The Effect of the Quality of Information Disclosure on Profit Information content and the Book Value of the Equity of Firms listed on Tehran Stock Exchange

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Abstract: This paper studies the effect of the quality of information disclosure on profit information content and the book value of the equity of 256 firms listed on Tehran Stock Exchange (TSE) during 2002-2009. To this aim, and to determine if there is any linear correlation between the research variables, various tests such as Pearson's and Spearman's correlation tests as well as Fisher, Limer, Hausman, Durbin-Watson, Wald, and Vaung's statistics methods were used. The results showed that: 1) the incremental and relative information content of the book value is little; 2) the profit information content is significantly higher than that of the book value; and 3) the quality of information disclosure in the studied firms did not have a significant impact on the information content of earnings and the book value of equity.

Introduction

Investment is one of the important factors of development in the current century. In this respect, stock exchange serves as the most significant tool that can mobilize investments, directing them towards the industry. The stock exchange in industrial countries is important to the extent that it acts as one of their most significant indicators of economic growth. Iran's economic structure and its respective characteristics have given rise to a condition that necessitates the growth and development of the stock exchange. When making decisions concerning investments in the stock exchange, the first and the foremost factor considered by the investor is the "price"; and studying the trend of changes in the stock prices is the most common starting point when buying stocks. Therefore, having knowledge of the factors affecting the stock prices is of great importance and since stock prices are influenced by several factors and every one of such factors leads to an increase or decrease in the prices of the stocks in some way, studying and analyzing each of those factors is a necessary task. The annual budget of the firm and its production prospects, sales, earnings per share, and budget control in mid-term reports as well as the level of realization of anticipations significantly influence the changes in the stock prices. Among the mentioned factors, one may seek into the anticipation of earnings per share may be the most important element affecting the stock prices.

Profit is one of the most premier indicators for assessing the activities of an economic unit. The importance of accounting profit arises from the expansion of quantitative managerial techniques and the necessity of addressing the needs of the users of financial statements, and by passing the limited view provided by assessing the results of past activities, it has empowered accounting in helping the decision-makers. The efficient market theory has been on the scene since 1965. Based on this theory, all the available information pertaining to the stock is manifested in the price of the stock and even the investors within the organization who have access to first hand information could not gain abnormal returns. In such market, the complete disclosure of information, particularly accounting information, carries information content.

Studying the content of information is to observe the role that accounting information could take in explaining the behavior of returns on securities. The well-know research conducted by Baul and Brown (1968) provided the first impetus as they noticed in their research the direct relationship between the unexpected changes in the profits and the stock residual return.

1- Theoretical Background

Disclosure, in its broadest sense, means presentation of information. Accountants use this term in a more limited way, meaning disclosure of financial information about a firm provided in the financial reports (usually in the form of annual

reports). In some cases, the term is used more narrowly, denoting providing information that is not incorporated in financial statements. The terms "quality" of disclosure of accounting information and "transparency" of a disclosure system are commonly and interchangeably used and it is difficult to reach a consensus on a precise definition of "transparency" and "quality". So far, various constructs such as adequacy, comprehensiveness, informativeness, and timeliness have been used as representatives of disclosure quality. Sinqavi and Dessay believe that quality refers to attributes of completeness, accuracy, and reliability. Balbal et al. and Kowsari interpret transparency as a combination of timeliness and conservatism. Timeliness refers to the extent the current economic events are incorporated in the current financial statements and conservatism implies the higher immediacy of reflection of adverse economic news over the promising news in financial reports. Bareth and Shipper claim that the transparency of financial reporting is the extent to which the financial reports reveal the underlying economics of an economic unit (business) in a manner comprehensible by the users of those reports. From accounting perspective, the underlying economics of a economic business unit include its resources (assets), claims on those resources (liabilities and equities), changes in the resources, claims and (on) cash flows (which are reflected respectively in the financial statement, income statement, and cash flow statement), risks, and the way the risks are handled. Panal and Shipper also assess financial statements as quality statements if they meet the three criteria of transparency, full disclosure, and comparability. Transparent financial statements are those that illustrate the basic events, transactions, judgments, and estimates of the financial statements and their applications. Transparency allows the users to observe and understand the results and applications of the decisions, judgments, and estimates of the financial statements preparers. Full disclosure implies the provision of all the information required for decision-making and, accordingly, ensures that the investors are not misled. Finally, comparability means that similar transactions and events are accounted for and reported identically. Experimental research does not set a clear distinction between the quantity and quality of disclosure. It is generally assumed that the quantity of the disclosed information serves as an indicator in determining its quality. As a result, disclosure quantity measures are used to evaluate the quantity of disclosure. Nonetheless, the assumption remains uncertain and disputes on obtaining a more effective scale for measuring the quality of disclosure persist. In this respect, Jang makes a distinction

between the quality and quantity of disclosure and holds that the quality refers to the exactness and accuracy of the disclosure and is calculated through the increase in consensus of the investors and the accuracy of their expectations concerning the disclosure. He uses the anticipation of analysis as a representation of the investors' expectation. Betty et al (2004) also suggest that the quality of disclosure depends not only on the quantity of disclosure, but also on how it extends to other issues. (With this respect, primary (major) and secondary (minor) topics (threads) of Jenkins Report are used). They claim that a high quality disclosure of information is widespread and balanced among the primary and secondary threads of the framework in question. Together with these two aspects, three other attributes are also used for assessing the disclosure of information: time aspect (concerning past versus future information), financial aspect (financial versus non-financial information), and the type of the measurement aspect (qualitative versus quantitative information). Nevertheless, the majority of researchers assume that the quality and quantity of disclosure are directly correlated. Taking into account the importance of disclosure quality and the responsibility of firms' managers concerning information (informing), TSE decided to provide the market with the score and rank of all the firms listed on TSE based on their "quality of disclosure and providing proper information", so that the firms have knowledge of their stance and strive to improve their position. During the recent years, the firms have constantly been ranked based on information and quality of disclosure and the list of the top 20 firms has been provided to the market. "It is noteworthy that the information score of the publishers is calculated based on the time when the information about the anticipation of the earnings per share is provided, 6- and 9-month financial statement, the unaudited declaration of three auditors on the anticipation of each primary share and the 6-month statement, the auditor's declaration on the mid-term 6-month financial statements, the unaudited financial statements at the end of the year and the discrepancies between the anticipated and actual audited performance. In addition, negative scores were given if the audited financial statements at the end of the year were not provided in a timely manner and paying the shareholders earnings was delayed." The "disclosure quality and proper informativeness scores" of all the firms listed on TSE are available for 2003 and after at TSE's website.

First, the researchers tried to examine the contradictory anticipations concerning the efficient market theory and the dominant literature in accounting (for example, whether or not the change

in accounting method could systematically mislead the stock exchange was examined). Eventually, the researchers strived to conduct a test (different from what was then common). Nonetheless, in the pioneering article by Ball and Brown (1968), which made the positive accounting research known, they did not take on to perform such test. Based on the evidence available in the financial sciences, they based their hypothesis on the notion that the efficient market theory is descriptive or explanatory. Taking into account the efficient market theory, they then tried to conduct a research to see if the net earnings could, from an experimental perspective, be related to the price of the stock, and in case of such relation, whether or not the net earnings could potentially provide valuable information. By observing a direct relation between the net earnings and the stock prices, Ball and Brown decided to conduct a research to find out if the net earnings merely reflect the elements within the stock prices or if the declaration of the net earnings could provide the stock exchange with some information (i.e. if the declarations on the net earnings carry information or not.)

The article by Ball and Brown prompted an extensive (experimental) literature on observing the relationship between the net earnings and the stock prices and if the net earnings include information content or not; the literature is still growing. From this perspective, it is a positive action in that the researchers try to find out the reason why the net earnings and the stock prices are directly related and why the net earnings could convey some information to the stock exchange.

2- Problem Statement

Market participants always seek to obtain quality financial information, since such information reduces the information asymmetry between the firms' managers and its external investors.

The main objective of disclosure is to inform the analysts and investors of the amount and schedule of the future cash flows. Such disclosure will help the analysts and investors in anticipating the future earnings. Therefore, transparency and disclosure provide the shareholders with valuable awareness. Based on the conducted research, a proper disclosure could improve the accuracy of estimates concerning the earnings of the future years. That is, compared to firms with lower levels of disclosure, firms enjoying higher levels of disclosure experience a more strong relation between the current stock returns and the future earnings (Jasper and Planburg, 2008).

The scores of disclosure quality are calculated based on the information provision of firms with respect to reliability and timeliness of the information. The timeliness criterion is measured based on the time the information (anticipation of earnings per share, unaudited mid-term financial statements, portfolio statement, auditor's declaration on anticipation of earnings per primary share and 6-month earnings as well as mid-term 6-month financial statements, audited and unaudited financial statements at the end of the fiscal period and the earnings distribution schedule) is submitted by the firm in specified times in the information disclosure instruction while taking into account the delay in submission of the information. The amount of fluctuations and changes in the submitted anticipations as well as the discrepancies between the anticipated and actual audited performance have taken as the criterion of reliability.

3-Conducted Studies

3-1-Studies on the Quality of Disclosure

Mohammad Hossein Setayesh, Mostafa Kazemnejad, and Mehdi Zolfaghari (2011)

These researchers investigated the influence of disclosure quality on the liquidity and the cost of capital of the current and future common stock of the firms listed on TSE. With this respect, the effect of the firms' size was controlled. The findings resulted from studying 105 firms during 2004-2008 indicate that there is a positive and significant relationship between the size of firms and their current and future liquidity. However, no significant relation exists between disclosure quality and the current and future liquidity of the firms. Moreover, there is a negative and significant connection between disclosure quality and the cost of capital of the firms' current and future common stocks.

Dastgir and Bazzaz-zadeh

Dastgir and Bazzaz-zadeh (2003) studied the effect of (mandatory) increase in disclosure on the cost of the common stocks of the firms listed on TSE. The amount of disclosure of the studied firms was calculated through comparing the annual financial statements for the year ending in 2000 with the items specified in the accounting instructions if force from March 21, 1999 ("Trade Law and Direct Taxes Law"). The results of studying 40 manufacturing firms indicate that an increase in the amount of disclosure will decrease the cost of the common stocks. In other words, investors prefer investing in firms with higher levels of disclosure (lower risk).

Diamond and Verchia

These two researchers studied the link between the disclosure of liquidity and the cost of capital of American firms. Their findings show that the disclosure of general information to reduce information asymmetry could decline firms' cost of capital through attracting the growing demand of major investors for increase in liquidity of stocks.

Botosan

Botosan investigated the relationship between the amount of disclosure and the cost of capital of American firms. The results show that in firms where the analysts show low levels of follow-ups, an increase in disclosure will result in decrease in the cost of capital, whereas in firms where the analysts represent high levels of follow-ups, no evidence of a relationship between the amount of disclosure and the cost of capital will be found.

Sengupten

Sengupten analyzed the effect of disclosure quality on the cost of debts of American firms. The findings show that the firms with high quality disclosure experience lower cost of debt. Additionally, in situations where market uncertainty about the firm is high, the relative importance of disclosure is higher.

3-2-Studies on Information Content

Dr. Hamid Khaleghi Moghaddam and Mohammad Azad

In a study conducted on the information content of the earnings prediction of firms, Dr. Hamid Khaleghi Moghaddam and Mohammad Azad used Pearson's correlation method. They proposed two hypotheses in their research:

1. There is no significant relationship between the firms' predicted earnings and the return on equity.
2. There is no significant relationship between the firms' predicted earnings and the actual earnings.

1. The results of testing the cumulative average abnormal return rate show that there is a significant connection between the predicted earnings and the return on equity.
2. The results of repeated measures analysis of the weekly average of abnormal return rate illustrate that there is a significant link among the abnormal return averages.

Based on the above results, it can be said that the first hypothesis of the research, claiming the absent of a significant relationship between the declaration of the predicted earnings and the stock returns, is rejected.

3. The results of Pearson's correlation test confirms the present of a strong and solid relation between the predicted and actual earnings. A positive correlation with a value approaching 1 is indicative of presence of a direct and incomplete relation.

Generally, the earnings predicted by firms carry information content and efficiency, thus highlighting the importance of predicting the accounting profit due to its role in and effect on decision-making by the users, particularly the investors.

Hamid Haghighat and Ehsan Rayegan

Hamid Haghighat and Ehsan Rayegan studied the role of earnings smoothing on the information content with respect to the prediction of future profits. In their research, they investigated managerial motives in smoothing the profits in the population of firms listed on TSE. In this study, profit smoothing was calculated using the negative correlation between the changes in optional accrual items and the changes in optional predetermined profits of 70 chosen firms during 1997-2001. Then, using the model proposed by Collins et al and extended by Tucker and Zarvoin, the link between the profits and current and future returns was analyzed through incorporating the profit smoothing index in the model for the years 2003-2010. The results of this research show that the current stock prices of the firms that use smoothing more than others include less information on the profits and future cash flows. Therefore, smoothing is conducted mainly to distort the information rather than to convey the confidential managerial information. In their research, they investigated the relationship between the corporate governance's features (ownership concentration, institutional ownership, managing director's influence, duality of managerial duties, the size of the board, the independence of the board, dependency on debts, and the duration in which the managing director is in charge of the board) and the information content of profits when there is a profit management task in the firms listed on TSE during 2001-2007. In order to test the hypotheses, multivariate regression model and combinatorial generalized least square were used. The research findings show that the relationship between the institutional ownership of the board and the information content of the profits in the firms with higher levels of profit management motives is stronger than that in the firms with lower profit management stimulus. Moreover, according to shareholders, other corporate governance's features (ownership concentration, managing director's influence, duality of managerial duties, the size of the board, dependency on debts, and the duration in which the managing director is in charge of the board) have no effect on the improvement of profit's information content, either at the presence of high levels of profit management motives or when there is low levels of profit management drives. Therefore, in order to support the minority shareholders, increase profit reliability, and to help to the development and growth of the stock exchange, it is necessary for the Supreme Council of Stock Exchange and Securities to take into account the ratification of the steering instruction of the firms listed on the stock exchange while considering the results of the research conducted on the corporate governance.

Bernard

Bernard is one of the first individuals who measured the information content of accounting data.

The researcher compared the explanatory power of two models: the first model examined the link between the book value of the stocks and stock earnings and the second model tested the relation between the stock dividends and stock prices. The results of Bernard's study showed that of three accounting variables, namely stock earnings, stock dividends, and book value, stock dividends enjoyed the most level of information content.

Bergestaller and Dichow

After Bergestaller and Dichow (1997) presented their assessment model, they found that the information content of stock dividends (as opposed to the stock's book value), varies with return on investment, and the book value of the stock is more significant in explaining the stock prices when compared to stock dividends. Bergestaller and Dichow found that, in comparison with earnings, the book value is more significant in explaining the stock market value.

Lendseman and Hend

By investigating the information content of dividends, Lendseman and Hend examined the different estimates provided by Olsen. They found that stock dividends incorporate information content.

Lou and Zarowin

Based on the findings of Lou and Zarowin (about the information content of accounting data), if the analysis is extended to 1996, the book value will decrease in line with the stock market value. They introduced the reason for this to be the change in business environment. Such change has resulted in formation of creative activities mainly in the form of intangible assets.

Michell et al

Michell et al studied the relation between the changes in the dividends and the quality of profits. For this purpose, they examined the market's reaction to the quality of the past published information through analyzing the stock prices and revising the analysts' prediction around the changes in dividends. Finally, the research hypotheses were verified after experimental testing. That is, the market reacts less intensely to the announcement of changes in the cash profit of firms with high quality profits. Moreover, the volume of the revised predictions of financial analysts was very little for the firms with high quality profits.

3-3-Studies on the Book Value

Omid Poorheidari, Gholamreza Amirpoor, Mohsen Safajoo

They studied the connection between profits and the book value of stocks, and the stock market value of firms listed on TSE.

They proposed four hypotheses in their research:

1. There is a significant relationship between earnings per share and the price of each share.
2. There is a significant relationship between the book value of each share and the price of each share.
3. There is a relationship between variation in coefficient of determination of earnings per share and variation in the size of the firms.
4. There is a relationship between variation in coefficient of determination of the book value of each share and variation in the size of the firms.

They used 64 firms as their research sample and studied them for the period of 1996-2004. In order to test the hypotheses, univariate regression analysis was used. According to the findings, the first hypothesis was verified. Based on this hypothesis, it can be said that the earnings per share is an important factor in determining the value of the firms in Iran. In other words, profit carries information content and plays a basic role in determining the value of firms.

The second hypothesis was also accepted. It can be concluded that the book value of each share is important in determining the value of firms and that in deciding the value of firms, the book value of each share is of less importance compared to earnings per share.

The third hypothesis is verified. That is, it can be said that there is a significant relationship between the size of the firm and the increase in the explanatory power of earnings per share concerning the price of each share during the considered period.

The fourth hypothesis is rejected, i.e. there is no relationship between the size of the firm and the coefficient of determination of each share. The results of the fourth hypothesis are not in line with the results of Western studies.

Dr. Mohammad Arab Mazar Yazdi and Mahmood Mostafazadeh

Dr. Mohammad Arab Mazar Yazdi and Mahmood Mostafazadeh studied the effect of profit management on the relevance of profit and book value in determining the value of the firm and compared the short-term and long-term optional accrual items. They proposed two hypotheses in their research:

1. Profit management decreases profit relevance and increases book value relevance.
2. Profit management, using long-term optional accrual items, has more influence on the profit and book value relevance compared to when the short-term optional accrual items are used.

In their research, they studied the firms listed on TSE during 2001-2006. The period for estimating Jones model coefficient was 2000-2006. In order to test the hypotheses, the classic regression model and

test of normality, homogeneity of variance, and test of independence were employed. To perform the test rejected and the alternative hypotheses were accepted. The results of the research indicate that profit management using long-term optional accrual items has more influence on the profit and book value relevance compared to when the short-term optional accrual items are used.

Saberamanian and Nekatachalam (1998)

Saberamanian and Nekatachalam (1998) indicate that the book value could play an indirect role in evaluating the stocks even within the framework of capitalization. Their study included a large sample covering 30 years from 1967 to 1996. They concluded that current and past profits contain identical information content (explanatory power) and that the combinatorial model of current and past profits outperforms the combinatorial model of current profits and book value in terms of explanatory power.

Collin, Maydo, and Weiss

Collin, Maydo, and Weiss (1997) investigated the connection between the profit and book value of stocks and the stock market value of firms during the last 40 years. Their results show that, generally, the stock market value of firms is reversely connected with profit and book value.

In the mentioned research, the information content of profits and book value over time was evaluated using the framework provided by Olsen. Olsen's model considers the price as a function of profit and book value. Their findings showed that (despite the claims of the professional society) information content resulted from the combinatorial model of profit and book value during the past years has not only decreased, but also has shown a small increase. Moreover, although the information content of profit has reduced, the information content of book value has increased. The results of the research by Collin et al indicate that such changes are due to the abundance in iterations, emergence of unexpected items, losses and changes in the size of medium-sized firms, and attraction of intangible resources.

Lou (1997) and Amir and Lou (1996)

Lou (1997) and Amir and Lou (1996) indicate that financial accounting information for evaluating the firms intensively invested in intangible assets (such as R&D, brand development, or IT) suffers some shortcomings.

A similar result is present in the research by Amir and Lou (1996). In their study, they concluded that the profit, book value, and cash flows were irrelevant in evaluating the firms that invested in communication industry.

4-Research Hypotheses

of normality, Kolmogorov-Smirnov test was used. Based on the findings, both hypotheses were Based on the explanations about the subject of the study, the hypotheses of this research include:

1. There is a significant relationship between the book value and stock returns.
2. There is a significant relationship between profit and stock returns.
3. The incremental content information of profit is more than the incremental information content of book value.
4. The relative content information of profit is more than the relative information content of book value.
5. The quality of disclosure increases the information content of profit.
6. The quality of disclosure increases the information content of book value.

5-Statistical Population

Statistical population includes all the items and individuals within a specific geographical scale (regional or global) who possess one or more identical attributes (Hafeznia, 2008, p. 199).

In this section, we study all the firms listed on TSE. The reason for such selection is the investors and financial analysts' attention to the stock market, availability of information and its transparency, as well as the higher reliability of information and its timeliness for the specific requirements of the stock market.

Given the scope of the research, our study includes the firms listed on TSE before March 21, 2002. During the mentioned period, a number of 457 firms were listed on TSE. For the purpose of homogeneity among the firms that were active during 2002 to 2009, the number of firms was modified based on the following specifications:

1. Investment companies and financial brokers, banks and insurance companies (13 companies)
2. Firms whose fiscal year did not end on March 20 (103 companies)
3. Elimination of noisy observations (below 1 per cent and above 99 per cent) and the firms whose data were unavailable (85 companies)

This said, the number of the study population amounts to 256 firms.

6-Hypothesis Testing Method

Once the data were gathered, the following model was used to test the first, second and third hypotheses:

$$R_{it} = a + \beta_1 E_{it} + \beta_2 BV_{it} + \varepsilon_{it} \qquad (3\text{-}1)$$

If β_1 is positive and significant, the first hypothesis is accepted.

If β_2 is positive and significant, the first hypothesis is accepted.

If $\beta_2 > \beta_1$, the third hypothesis is accepted.

R_{it} : stock return

E_{it} : dividend

BV_{it} : the book value of the stock

In order to test the fourth hypothesis, the following model along with Vaung's test (1989) were used:

$$R_{it} = a + \beta_1 E_{it} + \varepsilon_{it} \rightarrow adj R_E^2 \qquad (3\text{-}2)$$

$$R_{it} = a + \beta_2 BV_{it} + \varepsilon_{it} \rightarrow adj K_{BV}^2 \qquad (3\text{-}3)$$

If Vaung's statistic is significant, the fourth hypothesis is verified.

$$adj : R_E^2 > adj : K_{BV}^2$$

In order to test the fifth and sixth hypotheses of the research, the following models were used:

$$R_{it} = a + \beta_1 DQ_{it} + \beta_2 E_{it} + \beta_3 BV_{it} + \beta_4 DQ_{it} E_{it} + \beta_5 DQ_{it} BV_{it} + \varepsilon_{it}$$
$$(3\text{-}4)$$

If β_4 is positive and significant, the fifth hypothesis is verified.

If β_5 is positive and significant, the sixth hypothesis is verified.

DQ_{it} : disclosure quality rank

Wald Test

Wald test was performed using Fisher's statistic. In the F-test, two regressions are required, known as restricted and unrestricted regressions. The unrestricted regression is a regression in which the coefficients are freely determined by the data, whereas in a restricted regression, the coefficients are bound by some specific limits.

In order to test the coefficients limits, the model is firstly estimated based on the restriction that all the slope coefficients are equal to zero and R_R^2 and *RRSS* are derived. Then, the model is estimated without the restriction. This time, R_{UR}^2 and *URSS* are derived. Afterwards, the sum of the squares of the residuals (or coefficients of determination) resulted from the two regressions are calculated and the test's statistic is generated. The F-test statistic for examining the hypotheses on the estimation coefficients are as follows:

$$F = \frac{RRSS - URSS}{URSS} \cdot \frac{T-K}{m} \quad F = \frac{(R^2{}_{UR} - R^2{}_R)}{(1 - R_{2\,UR})/(T-K)}$$
$$(5\text{-}1)$$

where *URSS* is the sum of the squares of the residuals resulted from the unrestricted regression, *RRSS* is the sum of the squares of the residuals obtained from the

restricted regression, R_{UR}^2 is the coefficient of determination of the restricted regression, *m* is the number of restrictions, *T* is the number of observations, and *K* is the number of the parameters of the unrestricted coefficient.

Vaung's Non-nested Test

When we want to compare the efficiency of two non-nested models (models that are not sub-models of each other), such as the following models, Vaung's Z test is used:

$$z_{it} = B0 + B_1 X_{it} + \varepsilon_{2it} \qquad (1\text{-}6)$$

$$Z_{it} = a0 + a_1 y_{it} + \varepsilon_{1it} \qquad (1\text{-}7)$$

In order to compare the explanatory power of two models, likelihood ratio test is used. The statistic concerning the likelihood ratio is adjusted as follows:

$$LR = Log\left(\frac{L(mv_y)}{L(MV_X)}\right) = Log(L(MV_Y)) - Log(L(MV_X))$$

$$= \frac{n}{2}(Log(\hat{\sigma}x^2) - Log(\hat{\sigma}Y^2)) + \sum_{i}^{n}=1\left(\frac{1}{2}\frac{(eXi)^2}{\hat{\sigma}x^2} - \frac{1}{2}\frac{(eY_i)^2}{\hat{\sigma}^{Y2}}\right)$$

The variance of the LR statistic, ω^2, is calculated as follows:

$$\hat{\omega}2 = \frac{1}{n}\sum_{i}^{n}=1\left(\frac{1}{2}Log(\hat{\sigma}_x^2) - \frac{1}{2}Log(\hat{\sigma}_Y^2) + \frac{1}{2}\frac{(exi^2}{\hat{\sigma}x^2} - \frac{1}{2}\frac{(eYi)^2}{\hat{\sigma}Y^2}\right) - \left(\frac{1}{n}LR\right)^2$$
$$(1\text{-}9)$$

Where e_Y is equal to RSS_Y/n and e_X is equal to RSS_X/n. Vaung's statistic is calculated as follows:

$$z = \frac{1}{\sqrt{n}}\frac{LR}{\hat{\omega}} \qquad (1\text{-}10)$$

However, the simpler method is to calculate LR_i as follows:

$$LR_i = \frac{1}{2}Log\left(\frac{Rssx}{RssY}\right) + \frac{n}{2}\left(\frac{(exi)^2}{Rssx} - \frac{(eYi)^2}{RssY}\right) \quad (1\text{-}11)$$

Now, by fitting LR_i over a column of ones, the regression coefficients will be $\frac{1}{2}Log\left(\frac{RSS_x}{RSS_Y}\right)$, which shows the difference between the coefficients of determination of models (2) and (3). The standard deviation obtained from the regression will also provide some information about the significance of the difference among the models' coefficients of determination. By multiplying the T-statistic obtained from the regression by $((n-1)/n)^{1/2}$, Vaung's Z statistic is obtained (Aflatooni and Nikbakht, 2006).

7-Research Variables

7-1-Information Disclosure

Definition: Provision of information through methods or channels of identification or records of events in financial statements which are different from the identification of the financial reports. This is indeed the aspect of information disclosure which is highly considered.

7-2-Disclosure Index

Disclosure index is equal to the firm's disclosure score calculated by the Stock Exchange and Securities Organization. In this research, the annual scores of firms' disclosure quality, calculated for the firms listed on TSE during 2003-2009, are used as disclosure index. The disclosure quality scores of the firms listed on TSE are calculated for the 3-, 6-, 9-, and 12-month periods and published by the Stock Exchange and Securities Organization for the year 2003 onwards. These scores reflect the evaluation of the Stock market (organization) on the informativeness of corporate disclosure. The mentioned score is calculated based on the weighted average of timeliness and reliability of the disclosed information. The assessed information is in accordance with the information disclosure regulations of the Stock Market, including annual financial statements, mid-term 3-, 6-, and 9-month financial statements, and predictions of stock earnings over 3-, 6-, 9-, and 12-month periods. Delays in submitting the information to the Stock Market based on the determined deadlines and discrepancies between the realized profits and the predicted profits are used for measuring the timeliness and reliability of disclosure.

7-3- Information Content

Information would be of value to the investors when they witness a reaction of prices to the new information. When such an event occurs, it is idiomatically said that the declared information includes information content.

7-3- Profit

When discussing to provide a definition for the concept of accounting profit, the majority of accounts refer to two economic (real world) meanings of profit. These two economic meanings are: changes in the welfare and maximization of profit under the specific structural conditions of the market, demand for the products, and the cost of input items.

When commenting on profit, the Financial Accounting Standards Council implicitly refers to these two concepts: general profit is the change in the equity of a business unit during a specific period.

According to Irving, profit is enjoying from such services during a specific period.

From an accounting perspective, profit is the positive difference between earnings and expenses of the business unit.

7-4- The Book Value of Each Share

The book value of each share includes the value of each share of the firm's shares as in the firm's books and based on its historical cost.

The book value of each share is calculated as follows:

BVPSIT= Total Equities/No. of Common Stocks

8- Research Findings

8-1- Descriptive Statistics of the Research

The descriptive statistics of the research which include the mean, median, minimum, maximum, and standard deviation of the data are calculated and presented in figure (4-1). The mentioned values provide only an outline of the data distribution.

The results show that the mean (median) of the stock returns, book value, net profit, and disclosure quality are 0.26 (0.07), 0.67 (0.51), 0.17 (0.16), and 3.70 (3.83), respectively. Moreover, the maximum (minimum) values are 4.78 (-0.80) for stock returns, 11.55 (-3.83) for book value, 2.09 (-1.29) for net profit, and 4.60 (0.00) for disclosure information. The standard deviation values for stock returns, book value, net profit, and disclosure quality are 0.72, 0.77, 0.24, and 0.65, respectively.

Figure (4-1): Descriptive Statistics

Variable	Mean	Median	Maximum	Minimum	Standard Deviation
RET	0.26	0.07	4.78	-0.80	0.72
BV	0.67	0.51	11.55	-3.83	0.77
E	0.17	0.16	2.09	-1.29	0.24
DQ	3.70	3.83	4.6	0.00	0.65

RET: returns obtained through the policy of purchase and maintaining the shares

BV: the book value of the stocks which is adjusted against the stock market value at the beginning of the period

E: net profit which is adjusted against the stock market value at the beginning of the period

DQ: disclosure quality score which is equal to the logarithm of the disclosure scores published by TSE, which is about the firms listed on TSE

9-2- Correlation Coefficient Test

In order to examine the presence and direction of correlation between the research variables, Pearson and Spearman correlation tests are used and the results are shown in figure (4-2).

Figure (4-2): Pearson's Correlation Coefficients (down the main diagonal) and Spearman's Correlation Coefficients (above the main diagonal)

Variable	RET	BV	E	DQ
RET	1	0.19** (0.00)	0.35** (0.00)	0.06* (0.04)
BV	0.33**	1	0.44**	0.04

	(0.00)		(0.00)	(0.21)
E	0.55**	0.54**	1	0.14**
	(0.00)	(0.00)		(0.00)
DQ	0.12**	0.00	0.17**	1
	(0.00)	(0.87)	(0.00)	

* & ** are significance at 5% and 1% confidence intervals, respectively.

The results of Pearson's correlation test show that there is a significant relationship between the stock returns and book value (0.33), net profit (0.55), and disclosure quality (0.12) at 1% confidence interval. The correlation between the book value and net profit (0.54) is also significant at 1% confidence interval. There is also a significant relationship between information disclosure quality of the sample firms and the net profit (0.17) at 1% interval.

The results of Spearman's correlation test show that there is a significant relationship between the stock returns and book value (0.33), net profit (0.55), and disclosure quality (0.12) at 1% confidence interval. The correlation between the book value and net profit (0.54) is also significant at 1% confidence interval. There is also a significant relationship between information disclosure quality of the sample firms and the net profit (0.17) at 1% interval.

The results of Spearman's correlation test show that there is a significant relationship between the stock returns and book value (0.19) and net profit (0.35) at 1% confidence interval, and between the stock returns and disclosure quality (0.06) at 5% confidence interval. The correlation between the book value and net profit (0.44) is also significant at 1% confidence interval. There is also a significant relationship between information disclosure quality of the sample firms and the net profit (0.14) at 1% interval.

9-3- Hypotheses Testing

In order to examine the first, second, and third hypotheses of the research, the estimation results of model (3-1) as well as Wald test were used, and in order to test the fourth hypothesis, the estimation results of the model (3-2) and (3-3) and Voung test were used. Finally, to test the fifth and sixth hypotheses, model (3-4) was estimated.

The Results of Estimating Model (3-1) and the Testing of Hypotheses 1-3

In order to test the first hypothesis of the research, model (3-1) is estimated with a combinatorial data approach. The significance of Limer statistic (19.35) at 1% confidence interval and the insignificance of Hausman statistic (0.21) show that the random effects method is used to estimate model (3-1).

The results of estimating model (3-1) using the mentioned method show that the intercept (0.10) and the book value (0.02) do not have a significant relationship with the stock returns. This indicates that the book value variable carries little information content. Nonetheless, the results show that there is a significant connection between the net profit (1.01) and stock returns at 1% confidence interval. This is indicative of the high levels of information content for profit variable and acceptance of the second hypothesis. The results of Wald test (102.82) also show that the net profit coefficient is significantly higher than the book value coefficient. This means that the incremental information content of the net profit is significantly higher than the incremental information content of the book value. Therefore, the third hypothesis is also accepted.

Figure (4-3): The Results of Estimation of Model (3-1)

$$RET_{it} = \alpha_{it} + \beta_1 BV_{it} + \beta_2 E_{it} + \varepsilon_{it}$$

Variable/ Estimation Method	Coefficient	Student's t Statistic	Significance
Intercept	0.10	1.15	0.25
BV	0.02	0.71	0.48
E	1.01**	12.23	0.00
Adjusted Coefficient of Determination	11.73%		
Fisher statistic (Significance)	99.5** (0.00)		
Limer statistic (Significance)	19.35** (0.00)		
Hausman statistic (Significance)	(0.90) 0.21		
Durbin-Watson statistic	1.84		
Wald Statistic (Significance)	102.82 (0.00)		

** 1% confidence interval

The significance of Fisher statistic (99.50) indicates the overall significance of the model. The value of Durbin-Watson statistic (1.48) also shows that the disturbing elements of model (3-1) are not serially auto-correlated. As a result, the presented statistics are not false and can be reliable.

Moreover, the adjusted coefficient of determination shows that the net profit and book value variables explain about the 12% of the changes in the stock returns variable. This shows that there is information other than that latent in the net profit and book value that affect the stock returns. Such factors may include economic shocks, industry news, etc.

9-4-2- The Results of Estimating Models (3-2) and (3-3) and the Testing of Hypothesis 4

In order to test the fourth hypothesis, models (3-2) and (3-3) are estimated based on combinatorial data approach. The significance of Limer statistic (18.45) at 1% confidence interval and the insignificance of Hausman statistic (0.00) show that the random effects method is used to estimate model (3-2). In addition, the significance of Limer statistic (19.56) at 1% confidence interval and the insignificance of Hausman statistic (0.06) show that the random effects method is also used to estimate model (3-3).

Figure (4-4): The Results of Estimation of Models (3-2) and (3-3)

Model	Model (3-2)			Model (3-3)		
Variable/ Estimation Method	Coefficient	Student's t Statistic	Significance	Coefficient	Student's t Statistic	Significance
y-intercept	0.20*	2.38	0.02	0.11	1.36	0.17
BV	0.13**	5.37	0.00			
E				1.05**	13.92	0.00
Adjusted Coefficient of Determination	2.20%			12.04%		
Fisher statistic (Significance)	34.85**(0.00)			204.82**(0.00)		
Limer statistic (Significance)	18.45**(0.00)			19.56**(0.00)		
Hausman statistic (Significance)	(0.97) 0.00			(0.81) 0.06		
Durbin Watson statistic	1.86			1.84		
Waung statistics (Significance)			(0.00)-3.14**			

* & ** are significance at 5% and 1% confidence intervals, respectively.

The results of estimating model (3-2) using the mentioned method show that the intercept (0.20) at 5% confidence interval and the book value (0.13) at 1% confidence interval are significant. The significance of Fisher statistic (34.85) is indicative of the overall significance of the model and the adjusted coefficient of determination shows that the book value explains merely 2% of the changes in the stock returns. This is because the book value is calculated based on the historical information, but the stock returns are determined based on the current information. The value of Durbin-Watson statistic (1.86) also shows that the disturbing elements of model (3-2) are not serially auto-correlated. As a result, the presented statistics are not false and can be reliable.

The results of estimating model (3-3) show that the intercept (0.11) is not significant but the coefficient of net profit (1.05) is significant at 1% confidence interval. The significance of Fisher statistic (204.82) indicates the overall significance of the model; and the adjusted coefficient of determination shows that the book value explains about 12% of the changes in the stock returns. The value of Durbin-Watson statistic (1.84) also shows that the disturbing elements of model (3-3) are not

serially auto-correlated. As a result, the presented statistics are not false and can be reliable.

The significance of Vaung statistic (-3.14) at 1% interval shows that the adjusted coefficient of determination of the net profit is significantly higher than the adjusted coefficient of determination of the book value. This means that the relative information content of the net profit is significantly higher than the relative information content of the book value. Therefore, the fourth hypothesis is also accepted.

9-4-3- The Results of Estimating Model (3-4) and the Testing of Hypotheses 5 and 6

In order to examine the effect of disclosure quality on the information content of the book value and net profit, model (3-4) is estimated based on combinatorial data approach.

The significance of Limer statistic (18.61) and the insignificance of Hausman statistic (0.28) show that the random effects method should be used to estimate model (3-4). The results of estimating model (3-4) using the mentioned method show that none of the coefficients of the model are significant. More importantly, DQ*BV (0.02) and DQ*E (0.14) are also insignificant. This indicates that the quality of information disclosure in the studies firms have had no significant effect on the information content of the book value and net profit of the firms. Therefore, the

fifth and sixth hypotheses of the research are rejected. This could be due to the improper disclosure of

information by the firms.

Figure (4-5: The Results of Estimation of Model (3-4)

$$RET_{it} = \alpha_{it} + \beta_1 BV_{it} + \beta_2 E_{it} + \beta_3 DQ_{it} + \beta_4 DQ_{it}BV_{it} + \beta_5 DQ_{it}E_{it} + \varepsilon_{it}$$

Variable/ Estimation Method	Coefficient	Student's t Statistic	Significance
y-intercept	0.20	0.93	0.35
BV	-0.05	-0.37	0.71
E	0.54	1.21	0.23
DQ	-0.04	-0.98	0.33
DQ*BV	0.02	0.53	0.60
DQ*E	0.14	1.11	0.27
Adjusted Coefficient of Determination	12/73%		
Fisher statistic (Significance)	(0.00) 37.6**		
Limer statistic (Significance)	(0.00) 18.61**		
Hausman statistic (Significance)	(1.00) 0.28		
Durbin Watson statistic	1.8		

** 1% confidence interval

Nonetheless, the significance of Fisher statistic (37.60) at 1% confidence interval indicates the overall significance of the model and the value of Durbin-Watson statistic rejects the evidence of serially auto-correlated elements of disturbance of model (3-4). The adjusted coefficient of determination also shows that the independent variables explain about 13% of the changes in the stock returns. This indicates that despite taking into account the disclosure quality variable, the independent variables explain a small percentage of the changes in the dependent variable and there are other variables that could explain the majority of changes in the stock returns.

10- The general results are as follows:

1) The incremental and relative information content of book value is little.

2) Net profit includes significant incremental and relative information content and its information content is significantly higher than that of the book value.

3) The information disclosure quality of the studied firms does not have a significant effect on the information content of profits and book value.

11- Recommendations of the Research

Based on the results of this research, investors are suggested to consider the following in their analyses:

1) The incremental and relative information content of book value is little.

2) Net profit includes significant incremental and relative information content and its information content is significantly higher than that of the book value.

3) The information disclosure quality of the studied firms does not have a significant effect on the

information content of profits and book value. This could be due to the improper disclosure of information by firms. Moreover, the adjusted coefficient of determination shows that the net profit and book value variables explain about the 12% of the changes in the stock returns variable. This shows that there is information other than that latent in the net profit and book value that affect the stock returns. Such factors may include economic shocks, industry news, etc.

12- Research Limitations

Difficulty of collecting the research data was the major difficulty of this study. Moreover, this research was conducted based on the data collected from various sources and software and data validity and accuracy is one of the limitations inherited in such data.

13- Recommendations for Future Studies

1- Taking into account the fact that in this research the information content of mandatory disclosure was studied, it is suggested that the future studies consider the information content of optional disclosure.

2- The present study is suggested to be conducted on other industries.

3- The relationship between disclosure of information and the capital cost of debts is recommended to be studied.

4- Other explanatory variables and other time spans may be considered.

5- A comparative study on the stock markets of other countries

6- Investigating the effect of information disclosure quality on the information content of the dividends and the book value of the firms listed on TSE is recommended.

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