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# Information Asymmetry and Earnings Stability in Financially Insolvent Companies

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**A B S T R A C T**

The purpose of this study was to investigate the relationship between information asymmetry and the earnings stability in the financially insolvent companies listed in Tehran Stock Exchange. Earnings stability means earnings repetition in the next periods. To measure the dependent variable, i.e. earnings stability, the estimation of the future and current earnings model is used. To test the research hypotheses the data related to 457 companies listed in Tehran Stock Exchange as the statistical sample and for the period of 2006-2015 have been analyzed using combinational data analysis method. In order to estimate the appropriate models of hypotheses testing in combinational data Chow and Hausman tests were used. The research results suggest that there is a negative and significant relationship between information asymmetry and earnings stability. There is no significant difference in the relationship between information asymmetry and earnings stability in financially insolvent companies and non-insolvent companies. Increasing the probability of bankruptcy of the company, the relationship between information asymmetry and earnings stability does not change.

***Keywords:*** Information Asymmetry, Earnings Stability, Financially Insolvent Companies, Bankruptcy Risk.

## INTRODUCTION

Financial report is one of the most important products of the accounting system and its main objective is providing the necessary information to evaluate the performance and profitability ability of the economical firm(Laudon & Laudon, 2016). One of accounting items that is provided and presented in financial reports is "net income" that has various applications (Elliott & Elliott, 2007; Gitman, Juchau, & Flanagan, 2015; Macve, 2015; Weygandt, Kimmel, & Kieso, 2015). Earning usually is considered to be the basis for calculating the tax, a factor for developing dividend policy, guidance for investments and decision-making, and finally a factor for prediction(Dejong & Ling, 2013; Kothari, Mizik, & Roychowdhury, 2015). Earnings quality and earnings stability are always taken into considerations by stockholders(P. Dechow, Ge, & Schrand, 2010; Dichev, Graham, Harvey, & Rajgopal, 2013). Sound and transparent financial investment is important for every person and generally for the society(Shleifer & Summers, 1990). In other

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words, investment looks to the future, so our financial future is formed by the sound decisions that are taken today on investments. Records show that sound investment is along with the necessary confidence and one of the main components of the correct decision making is timely and complete information. This study attempts to identify the relationship between information asymmetry and earnings stability(Mun, 2002; Pike & Neale, 2006).

## RESEARCH THEORETICAL BASIS

The main point raised in the monetary and financial markets, particularly the stock exchange market is the issue of market efficiency, according to which all the available information in the market will reflect its effects on price of the stock. Perhaps from the perspective of the efficient market hypothesis, we can state that the reseason for the existence of accounting is the information asymmetry, in which one party of the transaction has more information than the other party. This is because there are internal transactions and information(Abdoli & Royaee, 2012; Ziaee, 2014). Financial report is one of the most important products of the accounting system and its main objective is providing the necessary information to evaluate the performance and profitability ability of the economical firm. One of accounting items that is provided and presented in financial reports is "net income" that has various applications. Earnings usually are considered to be the basis for calculating the tax, a factor for developing dividend policy, guidance for investments and decision -making, and finally a factor for prediction(Dadbeh & Mogharebi, 2013).

In recent decades the topic of “earnings quality " was taken into particular considerations by specialists and researchers. They attempt to evaluate the earnings quality by achieving a suitable and logical model, and identify the influential factors on it(Desai, Gompers, & Lerner, 2003).

Earnings stability refers to the reliability (continuing) of current earnings. The greater the stability of earnings, the more able are companies to retain current earnings and it is assumed that the earnings quality is higher(Collinsa & Hribarb, 1999; Hribar & Collins, 2002). Therefore, stability of earnings is an accepted indicator for the quality of earnings. Shareholders benefit from the earnings stability information for decision making(P. M. Dechow & Schrand, 2004).

Due to the diversity of financial reports users and their different information needs, if the information is unevenly among the population it can lead to different results in the same topic. Even if the exchange market price fully reflects the of information, there is still the possibility that individuals within the organization (managers) more than people outside the organization (stakeholders) have additional information about the quality situation of the company, and are able to gain more benefits by this informational advantage. The theory of information asymmetry in 1970 decade was funded by three scientists named Spins (Ghaemi & Vatan Parast, 2005).

In this study we will be looking at whether the information asymmetry is effective on earnings stability? And whether the impact of information asymmetry on the earnings stability in financially insolvent companies is more than financially non-insolvent companies? The answer to this question can be a useful guide for shareholders and mentioned company directors.

## RESEARCH BACKGROUND

P. M. Dechow and Dichev (2002)in their study investigated the relationship between accruals quality and earnings stability. They believed that working (current) capital accruals have more predictive power than the future operating cash flows. Their research result suggests that there is an important positive significant relationship between accruals quality and earnings

stability. They also showed that the quality of accruals is effective on some characteristics of the company, such as operations cycle, firm size, and loss and earnings volatility.

Bollen and Whaley (2004) using a simple model showed that the difference between bid and ask prices of the shares is resulted from small changes in stock prices, ordering costs, maintenance costs, incorrect selection and competitive condition.

S Bachtiar (2008) in a study examined the relationship between accruals and information asymmetry. His research findings indicate that there is a positive and significant correlation between accruals and asymmetry of information.

Bhattacharya, Desai, and Venkataraman (2013) in a study to examined the relationship between information asymmetry and earnings quality. Their research results showed that the low quality of earnings will lead to increased information asymmetry in financial markets.

## METHODOLOGY

This research based on objective, is an applied research and according to the nature and method is a descriptive - correlational one. This study is based on a quasi-experimental research design and has been performed using a post-hoc approach (through the past information). For the analysis of research data and estimation of models, a Pooled Data Approach was used.

In the first hypothesis of the research, information asymmetry is the independent variable and the earnings stability is the dependent variable

In order to test the research hypotheses, using the following regression model the stability (EP) is calculated for the studied companies:

$$Earn_{it} = \alpha + \beta Earn_{it-1} + \epsilon_{it} \quad (۱)$$

Where ***Earn*** is the net income that is homogeneous with the assets of the period beginning. In the above model, the larger the β coefficient, the more stable will be the earnings. To calculate the risk of bankruptcy, the Charitou model (2004) is used as follows:

$$Fail_{it} = Ln(P/1-P)_{it} = \omega_0 + \omega_1 TLTA_{it} + \omega_2 EBITTL_{it} + \omega_3 CFOTL_{it} + \varepsilon_{it} \quad (۲)$$

Where ***Fail*** is a divalent variable that take value 1 for bankrupt firms and value zero for other companies, *P* is bankruptcy risk (***BR***) in the coming year, ***TLTA*** is the ratio of total liabilities to total assets, ***EBITTL*** is the ratio of operating profit to total liabilities and ***CFOTL*** is the ratio of operating Cash Flow to total liabilities. The above model is estimated using logistic estimation method (Logit method) and using this method the bankruptcy risk is calculated.

To test the first hypothesis of the present study the following model is used:

$$Bid\_Ask_{it} = \alpha + \beta_1 EP_{it} + \beta_2 Size_{it} + \beta_3 MTB_{it} + \beta_4 ROA_{it} + \epsilon_{it} \quad (۳)$$

Where ***Bid_Ask$_{it}$*** is the measure of information asymmetry, which is calculated with the following equation:

$$Bid\_Ask_{it} = \frac{1}{D_{it}} \sum_{i=1}^{D_{it}} \frac{Ask_{D_{it}} - Bid_{D_{it}}}{\left(Ask_{D_{it}} - Bid_{D_{it}}\right)/2} \quad (۴)$$

In this regard, $Bid\_Ask_{it}$ is the amplitude of the difference between the shares bid and ask price or the measure of information asymmetry, ***Bid*** is the best (lowest) daily ask price of stocks, ***Ask*** is the best (highest) daily bid price of stocks and ***D*** is the number of days in year t, where the best ask price and the best bid price for firm ***i*** are available.

***EP*** is the value of earnings stability of the company that is obtained from equation (3-1), ***Size*** is the firm size that is equal to market value to book value of assets, ***MTB*** is the ratio of market value to book value of the shares representing the company's growth and ***ROA*** is the ratio of net income to total assets of the company representing firm's profitability. Latter three variables in the model (3-3) play control role. According to the first hypothesis of the study, in the model (3.3) ***EP*** variable coefficients is expected to be significant.

To evaluate the second hypothesis, the following model is estimated:

$$Bid - Ask_{it} = \alpha + \beta_1 Fail_{it} + \beta_2 Fail_{it} * EP_{it} + \beta_3 EP_{it} + \beta_4 Size_{it} + \beta_5 MTB_{it} + \beta_6 ROA_{it} + \epsilon_{it} \quad (۵)$$

The variables of this model are previously defined. According to the second hypothesis of the study in the above model $Fail_{it}*EP_{it}$ variable coefficients is expected to be significant.

Finally, to evaluate the third hypothesis, the following model is estimated:

$$Bid - Ask_{it} = \alpha + \beta_1 BR_{it} + \beta_2 BR * EP_{it} + \beta_3 EP_{it} + \beta_4 Size_{it} + \beta_5 MTB_{it} + \beta_6 ROA_{it} + \epsilon_{it} \quad (۶)$$

The variables of this model are previously defined, too. According to the third hypothesis of the study in the above model $BR_{it}*EP_{it}$ variable coefficients is expected to be positive significant.

**Research Hypotheses**

According to previous theoretical grounds and research, the present study hypotheses are formulated as follows:

First hypothesis: There is a significant relationship between information asymmetry and earnings stability.

Second hypothesis: the relationship between information asymmetry and earnings stability in financially insolvent companies are significantly different with this relationship in financially non-insolvent companies.

Third hypothesis: as the probability of bankruptcy increases, the relationship between information asymmetry and the earnings stability is reduced.

**Statistical population and sample**

The statistical population of this research includes all companies listed in Tehran Stock Exchange (Iran) between the years 2002 to 2010 and their membership has been preserved during this period. Of all the accepted companies, those that do not meet any of the following conditions have been removed and ultimately all the remaining companies were selected for testing:

Companies whose fiscal year end is not March have been eliminated.

Banks and financial institutions and financial investment companies have been eliminated.

Companies that do not have all the data necessary to calculate the variables during the studied period are excluded.

By investigating companies accepted in Tehran Stock Exchange and the imposition of conditions and restrictions 119 companies are selected to estimate the models and test the research hypotheses.

## RESULT

Descriptive statistics of dependent and independent variables of the study, including mean, median, maximum, minimum and standard deviation of the research data, is calculated and presented as shown in Table (1). The mentioned values present a general overview of the status of the distribution of the research data.

**Table 1.** Research descriptive statistics

| Variables | Mean | Standard Deviation | Minimum | Maximum | Median |
|---|---|---|---|---|---|
| SPREAD | 0.19 | 0.08 | 0.07 | 0.68 | 0.18 |
| EP | 0.68 | 0.06 | 0.55 | 0.85 | 0.68 |
| EARN | 0.15 | 0.14 | -0.11 | 0.93 | 0.12 |
| TLTA | 0.66 | 0.15 | 0.24 | 0.98 | 0.68 |
| EBITTL | 0.28 | 0.27 | -0.08 | 1.9 | 0.21 |
| CFOTL | 0.25 | 0.35 | -0.28 | 3.77 | 0.18 |
| BR | 0.01 | 0.04 | 0.00 | 0.76 | 0.00 |
| SIZE | 13.21 | 1.27 | 10.09 | 17.77 | 13.11 |
| MTB | 2.56 | 2.45 | 0.31 | 17.22 | 1.75 |
| ROA | 0.13 | 0.1 | -0.11 | 0.58 | 0.1 |

**Definition of variables:**

*SPREAD:* a measure of information asymmetry
*EP:* earnings stability
*EARN:* net income to assets of beginning of the period
*TLTA:* ratio of total liability to total assets
*EBITTL:* ratio of operating earnings to total liabilities
*CFOTL:* ratio of operating cash flow to total liabilities
*CFO/A:* ratio of cash flow to assets of beginning of the period
*BR:* bankruptcy risk
*SIZE:* firm size equal to natural logarithm of assets
*MTB:* ratio of market value to book value of assets
*ROA:* ratio of net income to assets of beginning of the period

**THE RESULTS OF THE RESEARCH MODELS ESTIMATION**

The results of model (1) estimation to calculate the earnings stability level of companies

In order to compute the earnings stability of the study companies, the model (1) is estimated using pooled data approach.

**Table 2.** The estimation results of model (1)

| Variable | Coefficient | T- student statistic | Significance | Index *VIF* |
|---|---|---|---|---|
| Intercept | ***0.03 | 11.71 | 0.001 | --- |
| $Earn_{it-1}$ | ***0.68 | 33.93 | 0.001 | 1.00 |
| Adjusted coefficient of determination | %63.58 | | | |
| Fisher statistic (significance) | ***1104.52) 0.00( | | | |
| Durbin-Watson statistic | 2.00 | | | |
| Limier statistic (significance) | 1.67) 0.14( | | | |
| ***Significance at 1% level | | | | |

The lack of statistical significance of Limier statistic (1.67) indicates that the model (3.1) should be estimated using constrained method. The estimation results of model (3.1) using

constrained method are presented in table (4-3). The estimation results (3.1) show that intercept (0.03) and $Earn_{it-1}$ variable coefficient (0.68) are significant at 1 % level and the value of Variance Inflation Factor index also shows that the independent variables in the model (3 - 1) have no multi collinearity problem.

Fisher statistical significance (1104.52) suggests overall significance of research model. Adjusted coefficient of determination indicates that the independent variable in the model (3-1) can explain about 64% of the dependent variable variability. Durbin-Watson statistic (2.00) also indicates that the remainders of the model have no serial autocorrelation problem, so the model results can be relied upon. After estimating the model (1) $Earn_{it-1}$ variable coefficient is derived as earnings stability criterion of the companies.

**The estimation results of model (2) to calculate bankruptcy risk**

In order to calculate bankruptcy risk of the companies, the model (2) is estimated using the Logit method. The presented results show that the intercept (-18.90) and the coefficient of variables of total liabilities to total assets ratio (20.30), the ratio of operating earnings to total liabilities (-13.34), and the ratio of operating cash flow to total liabilities (-0.32) are at significance level of 1 % .Variance Inflation Factor index also shows that the independent variables of the model (2) have no multi collinearity problem. Significance of maximum likelihood statistic (2005.70) at the 1% level indicates overall significance of the research model. The determination coefficient of Mac Fadn also shows that the independent variables of the model (2) explain about 80 % of the variability of dependent variable. After estimating the model (2), the bankruptcy probability of the company is calculated.

**Table 3.** The estimation results of model (2)

| Variable | Coefficient | T- student statistic | Significance | Index VIF |
|---|---|---|---|---|
| Intercept | ***-41.83 | -6.92 | 0.00 | --- |
| $TLTA_{it}$ | ***41.72 | 6.83 | 0.00 | 1.75 |
| $EBITTL_{it}$ | **-10.55 | -2.06 | 0.04 | 2.00 |
| $CFOTL_{it}$ | ***1.2 | 3.91 | 0.00 | 1.4 |
| Determination coefficient of Mac Fadn | %76.47 | | | |
| Maximum likelihood statistic (significance) | ***76.17 (0.00) | | | |
| ** and ***Significance at 1% and 5% levels respectively | | | | |

The estimation results of model (3) and the first hypothesis test of the research

To test the first hypothesis of the research, model (3) is estimated using pooled data approach. The lack of statistical significance of Limier statistic (1.67) indicates that the model (3) should be estimated using constrained method.

**Table 4.** The estimation results of model (3)

| Variable | Coefficient | T- student statistic | Significance | Index *VIF* |
|---|---|---|---|---|
| Intercept | **0.05 | 2.69 | 0.01 | --- |
| $EP_{it}$ | ***-0.11 | -5.48 | 0.00 | 1.01 |
| $Size_{it}$ | ***0.01 | 12.44 | 0.00 | 1.02 |
| $MTB_{it}$ | ***0.03 | 72.91 | 0.00 | 1.17 |
| $ROA_{it}$ | *-0.02 | -1.98 | 0.05 | 1.17 |
| Adjusted coefficient of determination | %87.85 | | | |
| Fisher statistic (significance) | 1525.31 (0.00) | | | |
| Durbin-Watson statistic | 1.83 | | | |
| Limier statistic (significance) | 1.28 (0.26) | | | |
| *, **and *** Significance at 1% , 5% and 10% levels respectively | | | | |

The presented results show that the intercept (0.05) at 5% level and the coefficient of variables of earnings stability (-0.11), size (0.01), and the company growth (0.03) at 1% level, and the coefficient of variable of profitability (-0.02) at 1% level are significant. Variance Inflation Factor index also shows that the independent variables of the model (3) have no multi collinearity problem.

Fisher statistical significance (1525.31) suggests overall significance of research model. Adjusted coefficient of determination indicates that the independent variable in the model (3) can explain about 88% of the dependent variable variability. Durbin-Watson statistic (1.83) also indicates that the remainders of the model have no serial autocorrelation problem, so the model results can be relied upon.

Significant negative coefficient of earnings stability variable (-0.11) shows that there is a significant negative relationship between earnings stability and information asymmetry coefficient. This suggests that as earnings stability increases, data transfer power can be increased by the number of earnings and the information asymmetry between buyers and sellers of securities is reduced. Therefore, the first research hypothesis is not rejected.

**The estimation results of model (5) and the second hypothesis test of the research**

To test the second hypothesis of the research, model (5) is estimated using pooled data approach. The lack of statistical significance of Limier statistic (1.21) indicates that the model (5) should be estimated using constrained method. The presented results show that the intercept (0.05) at 5% level and the coefficient of variables of earnings stability (-0.11), size (0.01), and the company growth (0.03) at 1% level, and the coefficient of variable of profitability (-0.02) at 1% level are significant. Variance Inflation Factor index also shows that the independent variables of the model (5) have no multi collinearity problem.

Fisher statistical significance (1015.23) suggests overall significance of research model. Adjusted coefficient of determination indicates that the independent variable in the model (5) can explain about 88% of the dependent variable variability. Durbin-Watson statistic (1.84) also indicates that the remainders of the model have no serial autocorrelation problem, so the model results can be relied upon.

**Table5.** The estimation results of model (5)

| Variable | Coefficient | T- student statistic | Significance | Index *VIF* |
|---|---|---|---|---|
| Intercept | $^{**}$0.05 | 2.63 | 0.01 | --- |
| $Fail_{it}$ | 0.24 | 0.99 | 0.32 | 1.37 |
| $Fail_{it} * EP_{it}$ | -0.32 | -0.94 | 0.35 | 1.4 |
| $EP_{it}$ | $^{***}$-0.11 | -5.41 | 0.00 | 1.02 |
| $Size_{it}$ | $^{***}$0.01 | 12.4 | 0.00 | 1.02 |
| $MTB_{it}$ | $^{***}$0.03 | 72.63 | 0.00 | 1.17 |
| $ROA_{it}$ | $^{*}$-0.02 | -1.95 | 0.05 | 1.17 |
| Adjusted coefficient of determination | %87.83 | | | |
| Fisher statistic (significance) | $^{***}$1015.23 (0.00) | | | |
| Durbin-Watson statistic | 1.84 | | | |
| Limiar statistic (significance) | 1.21 (0.3) | | | |
| *, **and *** Significance at 1% , 5% and 10% levels respectively | | | | |

Insignificancy of $\boldsymbol{Fail_{it}*EP_{it}}$ variable coefficient (-0.32) shows that the relationship between earnings stability and information asymmetry in bankrupt companies and non-bankrupt companies has no significant difference. In fact, the discussion of companies dealing with the financial crisis has no impact on earnings stability and information asymmetry. Therefore, the second hypothesis was rejected.

**The estimation results of model (5) and the second hypothesis test of the research**

To test the third hypothesis of the research, model (6) is estimated using pooled data approach. The lack of statistical significance of Limier statistic (0.58) indicates that the model (6) should be estimated using constrained method. The presented results show that the intercept (0.04) at 5% level and the coefficient of variables of earnings stability (-0.10), size (0.01), and the company growth (0.03) at 1% level are significant. Variance Inflation Factor index also shows that the independent variables of the model (6) have no multi collinearity problem.

**Table 6.** The estimation results of model (6)

| Variable | Coefficient | T- student statistic | Significance | Index *VIF* |
|---|---|---|---|---|
| Intercept | **0.04 | 2.2 | 0.03 | --- |
| $BR_{it}$ | 0.28 | 0.47 | 0.64 | 3.82 |
| $BR_{it}$ * $EP_{it}$ | -0.4 | -0.43 | 0.67 | 3.63 |
| $EP_{it}$ | ***-0.1 | -5.25 | 0.00 | 1.02 |
| $Size_{it}$ | ***0.01 | 12.64 | 0.00 | 1.02 |
| $MTB_{it}$ | ***0.03 | 71.33 | 0.00 | 1.21 |
| $ROA_{it}$ | -0.01 | -1.11 | 0.27 | 1.22 |
| Adjusted coefficient of determination | %88.47 | | | |
| Fisher statistic (significance) | ***1011.56 (0.00) | | | |
| Durbin-Watson statistic | 1.87 | | | |
| Limier statistic (significance) | 0.58 (0.77) | | | |
| ** and ***Significance at 1% and 5% levels respectively | | | | |

Fisher statistical significance (1021.59) suggests overall significance of research model. Adjusted coefficient of determination indicates that the independent variable in the model (6) can explain about 88% of the dependent variable variability. Durbin-Watson statistic (1.87) also indicates that the remainders of the model have no serial autocorrelation problem, so the model results can be relied upon to test the third hypothesis of the research.

Insignificancy of $\boldsymbol{BR_{it}*EP_{it}}$ variable coefficient (-0.40) shows that the probability amount of exposure to the financial crisis (bankruptcy risk) has no significant influence on the relationship between earnings stability and information asymmetry. Indeed, in the studied companies the discussion of the possibility of companies being bankrupt does not affect the relationship between earnings stability and information asymmetry. Therefore, the third research hypothesis is rejected.

## CONCLUSION

According to the results listed in Table (5-2) it is inferred that information asymmetry (information inequality) which is born of the capital market inefficiency effects on financial reporting quality and leads to a decline in the quality of financial figures of the firm. In this research, earnings stability was studied as an indicator of earnings quality. It was determined that in an environment where the amount of equality information distribution between people is not acceptable, quality of earnings (with earnings stability component) of the companies is not reliable. Also according to the test results of hypotheses 2 and 3 it can be inferred that earnings quality (with earnings stability component) of financially insolvent companies compared to healthy companies in an environment where information distribution is asymmetric, is not significantly different. In other words, the financial crisis in the studied companies does not lead to motivation for affecting the quality of earnings in these companies. Investigating it reasons requires further investigations and research. But perhaps one of the reasons can be mentioned as the lack of crisis-hit companies influencing commercial on short-term. This means that companies covered by Article 141 of the Commercial Code that are considered as financially insolvent

companies in this study, are able to carry on their normal business activity for a long time. So they do not feel extreme danger in terms of financial crisis.

Naturally, these results are obtained according to the information available and the constraints of time and place and for the evolution of the research it seems to be better the following research is done:

1. Research is investigated on the environment where its capital market has more (significant) efficiency.
2. Research be done with the same title but the time scope of the investigation be changed or be done for a particular industry.

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