

Absolute Measuring of Earnings Quality of the Companies Listed in Tehran Stock Exchange in 2010

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ABSTRACT

Objective: Up to now, many measurements have been proposed for measuring quality of reported earnings. However, any measurement has not been succeeded to providing a suitable model in order to absolute measuring of earnings quality. In better words, all the measures proposed until now, only able to provide numbers and figures about quality amount of companies earnings that do not mean alone but only in comparison to the quality amount of other companies provide the possibility of relative comparison. But this study, using its innovative model, is sought to absolutely measure earnings quality of companies listed in Tehran Stock Exchange in 2010.

Methods: This study investigates the quality of reported earnings in Tehran Stock Exchange during the year 2010. For this purpose, the number of 70 listed companies are selected and investigated. Continue, in order to investigate the quality of earnings quality of sampled companies was used three measures: Leuz *et al.* (2003), Barton and Simko (2002) and Penman (2001). Each of these three measures for investigating the quality of earnings respectively emphasized on the earnings variability, earnings predictability and the proximity degree of earnings to the liquidity. Finally, in this study, if there will be complete consensus between three measures, then we can conclude absolute judgments about the quality of earnings of sampled companies. Otherwise, no absolute judgment will not been given by the researchers.

Findings and Conclusions: The results of data analysis indicated that: (1) in using every measure, all of three measures (i.e. Leuz *et al.*, 2003; Barton and Simko, 2002; Penman, 2001), showed that earnings quality of companies listed in Tehran Stock Exchange in 2010 is high. (2) In total, 40 companies (more than 57% of companies) were determined with high quality in earnings reporting and (3) from the 70 companies that are present in research sample, 30 companies were with unspecified quality in earnings reporting.

The Result of Research Investigators is that: in the Tehran Stock Exchange for judgment and decision making about earnings quality of companies, instead of using one measure, it is better to use two or more measures for obtaining more confidence.

KEYWORDS: quality of earnings, earnings variability, Earnings predictability, degree of proximity to liquidity.

1. INTRODUCTION

Accounting standards sometimes have flexibilities that these items will allow the manager in selecting of accounting procedures and then financial reporting. Due to this potential opportunity, sometimes managers utilize mentioned flexibilities for changing financial results. In better words, sometimes, some managers manipulate earnings in order to achieve pre-determined goals. This matter can do through smoothing the figures of earnings in different periods or managing it (directing to a specified amount) at a special period.

Magrath and Weld (2002) noted that smoothing the earnings - for achieving management's previous predictions or predictions of analysts - can prepare the context for mismanagement of earnings and fraudulent practices. They add: earnings management even is essentially a questionable practice if it does not lead to clear violation from accounting rules. A company that manages its earnings implicitly sends this message to its employees that deviation from reality is not badly policy or practice. Managers, who reutilize this practice, unintentionally have created the climate in organization which the occurrence possibility of other improper acts from employees is not unlike.

The main objective of this study is not to investigate the phenomenon of earnings management, its contexts or reasons for creation. But the purpose of discussing earnings management here is that: we believe that occurring earnings management effect on earnings quality. Schipper and Vincent (2003) defined earnings quality as proximity degree of accounting earnings to Hicksian earnings. Hicksian earning is an amount that is consumed during a period so that the welfare of the end period in comparison to the beginning of period is not changed.

Other measures of earnings quality, for evaluating quality, separate operating income into two parts-cash and accrual. Then they call earnings with more quality if its cash part is greater. Also earnings quality can be evaluated based on the stability of earnings. Here, the more stability of earnings, the more usefulness for decision making and then the more quality.

In short, in one hand, the results of various studies and general news show the "multiplicity occurrence of earnings management" in practice. This matter raises the need to investigate the earnings quality. On the other hand, there was not the consensus among researchers or financial thinkers about "the measurements of earnings quality" and it is expected that it will not exist in the near future. Therefore, to solve this issue in this study, I decided to evaluate earnings quality with multiple measurements rather than one measurement and then I investigate the idea of this study, that is: whether quality evaluation with multiple measurements can offer an appropriate solution for users of earning information or not need to do something.

2. LITERATURE REVIEW

Benish and Vargus (2002) by applying earnings stability investigated this issue that: whether there is a relationship between earnings quality and trades based on abnormal confidential information or not. They found that in the companies with abnormal confidential purchases, accrual component of earnings is significantly more stable (as a result has more quality). Also, in the companies with abnormal confidential sales, accrual component of earnings is significantly less stable.

Balsam *et al.* (2003) used the amount of "accrual discretionary earnings" as a criterion to measure the quality of earnings. In this method that is used regression model, changes in total accrual can be considered as dependent variable and changes in sales, changes in property, plant and equipment, changes in operating cash flow and finally, changes in the size of the company as independent variables. In this model, if the adjusted coefficient of determination of the regression is significant, then, it is concluded that earnings management is done in the related company and so we judge that the earnings quality of that company is low.

Richardson *et al.* (2001) during a study concluded that: the information about earnings quality is not concentrated on in a particular part of accruals (e.g. current accruals) but also non-current accruals are included. He showed that accrual debts had useful role in helping to clear the information related to accrual assets in determining the earnings quality. Totally, the results of this study showed that accruals provide an intrinsic, robust and effective criterion to measure earnings quality. This study suggests that information from the accrual is not documentable as only factor in determining earnings quality.

Penman and Zhang (2003) in their study investigated the effective factors on the earnings quality reduction in the years after 1990. In this study, to assess the quality of earnings is used two measures - discretionary accruals and earnings response coefficients. The results showed that significant increase in the range of discretionary accruals and significant decrease in earnings response coefficient represents the reduction in earnings quality during the period under review.

Lugee and Marquardt (2004) in their study tested the quality of earnings, according to the conceptual framework of financial accounting standards board and concluded that the earnings quality of companies will improve when the amount of their institutional ownership increases. In this case, the items forming the earnings of companies will be higher relevance and reliability.

3. RESEARCH METHODOLOGY

3.1. Research Hypotheses

Earnings quality is an issue that in recent years has been converted to a focus for evaluating the financial performance of companies. In the wake of financial scandals that have recently occurred, trust and confidence of investors to the financial reporting system have been shaken and earnings quality emerges as an important factor in determining the validity and reliability of reported figures. Also, in these years, earnings quality attracted the attention of many legislators and academics to itself. In summary, nowadays companies, investors, portfolio managers and analysts have seen an environment that is sensitive to the overall quality of financial reporting. Hence, we are seeking answers to this question in this study: whether reported earnings of companies listed in Tehran Stock Exchange has required quality or not. In this regard, the following hypotheses have been designed:

Hypothesis 1: Based on Leuz *et al.* (2003) measure, reported earnings quality of companies listed in Tehran stock exchange in 2010 is low.

Hypothesis 2: Based on the Barton and Simko (2002) measure, reported earnings quality of companies listed in Tehran stock exchange in 2010 is low.

Hypothesis 3: Based on Penman (2001) measure, reported earnings quality of companies listed in Tehran stock exchange in 2010 is low.

Hypothesis 4: In general, the quality of earnings reporting of companies listed in Tehran stock exchange in 2010 is not high.

3.2. Collection

In this study, to measure the earnings quality (which is done using three models) of companies is totally used five variables as: operating earnings, operating cash flow, operating assets, sales and net income, which all of them are extracted directly from the underlying financial statements. As a result, financial statements of companies, including income statement, balance sheet and statement of cash flows are considered as a means of collecting data for this research.

3.3. Methods of Data Analysis

In this study, four hypotheses have been proposed that in the first three hypotheses, each of them assess the quality of earnings using a different measurement and fourth hypothesis measurement is consensus of three measurements of hypotheses one to three. Each of these three measurements, are respectively discussed in appropriate detail in the followings.

The first measure of research focuses on the variability of earnings. The central core of this measure is formed from this idea that: because managers believe that investors prefer growth in earnings, so they are interested in smoothing earnings flow. In other words, they try to manage earnings in the form of smoothing its flow. In this point of view, if earnings of company fluctuate continuously, then it is obvious to conclude that obtained earnings of that company has not required quality. Leuz *et al.* (2003) formulated variability of earnings through dividing the standard deviation of operating income on standard deviation of operating cash flow. In this model, the less proportion indicate the lower quality of earnings. In this study, Figure one is distinction boundary for Leuz index. That is, Leuz quantity less than one means low quality and Leuz quantity more than one means high quality of earnings.

The second measure of earnings quality measurement in this study focuses on the earning surprise. This measure is proposed by Simko and Barton (2002) that is obtained by dividing the beginning balance of operating assets on sale. Here, whatever the mentioned proportion is higher, then earnings quality is lower. Thus, in this measurement the amount of two is breakdown boundary of Barton-Simko index. That is, the Barton-Simko quantity more than two means low quality and the Barton-Simko quantity less than two means high quality of earnings.

The third measure of this study focuses on the degree of earnings proximity to liquidity. This measure is considered the simplest measures of earnings quality. In this study, earnings proximity to liquidity is measured by Penman (2001) model. This model used the proportion of operating income to cash flow from operations to judge. So, whatever this proportion is smaller, and then earnings quality is higher. Finally, the three constant value is the breakdown boundary of Penman index. That is, the Penman's quantity more than three means low quality and Penman's quantity less than three means high quality of earnings.

But in this study, for final judgment about the quality of the reported earnings at the level of each company and the total stock exchange is used the consensus of three models. In this line, if all three measures have complete consensus about the quality of earnings, then will be formed absolute judgment about earnings quality. But if at least one of the measurement results be different with others, then judgment about the quality of earnings is subject to further investigation in future.

3.4. Statistical Population and Sample

The statistical population in this study is companies listed in Tehran Stock Exchange in 2010 and also include the following conditions:

1. Companies that are profitable and their fiscal year ended to December 31 of 2010.
2. They are not from investment and financial industries (due to their specific nature).
3. Their required Information is available.

In this study, after definition of the population and recognition its delimitation measure, paid to collect information about population and appointing its members. In this area, can be seen that there are totally 263 companies in Tehran stock exchange in 2010 which the end of their fiscal year is December 31 and their information is available. In the following, by the deletion of 20 companies from the investment and financial companies, the remaining members of population were determined 243 companies.

Finally, in this study, in order to obtain a probable sample from population we used simple random sampling method. And also the sample size was determined using Cochran formula which was calculated about 70.

4. RESEARCH FINDINGS

This study is a quasi-experimental study that by using three methods or different criteria of measurement pays attention to judge about quality of the reported earnings for companies. Mentioned final judgment is formed in the way that: If all three used measurements determine the earnings quality of companies high, then earnings quality of that company is reported absolutely high and conversely, if all three used measurements determine the earnings quality of company low, then earnings quality of that company is reported absolutely low. However, if the results of at least one measurement are different with others, in this case, the quality of earnings is reported as unspecified. Accordingly, the results of conducted proceedings in the research sample are as follows:

First hypothesis: This hypothesis is claimed that: based on Leuz *et al.* (2003) measure, the quality of reported earnings of companies listed in Tehran Stock Exchange in 2010 is low. The findings from investigating this claim are provided in Table (1):

Table 1: Earnings quality in 2010 based on Leuz index

The name of index	Average values	Standard Deviation	Significance level of 95%		Test criteria	T-statistics	Significant level
			The minimum value	The maximum value			
Leuz	2.672	5.183	0.436	2.907	constant number one	2.699	0.009

According to 0.009 in the column of significant level, the result from first hypothesis test is as follows: Not only at the error level of five percent, even at the error level less than one percent, reported earnings in Tehran Stock Exchange also has high or desirable quality. Therefore, the first hypothesis of this study based on the low quality of earnings in Tehran Stock Exchange is rejected.

Hypothesis 2: Based on the Barton and Simko (2002) measure, quality of earnings reporting in Tehran Stock Exchange in 2010 is low.

Table 2: Earnings quality in 2010 based on Barton-Simko index

The name of index	Average values	Standard Deviation	Significance level of 95%		Test criteria	T-statistics	Significant level
			The minimum value	The maximum value			
Barton Simko	0.506	0.545	-1.623	-1.363	constant number two	-22.89	0.000

If significant level is higher than acceptable error level (which is $\alpha = 0.05$ in this study), this means that the null hypothesis is rejected and the opposite hypothesis is accepted. Accordingly, given the value of 0.000 in the column of significant level, about the second hypothesis indicates that:

With 95% confidence cannot be accepted that the quality of earnings in the companies listed in Tehran stock exchange is low. In other words, according to Barton-Simko index, the test results of earnings quality, contrary to the researcher's predictions and expectations is at the high level. This result almost will be fixed in all possible levels of error.

Hypothesis 3: Based on Penman (2001) measurement, the quality of reported earnings of companies listed in Tehran stock exchange in 2010 is low. The results of this investigation have been summarized in Table (3):

Table 3: Earnings quality in 2010 based on Penman index

The name of index	Average values	Standard Deviation	Significance level of 95%		Test criteria	T-statistics	Significant level
			The minimum value	The maximum value			
Penman	0.900	2.109	-2.602	-1.596	constant number three	-8.327	0.000

T statistic, the related significant level and its comparison with the error level are indicated high quality of reported earnings in 95% confidence level and even when the error level is more than the usual minimum value, i.e. 1%, the subject of high quality of earnings will continue. Finally, we can say that the researchers also encountered negative response to their predictions in this hypothesis. That is, based on Penman index, they did not achieve to the evidence on low quality of reported earnings in companies listed in Tehran stock exchange.

Hypothesis 4: In total, quality of earnings reporting of companies listed in Tehran stock exchange in 2010 is not high. Findings from investigation of this hypothesis are presented in table (4) below.

Table 4: Earnings quality in 2010 based on each of three research measures and its final judgment

Row	The name of company	The amount of LEUZ	Earnings quality	The amount of BAR-SIM	Earnings quality	The amount of PENMAN	Earnings quality	Final earnings quality
1	Afast	1.54172	High	1.0353083	High	0.144163	Low	Unspecified
2	Iran Khodro Diesel	0.75781	Low	0.480589	High	0.402718	High	Unspecified
3	Bama	1.28301	High	0.5593567	High	1.022112	High	High
4	Behnoush	0.80379	Low	0.3959209	High	1.104949	High	Unspecified
5	Pars Khazar	1.32641	High	0.0032152	High	1.058403	High	High
6	Zagros Petrochemical	0.7289	Low	0.9663674	High	0.799661	High	Unspecified
7	Post Bank of Iran	12.2849	High	0.8417299	High	0.374707	High	High
8	Parsian Electronic Commerce	5.24393	High	-0.645931	Low	0.426581	High	Unspecified
9	Development of Zinc Mines of Iran	0.02508	Low	0.4673376	High	0.404443	High	Unspecified
10	Drug Cup	1.28432	High	0.797397	High	0.255695	Low	Unspecified
11	Eruption and Oxygen	1.27235	High	0.8035253	High	0.04911	High	High
12	Chadormlo	1.05109	High	0.8589708	High	1.068786	High	High
13	Charkheshgar	0.80053	Low	0.1330495	High	-0.70094	Low	Unspecified
14	North Drilling	1.90952	High	1.0916143	High	1.335789	High	High
15	Transport and Petrochemical	1.22956	High	-0.691044	Low	1.96034	High	Unspecified
16	Toka Transportation	1.35942	High	-0.03104	Low	0.582233	High	Unspecified
17	Chinese Soil	1.60449	High	0.325624	High	0.468605	High	High
18	Informatics Service	1.69468	High	-0.135354	Low	1.686775	High	Unspecified
19	Pars Beast Feed	1.28368	High	0.0806059	High	0.783981	High	High
20	Data Processing of Iran	1.25117	High	0.0812859	High	1.941709	High	High
21	Osveh Pharmaceutical	1.0354	High	0.0604635	High	1.617625	High	High
22	Doctor Abidi Pharmaceutical	1.23536	High	0.2150959	High	1.032439	High	High
23	Kosar Pharmaceutical	1.38301	High	0.1175013	High	0.586597	High	High
24	Iran Radiator	1.25536	High	0.4726936	High	0.814559	High	High
25	Rangin	1.31532	High	0.3882076	High	0.488964	High	High
26	Iran Casting	1.28876	High	-0.133439	Low	0.421774	High	Unspecified
27	Tractor Sazi Iran Casting	1.48774	High	0.2608958	High	0.262635	Low	Unspecified
28	Zamiyad	0.24982	Low	0.361631	High	-1.10993	Low	Unspecified
29	Poyesh Structure	2.55213	High	0.1590786	High	0.240358	Low	Unspecified
30	Saipa Glass	1.30193	High	0.4131162	High	0.563223	High	High
31	Oromie Cement	2.76727	High	2.5910466	Low	0.885166	High	Unspecified
32	Khash Cement	1.69787	High	0.4944434	High	0.766393	High	High
33	North Cement	3.05787	High	2.4016554	Low	0.287367	Low	Unspecified
34	Karon Cement	1.37772	High	0.6841206	High	1.121011	High	High

35	Hormozgan Cement	5.30502	High	1.0386815	High	1.051327	High	High
36	Daroupakhsh Pharmaceutical Chemistry	1.33835	High	0.1131489	High	0.42088	High	High
37	Fars Chemical	1.34577	High	0.0893445	High	0.287213	Low	Unspecified
38	Iranian Copper Industries	0.98338	High	0.6389442	High	0.925144	High	High
39	Industrial Pars Minoo Industry	1.65765	High	1.1826147	High	0.240272	Low	Unspecified
40	Industrial Propulsion	1.4859	High	0.249028	High	0.584996	High	High
41	Shahed Reclamation and Development	1.047	High	1.042879	High	8.967321	High	High
42	Mineral Processing	1.2659	High	0.796	High	1.383031	High	High
43	Zar Spring Building	1.2686	High	0.342608	High	0.698346	High	High
44	Khuzestan Steel	0.3999	Low	0.66439	High	0.262655	Low	Unspecified
45	Iran Fiber	1.3091	High	0.596658	High	0.209038	Low	Unspecified
46	Iran Automobile Parts	0.1372	Low	0.177299	High	0.319081	Low	Unspecified
47	Sugar of Naghshe Jahan	1.3308	High	0.185673	High	0.689281	High	High
48	Iran Carburetor	1.2726	High	0.287718	High	0.692096	High	High
49	Alvand Tile	2.4996	High	1.019664	High	0.209011	Low	Unspecified
50	Sina Tile	1.3469	High	0.506933	High	0.775518	High	High
51	Tube Gas	1.3766	High	0.582509	High	-7.32437	Low	Unspecified
52	Bahman Group	35.317	High	0.083172	High	3.167037	High	High
53	Sepahan Industrial Group	1.8514	High	0.26568	High	0.503319	High	High
54	Golgohar	0.8379	Low	2.016113	Low	0.848654	High	Unspecified
55	Razak Laboratories	2.0245	High	0.26442	High	0.590476	High	High
56	Sahand Rubber	1.2749	High	0.479421	High	0.882	High	High
57	Pak Dairy	24.596	High	0.211575	High	0.286123	Low	Unspecified
58	Leabiran	1.1552	High	0.235985	High	12.61035	High	High
59	Brake Line	1.2895	High	0.445743	High	0.691845	High	High
60	Machine Sazi Arak	1.2527	High	0.196289	High	0.527046	High	High
61	Mepna	5.653	High	0.583122	High	3.936091	High	High
62	Tractor Engine Builders	1.3837	High	0.449774	High	0.533345	High	High
63	Mahram	1.1459	High	-0.18645	Low	1.091649	High	Unspecified
64	Nasir Machine	1.2792	High	0.348612	High	0.830009	High	High
65	Pars Oil	9.6099	High	0.633603	High	0.133245	Low	Unspecified
66	Negin Tabas	1.2472	High	0.719517	High	1.857993	High	High
67	Roller and Steel Production	1.3756	High	0.54151	High	0.278395	Low	Unspecified
68	Trance Energy	1.6988	High	0.907405	High	0.60312	High	High
69	Varziran	1.303	High	0.924165	High	0.13988	Low	Unspecified
70	Hepco	6.6341	High	0.897204	High	-0.00985	Low	Unspecified

Before analyzing above table, we want to remember that we used one-way mean compare test for examining significance of high or low earnings quality, but its results was not reliable because of using rank scale for doing this test. In the better words, we allocated rank +1 for high quality, rank -1 for low quality and rank 0 for unspecified quality and then we tested the mean value of investigated data-is it significantly more than zero or not? In this line we showed that the mean rank of quality is more than zero but this result was not reliable because more company ranks were zero in this test. We know that rank zero will not have any effect on mean vale, as if they aren't in the investigated data actually. Finally we decided to see and analyze sampled data from another view. This point of view and its results are as following:

As can be seen in Table (4), from 70 companies included in the research sample, none of the companies were determined with low quality of earnings. In contrast, the 40 companies (more than 57% of companies) were identified with high quality of earnings that it is a good and pleasure subject. On the other hand, in the studied sample, 30 companies were identified with unspecified quality in earnings that it is equivalent to 43% of studied companies. The frequencies of these companies are considerable.

5. CONCLUSION

By collecting the variables and required data and their analysis, this study presented inconsistent results with much of the conducted researches in Tehran Stock Exchange. In significant part of research, the findings indicate high quality in reported earnings. But with all above qualities, the fourth hypothesis, which was the main focus for research investigators, has outputs that is not completely consistent with other hypotheses. So considering this case, the final conclusion of research is as following:

First, second and third hypothesis results showed that reported earnings in TSE had high or at least desirable quality. But we should know that these hypotheses are based on only one measurement. It is obvious that considering result of multiple measurements is more reliable than result of one measurement. Therefore result of fourth hypothesis (that is based on consensus of three independent measurement of earnings quality) will be more reliable than last hypotheses. Although, results from fourth hypothesis didn't reject the result of hypothesis number 1 to 3, but it hasn't complete match with results of other hypothesis. Therefore a conservative reasoning considers the worst event in the ambiguous situation. According to this point of view, our final conclusion will be: based on results from the fourth hypothesis -especially the 43% of studied companies have unspecified quality in earnings- it is better that: financial analysts, portfolio managers, investors and totally users of earnings information in Tehran Stock Exchange use more than one measurement to evaluate the quality level of earnings.

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