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The Relationship between changes in the Items of the Financial Statements (Income Statement-Based Changes) and changes in the Stock Returns of the Firms Listed on the Tehran Stock Exchange

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ABSTRACT

Investment is one of the significant topics involved in the societies and the stock returns might be prioritized because of increases in the stock price, cash dividend, bonus shares and preemptive right for the buyers of the common stocks. The present study develops a main hypothesis and six subsidiary hypotheses to investigate the impact of the effective factors in the changes of the stock returns. The required data has been gathered by the verified software of Rahavard-e-Novin and also the publicly issued information of the Tehran Stock Exchange. Using Pearson correlation coefficient, the collected data has been analyzed. The findings reveal that sales revenue, cost of goods sold, operating income and net income are the four factors found to be useful in making decisions about the changes of the stock returns.

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INTRODUCTION

Capital market development is known as one the main factors of economic growth and development. In doing so, the capital market of Iran has observed a lot of violations including the major ups and downs in the stock trades, assignments of the public shares through the Tehran Stock Exchange and increasing the number of firms listed on the Tehran Stock Exchange.

The significant role of capital market in the economic development and the effective evolutions of the Tehran Stock Exchange have resulted in conducting various studies about the Tehran Stock Exchange.

Extensive investigations should be conducted by the investors in order to make investment decisions. In other words, the investors should take into account many factors for making investment decisions because their assets are converted into stocks. The investors might make unsatisfactory decisions by overlooking some related factors. This is more involved in the countries in which the stock exchanges are not efficient. There is no need to conduct extensive investigations in the countries in which the stock exchanges are efficient because the market price of the stocks is close to its intrinsic value. In other words, the market price of the securities is an appropriate indicator of their real value (Frank. Riley, 2007)

The present study aims to determine the relationship between changes in the financial statement items and changes in the stock returns. This study also seeks to examine whether the reliance on the basic financial statements could predict the stock returns. Stated another way, it is tested whether the basic financial statements have incremental information content. This study intends to be useful for the investors and financial analysts to make economic decisions by relying on the basic financial statements.

Statement of the Problem:

The financial reporting mainly aims to satisfy the information requirements of the current shareholders and potential investors of the businesses and this is the reason for considering the income statements in making decisions. This might be attributed to the fact that the investors prefer gaining profit rather than the other related objectives. As a result, periodic measurement of the earnings is known as the primary objective of the accounting. Most believe that publishing income statements and announcing accounting earnings transfer information to the capital market and incur changes in the rate of return and volume of stock trades. These changes are different in terms of the market efficiencies (Mahmoudi Khoshro, 2003). Generally, the investors

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are essentially seeking for the amount that should be paid for the common stocks. The determination of the precise amount paid for the stocks requires extensive analyses. Stock selection in an efficient market is a simple task because the stock price is not significantly different from its intrinsic value. In this market, the stocks are selected according to the risk-based behaviors.

After selecting the industry type or hi tech industries, the firms with ensured dividends should be selected. Estimating the future quantity and quality of the earnings is significant in success or failure of the investment. (Jhankhany, 1996)

The investors should examine the competitive position of the firms because this is the first variable that impacts the future quantity of the earnings. The proponents of the efficient market hypothesis believe that the accounting earnings are appropriate indicators of stock value because it affects the stock price. Some related questions which arise are: Do the changes in the accounting trends mislead the stock market? Is there any empirical relationship between accounting earnings and stock prices? Are the announced earnings an effective factor of the stock return? Does the earnings announcement transfer information to the market?

The above questions have been always considered by the accounting society and this is the reason for the extensive studies conducted in this filed. Some authors have confirmed the significant relationship between accounting earnings and stock return (Khaki, 2003)

To examine the association between the principles of the basic financial statements and changes in the stock returns of the firms listed on the Tehran Stock Exchange, the following hypotheses have been tested.

The main hypothesis:

There is a significant relationship between changes in the financial statement items and changes in the stock prices of the firms listed on the Tehran Stock Exchange.

The subsidiary hypothesis

The fist subsidiary hypothesis: There is a significant relationship between changes in the sales revenue and changes in the stock returns of the firms listed on the Tehran Stock Exchange.

The second subsidiary hypothesis: There is a significant relationship between changes in the cost of goods sold and changes in the stock returns of the firms listed on the Tehran Stock Exchange.

The third subsidiary hypothesis: There is a significant relationship between changes in the operating costs and changes in the stock returns of the firms listed on the Tehran Stock Exchange.

The fourth subsidiary hypothesis: There is a significant relationship between changes in the other costs and changes in the stock returns of the firms listed on the Tehran Stock Exchange.

The fifth subsidiary hypothesis: There is a significant relationship between changes in the operating income and changes in the stock returns of the firms listed on the Tehran Stock Exchange.

The sixth subsidiary hypothesis: There is a significant relationship between changes in the net income and changes in the stock returns of the firms listed on the Tehran Stock Exchange.

Research Background:

Inci and Lee (2011) investigated the relationship between stock returns and changes in the stock market in five European countries including France, Germany, Italy, Swiss and England. The findings of this study revealed that the slow rates of changes significantly impact the stock return.

Eija (2008) found that the accrual and cash accounting bases are not merely appropriate for determining the budget and the employment of the accrual accounting is not an assurance for the intergenerational assets, transparency or accounting ability. In addition, the findings revealed that some consistent accounting standards are required for the continuity of the accrual accounting of the governmental sector.

Namazi (2001) in his research with this title: 'the scrutiny of the way of credits allocation with using the idealistic programming model in FARS province', the result of his research is: the present way of distribution and allocation of credits in budget remark number 3 is not optimum. But it is not able to vindicate the determined purposes also it is caused of crumbling the budgets.

Barled and Livant (2005) examined the information content of the cash flow statement ratios. They mainly aimed to explore the impact of incremental information content of the ratios of cash flow statement on the information content and the ratios of the income statement and balance sheet. In doing so, they examined the relationship between these ratios and the stock returns. They argued that cash flow based ratios have incremental information content if they significantly improve the relationship between the income statement-based and balance sheet-based ratios with the stock returns. This study indicated that the cash flow-based ratios often have incremental information content in those years. Their study disclosed that the information of the cash flow-based ratios significantly increase the relationship between stock returns and the financial ratios of the income statement and balance sheet. This study also confirmed that the cash flow-based ratios are more correlated and associated with the stock return.

Leko tishok and berlo (1986) found that the market positively reactions to the news about the dividends and stock split. Their investigations confirmed that the dividends mostly increase after the announcement of the stock split. They showed that the stock split does not preserve the cash and this is the reason for the sensitivity of the messaging assumption.

Studies of Seven and March (2001) represented that when issuing stocks aims at investment financing, the average reduction of the stock returns is lower than debt financing. They found that the concern of the investors about reducing earnings per share is a reason for the reduction of the stock returns because this ratio is affected by the dividend policies and is controlled by the firms.

Iranian Studies:

Babajani and Azimi (2012) tested the relationship between the reliability of the accounting information and the stock returns. As a result, a comprehensive definition of the accruals has been developed and complete classifications have been defined for the balance sheet accruals. They concluded that there is a stronger relationship between the current accruals with lower reliability and future stock returns (Babajani and Azimi, 2012).

Babayian (2007) explored the relationship between changes in the balance sheet components and changes in the stock returns over 2001 to 2005 for the firms listed on the Tehran Stock Exchange. The statistical analyses confirm the significant inverse relationship between changes of the balance sheet components and stock return changes of the Tehran Stock Exchange.

Sinayi and Mahmoudi (2005) examined the impact of stock split and bonus shares on the stock returns of the firms listed on the Tehran Stock Exchange. Their study aimed at investigating the stock price behaviors about the industrial decisions to measure the efficiency degree of the Tehran Stock Exchange. They covered a period over 1993 to 2001 and selected 10 firms as the sample with 199 stock splits and bonus shares. The following hypotheses were developed based on the fact that the stock splits and bonus shares are not the sources of value creation. That is, the news about these two events should not generate abnormal returns. The average abnormal return was equal to zero. This study calculated abnormal return over 23 months including 11 months before convening extraordinary general meeting and 11 months after convening this meeting. The market model was employed to calculate the expected return and the cumulative frequency of the average abnormal returns were examined. Their findings confirmed the increased return until a month before the meeting and the significant reductions after that month. Based on the results, this trend becomes consistent one month after this meeting. Since 1996, the economic indexes of the stock exchanges had significantly changes. In a period from 1993-1996, the cumulative abnormal return of the period prior to the meeting was positive and the period from one month before the meeting to five months after the meeting was selected as equal to zero or close to zero. In the assumed period from 1997 to 2001, the cumulative frequency of the average abnormal returns represented a positive cumulative abnormal return until one month before the meeting. However, this average return significantly reduced one month before and after the meeting. The findings confirm the inefficiency of the Tehran Stock Exchange because of the cumulative abnormal returns in the situation in which this value should be close to zero.

Methodology:

This is a survey using library studies and the publicly published information in the financial statements of the firms selected as the sample. The validity of the questionnaire is determined by SPSS software and Chronbach's alpha which is found to be 0.78 that is a reasonable number. Using Rahaverd-e-Novin (software verified by the Tehran Stock Exchange) and the electronic archives of the Tehran Stock Exchange, the related data about the monthly return of the firms are collected.

Variables Definition:

The stock price is composed of two items. The first one is the current return or the return on dividends and the other item is the return from increasing the stock prices. To calculate the stock return, the beginning and ending prices and the interests of the shareholders are considered and the intended return is computed by the following formula:

$$R_{it} = \frac{R_{it} - P_{it} + D_{it}}{P_{it} - 1}$$

Where in:
R_{it}= Rate of return of stock i in year t
P_{it}= Stock price in year t
P_{it}-1= Stock price in year t-1
D_{it}= Dividends of stock i in year t

The dividends are paid to the shareholders in the period in which the annual meetings are convened. The dividends reduce the stock prices in a given period. Therefore, placing D_{it} in the formula of the rate of return

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might be also considered as the modification factor. The value of this element in the periods where there is no annual meeting is equal to zero.

Methods of Calculating Stock Return:
There are several methods proposed for calculating the stock returns:
- Cash dividend forecast
- Earnings-to-price method
- The real return method

Cash Dividend Forecast:

The market price of the stocks should be available in calculating the return of a period. Another essential element is the prediction of the future cash dividends. In this situation, the value of each stock is equal to the total present values of the future cash dividends. The calculation formula is as follows:

$$p = \sum \frac{D_1}{(1+D_e)^t}$$

Ke= Expected return by the shareholders
Pt= Expected cash dividends at the end of the year
P= Stock price
When the shareholders expect to receive the cash dividends with a constant annual growth, the value of K_e is calculated as follows:

$$K_e = \frac{D_t}{P} + g$$

g= Growth rate of the cash dividends
Calculating this return is mostly suitable for those investors who buy stocks to be maintained in long-term.

Earnings to Price Method:
The shareholder's return for a given period is calculated as follows:

$$K_e = \frac{E_1}{P}$$

E1= Annual earnings of the stocks
P= Purchase price of the stocks (market value)
This method has been rarely used by the shareholders because it ignores the changes in the stock prices.

The Real Return Method:

Using this method, the stock return is calculated for the shareholders from the perspective of the corporation. The stock price is comprised of two portions including:
a) Return from receiving dividends
b) Return from increasing the ending price of the stocks in comparison with the beginning price

Methods to Calculate the Shareholder's Return:

Most of the shareholders interpret risk and return as the qualitative and subjective variables and conclude that their intended stocks have high risks or returns. The investors spend their current funds over their investment and gain a specific return. The investors believe that the conversion of the current consumption to their wealth is the benefit of the investment. Therefore, each shareholder has a timely plan to measure the changes in the benefits. James Van Horn argues that the individuals tend to spend their funds in a manner in which their wealth is fully consumed after his/her death. This thought is in conflict with the benefit and social accounting theories; however, it plays a significant role in calculating the individual wealth and a problem arises when there is no awareness about when the stocks should be sold and the earnings should be consumed.

In the uncertain situation, the individuals try to establish a balance between the current and future consumptions through investment. That is, the individuals aim to maximize their future earnings in a timely manner by accepting the uncertainty risk. Most of the books about the financial management solve the timing problem of the benefits by considering one-year period.

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Hypotheses Testing:

Using Pearson correlation coefficient, it is examined whether the items of the financial statements (specially, income statement) are associated with the changes in the stock returns of the firms listed on the Tehran Stock Exchange. Accordingly, the main hypothesis examines the correlation coefficient between the items of the financial statements and changes in the stock return.

Population and Sample:

Based on the issued information on the Tehran Stock Exchange, there are 407 firms listed on the exchange in 2010. The following formula is used to determine the number of the sample firms:

$$n = \frac{407 \times (1/96)^2 \times 0/5 \times (1-0/5)}{(0/05)^2 \times (299-1) + (1/96)^2 \times 0/5 \times (1-0/5)} \qquad n = \frac{NZ^2_{\alpha/2} P(1-P)}{\varepsilon^2 (N-1) + Z^2_{\alpha/2} P(1-P)}$$

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Where in;

N: Number of the Population

Z: Standardized variable in relation to the significance level

P: Success rate of the hypothesis (confirming the hypothesis)

q: Failure rate of the hypothesis (Rejecting the hypothesis)

ε: Error term

According to the above formula, the sample is determined to be at least composed of 198 firms at the 05 percent of significance.

Conclusions:

To examine the relationship between the items of the financial statements and the changes in the stock returns of the firms listed on the Tehran Stock Exchange, one main hypothesis and six subsidiary hypotheses have been developed. The results of the hypotheses are provided below.

Testing the main hypothesis:

The first main hypothesis seeks to find the relationship between the items of the financial statements and changes in the stock returns. This hypothesis investigates whether there is an association between the items of the financial statements and changes in the stock returns of the firms listed on the Tehran Stock Exchange.

Results:

The findings of the correlation tests between the items of the financial statements and changes in the stock returns over a period from 2007 to 2011 is represented in the following table. It must be mentioned that the cross-section tests are performed in a five-year period; the total sample firms are equal to 609 firms. The findings reveal that the correlation coefficient between the items of the financial statements and changes in the stock returns is equal to 0.243 and is significant at the 95 percent level of significance.

Table 1: Pearson correlation coefficient between the items of the financial statements and changes in the stock returns of the firms listed on the Tehran Stock Exchange

Number	R^2	Sig. level	Pearson Correlation Coefficient
609	0/081796	0/000	0/43

According to table2, the significance level of sales revenue and stock return is 0.000 which seems insignificant in comparison with α=0.05. That is, the insignificant relationship between the changes in the sales revenue and stock return is rejected. Therefore, it is concluded that the changes in the sales and changes in the stock returns are significantly associated. The first subsidiary hypothesis is then confirmed at the 99 percent level of significance.

Table 2 Results of the first hypothesis

Number	R^2	Sig. level	Pearson Correlation Coefficient
631	0.000361	0.625	-0.019

Results of the second hypothesis:

As shown in table below, the correlation between the cost of goods sold and the stock return is -0.99 and confirms the inverse significant relationship between these two variables. It is generally concluded that increasing the cost of goods sold reduces the stock return; while, reducing the cost of goods sold increases the stock returns. As a result, the value of R^2 is 0.01 and it shows that only 1 percent of the changes in the stock returns relate to the changes in the cost of goods sold and the remaining percent is related to the other factors.

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Table 3: Results of the second hypothesis

Number	R^2	Sig. level	Pearson Correlation Coefficient
612	0.009801	0.014	-0.099

Testing the third hypothesis:

Based on table 4, the significance level of operating costs and stock return is 0.191 which is higher than α=0.05; that is, the relationship between the owner's equity and stock return is rejected and it is concluded that there is no significant association between the operating costs and the changes in the stock returns. The third subsidiary hypothesis is then rejected.

Table 4: Results of the third hypothesis

Number	R^2	Sig. level	Pearson Correlation Coefficient
611	0.002809	0.191	-0.053

Results of the fourth hypothesis:

The following table represents the findings about the fourth hypothesis. It is found that R^2 of the model is 0.01 and it shows that changes in the other costs might explain only 1 percent of the changes in the stock returns and the remaining 99 percent are associated with the other factors. It is then concluded that there is an inverse relationship between changes in the other costs and the changes in the stock returns. Therefore, the fourth hypothesis is rejected.

Table 5: Results of the fourth hypothesis

Number	R^2	Sig. level	Pearson Correlation Coefficient
631	0.000361	0.625	-0.019

Results of the fifth hypothesis:

The significance levels of the two variables of operating income and stock return are found to be 0.000 which is insignificant in comparison with α=0.05; then it is concluded that there is a significant relationship between changes in the operating income and the changes in the stock returns. The fifth subsidiary hypothesis is confirmed at the 99 percent level of significance. Based on the statistical findings, these two variables are significantly correlated and there is a direct significant association between these variables.

Table 6: Results of the fifth hypothesis

Number	R^2	Sig. level	Pearson Correlation Coefficient
612	0.0529	0.001	0.230

Results of the sixth hypothesis:

Based on table7, the significance levels of net income and stock return are 0.000 and this indicates that there is a significant relationship between the changes in the net income and the changes in the stock return. The sixth subsidiary hypothesis is then confirmed at the 99 percent level of significance.

Table 7: Results of the sixth hypothesis

Number	R^2	Sig. level	Pearson Correlation Coefficient
606	0.137641	0.001	0.371

Conclusion and Directions for Future Research:

The present study used descriptive statistics to describe the data and then tested the hypotheses by employing various statistical methods such as regression coefficient and multivariate regression. The findings reveal that the changes in the cost of goods sold, sales revenue, operating income and net income are significantly associated with the changes in the stock returns. However, no significant relationship was observed between changes in the operating costs and changes in the stock return. Generally, it is concluded that there is a significant association between the changes in the items of the basic financial statements and changes in the stock returns. It is also concluded that based on the information on the annual financial reports, the future stock returns might be predicted.

The future studies might be conducted based on the following suggestions:

1. This topic might be examined in any other industry to achieve more precise conclusions.
2. The further studies might examine the relationship between changes in the items of the basic financial statements and changes in the stock prices of the firms listed on the Tehran Stock Exchange.

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