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The study of relationship between earnings quality and investment in capital assets on Tehran stock exchange companies

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Abstract

This study examines the relationship between earnings quality and investment in capital assets of accepted companies in Tehran Stock Exchange. For this purpose, 109 sample companies with required information for 4-year period (2007-2010) of study were selected in judgmental form and based on the defined limitations. The investigated variables of this study included the earnings quality, investment in capital assets and the returns on capital asset. The results of the data analysis and hypotheses testing indicated that there is a significant relationship between earnings quality and investment in capital assets in both retrospective approach and the prospective approach.

Keywords: earnings quality, capital assets, investment in capital assets, returns on capital assets

Introduction

Stock Exchange investors require accurate and timely financial information for appropriate economic decision-making until based on that take the best decision. So, they are looking for indicators to use in the analysis of investment. One of the proposed indicators ininvestment decision-making process is the earnings quality. Earnings quality is a broad concept that reports the stability, sustainability, and non- fluctuation of profit. The order of earnings quality is the closeness of operating profit to cash flow obtained from operating activities. Schipper and Vincent (2003) recognized that earnings quality relevant to the desired profit of everyone, namely, from their perspective earnings quality is some of the honesty that show the reported revenues on the desired earnings report ofeveryone. Richardson *et al* (2001), earnings quality is the degree of stability of earnings performance in future period. Behnisch and Vargas (2002) define the earnings quality as the possibility of sustainability of current earnings in the future. Naturally, it is expected that enhancement of earnings quality increases the business unit investment in capital assets, because it is considered as one of the crucial factors in financial decisions making. Also,by capital perspective means the generated and not generated assets that apply in goods and services production process over a period of more than a year or maintains in firm. Also, the inclusive culture of Nourvarsh assumes the capital assets as the tangible fixed assets. In this study that the data analysis was performed by using combined data,the relationship of calculated earnings quality with investment in capital assets was tested. Both retrospective and prospective approach is used for the calculation of investment in capital assets. After the introduction, the theoretical principles and subject literature is stated, then the applied models are described. Subsequently, the empirical results of the data analysis will be presented.

Theoretical Framework and Literature review

The primary objective of financial statements is to provide summarized and classified information about the financial position, financial performance and financial flexibility of the business unit as mentioned economic decision making require accurate and timely information. In the past, most of the investment decisions were takenbased on reported earnings and managers for codification of profit dividing policies and investors for investments analysis used the profit. On the other hand, companies' managers to protect their job position, receive rewards and other factors try to manipulate profit. Therefore, investors and analystswere looking for more accurate indicators for

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investment analysis and decisions making because in addition to profit rate, they pay attention to its stability and repeatability. Management decisions also require information about the earnings quality. Managers act in conformity with the principles and estimates and forecasts are factors that can affect earnings quality.

Managers' authorities in utilization of adaptation, estimate and forecast principles are factors that can affect earnings quality. The profit with poor quality does not have efficiency because it will reduce the economic growth of company. It is expected that the higher the earnings quality is the enhancement of investment in capital assets. Therefore, earnings qualityis considered as an important criterion to examine the performance of management and financial health of business unit. A number studies conducted in relation to earnings quality and its relationship with other variables.

Karimi and Sadeghi (2010) investigated the relationship between earnings quality and profit sustainability of companies accepted in Tehran Stock Exchange which in this study, earnings quality has been calculated based on the investment in capital assets and workforce and then its relationship with profit sustainability has been tested through the panel data that its results indicated a significant relationship between earnings quality and profit sustainability in both retrospective and prospective approach. They have used the financial ratios in retrospective approach and the time-series regression in prospective approach for calculation of earnings quality based on the investment.

Hashemi, Sadeghiand Soroush Yar (2007), in another study, evaluated the role of earnings quality on pattern, financing method and efficiency of investment in companies accepted in theTehran Stock Exchange. The main objective of this study was to investigate the role of accruals in determining the returns on assets, investment sensitivity to internal cash and determining the effect of financing amount from the external sources on market pricing of discretionary accruals. Their findings show that in total sample of companies with large positive discretionary accruals, investment in capital assets is more sensitive to internal cash flows. In addition to these results, indicate the negative relationship between discretionary current accruals and future returns on assets.

Nourvash and Majidi (2005), in a study, surveyed the relationship between the earnings quality and capital cost in Iranian Stock companies. The results showed the inverse relationship between earnings quality and capital cost in the test period (1999-2003) except the year 2000.

Kevin and Vicky (2008) examined the relationship between earnings quality and investment in capital asset during the 2005-1988 in America. Their results showed that the companies with lessearnings quality allocate their resources less to capital assets and have less rate of returns on assets.

Francis *et al* (2005) conducted a study to survey the relationship between earnings quality and the cost of capital. They found that poor quality of accruals entails enhancement of information uncertainty and investment risk, and consequently increase the cost of capital.

Ferfield (2003) and Zhang (2007) proved that an institution or an economic unit with larger commitments (more) tends to grow and develop the economic unit or institution and hence invest more in the future.

Chan *et al* (2004), in another study examined "the relationship between earnings quality and stock returns" during the period 1995-1971. The summary of main findings indicated that the relationship of earnings quality with lower levels(high accruals in profit) with returns is low and inverse.

Research Hypotheses

According to the research question, the following research hypotheses are formulated and tested:

There is a significant relationship between earnings quality and investment in capital assets in Tehran Stock Exchange companies.

Methodology

In this study, the combined data are used to test the hypotheses.In combined data method, the F-test Lyme is used for selection of fixed effects methods and common effect and the Breusch- Pagan test is used for random effect methods andcommon effect. In the case of selection between fixed effects and random effects method, the Hausman test is applied. Statistical analysis is done through software EVIEWS. Finally, the result analysis and significance of hypothesis testing is done through the modified determination of coefficient test (R ^ 2),t-test and Fisher's F-test. Subsequently, description of how to calculate earnings quality and models used to test the hypothesis are stated.

Calculation of earnings quality

The following formula is used to calculate earnings quality:

The closeness of operation earning to operation-cash flow which is calculated as the ratio (whatever this ratio be bigger, namely, profit is closer to cash and earnings quality is higher and vice versa).

$$Qe_{it} = \frac{OCF}{OE}$$

Qe_{it}=Earnings quality

OCF = Operation Cash Flow that is the result of cash entry and exit obtained from operating activities to the company which its net is ultimately placed in Cash Flow.

OE = is the operating earnings of the company that is obtained from operating activities of company.

Examining the relationship between earnings quality and investment in capital assets

The regression was used in examination of the relationship between earnings quality and investment in capital assets. In calculating the investment in capital assets, because both retrospective and prospective approach is used, so the relationship of earnings quality with investments in capital assets is used in both cases.

Retrospective approach

$$r_{ct} = (CAPX_t - CAPX_{t-1}) / (E_t - E_{t-1})$$

$CARX_t$: The amount of investment in capital assets that is equal to the amount of purchase of tangible and intangible fixed assets and long-term investments.

$CARX_{t-1}$: The amount of investment in capital assets in the last period.

E_t: Profit of current year

E_{t-1}: Profit of years ago

Prospective approach

$$r_{ct} = \frac{(CAPX_t - CAPX_{t-1})}{TA_{t-1}}$$

TA_{t-1}: Total assets at the beginning period

$CARX_t$: The amount of investment in capital assets that is equal to the amount of purchase of tangible and intangible fixed assets and long-term investments.

$CARX_{t-1}$: Refers to investment in capital assets during the past.

In calculation of investment in capital assets once the total non- current assets are used and once the fixed assets are used, so 4 possible cases will exist for investment in capital assets.

Statistical population and sample

In this study, the companies accepted in Tehran Stock Exchange with following characteristics were selected as the sample.

1. Fiscal year end ofcompanies become 29 November.
2. In research period, their stockwas exchanged for at least once every three months.
3. Companies become productive.
4. In all the years, they have had investment in capital assets
5. During the survey years do not have the financial year change.

The location domain of study is all of the accepted companies in Tehran Stock Exchange and time domain of study is from 2007 to 2010. In order to complete the data of each year, also the data from previous years are needed, so the data of 2006 were collected too. According to the mentioned characteristics, the 109 companies were ultimately selected as samples.

Data analysis and hypothesis testing based on the retrospective approach

As regards two state and model is used to calculate the investment in capital assets, thus according to the research hypothesis that centered on the relationship between earnings quality and investment in capital assets, after calculation of earnings quality and its relationship with investment in capital assets, its obtained results are shown in Tables 1 and 2.

Table 1. Results of the data analysis for research hypothesis testing
Patterns A. Fixed assets and retrospective approach

Final result	Breusch–Pagan test		Lyme test	
	Test result	Statistics	Test result	Statistics
Fixed effect	The selection of fixed effect against common effect	044/0 (834/0)	The selection of fixed effect against common effect	94/1 (00/0)

Durbin-Watson	R^2 reduced	F	α_2	α_1	statistics
48/2	25/0	(00/0) 32/2	(00/0) 7-10×62/3-	(00/0) 28/0-	Model 1

The amount in the parenthesis is the least level of significance

As can be seen, coefficient α_2 is a negative and significant amount (at least its significant level is less than 0.05). Therefore,the effect of earnings quality on investment in capital assets becomes significant and negative. In addition, the statistics of Durbin-Watson are estimated between 1.5 and 2.5 which implying the absence of autocorrelation. Determination coefficient (R^2) model indicates that close to 25% of the changes of dependent variable is explained by the regression model. Also, the significant value of F indicates appropriate explanatory power of model.

Table 2.Results of data analysis to test the research hypothesis
Pattern B. non-current assets and retrospective approach

Final result	Breusch–Pagan test		Lyme test	
	Test result	Statistics	Test result	Statistics
Fixed effect	The selection of fixed effect against common effect	25/13 (1/00)	The selection of fixed effect against common effect	1/83 (00/0)

Durbin-Watson	R^2reduced	F	α_2	α_1	statistics
12/2	002/0	(96/0) 003/0	(19/0) 6-10×42/1-	(30/0) 02/2	Model 2

The amount in the parenthesis is the least level of significance

In Model 2, the coefficient α_2 is statistically estimated significant and indicatesthe meaningless relationship between earnings quality and investment in capital assets. Also, the statistics of Durbin - Watson are estimated between 1.5 and 2.5 which implying the absence of autocorrelation. Meaningless F expresses the inability of designed model to explain the changes in the dependent variable. Determination coefficient (R^2) model indicates that close to 2% of the changes of dependent variable is explained by the regression model.

Data analysis and hypothesis testing based on the prospective approach

According to the research hypothesis which expressed thatthere is a significant relationship between earnings quality and investment in capital assets. After the capital assets were calculated in prospective approach, the results of the test are shown (Table 3 and 4).

Table 3. Results of data analysis for testing the research hypothesis
Model C. Fixed assets and prospective approach

Final result	Hausman test		Breusch–Pagan test		Lyme test	
	Test result	Statistics	Test result	Statistics	Test result	Statistics
Fixed effect	The selection of fixed effect against common effect	20/22 (1/00)	The selection of fixed effect against common effect	3/99 (0/045)	The selection of fixed effect against common effect	10/52 (0.00)

Durbin-Watson	R^2 reduced	F	α_2	α_1	statistics
08/2	71/0	(00/0) 93/10	(00/0) 7-10×77/1	(00/0) 19/0	Model 3

The amount in the parenthesis is the least level of significance

In pattern 3, the coefficient α_2 is a negative and significant value, so the effect of earnings quality on investment in capital assets is estimatednegative and significant. Furthermore,the statistics of CameraWatson are estimated between 1.5 and 2.5 which indicates the absence of autocorrelation. Also, determination

coefficient (R^2) of model indicates that close to 71% of the changes of dependent variable is explained by the regression model. The significant amount of F indicates the appropriate explanatory power of model.

Table 4. Results of the data analysis forresearch hypothesis testing
Pattern D. non-current assets and prospective approach

Final result	Breusch–Pagan test		Lyme test	
	Test result	Statistics	Test result	Statistics
Fixed effect	The selection of common effect against random effect	0/93 (0/33)	The selection of fixed effect against common effect	80/86 (0.00)

Durbin-Watson	R^2 reduced	F	α_2	α_1	statistics
25/2	67/0	(00/0) 98/8	(00/0) 7-10×38/1	(00/0) 26/0	Model 4
The amount in the parenthesis is the least level of significance					

Also, in pattern 4, the amount of coefficient α_2 shows a negative and significant amount, so the effect of earnings quality on investment in capital assets is estimated negative and significant. Furthermore, the statistics of Camera Watson are estimated in distance between 1.5 and 2.5 which indicates the negative and significant effect of earnings quality on investment in capital assets,furthermore,the statistics of CameraWatson are estimated between 1.5 and 2.5 which indicatesthe absence of autocorrelation. Determination coefficient (R^2) of model shows that close to 67% of the dependent variable changes is explained by the regression model. The significant amount of F indicates the appropriate explanatory power of model.

Conclusions

As it seen, investment in capital assetswas calculated in both retrospective and prospective approach. According to the tables (1) to (4) in the retrospective approach in the first case and in the prospective approach in two casesthe null hypothesis H0 is rejected. However with rejection ofnull hypothesis H0, there is a significant relationshipbetween earnings quality and investment in capital assets, but this relationship inverse, namely the relationship between two variables are inverse and with increase of one the other decreased.

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