A study on the Relationship between Information Asymmetry and Earnings Management in Companies Listed in Tehran Stock Exchange

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ABSTRACT

The purpose of this study is to examine the relationship between information asymmetry and earnings management. This study tries to answer the question whether there is a relationship between information asymmetry and earnings management. The research was performed on 69 companies listed in Tehran Stock Exchange in the timeframe of 2003 to 2012. In order for the data analysis, statistical techniques such as simple multivariate regression analysis, Eviews software, and Chow, Breusch-Pagan and Houseman tests were used. The results of the research showed that in most cases, there is no significant relationship between information asymmetry and earnings management of targeted companies.

Keywords: Information Asymmetry, Earnings Management, Discretionary Accruals, Non-discretionary Accruals.

1. INTRODUCTION

There is a great amount of information available in the financial markets nowadays, most of which is about profitability and notification advertisement of profit appropriation. One of the important issues is that, the managers of companies are in charge of publishing the news and notifications and manipulate investors’ predictions. This theory is called “signaling hypothesis” (Cheng, 2006: 4). The role of information in decision making cannot be easily denied, and the less accuracy of the information the more uncertainty occurs. If required information is disclosed among interested parties asymmetrically, it can lead to different results on a single issue. So, before the information itself is important for the decision maker, this is the quality of information disclosure that should be carefully evaluated. Reported profit in the companies has always been considered as a criterion for financial decision making, but when the objectives of managers and owners are not aligned, the manager may provide financial statements in favor of himself. The users of financial information have always been concerned about information asymmetry and are always seeking information to use it in their logical decision making (Bodaghi and Bazzaz-zadeh, 1999: 174).

Sloan (1996) believes that we can infer that based on the earnings announcements, managers may manipulate reported results, that it is earnings management. The management objective can be explained by the hypothesis of information asymmetry. The asymmetry of information exists when shareholders and investors have no access to sufficient resources, motivational plans, or information related to activities in the field of awareness and clarification (Schipper, 1989; Warfield et al, 1995).

Other researchers believe that information asymmetry is a prerequisite for earnings management (Trueeman and Titman, 1988). Furthermore, the amount of information asymmetry systematically explains the income accruals (Richardson, 2000). Therefore, it can be stated that in order to increase the information asymmetry, managers apply earnings management to protect their personal interests. Accordingly, this research, after discussing the concepts and importance of information asymmetry and earnings management, studies the related literature and then focuses on studying the relationship between information asymmetry and earnings management in the companies listed in Tehran Stock Exchange.
2. THEORETICAL FRAMEWORK

2.1. Information Asymmetry

In the 1970s, three scientists named by Spence, Akerlof and Stiglitz established a theory about the information economy which was called the theory of information asymmetry. Akerlof showed that information asymmetry can increase contradictory selection in the markets which accrue before any bargain. Spence noted that informed mediator can increase their own revenue through transferring confidential information to Lower level mediators. Akerlof imagines a market in which the seller has more information than the buyer (Akerlof et al, 1970).

Appropriate information related to the research subject is one of the factors in the decision making. If required information is disclosed among individuals asymmetrically, it can lead to different results on a single issue (Diamond and Verrecchia, 1991). The difference between purchase and sale prices is a criterion widely used to measure the information asymmetry (Attig et al, 2006). Due to the problems of information asymmetry, foreign investors quote wide differences in purchase and sale prices to reduce their potential risk (Yet and Imm, 2010).

Attig et al (2006) state that despite the large shareholders, information asymmetry and costs of access to capital increased, in contrast, the liquidity of companies decreased. On the other hand the difference between monopolistic and competitive industries is the result of information asymmetry (Guadalupe and Gonzalez, 2006). One of the important issues which is considered in capital markets specially in stock exchanges, is the issue of market efficiency based on which all existed information in the market reflect its effects on the stock price. Perhaps from the perspective of efficient market assumption, it could be stated that, the reason for using accounting discipline is the phenomenon of information asymmetry, in which one party of the transaction has more information than the other parties, and this problem is the result of internal transactions and information (Ghaemi and Vatanparast, 2006: 4). If the market is efficient, for compensation of higher costs resulting from the difference between more expanded purchase and sale prices, similarly higher efficiency is needed (Yet and Imm, 2010).

Gaspar and Massa (2006) showed that when the market is efficient, less competitive industries cause less information asymmetry and consequently the volatility of returns will reduce. In contrast, Li and Tang (2008) stated that lower information asymmetry would not lead to higher returns, and this is due to market inefficiencies that can cause unaware investors face the problem of selecting contradictory variants.

2.2. Earnings Management

DeGeorge et al (1999), define earnings management as a form of artificial manipulation of earnings by management to reach the expected level of profits for some specific decisions. According to him, the main motivation for earnings management is to manage the perception of investors toward the business unit. Also, Gordon and Naryanan (1986) believe that the main motivations for earnings management are: a) the Managers’ criterion for choosing a specific method of accounting is to maximize his interest, and b) managers’ interest depends on the level of satisfaction of shareholders on company’s performance. So assuming the stability of other factors, the more the shareholders are satisfied, the more job security, position, profit and rewards of executives will be, c) the interest of the managers is a dependent of job security, management rewards and salary levels and rate, and finally, growth level and rate of company size, and d) the satisfaction level of company's shareholders depends on the stability of growth rate of profits. From Healy (1985) and Schipper’s point of view (1989) and Degeorge et al (1999), earnings management is accomplished in the scope of financial reporting, accrual accounting and other management activities and actions. Fama and Jensen (1983), and Beatty et al (2002), believe that the public companies due to the representation theory compared to the private companies have more motivation for executing earnings management. Several studies also show that managers in order to improve profits and stock prices, use opportunities of earnings management to increase their salary and rewards (Bergstresser and Philippon, 2006).

Existing theories on the direct relationship between competitive industries and earnings management are limited (Ronen and Yaari, 2008). Marciukaityte and Park (2009), argue that competitive industries decrease agency costs through restricting the use of misleading earnings management. Also, the companies in such industries have the least errors in estimating the profits. Tinaikar and Xue (2009) believe that companies in competitive industries use earnings management in order to maintain control of their personal interests. Rajgopal et al (2007) showed that companies use the earnings management of unusual discretionary accruals in order to raise stock prices, through which they can provide suitable opportunities to create positive motivation within investors for investment. Finally, earnings management increases company’s value in short terms, but in long terms it decreases the company’s value and efficiency (Baker et al, 2006). Several studies (Darrough et al, 1998; Dechow and Skinner, 2000; Schipper, 1998, Fields et al, 2001; Nelson et al, 2002) showed that receiving rewards, loan contracts, capital markets, and political parameters are the most important motivations of earnings management.
3. RESEARCH BACKGROUND

Lang and Lundholm (1993) in their study used a reciprocal relationship between profitability and efficiency to measure information asymmetry. Their research results indicated that the weaker the relationship between earnings and returns is, the less information asymmetry will be. They also found that the companies with a weaker relationship between earnings and returns would have higher level of disclosure.

Jiang and Kim (2004) in their study concluded that foreign companies are more willing to hold shares of companies with less percentage of domestic institutional ownership. Their findings suggest that foreign companies are good processors for general information and are attracted to companies that have less information asymmetry. Hence, improving market transparency or reducing information asymmetry, if the goals of regulators of stock market are to attract foreign investors to the stock market, is an important and fundamental issue.

Poorheidari and Hemmati (2006) in their research, considered the effect of contracts of liabilities, political costs, and plans of rewards on earnings manipulation by managers, and they concluded that, on the average, there isn’t any positive and significant correlation between the ratio of liability to the salaries of shareholders and earnings manipulation.

Noravesh and Ebrahimi (2006) in a research examined the relationship between the composition of shareholders with information asymmetry and the usefulness of accounting standards. The results indicate that the companies which have more institutional shareholders, report more information related to the earnings and future flows of cash than those companies which have less institutional shareholders do. And there is information asymmetry between both groups of companies.

Sajjadi al et (2009), in their research concluded that some factors such as changing the performance of company, and predicting future earnings growth have a direct relationship with earnings management. But, there is no significant relationship between earnings management and parameters such as size and ownership structure of the company.

Chung et al (2009) by considering the relationship between corporate governance and liquidity, stated that good governance improve operational and financial transparency (including the liquidity of the stock market) and thus, will reduce information asymmetry between domestic and foreign investors.

Badaghi and Bazzaz-zadeh (2009), in a research examined the relationship between earnings management and the quality of disclosure in financial reporting. They briefly considered the information between the years of 2004–2006 and a cumulative of all three years, concluded that it was just in 2006 that a negative significant relationship between earnings management and the quality of disclosure in financial reporting was reported, and also the whole three years show the lack of significant relationship between these two variables.

Mehrani and Bagheri (2010) studied the information of 90 companies listed in Tehran Stock Exchange between 2000 to 2006, and they concluded that there is a direct significant relationship between earnings management and high flows of free cash in companies with low growth, but there isn’t any direct significant relationship between earnings management and institutional shareholders in companies with high flows of free cash and low growth.

Yet and Imm (2010) also in their research considered 180 companies listed in Malaysian Stock Exchange in the timeframe of 1998 to 2004, to examine the relationship between information asymmetry and earnings management. The results of this study showed that there is a significant relationship between these two variables so that 36 percent of earnings management changes resulting from the information asymmetry was between investors.

4. RESEARCH HYPOTHESES

The main objective of this study is to examine the relationship between information asymmetry and earnings management of companies listed in Tehran Stock Exchange. Thus, this research develops a main hypothesis and two sub-hypotheses as follows:

**Hypothesis:**

1. **H1:** there is a significant relationship between information asymmetry and earnings management of companies listed in Tehran Stock Exchange.

**Subsidiary hypotheses:**

1. **H2a:** there is a significant relationship between information asymmetry and discretionary accruals management of companies listed in Tehran Stock Exchange.
2. **H2b:** there is a significant relationship between information asymmetry and non-discretionary accruals management of companies listed in Tehran Stock Exchange.

4.1. How to measure information asymmetry

To measure the information asymmetry between investors, a model which was designed by Venkatesh and Chiang (1986) was used to determine the proposed price range of purchase and sales of shares. The mentioned model is as follows:

\[ \text{SPREAD}_t = \frac{(AP - BP) 	imes 100}{(AP + BP) / 2} \]
4. Where:  
SPREAD: is the range of proposed price difference between the purchase and sales of shares, \(t\): is the year under study,  
\(i\): is the company under study, AB: is the average of sale proposed price of shares of company \(i\) during the period of \(t\),  
BP: is the average of proposed price of shares of company \(i\) during the period of \(t\). According to the above model, as the range of proposed price difference of the purchase and sales of shares gets a larger number, information asymmetry gets more too.

4.2. How to measure earnings management  
In this study, according to existing literature, the accruals have been used as an alternative for earnings management. Accruals include discretionary and non-discretionary accruals. Accruals are the difference between operational earnings and the cash from operational activities. In other words:

\[
\text{Accrual}_{i,t} = OI_{i,t} + CFO_{i,t}
\]

Where:
- \(\text{Accrual}_{i,t}\): The accruals of company \(i\), at end of year \(t\),  
- \(OI_{i,t}\): the operational earnings of company \(i\) at the end of year \(t\),  
- \(CFO_{i,t}\): cash from operational activities of company \(i\) at the end of year \(t\).

After calculating total accruals, non-disclosure accruals should be calculated and finally, by subtracting non-disclosure accruals from total accruals, the discretionary accruals come out.

Non-disclosure accruals: in order to calculate non-discretionary obligations the Jones’s modified model (1990) is used as follows:

\[
NDA_i = \alpha_1 \left( \frac{1}{A_{i,-1}} \right) + \alpha_2 \left( \frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{A_{i,-1}} \right) + \alpha_3 \left( \frac{PPE_t}{A_{i,-1}} \right)
\]

Where:
- \(NDA_i\): Non-disclosure obligations in the year \(t\) which have been standardized with the assets of the past period,  
- \(\Delta REV_{i,t}\): income in year \(t\) subtracted from the income in the year \(t-1\),  
- \(\Delta REC_{i,t}\): the total of properties and equipment at the end of the year \(t\),  
- \(PPE_t\): the total of assets at the end of the year \(t-1\).

Discretionary accruals can be calculated by the following equation:

\[
DA = \text{Accrual} - \text{NDA}
\]

4.3. Control variables  
The purpose of using control variables is controlling other possible factors affecting the company's future cash flows. Return on assets, company size and Tobin’s Q ratio have been intended as “control variables”.

1. Return on Assets (ROA): In the present study, given that the interest expenses and taxes are determined by factors other than effective use of resources, for calculating this criterion, the ratio of earnings before tax and interest expenses (operational net earnings) to the company's total assets as a criterion of asset returns have been used.

2. Tobin’s Q: This index in fact reflects the market value of company’s assets to the cost of replacing company's assets. In this study, Tobin’s Q is calculated by fraction of total market value of assets plus debt, divided by book value of assets. Therefore we have (Randoy and Goel, 2003: 627):

\[
\text{Tobin’s Q} = \frac{MVE + TL}{TA}
\]

Where:
- Tobin’s Q: Q Tobin, MVE: market value of shareholders’ equity, TL is the total of debts, and TA is Total assets of the company.

3. Company Size: With regards to inflationary conditions and unrelated historical data of assets and avoiding the effect of fluctuations due to the sale, in accordance with the study of Yet and Imm (2010), in this study, the natural logarithm of stock market value is used as a measure of company size.

5. The models of testing hypotheses  
5.1. The model related to the first sub-hypothesis  
To test the first hypothesis of the study, Jones model was used. In this model instead of earnings management, discretionary accruals have been used. Also, to achieve the more accurate results and neutralizing the effects of other variables, ROA, Tobin’s Q, and company size were considered as control variables. So to clarify how information asymmetry causes changes in the discretionary accruals, the following model was used.

\[
DA_{i,t} = \alpha_0 + \beta_1 \text{BIDASK}_{i,t} + \beta_2 \text{ROA}_{i,t} + \beta_3 \text{TOBIN}_{i,t} + \beta_4 \text{SIZE}_{i,t} + \epsilon_{i,t}
\]

Where:
5.2. The model related to the second sub-hypothesis

Jones model was again used to test the second hypothesis. In this equation, non-discretionary Accruals were regarded as dependent variable, and to achieve better results, variables such as return on assets, Tobin’s Q and company size were considered as control variables. Hence, the following equation is used to show the relationship between information asymmetry and discretionary accruals.

\[ \text{NDA}_{t,t} = \alpha_0 + \beta_1 \text{BIDASK}_{t,t} + \beta_2 \text{ROAI}_{t,t} + \beta_3 \text{TQOBIN}_{t,t} + \beta_4 \text{SIZE}_{t,t} + \epsilon_{t,t} \]

Where:
- \text{NDA}_{t,t}: Non-discretionary accruals of company \( i \) in year \( t \)
- \text{BIDASK}_{t,t}: Information asymmetry of company \( i \) in year \( t \)
- \text{ROAI}_{t,t}: Return on assets of company \( i \) in year \( t \)
- \text{TQOBIN}_{t,t}: Tobin’s Q ratio of company \( i \) in year \( t \)
- \text{SIZE}_{t,t}: The size of company \( i \) in year \( t \)

6. RESEARCH METHODOLOGY

This study is a quasi-experimental and ex-post facto research study, and is done by using historical information. The timeframe of this study is 9 year, from 2002 to 2011, and also the statistical population of this study consists of all companies listed in Tehran Stock Exchange up to the beginning of 2002. And also, in this research, purposeful statistical sampling is used and the companies analyzed are selected based on the following criteria:

1. Due to increased comparability, their financial period should be ended on March, and during the period of study, should have no change in fiscal year,
2. During the period of study, it should have continuous activities, and its shares should be dealt without any significant interruption,
3. Due to the specific nature of activities, it shouldn’t be included banks and investment companies.
4. All required financial and non-financial information, including the notes attached to the financial statements, should be available.

Finally, with regard to the criteria listed above, 69 companies during the period of 2004 to 2012 have been selected for this study. And also for data analysis and estimating the research models, the regression model of the least ordinary squares of combined data by methods of joint effects, fixed effects or random effects, are used. To determine the appropriate estimation procedure, the various tests must be performed. The most common tests used for this purpose, are Chow test, Breusch-Pagan test and Houseman test. Thus, to analyze raw data and calculating research variables, the software Excel 2010, and to perform statistical tests and final analysis, the software Eviews version 7 have been used.

7. RESEARCH FINDINGS

In the present study, to estimate the parameters of \( \alpha_1, \alpha_2, \alpha_3 \), and to determine the non-discretionary accruals based on Jones modified model, the software Excel, Eviews version 7 and the combined data regression model using random effects method have been used. Consequently, after collecting data related to 69 companies during the period of 2003 to 2011, performing required calculations, balancing dependent and independent variables by criterion of company’s total assets in the previous period, research parameters have been estimated based on the following model:

\[ \frac{TA_i}{A_{i-1}} = \alpha_1 \left( \frac{1}{A_{i-1}} \right) + \alpha_2 \left( \frac{\Delta \text{REV} - \Delta \text{REC}}{A_{i-1}} \right) + \alpha_3 \left( \frac{\text{PPE}}{A_{i-1}} \right) + \epsilon \]

Finally, \( \alpha_2 \) parameter value equals to 8952.811, \( \alpha_2 \) equals to -0.045446 and \( \alpha_3 \) equals to 0.041061 were obtained. After calculating the parameters, for calculating non-discretionary accruals of studied companies, each company's specific non-discretionary accruals have been subtracted from the total accruals.

\[ \text{H}_{1a}: \] There is a significant relationship between information asymmetry and discretionary accruals of companies listed in Tehran Stock Exchange.

To consider the effects of information asymmetry on discretionary accruals, the regression model of combined data has been used. According to the results of Chow and Houseman tests, to estimate the intended model, fixed effect method has been used. The results achieved from the estimation of this model are presented in Table 1.
Table 1: Statistical results of testing the first hypothesis

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficients</th>
<th>Standard error</th>
<th>T Statistic</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information asymmetry</td>
<td>5.639</td>
<td>0.694</td>
<td>1.526</td>
<td>0.127</td>
</tr>
<tr>
<td>Return on assets</td>
<td>495</td>
<td>0.088</td>
<td>5.189</td>
<td>0.000</td>
</tr>
<tr>
<td>Tobin’s Q ratio</td>
<td>-0.013</td>
<td>0.007</td>
<td>-1.880</td>
<td>0.060</td>
</tr>
<tr>
<td>Company size</td>
<td>0.057</td>
<td>0.014</td>
<td>3.876</td>
<td>0.000</td>
</tr>
<tr>
<td>Constant amount</td>
<td>-0.777</td>
<td>0.18</td>
<td>-4.314</td>
<td>0.000</td>
</tr>
<tr>
<td>Coefficient of determination</td>
<td>Adjusted coefficient of determination</td>
<td>F statistic</td>
<td>F statistical significance</td>
<td>Durbin-Watson statistic</td>
</tr>
<tr>
<td></td>
<td>0.415</td>
<td>0.312</td>
<td>4.04</td>
<td>0.000</td>
</tr>
</tbody>
</table>

As can be seen, the F statistic and significance level related to this statistic indicates that regression model is significant in general. The amount of Durbin-Watson statistic also indicates the lack of autocorrelation between errors of the model. However, variable coefficient of information asymmetry and significance level related to t statistic indicate that there is no significant relationship between information asymmetry and discretionary accruals. Thus, the first hypothesis is rejected.

H_{1b}: There is a significant relationship between information asymmetry and non-discretionary accruals of companies listed in Tehran Stock Exchange.

Table 2: Statistical results of testing the second hypothesis

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficients</th>
<th>Standard error</th>
<th>T Statistic</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information asymmetry</td>
<td>2.722</td>
<td>0.852</td>
<td>0.561</td>
<td>0.575</td>
</tr>
<tr>
<td>Return on assets</td>
<td>-0.020</td>
<td>0.013</td>
<td>-1.486</td>
<td>0.138</td>
</tr>
<tr>
<td>Tobin’s Q ratio</td>
<td>0.000</td>
<td>0.001</td>
<td>-0.168</td>
<td>0.866</td>
</tr>
<tr>
<td>Company size</td>
<td>-0.002</td>
<td>0.002</td>
<td>-1.149</td>
<td>0.251</td>
</tr>
<tr>
<td>Non-discretionary accruals of past period</td>
<td>0.333</td>
<td>0.035</td>
<td>9.420</td>
<td>0.000</td>
</tr>
<tr>
<td>Constant amount</td>
<td>0.056</td>
<td>0.028</td>
<td>2.010</td>
<td>0.045</td>
</tr>
<tr>
<td>Coefficient of determination</td>
<td>Adjusted coefficient of determination</td>
<td>F statistic</td>
<td>F statistical significance</td>
<td>Durbin-Watson statistic</td>
</tr>
<tr>
<td></td>
<td>0.946</td>
<td>0.934</td>
<td>76.283</td>
<td>0.000</td>
</tr>
</tbody>
</table>

Also, to test this hypothesis consistent with the first hypothesis test, regression model of the combined data has been used. The results achieved from the estimation of this model are presented in Table 2.

As can be seen, the F statistic and significance level related to this statistic indicates that regression model is significant in general. The amount of Durbin-Watson statistic also indicates the lack of autocorrelation between errors of the model. However, variable coefficient of information asymmetry and significance level related to t statistic indicate that there is no significant relationship between information asymmetry and non-discretionary accruals. Thus, the second hypothesis is rejected.
8. Conclusion and recommendations
In this research the relationship of information asymmetry between investors and the rate of exerted earnings management in financial statements of companies listed in Tehran Stock Exchange was examined. To measure the information asymmetry between investors, a model which was designed by Venkatesh and Chiang for determining the range of proposed price of purchase and sales of shares, was used. And then, monthly average of purchase and sales difference was calculated. And also, to check this relation, earnings management based on Jones model, was analyzed in to accruals and non-discretionary accruals. 

Also, to achieve more accurate results and to control the effects of other factors, variables such as return on assets, Tobin’s Q ratio, and company size, consistent with other researches, were considered as control variable, and 69 companies listed in Tehran Stock Exchange were tested. To achieve the research objectives, a main hypothesis and two sub-hypotheses were developed. In the first hypothesis the relationship between information asymmetry among investors and discretionary accruals was tested. The results of the test indicate there is no significant relationship between information asymmetry and discretionary accruals. In the second hypothesis using Jones model, the relationship between information asymmetry among investors and non-discretionary accruals was tested. Test results also indicate that there is no significant relation between these two variables. Therefore, according to the tests of this research, it can be inferred that there is no significant relationship between information asymmetry and earnings management among companies listed in Tehran Stock Exchange, and this result is contradictory with the study of Yet and Imn (2010). Since the results of this research are contradictory with the studies done in this field, it is recommended some more researches to be done. For more researches to be done in the future, the following suggestions are recommended:

a) Studying the relationship between information asymmetry and earnings management using midterm information of companies listed in Tehran Stock Exchange,

b) Using day by day purchase and sales difference to measure the information asymmetry among investors.

RESOURCES


