correlation			1	0.036	0.029	0.083
	Sig.				0.299	0.404	0.016
Firm size	Correlation				1	0.469	-0.142
	Sig.					0.000	0.000
LnP	correlation					1	0.014
	Sig.						0.694
BAS	Correlation						1
	Sig.						

**Table-3**  
**Regression model for influence of OC on information asymmetry for all firms**

Statistics	Variables	Regression coefficient	Standardized coefficient (β)	T	Sig. t
	Constant ©	0.625	-	4.069	0.000
	OC	0.110	0.080	2.328	0.020
	Firm size	-0.023	-0.196	-5.131	0.000
	LnP	0.011	0.038	1.000	0.318
Coefficient of determination	Adjusted Coefficient of determination		F	Sig. F	Durbin-Watson
0.037	0.033		10.560	0.000	1.667

Results from analyses show that MO negatively influenced on information asymmetry. Firm size negatively and significantly (-0.033) influenced on information asymmetry of all firms. Results related to F-statistic show that the model is generally significant without self-regression regarding Durbin-Watson statistic. Moreover, the results related to adjusted coefficient of determination show that variations of information asymmetry was 0.027 influenced by MO and control variables particularly firm size.

Regression model for influence of IO on information asymmetry showed that IO positively influenced on information asymmetry. Nevertheless, this influence is weak regarding regression coefficient of IO (0.118); however, this influence is significant (0.018) regarding t-statistic. Other results suggest a negative significant influence by firm size (-0.033) on information asymmetry of all firms. Moreover, results related to adjusted coefficient of determination show that variations of information asymmetry was 0.034 influenced by IO and control variables particularly firm size.

Results from Spearman correlation test between variables of all firm with low voluntary disclosure indicates lack of a significant correlation between independent variables and information asymmetry; however, there was a negative significant correlation between firm size and information asymmetry (-0.183).

Results from regression modelsto test influence of OC and its dimensions on information asymmetry of firms with low voluntary disclosure showed that OC positively influenced on information asymmetry. Nevertheless, this influence is weak regarding regression coefficient of CO (0.082); however, this influence is insignificant (0.141) regarding t-statistic. Moreover, results related to adjusted coefficient of determination show that variations of information asymmetry of firms with low voluntary disclosure was 0.037 influenced by OC and control variables particularly firm size.

Regression model for influence of MO on information asymmetry during an eight-year period for firms with low voluntary disclosure showed that MO negatively and insignificantly influenced on information asymmetry (-0.057).

Firm size negatively and significantly (-0.033) influenced on information asymmetry of firms with low voluntary disclosure. Moreover, results related to adjusted coefficient of determination showed that variations of information asymmetry of firms with low voluntary disclosure were 0.034 influenced by MO and control variables particularly firm size.

Given that variables were not normal, non-parametric statistics such as Spearman's rank correlation coefficient were used to determine correlation between variables for firms with high voluntary disclosure. Results from correlation between variables indicated a positive significant correlation between OC and IO and information asymmetry of firms with high voluntary disclosure; however, there was a negative significant correlation (-0.102) between firm size and information asymmetry. There was a negative significant relationship between MO and OC and a positive significant relationship between IO and OC of firms with high voluntary disclosure and a negative correlation between share price and MO.

Regression model for influence of OC on information asymmetry during an eight-year period for firms with high voluntary disclosure showed that OC positively influenced on information asymmetry. This influence was relatively strong regarding regression coefficient of OC (0.171); moreover, this influence was significant (0.041) regarding t-statistic. Firm size negatively and significantly (-0.032) influenced on information asymmetry of all firms with high voluntary disclosure. Results related to adjusted coefficient of determination show that variations of information asymmetry was 0.029 influenced by OC and control variables particularly firm size.

Regression model for influence of MO on information asymmetry during an eight-year period for firms with high voluntary disclosure showed that OC positively influenced on information asymmetry. This influence was relatively strong regarding regression coefficient of OC (0.171); moreover, this influence was significant (0.041) regarding t-statistic. Firm size negatively and significantly (-0.032) influenced on information asymmetry of all firms with high voluntary disclosure. Results related to adjusted coefficient of determination show that variations of information asymmetry was 0.029 influenced by OC and control variables particularly firm size.

Regression model for influence of MO on information asymmetry during an eight-year period for firms with high voluntary disclosure showed that MO positively influenced on information asymmetry. This influence was highly weak regarding regression coefficient of MO (0.003); moreover, this influence was insignificant (0.961) regarding t-statistic. Firm size negatively and significantly (-0.033) influenced on information asymmetry of all firms with high voluntary disclosure. Results related to adjusted coefficient of determination showed that variations of information asymmetry were 0.019 influenced by MO and control variables particularly firm size.

Regression model for influence of IO on information asymmetry during an eight-year period for firms with high voluntary disclosure showed that IO positively influenced on information asymmetry. This influence was relatively weak regarding regression coefficient of IO (0.151); moreover, this influence was significant (0.088) regarding t-statistic. Firm size negatively and significantly (-0.032) influenced on information asymmetry of all firms with high voluntary disclosure. Results related to adjusted coefficient of determination showed that variations of information asymmetry were 0.026 influenced by OC and control variables particularly firm size.

Table 4 and table 5 summarize findings of the study for 104 sample firms in three studied levels.

**Discussion:** The present study tried to provide investors with a measure to explain influence of ownership structure on information asymmetry by which they can understand information symmetry and decide more confidently on their considered portfolio. Thus, the present study evaluated the relationship between ownership concentration and information asymmetry considering voluntary disclosure by Jiang et al.<sup>6</sup> model in firms listed in Tehran Stock Exchange during an eight-year period from March 2004 to March 2011.

For all firms, results showed that OC positively and significantly influenced on information asymmetry and variations of information asymmetry were 0.033 influenced by OC and control variables particularly firm size; firm size was negatively and significantly (-0.033) influenced on information asymmetry. This indicates that information asymmetry, i.e. the gap between bid-ask price is lower in larger firms. Since OC positively influenced on information asymmetry of all firms, it can be concluded that information asymmetry is high in firms with concentrated ownership structure; that is, price gap and bid-ask risk of shares is high in such firms which result in inefficiency of capital market and violation of equity.

The other finding is that for all firms, MO negatively and insignificantly influenced on information asymmetry and variations of information asymmetry were 0.027 influenced by MO and control variables particularly firm size. Since MO did not influence on information asymmetry of all firms, it can be concluded that information asymmetry is independent from MO in all firms.

**Table-4**  
**Type of influence of variables in regression model in three studied level**

Variable	type of influence		
	Total firm	Firms with low voluntary disclosure	Firms with high voluntary disclosure
OC	Positive significant influence	Positive insignificant influence	Positive significant influence
MO	Negative insignificant influence	Negative insignificant influence	Positive insignificant influence
IO	Positive significant influence	Positive insignificant influence	Positive insignificant influence
Firm size	Negative significant influence	Negative significant influence	Negative significant influence
LnP	Positive insignificant influence	Negative insignificant influence	Positive insignificant influence

**Table-5**  
**Summary of findings for 104 sample firms**

Studied level / Variable	Total firms	Firms with low voluntary disclosure	Firms with high voluntary disclosure
OC	Effective	Ineffective	Effective
MO	Ineffective	Ineffective	Ineffective
IO	Ineffective	Ineffective	ineffective

For all firms, results showed that IO positively and significantly influenced on information asymmetry and variations of information asymmetry were 0.034 influenced by IO and control variables particularly firm size. Since IO positively influenced on information asymmetry of all firms and Spearman's rank correlation coefficient supported the positive significant relationship between IO and information asymmetry, it can be concluded that information asymmetry is high in firms with institutional ownership structure; that is, price gap and bid-ask risk of shares is high in such firms resulting in inefficiency of capital market and violation of equity.

Moreover, OC positively and insignificantly influenced on information asymmetry of firms with low voluntary disclosure; variations of information asymmetry were also ~0.037 influenced by OC and control variables particularly firm size; OC positively and significantly influenced on information asymmetry of firms with high voluntary disclosure; variations of information asymmetry were also ~0.029 influenced by OC and control variables particularly firm size. OC positively influenced on information asymmetry of firms with high voluntary disclosure; however, OC did not influence on information asymmetry of firms with low voluntary disclosure. It can be concluded that information asymmetry is higher in firms with concentrated ownership structure and more voluntary disclosure; that is, price gap and bid-ask risk is high in such firms which result in inefficiency of capital market and violation of equity.

MO negatively and insignificantly influenced on information asymmetry of firms with low voluntary disclosure; variations of information asymmetry were also ~0.034 influenced by MO and control variables particularly firm size; MO positively and insignificantly influenced on information asymmetry of firms with high voluntary disclosure; variations of information asymmetry were also ~0.019 influenced by MO and control variables particularly firm size. Since MO did not influence on information asymmetry of firms with low and high voluntary disclosure, it can be concluded that information asymmetry is independent from ownership structure.

Results showed that IO positively and insignificantly influenced on information asymmetry of firms with low voluntary disclosure; variations of information asymmetry were 0.040 influenced by IO and control variables particularly firm size. IO positively and insignificantly influenced on information asymmetry of firms with high voluntary disclosure; variations of information asymmetry were 0.026 influenced by IO and control variables particularly firm size. Since IO did not influence on information asymmetry of firms with low and high voluntary disclosure, it can be concluded that information asymmetry is independent from ownership structure.

Results from this study on the influence of IO on information asymmetry of all firms during studied period were consistent with Fama et al.<sup>7</sup> and Jiang et al.<sup>6</sup>, Kazemi and Mohamadnejad<sup>8</sup>.

Results from this study on positive influence of OC on information asymmetry of all firms as well as firms with high voluntary disclosure during studied period were consistent with Kanagaretnam et al.<sup>9</sup> and Jiang et al.<sup>6</sup>. Considering the influence of OC on information asymmetry, justified coefficient of determination was low for firms with high voluntary disclosure compared to all firms; this indicates that lower OC results in information asymmetry in firms with optimal disclosure of accounting information. This result is also consistent with Jiang et al.<sup>6</sup> and Korbacheh et al.<sup>10</sup>.

## Conclusion

Considering the positive influence of IO and OC on information asymmetry of all firms during studied period, investors who use financial statements of the firms listed in TSE are recommended to consider increasing influence of IO and OC factors on information asymmetry of the firms during their investment decisions to avoid violation of their equity. Considering the positive influence of IO and OC on information asymmetry of all firms during studied period, shareholders who use financial statements of the firms listed in TSE are recommended to consider increasing influence of IO and OC factors on information asymmetry of the firms during their decisions to avoid violation of their equity. Considering the positive influence of IO and OC on information asymmetry of all firms during studied period, TSE is recommended to consider negative influence of IO and OC on information asymmetry of the firms in for more efficient capital market by decreasing price gap to avoid violation of equity.

Considering the positive influence of OC on information asymmetry of all firms as well as firms with high voluntary disclosure during studied period and low justified coefficient of determination in firms with high voluntary disclosure, OC seems to result in information asymmetry in firms with optimal disclosure of accounting information. Thus, TSE is recommended to consider negative influence of IO and OC on information asymmetry of the firms in for more efficient capital market by decreasing price gap to avoid violation of equity. Considering the positive influence of OC on information asymmetry of all firms as well as firms with high voluntary disclosure during studied period and low justified coefficient of determination in firms with high voluntary disclosure, OC seems to result in information asymmetry in firms with optimal disclosure of accounting information. Thus, Technical Committee formulating Accounting Standards for Auditing Organization of Iran is recommended to provide opportunities to necessitate some factors of voluntary information disclosure reflected in Jensen index.

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