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The Relationship between Financial Reporting Quality and Investment Efficiency in Tehran Stock Exchange

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Abstract
One of the objectives of financial reporting is to facilitate the efficient allocation of capital in the economy. One of most important aspects of this fact is to improve the investment decisions. Also, increase in the financial transparency can be considered as a useful factor to reduce investment inefficiency. Many factors influence the quality of financial reporting. Also, many factors can have an impact on financial reporting. Several studies have tried to investigate the link between the financial reporting quality and financial and non-financial variables of firms. The main approach of this research was to investigate the relationship between financial reporting quality and investment efficiency and the factors affecting the firms listed in Tehran Stock Exchange from 2009 to 2012. Results of statistical analyses on 93 firms in Tehran Stock Exchange showed that the financial reporting quality had a significant positive correlation with the investment efficiency. Furthermore, it was found that there was a direct link between firm size and growth opportunities with investment efficiency. Finally, it was found that there was no correlation between cash holdings and tangibility of assets with investment efficiency.

Key words: Investment Efficiency, Financial Reporting Quality, Accruals Quality.

1. Introduction

Financial reporting is one of the most important products of accounting system that tries to provide necessary information for users to make economic decisions on the evaluation of an economic enterprise's profitability and performance.Measuring and providing informationthat makes it possible to evaluate the past performance and effectivelyassess and predictthe possible future profitability and anticipated activities can be considered as a prerequisite for achieving this goal (Bolo, 2007).

Financial reporting quality includes the accuracy of reported information to better describe a firm's operations. Practically, investors are really interested in information on firm's cash flow. Thisdefinition of financial reporting quality is in accordance with a definition proposed bythe Accounting Standards Board; this board asserts that one of the objectives of financial reporting is to inform potential creditors and investors to make reasonable decisions and evaluatethe expected cash of the firm. The main indicators of financial information quality from the perspective of the developers of accounting standards are relevance and reliability which make information useful for decision makers (HassasYegane, 2006). Although the theoretical frameworks of financial accounting standards differ in terms of tendency toward reliability and

relevance, they do not introduce a certain threshold for each of these two dimensions. It is likely that the relative preference between relevance and reliability vary between different groups of investors. For example, short-sighted investors will probably prefer relevance. Conversely, far-sighted investors will probably prioritize reliability (Sajjadi et al. 2009).
The importance of financial information quality increases hundredfold in the event of some certain financial and nonfinancial events. Participants in these events require transparent and high-quality information on the financial performance and position of the firm so that information asymmetry is minimized thereof (Noravesh, 1998).

The theoretical framework of research

Based on the theoretical framework issued by the Board, financial information should be firstly relevant and reliable to be useful in decision-makings. Relevant information should be timely gathered and provided. Furthermore, they must be predictable and feedback-contained. Reliability includes honesty, verifiability and impartiality (ZarifFard, 2008).
In addition to more efficient investment, high-quality financial reporting reduces information asymmetry between firm and financiers outside the firm. For example, high-quality financial reporting may force the firm to obtain positive net present value (NPV) in order to attract investors' capital. On the other hand, the financial reporting quality limits managers' motivations for engaging in activities that are of little or negative value.For example, the financial reporting quality may facilitate better contracts to avoid investment efficiency. Furthermore, it can increase investors' ability to control the investment decisions. Therefore, it is expected that high-quality financial reporting reduces excessive and wasting investments (Biddle et al. 2009).
In recent years, many studies have been done on the relationship between the financial reporting quality (disclosure levels in annual reports) and firm characteristics. The followings are some of these researchers: Buzby (1974), Cooke (1989), Hossain, Tan and Adams (1994), Wallace, Naser and Mora (1994), Lang and Lundholm (1993), McNally, Eng and Hasseldine (1982), Chow and Wong-Boren (1987), Naser and Nuseibeh (2003), Frost and Pownall (1994), Aboody, Hughes and Liu (2005), Baker, Stein, and Wurgler (2003), Biddle et al. (2009). Having reviewed the annual reports of firms, it is known that the quality of information disclosed in such reports is different. Differences in firms' disclosure are likely the results of manager's thinking and their thinking philosophy as well as their discretion regarding disclosure for investment purposes. On the other hand, decisions on financial disclosure are not usually done in vacuum and financial reporting is one of the ways by which information is transmitted. Furthermore, combination of communication resources and the quantity and quality of disclosed informationare under the influence of many factors which need voluminous research. Theorizing and empirical evaluation of variables affecting mandatory disclosure can create a room that helps to improve the quality of disclosure (Noravesh, 1998).
A research conducted by Bushman and Smith (2001) shows that high-quality financial reporting increasesthe investment efficiency (Bushman & Smith, 2001). In another study, Biddle and Hilary (2009) concluded that firms with high-quality financial reporting represent high levels of investment efficiency and low levels of cash investment sensitivity.These results trigger another question which aims to find out the relationship between higher quality financial reporting and over-investment and under-investment (Biddle et al. 2009).

In the present study, we investigate the relationship between financial reporting quality and investment efficiency in the capital market of Iran. Also, the impact of financial and non-financial variables such as firm size, the level of cash holdings, investment opportunities and tangible assets on the investment efficiencyare investigated.

Background of the research

Biddle et al. (2009) investigated the relationship between financial reporting quality and investment efficiency and found that firms with higher reporting quality had lower levels of distortion from the predicted investment and were less sensitive to changes in macroeconomic conditions (Biddle et al. 2009).

Bushman and Smith (2001) and Lambert et al. (2007) examined the relationship between financial reporting quality and investment and found that increase in the financial reporting quality led to increase in investment efficiency (Bushman and Smith, 2001).

Jensen (1986) investigated the financial reporting quality and found that financial reporting quality influenced the characteristics of firms, including financial leverage, investment, auditing quality and financial structures (Jensen, 1986).

Li Feng (2010)examined the impact of financial reporting quality on investment costs, information uncertainty and agency and found that high-quality financial reporting reduced investment and agency costs (Fengchen et al. 2010).

Stiglitz (1981) stated that due to economic facilities used to produce and storeinformation, large firms tended to spend relatively more resources to produce information and disclosure of information in large firms were more than small firms (Stiglitz and Weiss, 1981).

Noravesh (1998) conducted a research titled investigating the relationship between financial reporting quality and the number of trained and qualified accountants in firms listed in Tehran Stock Exchange and tried to examine the relationship between hiring more trained accountants and financial reporting quality and concluded that financial reporting system in firms hiring more trained accountants was significantly different from other firms (Noravesh, 1998).

Sajjadi et al. (2009) conducted a study titled investigating the impact of non-financial characteristics on the financial reporting quality of listed firms in Tehran Stock Exchange and concluded thatfirm size, firm life and type of industry had significant and positive relationship with the financial reporting quality and financial reporting quality was negatively related to the ownership structure (Sajjadi et al. 2009).

Methodology

Regarding the purpose of study, the present research is of applied research type. The aim of applied research is to develop the practical knowledge in a specific field. Also, this research is put into the descriptive-correlational type in terms of the method and the nature of the research. The purpose of this research is to determine the extent of the relationship between research variables. Furthermore, the statistical population of this research consists of all firms listed in Tehran Stock Exchange from 2009 to 2012. Furthermore, systematic deletion method is used to determine the sample members so that only those firms that have the following conditions are selected: 1) Firms that have delivered the information of their last four years (2009 till 2012) to Tehran Stock Exchange. 2) Firms whose financial year ends in March. 3) Firms that have not trading halt for more than 6 months. 4) Firms that have provided the information

needed to calculate research variables. According to the above conditions, 93 firms were selected and studied as research sample. Theoretical foundations and background of the research were gathered via library, article review and Internet research. Financial statements and notes to the financial statements to researched firms, which have been published by the Tehran Stock Exchange, were introduced as research tools.

Research model and methods of measurement

Dependent variable:

Investment efficiency:

As stated by Biddle et al. (2006), investment efficiency was calculated via using the formula of deviation from the expected investment and investment prediction model as a function of investment growth model. Therefore, under-investment (negative deviation from the expected investment) and over-investment (positive deviation from expected investment) were considered as investment inefficiency (McNichols and Stubben, 2008).

$$Invest_{i,t} = a_0 + a_1 NEG_{i,t} + a_2 \%RevGrowth_{i,t-1} + a_3 NEG * \%RevGrowth_{i,t-1} + \varepsilon_{i,t} \quad (1)$$

In which,

$Invest_{i,t}$= The total investment in machinery, equipment, land, building, research and development expenditures minus proceeds from sale of fixed assets divided by total assets of firm i in year t.

$\%RevGrowth_{i,t-1}$: The annual growth rate of incomes of firm i in year t-1.

$NEG_{i,t}$:Dummy variable that equals 1 if the value of a firm's earnings growth is negative. Otherwise, it is equal to zero.

$\varepsilon_{i,t}$: Residual error

a_1 **to** a_3:Variable coefficients (slope)

a_0: Constant value calculated by regression model

As calculated by Biddle (2009), the value of deviation from the expected investment (the amount of residual error) for equation (1) can be considered as investment inefficiency. Under-investment is the result of negative value of the residual error and over-investment represents the result of negative value of the residual error.

Independent variable:

Financial reporting quality:

To calculate the financial reporting quality, we initially calculate accruals quality based on a model proposed by Mac Nichols (2002). Then, the absolute value of residual error represents the financial reporting quality. This criterion is based on the idea that states that accruals reduce the smoothing caused by the change in the cash and thus increase the earnings awareness. Furthermore, this measure has been used in previous research.

Accruals quality: this measure is used via the model proposed by Mac Nichols (2002) shown below:

$$\frac{\Delta WC_{i,t}}{Assets_{i,t}} = \beta_{0,i} + \beta_{1,i}\frac{CFO_{i,t-1}}{Assets_{i,t}} + \beta_{2,i}\frac{CFO_{i,t}}{Assets_{i,t}} + \beta_{3,i}\frac{CFO_{i,t+1}}{Assets_{i,t}} + \beta_{4,i}\frac{\Delta sales_{i,t}}{Assets_{i,t}} + \beta_{5,i}\frac{PPE_{i,t}}{Assets_{i,t}} + V_{i,t} \quad (2)$$

In which,

$\Delta WC_{i,t}$:Changes in working capital accounts of firm i in year t, which is calculated as follows:

Change in working capital accounts= Increase in accounts receivable + increase in store stock + decrease in accounts payable and debt + reduction in taxes payable + increase (decrease) in other assets (liabilities)

$Assets_{i,t}$**:** Average assets of firm i in year t

$CFO_{i,t-1}$: Cash resultant from operations of firm i in year t-1

$CFO_{i,t}$: Cash resultant from operations of firm i in year t

$CFO_{i,t+1}$: Cash resultant from operations of firm i in year t+1

$\Delta sales_{i,t}$: Changes in sales accounts of firm i in year t

$PPE_{i,t}$: Property, machinery and equipment of firm i in year t

$V_{i,t}$: Residual error

$\beta_{1,i}$**to** $\beta_{5,i}$**:** Variable coefficients (slope)

$\beta_{0,i}$**:** Constant value calculated by regression model

The residual error in equation (2) indicates that the estimated error in the current accruals is not associated with operating cash and it cannot be measured via determining the changes in income, machinery and equipment. Then, the absolute value of residual error represents the financial reporting quality.

Control variables:

Control variables of this study include firm size, cash holdings, growth opportunities, tangible assets and industry type.

1. Firm size: it equals to logarithm of firm's assets.

Size=log($Asset_t$**)** **(3)**

$Asset_t$:The amount of firm's assets in year t

2. Growth opportunity:it is measured by the ratio of the market value of capital over book value of capital:

GROWOP = P_{ij} **/** BV_{ij} **(4)**

GROWOP: Growth opportunity

P_{ij} : Market value of firm's capital

BV_{ij}: Book value of firm's capital

3. Cash: It represents the amount of cash owned by the firm which will be equal to cash over total assets if divided.

4. Tangibility: It is the proportion of tangible assets which is equal to:

$$Tang = \frac{PPE_{i,t}}{Total\ Asset_{i,t}} \qquad (5)$$

In which,

$Tang$**:** Tangibility

$PPE_{i,t}$**:** Property, machinery and equipment of firm i in year t

$Total\ Asset_{i,t}$**:** Total assets of firm i in year t

Research hypotheses:

First main hypothesis: There is a negative relationship between financial reporting quality and investment efficiency in the capital market of Iran.

Second main hypothesis: There is a direct relationship between firm size and investment efficiency.

Third main hypothesis: There is a direct relationship between corporate cash holdings and investment efficiency.

Fourth main hypothesis: There is a direct relationship between the firm's growth opportunities and investment efficiency.

Fifth main hypothesis: There is a direct relationship between tangibility of firm's assets and investments efficiency.

Analyzing and testing the research hypotheses

2.3.4. Analyzing and testing the first research hypothesis:

There is a negative relationship between financial reporting quality and investment efficiency in the capital market of Iran.

Table 1: Correlation coefficient, coefficient of determination, adjusted coefficient of determination and Durbin-Watson test applied between financial reporting quality and investment efficiency

$$Invest_{i,t} = \beta_0 + \beta_1 FRQ_{i,t} + \beta_2 Size_{i,t} + \beta_3 Cash_{i,t} + \beta_4 GROWOP + \beta_3 Tang_{i,t} + e_{i,t}$$

Dependent variable	Independent variable		explanatory power			Variance analysis	Durbin-Watson test	The result of hypothesis
Financial reporting quality	Investment efficiency		R	R^2	Adjusted R^2	F-statistic (significance)		
	Coefficient	T-statistic (significance)						
FRQ	0.501	6.808 (0.00)	0.359	0.129	0.126	46.352 (0.000)	1.699	Supported

According to Table 1, Pearson correlation coefficient between financial reporting quality and investment efficiency is 0.359. This value indicates that these two variables are significantly related to each other at 5% error level. Since sig. is less than 5 percent, the H_0 is rejected at 5% error level and the existence of the correlation between these two variables is verified. Also, the calculated adjusted coefficient of determination is 0.126, which is a medium value, and indicates an appropriate goodness of fit for changes in financial reporting quality by investment efficiency.

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2.2.3.4. Analyzing and testing the second to fifth research hypotheses

Results pertaining to second to fifth research hypotheses are depicted in Table 2:

Table 2: Summary of findings indicating the effect of firm size on the coefficients of regression model

Statistical components / Research variables	Pearson correlation coefficient	Coefficient of determination	Calculated Coefficient of determination	Durbin-Watson test	F-statistic	T-statistic	N	Error level	Sig.	Supported hypothesis
Financial reporting quality	0.359	0.129	0.126	1.699	46.352	6.808	316	0.05	0.00	H_1
Firm size	0.408	0.166	0.161	1.708	31.164	3.748	316	0.05	0.00	H_1
The amount of cash	0.358	0.125	0.119	1.607	25.594	1.629	316	0.05	0.068	H_0
Growth opportunities	0.417	0.174	0.168	1.713	32.885	-4.123	316	0.05	0.00	H_1
Tangibility of assets	0.355	0.122	0.115	1.519	2.885	1.719	316	0.05	0.060	H_0

Given the t-statistic and significance level indicated in Table 2, it can be concluded that hypotheses 2 and 4, advocating the existence of relationship between firm size and growth opportunities with investment efficiency, are supported at 0.00 sig. Conversely and given the amount of t-statistic and significance levels of 0.068 and 0.60 respectively, hypotheses 3 and 5 are not supported thereof. Finally, a multiple regression model fitted to describe the effects of all independent variables and control variables on the dependent variable is reviewed.

Table 3: Correlation coefficient, coefficient of determination, adjusted coefficient of determination and Durbin-Watson test applied among all model variables

Model	Correlation coefficient	coefficient of determination	adjusted coefficient of determination	Standard error of estimate	Durbin-Watson
1	0.435	0.189	0.176	0.03671	1.694

According to Table 3, Pearson correlation coefficient for research model is 0.435. This value indicates that financial reporting quality and independent variables are significantly related to each other at 5% error level. Since sig. is less than 5 percent, the H_0 is rejected at 5% error level and the existence of the correlation between these two variables is verified. Also, the calculated adjusted coefficient of determination is 0.176, which is a small and medium number and indicates a low goodness of fit for changes in financial reporting quality by above-mentioned variables.

Table 4: Summary of findings of multiple regression using Enter method

Model	Non-standardized coefficient		Standardized coefficient	T-statistic	Significance level	Status indicator	Collinearity Statistics	
	B	Std.Error					VIF	Tolerance
Constant	-0.031	0.022	-	-2.403	0.00	1.000	-	-
Financial reporting quality	0.479	0.075	0.343	6.347	0.00	1.709	1.117	0.895
Firm size	0.23	0.004	0.162	2.512	0.013	1.906	1.595	0.627
Cash holdings	0.00	0.00	0.0.095	1.574	0.117	2.283	1.382	0.724
Growth opportunities	0.19	0.03	0.090	1.538	0.032	3.041	1.207	0.829
Tangibility of assets	0.011	0.001	0.082	1.457	0.146	4.758	1.068	0.936

Given Table 4.12 and significance level (sig=0), F-statistic is less than 5% error level. As a result, a fitted regression model is significant. The values of constant and coefficient B associated with each variable are determined in terms of overall significance level (sig).Regarding this output, it can be seen that the level of significance (sig) of test for equality of regression coefficient associated with cash holdings and tangibility of assets is greater than five percent, one can conclude that regression coefficient is equal to zero (hypothesis $H_0$is supported) and they should be removed from the regression equation. It shows that there is no significant relationship between cash holdings and tangibility of assets with investment efficiency. However and regarding other variables, regression coefficient is not equal to zero (hypothesis H_0 is rejected) and they should not be removed from the regression equation. The multiple regression model is as follows:

$$\mathbf{Y= -0.031+0.479FRQ+0.23Size+0.19Growop+ e_i}$$

Conclusions

Regarding the hypothetical significant relationship among independent variables and moderator variables with dependent variable (investment efficiency of listed firms in Tehran Stock Exchange from 2009 to 2012),this research found that there is a significant positive relationship between financial reporting quality and investment efficiency. Furthermore, it was found that firm size and growth opportunities affect the relationship between financial reporting quality and investment efficiency. These results are consistent with the results of research conducted by Feng Chen (2010) and others.

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