A Study of the Impact of Equity Overvaluation on Earnings Management: Iranian Overview

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[Abstract] Researchers indicate that if the market value of the stock in a firm exceeds its true value, this overvaluation affects the managerial behaviors and corporation actions. Thus, for investigating the impact of equity overvaluation on consequent, income-increasing earnings management financial data of 60 listed companies were collected from Tehran Stock Exchange during 2006-2010. Consequently, regression analysis for testing correlation regressions was employed. Results of the study indicate that equity overvaluation had a positive and significant relationship with subsequent income-increasing earnings management. The results indicate that firm's management tended to support valuation errors to access the benefits of a rising stock price through discretionary accrual's manipulation, when stock would become overvalued by market.

[Keywords] overvalued equity; earnings management; discretionary accruals; valuation errors

Introduction

Accounting regulations allow managers to affect financial reports by selecting accepted procedures. This policy helps manage reported earnings and better reflect firms' economic position. Selecting policies to transfer present expenses to future expenses and forthcoming revenues to present revenues have been gathered together, which makes it difficult to attain objectives in the future periods, Schaller and Chirinko (2007) illustrate some effects of misevaluation on investment, such as investors become excited about particular firms. In their excitement, they bid up the prices of these firms. Overvalued shares lower the perceived cost of equity capital. If managers act on this lower-perceived cost, they will issue new shares, lower the discount rate used in evaluating investment projects, and increase investment spending. Moreover, Benish and Nicholas (2009) believe firms that meet overvalued equity have a likelihood of financial statement fraud, high sales growth, low operating cash flows, and a recent history of acquisition and stock issuance. Thus, managers gradually are forced to select policies that are more aggressive and maintain them in the process. However, these policies could lead to fraud eventually (Jensen, 2005). In the current study, with regard to importance of impacts of overvaluation on firm's future value and severe volatilities, the impact of equity overvaluation on earning's management is tested in firms listed in the Tehran stock exchange.

The finance literature has widely documented that overvaluation intensifies income-increasing earning's management activities (i.e., higher discretionary accruals). It has an economic impact: one-standard-deviation increase in total valuation error generates a fifteen percent standard-deviation increase in discretionary accruals. Additionally, the agency costs of overvalued equity are substantial. Overvaluation-induced, income-increasing earnings management is negatively related to future abnormal stock returns and operating performance, and this negative relation becomes more pronounced as overvaluation intensifies. Among the most overvalued firms, those with high discretionary accruals underperform those with low discretionary accruals during the following year (Chi & Gupta 2009). In contrast, undervalued firms are not expected to actively under-report accruals, (i.e., manage earnings)

downwards. In fact, under-valued firms might also attempt to manage earnings upward to correct the misevaluation. Therefore, such firms are unlikely to be concentrated in the low accrual deciles of the population of firms; instead, they might be dispersed across various accrual deciles of firms. Hence, the low accrual deciles' portfolios' future stock-price performance is expected to be normal. This prediction differs from that of the investor-fixation hypothesis for the accrual anomaly (Kothari et al., 2005).

Marciukaityte and Varma (2007) argue that substantial overvaluation of equity pressures managers to manipulate earnings, and when investors learn about earning's restatements by overvalued firms, they reevaluate the firms to correct not only for pre-misstatement overvaluation, but also for the loss. Healy and Whalen (1999) said that "Earning's management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers."

Affecting Factors on Incorrect Evaluation

There are various reasons that a company is improperly assessed. However, reasons of overvaluation are difficult to accurately describe and define empirically. Incorrect assessment occurs in a deficient market in a semi-strong market. Of course, for analyzing the topics in this research, it is not important whether the markets are deficient or not because even in an efficient market, it is assumed that the average price is right and half of the companies are overvalued while the remaining companies are undervalued.

The real value of its stock price may be diverted for several reasons: 1) Perhaps the most important reason for the incorrect assessment is information asymmetry between inside and outside the organization. Information asymmetry refers to a situation in which there is no obvious information or non-public information (Chi & Gupta 2009). 2) Finding the wrong stock price may result in incorrect assessment of the public information. 3) Speculative trading: This means that investors desire to pay but not by their beliefs about the intrinsic value of shares. However, they believe what other investors are willing to pay for the shares. 4) Liquidity crunches mean that the price is affected by surpluses and deficits, which are affecting the stock price, and they occur when investors are involved in mental transactions.

Literature Review

Jie Chen (2007) examines the relationship between discretionary accruals (representing earnings management) and returns from the prior year or after the year of the stock market. The results indicate that managers tend, in the face of higher abnormal returns, to support equity overvaluation through increasing earnings management. Managers with high equity incentives are more likely to report earnings that meet or just beat analysts' forecasts. The results also reveal that managers with consistently high equity incentives are less likely to report large positive earnings surprises.

Researchers conclude that when managers face material abnormal returns, they tend to support overvalued equity through income-increasing earning management (Badertscher, 2010; Chi & Gupta, 2009; Jie Chen, 2007; Graham et al., 2005). Higher discretionary accruals are associated with lower future abnormal stock returns, and more importantly, this association becomes stronger as prior overvaluation intensifies. Among the most overvalued firms, those with high discretionary accruals underperform those with low discretionary accruals during the following year (Chi and Gupta, 2009). Researchers conclude that when managers face material abnormal returns, they tend to support overvalued equity through income-increasing earning management (Badertscher, 2010; Chi & Gupta, 2009; Jie Chen, 2007; Graham et al., 2005).

Variables of Research

Earning Management Criteria

One of the most commonly used criteria in literature for determining earnings management is the amount of discretionary accruals. In this research, a modified version of Jones's model (1991) based on Chi and Gupta (2002) is used to measure discretionary accruals (as the representative for earning management). This model assumes that changes in revenue's minus changes in account receivables are free from

managerial discretion (it is assumed that credit sales are discretionary).

$$\frac{TA_{it}}{Assests_{it-1}} = \alpha \frac{1}{Assets_{it-1}} + \beta_1 \frac{\Delta sales_{it} - \Delta AR_{it}}{Assets_{it-1}} + \beta_2 \frac{PPE_{it}}{Assets_{it-1}} + \beta_3 \frac{CFO_{it}}{Assets_{it-1}} + \varepsilon_{it}$$

TA_{it}: Represents total accruals for firm *i* at year-end *t* which can be calculated by two methods of balance sheet and cash flows; in this research, the balance sheet method is used to calculate total accruals.

$$TA_{it} = (\Delta CA_{it} - \Delta Cash) - (\Delta CL_{it} - \Delta STD_{it}) - DEP_{it}$$

ΔCA_{it} : Change in current assets for firm *i* at year *t*.

$\Delta Cash_{it}$: Change in cash flows for firm *i* at year *t*.

ΔCL_{it} : Change in current liabilities for firm *i* at year *t*.

ΔSTD_{it} : Change in current portion of long-term liabilities for firm *i* at year *t*.

DEP_{it} : Depreciation expense of fixed assets and intangible assets for firm *i* at year *t*.

$\Delta Sales_{it}$: Change in sales for firm *i* at year *t*.

ΔAR_{it} : Change in accounts receivables for firm *i* at year *t*.

PPE_{it} : Gross of property, plant, and equipment, for firm *i* at year – end *t*.

$Assets_{it-1}$: Total assets for firm *i* at year-end *t-1*.

$\alpha, \beta_{1,2,3}$: Coefficients for modified-Jones model.

CFO_{it} Operating cash flows for firm *i* at year-end *t* that are captured by following equation: Operating cash flow as cash flow statement plus cash flow related to investment returns and payable earnings of financing minus cash flows related to taxing (This adjustment has been conducted because of difference between Iran's accounting standard No. 2 and standard FASB 95). Since modified-Jones' model is not appropriate for very high and very low levels of firm performance. The operating cash flow is originated from the model of Cohen et al., (2008) to control levels of firm performance.

ε_{it} : Model error or the same intrigue term that indeed convey discretionary accruals estimated value. To calculate discretionary accruals parameters of the modified-Jones' model should be estimated. In this research, the annual cross-sectional regression model for each industry is used to estimate parameters. This procedure control, industry-wide changes in economic conditions, which affect total accruals and allow changing the coefficients over time. After estimating parameters in a modified-Jones model, the non-discretionary accruals (NDACC) are calculated as follows:

$$NDACC_{it} = \hat{\alpha} \frac{1}{Assets_{it-1}} + \hat{\beta}_1 \frac{\Delta sales_{it} - \Delta AR_{it}}{Assets_{it-1}} + \hat{\beta}_2 \frac{PPE_{it}}{Assets_{it-1}} + \hat{\beta}_3 \frac{CFO_{it}}{Assets_{it-1}}$$

$NDACC_{it}$: Non-discretionary accruals for firm *i* at year-end *t*.

$\hat{\alpha}, \hat{\beta}_{1,2,3}$: Regression estimates of α and β_1 and β_2 and β_3.

In final step, discretionary accruals (DACC) are calculated as follows: $DACC_{it} = \frac{TA_{it}}{Assets_{it-1}} - NDACC_{it}$

$DACC_{it}$: Discretionary accruals for firm *i* at year-end *t*.

Criteria for Overvaluation

In financial and accounting literature, $\frac{M}{B}$ is used as proxies for both misevaluation and growth opportunities. Rhodes-Kropf et al. (2005), indicate that if there would be a perfect measure for a firm's true value, (v),($\frac{M}{B}$) could be divided into two parts:

$$\frac{M}{B}=\frac{M}{V}\times\frac{V}{B}$$

Market value to true value ($\frac{M}{V}$), which captures misevaluation and true value to book value ($\frac{V}{B}$) capture growth opportunities.

The logarithmic form of the above equation could be written as follows:

$$m-b=(m-v)+(v-b)$$

Lower case letters show natural logarithms of relevant variables. If the market forecasts (anticipate) future growth opportunities discount rate and cash flows correctly, $(m-v)$term will be zero and $(v-b)$ will be $Ln\frac{M}{B}$ in all times. If the market makes a mistake in estimating discounted future cash flows and the market does not have all the information that managers have, the $(m-v)$term will include (capture) the misevaluation part of market value to book value.

Rhodes-Kropf et al (2005) indicate that part of $(m-v)$ is shared between all the existing firms in an industry or a market while another part of it is firm-specific. Thus, they divide $Ln\frac{M}{B}$ into three components:

1. The difference between observed price and a valuation measure that reflects time-*t* fundamentals (Firm-specific error).
2. The difference between valuation conditional on time-*t* fundamentals and a firm-specific valuation that reflects long-run value (Time–series sector error).
3. The difference between valuation based on long-run value and book value (long-run value to book).

They stated true value as linear function of firm-specific accounting information at a point at time (θ_{it}) and a vector of corresponding accounting multiples (α).

Therefore, the above equation could be written as follows:

$$m_{it}-b_{it}=m_{it}-v(\theta_{it},\alpha_{jt})+v(\theta_{it},\alpha_{jt})-v(\theta_{it},\alpha_{j})+v(\theta_{it},\alpha_{j})-b_{it}$$

Terms *i*, *t*, *j* suggest firm, year and industry type respectively.

m_{it} : Natural logarithm of equity market value for firm *i* at year-end *t*.

b_{it} : Natural logarithm of equity book value for firm *i* at year-end *t*.

$v(\theta_{it},\alpha_{jt})$: Estimated true value of firm *i* based on industry level valuation multiples at time *t*, (α_{jt})

$v(\theta_{it},\alpha_{j})$: Estimated true value of firm *i* based on industry level valuation multiples in long-run (α_{j}).

The key difference in true value terms is that annual multiples are stated as (α_{jt}) and long-run multiples are stated as (α_{j}). The first part of the above equation $[m_{it}-v(\theta_{it},\alpha_{jt})]$ is the difference between market value and true value for firm *i* in industry *j* and time *t*. This part of valuation error is named firm-specific error.

The second part of the above equation $\left[v(\theta_{it},\alpha_{jt})-v(\theta_{it},\alpha_{j})\right]$ is the difference between the estimated true value in firm *i* for industry *j* and time *t* and the long-run true value in firm *i* in industry-level. This part of valuation error is called a time-series sector error. This difference reflects the extent to which the whole sector may be become misevaluated at time *t*. The total of the first and second parts of above equation $\left[m_{it}-v(\theta_{it},\alpha_{jt})+v(\theta_{it},\alpha_{jt})-v(\theta_{it},\alpha_{j})\right]$ are entire valuation errors. The third part of the above equation $\left[v(\theta_{it},\alpha_{j})-b_{it}\right]$ conveys the difference between the long-run true value and book value. It is necessary to point that each of the three components varies across firms and years because each component utilizes (θ_{it}), which is firm *i*'s accounting information at year *t*. In this research to estimate true values $\left[v(\theta_{it},\alpha_{j}),v(\theta_{it},\alpha_{jt})\right]$, the market value is stated as a linear function of book value, net income, and leverage variables.

$$m_{it}=\alpha_{\circ jt}+\alpha_{1jt}+\alpha_{2jt}\ln|NI|_{it}+\alpha_{3jt}I_{[\langle\circ]}\ln|NI|_{it}+\alpha_{4jt}LEV_{it}+\varepsilon_{it}$$

Where:

m_{it} : Natural logarithm of the equity market value for firm *i* at year-end *t*.

b_{it} : Natural logarithm of the equity book value for firm *i* at year-end *t*.

$\ln|NI|_{it}$: Natural logarithm of the net income absolute value for firm *i* at year-end *t*.

LEV_{it} : Market leverage for firm *i* at year-end *t*.

ε_{it} : Model error suggesting estimated value of firm-specific error.

Since the net income can sometimes be negative, it is stated as an absolute value |NI| associated with a dummy variable (I<0) so that it could be protected as a negative net income in the model. If net income is positive for the firm (value I=0) and if net income is negative, (I=1) is assumed. To calculate the valuation multiples (α_{jt}), the firms are classified in symmetric industries and the cross-sectional regression (year to year) is performed for each industry to capture estimates of industry accounting multiples for year *t*, $(\hat{\alpha}_{jt})$ which are obtained from annual regressions. The estimated value $v(\theta_{it},\alpha_{jt})$ is the fitted value from regression equation.

$$v(B_{it},NI_{it},LEV_{it},\hat{\alpha}_{\circ jt},\hat{\alpha}_{1jt},\hat{\alpha}_{2jt},\hat{\alpha}_{3jt},\hat{\alpha}_{4jt})=\hat{\alpha}_{\circ jt}+\hat{\alpha}_{1jt}b_{it}+\hat{\alpha}_{2jt}\ln|NI|_{it}+\hat{\alpha}_{3jt}I_{\langle\circ}\ln|NI|_{it}+\hat{\alpha}_{4jt}LEV_{it}$$

$$\text{For all } \alpha_K, K=0,1,2,3,4 \quad \bar{\alpha}=\frac{1}{T}\sum_{t}\alpha_{jt}$$

The estimated value $v(\theta_{it},\alpha_{j})$ is the fitted value from the regression equation using the $\bar{\alpha}_{jt}$'s:

$$v(B_{it},NI_{it},LEV_{it},\bar{\alpha}_{\circ jt},\bar{\alpha}_{1jt},\bar{\alpha}_{2jt},\bar{\alpha}_{3jt},\bar{\alpha}_{4jt})=\bar{\alpha}_{\circ jt}+\bar{\alpha}_{1jt}b_{it}+\bar{\alpha}_{2jt}\ln|NI|_{it}+\bar{\alpha}_{3jt}I_{\langle\circ}\ln|NI|_{it}+\bar{\alpha}_{4jt}LEV_{it}$$

α_{jt} The above used models would be appropriate with discount rates and growth rates changing over time. Based on research results of Rhodes-Kropf et al. (2005), the estimate of long-run true value $v(\theta_{it},\alpha_{j})$ can reflect information that managers have, and this information is unknown for a market at time *t*.

This implies that the estimate of time series sector error $\left[v(\theta_{it},\alpha_{jt})-v(\theta_{it},\alpha_{j})\right]$ could be a form of misevaluation that would be created as a result at (of) informational asymmetry. Various variables are measured in the mentioned models as follows:

Market value of equity: Price × Shares outstanding

Book value of equity and net income are according to financial statements.

Market leverage: 1- (market value of equity /market value of assets)

Market value of assets: (Book assets - Book equity + Market equity)

According to overvaluation criteria, the independent variable in the main research of model will be total valuation errors (Firm-specific valuation error + time series sector error).

Control Variables

With regard to prior studies, we controlled common factors, which would be deterministic and effective factors on earning management. One of the control variables in this research is firm size, and it is used for calculating the natural logarithm of book value assets. Watts and Zimmerman (1990) state that large firms face higher political costs and, therefore, can have the stronger incentive to use accounting discretion to reduce politic costs. Thus, controlling the firm-size can play a controlling role. Moreover, it is likely that firms with a high growth rate would have higher accruals; according to Chi and Gupta (2009) the (v/b) ratio is used to control growth opportunities.

Higher leverage increases volatility of net income and gives the manager a stronger incentive to manage earnings to prevent their covenant violations and preserve credit ratios. On the other hand, higher leverage is a proxy for closer monitoring from debt-holders and can be related to less earning management (Chi & Gupta, 2009). Consequently, another variable control has been assumed as book leverage and is measured as [1- (Book equity/Book assets)].

Return on Assets

This shows that the actual amount of profit a company that reflects the amount of efficiency and effectiveness of the company's assets. Managers may be due to poor performance deciding to manage the income. Finally, Kothari et al. (2005) and Chi and Gupta (2009) say that in order to control the firm's performance, the assets return variable is used and is measured as follows: [EBIT/Total assets]. The last point should be declared is that for minimizing the probability of reflection for the existence of causation relationship when discretionary accrual's regression is done on valuation errors, we use valuation errors with a delay of one year relative to discretionary accruals in the model.

Hypothesis Test Models

The assumed model for investigating the research hypothesis is as follows:

(A)
$$DACC_{IT} = \beta_{\circ} + \beta_1 [m_{it-1} - v(\theta_{it-1}, \alpha_{jt-1}) + v(\theta_{it-1}, \alpha_{jt-1}) - v(\theta_{it-1}, \alpha_j)] + \beta_2 [v(\theta_{it-1}, \alpha_j) - b_{it-1}] + \beta_3 \ln Assets_{it-1} + \beta_4 BookLeverage_{it-1} + \beta_5 ROA_{it-1} + \varepsilon_{it}$$

(B)
$$DACC_{it} = \beta_{\circ} + \beta_1 [m_{it-1} - v(\theta_{it-1}, \alpha_{jt-1})] + \beta_2 [v(\theta_{it-1}, \alpha_{jt-1}) - v(\theta_{it-1}, \alpha_j)] + \beta_3 [v(\theta_{it-1}, \alpha_j) - b_{it-1}] + \beta_4 \ln Assets_{it-1} + \beta_5 BookLeverage_{it-1} + \beta_6 ROA_{it-1} + \varepsilon_{it}$$

(C)
$$DACC_{it} = \beta_{\circ} + \beta_1 [m_{it-1} - v(\theta_{it-1}, \alpha_{it-1})] + \beta_2 [v(\theta_{it-1}, \alpha_{it-1}) - v(\theta_{it-1}, \alpha_j)] + \beta_3 [v(\theta_{it-1}, \alpha_j) - b_{it-1}] + \beta_4 \ln Assets_{it-1} + \beta_5 BookLeverage_{it-1} + \beta_6 ROA_{it-1} + \beta_7 DACC_{it-1} \varepsilon_{it}$$

Model (A) is the main model of the research. Model (B) is used to test the research hypothesis by separation of discretionary accruals, and model (C) is used to test research by control of past discretionary accruals. To analyze the models above, the multivariate linear regression method is used with panel data (cross-section, time-series). Ordinary least squares will be used as the regression method.

Society of the Study

This study is inductive and for past information, historical financial statements have been used. This study is also a correlative study, since it seeks to investigate the relation between dependent and

independent factors. It is a periodic study because it studies a specific period of time, and it can be an applied research. Independent and dependent variables and primary processing of data were carried out by Excel. The assumption of the research is tested based on the regression analysis with the aid of SPSS statistical analysis software. In order to gather theoretical information, library research was used and articles that originated from the internet. An empirical research was used to describe the events in Tehran Stock Exchange (TSE) and to investigate the correlation of variable by regression analysis. The TSE listed companies were chosen as a population, and then samples were selected based on the following conditions:

1) The entities should be listed before 2006.
2) Date financial firms should lead to the end of March in each year.
3) The entities should be activated during 2006 to 2010.
4) The entities should not change their financial periods.
5) The entities availability of information is required.
6) The entities should not be member of banks and financial institutions (Investment companies, financial intermediation, holding companies, banks and leasing companies).

The total number of industries based on recent classifications in Tehran's stock exchange was 38 industries. It should be mentioned that industries that had fewer than seven firms must be omitted. Then similar industries were consolidated and used as one industry. Eventually, six industries remained and were considered for these cases; 60 firms, (300 firm-year data) were randomly selected as the sample society.

Methodology

Researchers conclude that when managers face material abnormal returns, they tend to support overvalued equity through income-increasing earning management (e.g., Badertscher 2010; Chi and Gupta, 2009; Jie Chen, 2007; Graham et al., 2005). Thus, following hypothesis is postulated:

H_1: *Equity overvaluation has a positive relationship with income-increasing earnings management. This hypothesis would try to examine the significance impact of valuation errors on discretionary accruals. To test this hypothesis, first a correlation analysis, then a regression analysis, and, finally, a mean-difference test will be investigated.*

Correlation Analysis

First, to test hypothesis and examine the relationship between total valuation errors and earning management, the Pearson correlation coefficients and partial correlation coefficients is used.

Table 1. *Pearson correlation coefficients*

Factors		DACC	$m_{it}-v(\theta_{it},\alpha_j)$	$v(\theta_{it},\alpha_j)-b_{it}$	ROA	Book Leverage	lnAssets
DACC	Correlation	1	0.153*	0.104	0.052	-0.049	-0.012
	Sig.	-	0.026	0.053	0.109	0.227	0.425
$m_{it}-v(\theta_{it},\alpha_j)$	Correlation		1	0.296**	-0.117*	0.460**	-0.008
	Sig.		-	0.000	0.035	0.000	0.454
$v(\theta_{it},\alpha_j)-b_{it}$	Correlation			1	0.604*	0.135*	-0.139*
	Sig.			-	0.000	0.018	0.016
ROA	Correlation				1	-0.356**	-0.144*
	Sig.				-	0.000	0.013
Book Leverage	Correlation					1	0.204**
	Sig.					-	0.001
LnAssets	Correlation						1
	Sig.						-

* Correlation is significant at the 0.05 level. ** Correlation is significant at the 0.01 level.

Table 2. *Result of the Study*

Control variables			DACC	$m_{it} - v(\theta_{it}, \alpha_j)$
$v(\theta_{it}, \alpha_j) - b_{it}$	**DACC**	Correlation	1.000	0.278
		Significance	-	0.017
ROA		df	0	234
Book Leverage	$m_{it} - v(\theta_{it}, \alpha_j)$	Correlation	0.278	1.000
		Significance	0.017	-
lnAssets		df	234	0

The Pearson correlation coefficients and partial correlation coefficients are used to test the hypothesis and examine the relationship between total valuation errors and earning management (Tables 1, 2). The Pearson correlation coefficient between total valuation errors and discretionary accruals is 0.153. Therefore, the null hypothesis is approved with a confidence of 5%. Partial correlation coefficient between total valuation errors and discretionary accruals was 0.278, and, thus, the null hypothesis is approved with a confidence of 5%.Therefore, considering or not considering effects of other variables, there is a significant and positive relationship between total valuation errors and discretionary accruals. Thus, it could be concluded that there is a significant and positive relationship between overvaluation and income-increasing earnings management.

Regression Analysis

Results from regression analysis are provided in Tables 3, 4, 5.

Table 3. *Model Summary*

R	R Square	Adjusted R Square	Durbin-Watson
0.172	0.029	0.009	2.265

Table 4. *Results of ANOV Test*

Model	Sum of Squares	df	Mean Squares	F	Sig
Regression	0.408	5	0.081	7.421	0.017
Residual	2.483	234	0.011		
Total	2.891	239			

Table 5. *Results of Coefficients Test*

Model	Unstandardized Coefficients		standardized Coefficients	t	Sig.	VIF
	B	S.D	Beta			
Constant	-0.048	0.137		-0.352	0.725	
$m_{it} - v(\theta_{it}, \alpha_j)$	0.318	0.015	0.391	4.186	0.037	1.422
$v(\theta_{it}, \alpha_j) - b_{it}$	-0.001	0.013	-0.008	-0.079	0.937	2.292
ROA	0.139	0.088	0.156	1.578	0.116	2.364
Book Leverage	-0.026	0.056	-0.039	-0.461	0.646	1.706
lnAssets	0.001	0.005	0.018	0.266	0.790	1.084

F-statistic and its significance level in variance analysis show the model hypothesis is approved with a confidence of 95%. R-Square is 0.03 (i.e. about %3 of the variations of the dependent variable) is describable by an independent variable. The independent variable coefficient of total valuation errors is equal with 0.318, and its significance level is equal with 0.037, which is less than 0.05; thus, the coefficient of total valuation error's independent variable will be significant and positive. It means that when a total valuation error increases (the firm is overvalued), the discretionary accruals will increase (income-increasing earning's management is performed). Therefore, the research hypothesis is accepted with confidence of 95%. This result is consistent with Chi and Gupta (2009) and Jensen, who declared that as the overvaluation increases, the income-increasing earning management will increase. T-statistic and coefficients related to growth opportunity variables show a negative relationship between the growth opportunities variable and the discretionary accruals, but this is not significant. This results is not consistent with Chi and Gupta (2009) or Skinner and Sloan (2002).

With regard to the t-statistic and coefficient of assets return rate variable, there is a positive relationship but it is of less importance than between an asset's returns rate and discretionary accruals. This is inconsistent with Chi and Gupta (2009) and Kothari et al., (2005), who found a positive and significant relationship between the variables. With regard to the t-statistic and coefficient for a leverage variable, there is a negative relationship between leverage and discretionary accruals, although, it is not significant. This is inconsistent with Chi and Gupta (2009). Furthermore, with regard to the t-statistic for a firm-size variable, the relationship between firm size and discretionary accruals is not supported. This is inconsistent with Chi and Gupta (2009) and Watts and Zimmerman (1990). Thus, control variables have not a significant effect on discretionary accruals as the dependent variable. With regard to the results of regression analysis and obtained coefficients, the following model is fitted:

$$DACC_{it} = -0.048 + 0.318[m_{it-1} - v(\theta_{it-1}, \alpha_{jt-1}) + v(\theta_{it-1}, \alpha_{jt-1}) - v(\theta_{it-1}, \alpha_{j})] - 0.001v(\theta_{it-1}, \alpha_{j}) - b_{it-1}] \quad +0.0001$$

$$\textbf{lnAssets}_{\text{it-1}} - 0.026\ \textbf{Book Leverage}_{\textbf{it-1}} + 0.139\ ROA_{it-1} + \varepsilon_{it}$$

The regression infrastructure hypotheses were investigated after fitting the regression model to assure a goodness of fitting model (good fitting). The scatter plot of normal probability of residuals largely, also, indicates that the residuals are relatively normal. The diagram of the comparison between the turnover of the standard residuals and the regression standardized predicted values also indicate that the variance of residual is constant. Results of Kolmogorov-Smirnov test about the normality of residuals supporting the normality of residuals (p=0.052), and the results are presented in Table 6.

Table 6. *Kolmogorov-Smirnov Test*

		Unstandardized Residual
N		240
Normal Parameters	Mean	0.0000000
	Std. Deviation	0.10193713
Most Extreme Differences	Absolute	0.097
	Positive	0.088
	Negative	-0.097
Kolmogorov-Smirnov Z		0.950
Asymp. Sig. (2-tailed)		0.052

Examining correlation residuals by using the Durbin-Watson test and the Runs test also show independence of residuals The Durbin-Watson statistic (2.265) shows lack of correlation among residuals. Table 7 portrays the results of the test.

Table 7. *Runs Test*

	Unstandardized Residual
Test Value	-0.00132
Cases < Test Value	120
Cases >= Test Value	120
Total Cases	240
Number of Runs	130
Z	1.164
Asymp. Sig. (2-tailed)	0.244

A variance inflation factor statistic has been used to examine multicollinearity (existence of relationship between independent variables). Considering that this statistic is smaller than five, there is not a multicollinearity problem between the independent variables. With regard to support of above hypotheses, we could give confidence to results from the fitted model.

Mean-Difference Test

In addition to correlation and regression analysis, the mean-difference test was performed. To perform this test, observations of the company for one year; then, based on the total amount assessed, it was classified into 5 groups (portfolios). Allocating observations to each portfolio was negative to positive, respectively, and all of observations were divided equally. Table 8 shows mean values and standard deviation of total valuation errors and discretionary accruals for each portfolio.

Table 8. *Characteristics of quintile-Portfolios formed by Valuation Errors*

	N	Q1	Q2	Q3	Q4	Q5
$m_{it}-v(\theta_{it},\alpha_j)$	48	-0.6658	-0.2046	0.0873	0.3073	0.7971
		(0.22110)	(0.09750)	(0.06115)	(0.08240)	(0.27304)
DACC	48	-0.0452	-0.0048	0.0108	0.0227	0.0352
		(0.09433)	(0.11493)	(0.08946)	(0.10831)	(0.07746)

* Digits into parentheses are standard deviation.

As the mean total valuation error value for each portfolio increases, the mean value of discretionary accruals increase in each portfolio respectively. A result from the mean-difference test is provided in Table 9.

Table 9. *Result of Mean-Difference Test*

	Mean		Diff	Std. Deviation		t	df	Sig.
	Q1	Q5	Q5-Q1	Q1	Q5			
$m_{it}-v(\theta_{it},\alpha_j)$	-0.6658	0.7971	1.4629	0.22110	0.27304	-28.848	94	0.000
DACC	-0.0452	0.0352	0.0804	0.09433	0.07746	-4.565	94	0.000

T-statistic related to test for discretionary accruals is equal with -4.565 and its significance level would be 0.000, which is smaller than 0.01. Thus, with 99% confidence, it could be said that there is a significant difference between discretionary accruals in the fifth group, with the highest valuation error and discretionary accruals in the first group with the lowest valuation error. Results indicate that a firm's management with higher valuation errors has more tendencies to use income-increasing strategies than a firm's management with lower valuation errors. Further, this is consistent with Jensen's (2005) hypothesis that as firms become more overvalued, their income-increasing earnings management activity intensifies Results from this test support results from regression and correlation analysis.

Additional Tests

To further examine the hypothesis test by separation valuation errors, a hypothesis test by separation discretionary accruals and a hypothesis test by controlling past discretionary accruals were performed. It is divided total valuation errors into two sections: firm-specific error and time-series sector error. Only firm-specific error shows a positive relationship with subsequent discretionary accruals. It could be concluded that only overvaluation in firm level has a substantial role in income increasing subsequent earning's management. The relationship between valuation errors with subsequent income-increasing earning's management was examined, and the sample includes both increasing discretionary accruals (positive) and decreasing discretionary accruals (negative).

For more investigation, we divided our sample into two groups of positive and negative discretionary accruals, and then we investigated the relationship between valuation errors with decreasing and increasing earning's management. In case a significant and positive relationship between valuation errors and negative and positive discretionary accruals was found, this supported the hypothesis of research. A noticeable point is that the coefficient related to total valuation errors in the group with negative discretionary accruals was found larger than the coefficient related to total valuation errors in the group with positive discretionary accruals. This means that among firms with negative discretionary accruals, a one-unit increase in total valuation errors (overvaluation) will lead to a further increase discretionary accruals.

Valuation errors with one-year delay relative to discretionary accruals to minimize probability of the existence of causal relations were used. When performing discretionary accruals regression on valuation errors, past discretionary accruals can have a relationship with valuation errors because, according to prior research, one important incentive of managers for involvement in earning's management will affect reports of earnings and current prices of stock. However, evidence from the accrual anomaly literature suggests that managerial efforts to increase stock prices through accruals management is futile or includes a short-time of period. Because past discretionary accruals have a relationship with future stock returns negatively (Chi & Gupta, 2009). For this purpose, by including past discretionary accruals (discretionary accruals), it is examined whether or not the relationship between discretionary accruals and total valuation errors is different relative to our past findings Results show that even after controlling past discretionary accruals, there is a significant and positive relationship between total valuation errors and positive discretionary accruals, and there is a significant and positive relationship between overvaluation and income-increasing earnings management. Therefore, the research hypothesis is acceptable even after control of past discretionary accruals.

Summary and Conclusion

This study investigated the impact of equity overvaluation on earning management of companies on the Tehran stock exchange during a five-year period. For achieving this aim, the discretionary accruals as criteria for earning management determined by using the modified-Jones model, and valuation errors as criteria for overvaluation determined by using the model of Rohdes-Kropf et al., (2005) were calculated. Then, the relationship between these two items was examined through the innovative model of Chi and Gupta (2009). Generally, results from the conducted tests to examine the research hypothesis support that equity overvaluation will lead to subsequent income-increasing earning management (benefit from more discretionary accruals in financial reports) in terms of statistical (statistically) measure: a one unit increase in total valuation error would lead to increase unit 0.318 in discretionary accruals.

The results of the test are consistent with Jensen (2005), who predicted that equity overvaluation could lead managers to support equity-inflated prices in the short-term, while these activities could threat shareholders' wealth in long run. On the other hand, in studying firms on the Tehran stock exchange, when equity is overvalued, firms management tend to support overvalued amounts to access high stock prices by manipulating discretionary accruals. Results from the hypothesis of research are consistent with Jensen's statement that "the overvaluation when becomes larger (higher valuation errors) their earning management would be larger (higher discretionary accruals)" Furthermore this result is supported by Badertscher (2010), Badertscher et al., (2007); Chi and Gupta (2009); Chen (2007); Marciukaityte and

Varma (2007); and Kothari et al., (2006).

Implication

Stock market impact on economic development of a country is undeniable. The main task of the market is moving up to an optimal allocation of capital and resources so that there should be an efficient market. There should be the complete information access by traders equally, and the traders should have a similar attitude. The results of the research show there is a meaningful relation between equity overvaluation and earning's management. Consequently, the following suggestions are offered:

1) Asymmetrical information is the most important factor in creating the phenomenon of equity information. Thus, it is proposed that the stock exchange and audit organization be bound by legal requirements and standardizing, and companies have to disclose and provide complete and transparent information for investors to use when evaluating the performance of their companies. Moreover, part of a manager's authority in controlling of profit should be decreased.

2) Due to managers having the most information, it is proposed that instead of supporting the equity overvaluation, information should be amended by the managers.

3) To financial analysts and auditors, it is recommended that due to the access to information about companies and due to their abilities in data analysis, they carefully examine all aspects of corporate activity and, with awareness of errors and evaluation of its disclosure to investors, pave the way for a flourishing economy and proper allocation of resources. One point should not be forgotten: it is essential that additional evaluation should not assume that all confusion is only failure of investors and the market makers. However, analysts, managers, investment bankers, and auditors are tempted to manipulate the information. Thus, effective regulation and character should be created by any of the relevant institutions, since it reduces the sensitivity of problems.

4) Corporate governance systems, especially if the board of directors exhibits independence and competence, can be a solution to overvalued problems. As Shiue et al. (2009) mentioned, for policy makers and practitioners, the findings indicate that a more independent and competent board of directors can help depress the occurrence of overvalued equity.

References

Badertscher, B, (2010). Overvaluation and its effect on management's choice of alternative earnings management mechanisms, working paper. Retrieve from http://ssrn.com.abstract=1005621

Badertscher, Brad., Collins, D,W., & Lys, T, Z, (2007). Earning management and the predictive ability of accruals with respect to future cash flows. Retrieve from http://www.nd.edu/~carecob/Workshops/07-08%20Workshops/Badertscher%20Paper.pdf.

Beneish, M, D., Nicholas, D. (2009). Identifying Overvalued Equity, working paper. Retrieve from http://ssrn.com.abstract=1134818

Chen, J., (2007). Earning management and the performance of seasoned equity offerings: A new looks based on agency costs of overvalued equity. Retrieve from https://server1.tepper.cmu.edu/gsiadoc/WP/2007-E38.pdf

Chi, J., Gupta, M. (2009). Overvaluation and earning management. *Journal of Banking and Finance 33*(9), 1-48.

Cohen, D., Dey, A., & Lys, T, (2008). Real and accrual based earning management in the pre-and post-sarbanes oxley periods. *The Accounting Review, 83,* 757-787.

Graham, J., Harvey, C., & Rajgopal, S. (2005) .The economic implications of corporate financial reporting. *Journal of Accounting and Economics, 40*, 3-73.

Healy, P. M., &Wahlen, J, M. (1999). A Review of the Earning Management Literature and its Implications for Standard. *American Accounting Association, 13*(4), 365-383.

Jensen, M, (2005). Agency cost of overvalued equity. *Financial Management Journal, 34,* 5-19.

Jensen, M, (2004). The agency cost of overvalued equity and the current state of corporate finance. *European Financial Management, 10,* 549-565

Jones, J, (1991). Earning management during import relief investigations. *Journal of Accounting*

Research, 29, 193-228.
Kothari, S., Leone, A., & Wasley, C, (2005). Performance matched discretionary accrual measures. *Journal of Accounting and Economics, 39,* 163–197.
Kothari, S. P., Loutskina, E., & Nikolaev, V. (2006). *Agency cost of overvalued equity as an explanation for the accrual anomaly.* Working Paper, MIT University of Virginia, Tilburg University.
Marciukaityte, D ; Varma, R, (2008). Consequences of overvalued equity: Evidence from earnings manipulation. *Journal of Corporate Finance.* Retrieve from http://www.sciencedirect.com/science/article/B6VFK-4SJ2WS3 1/2/a916f9e21e70a6213f8db590f46d7c81
Rhodes-Kropf, M., Robinson, D., & Viswanathan, S. (2005). Valuation waves and merger activity: The empirical evidence. *Journal of Financial Economics, 77,* 561-603.
Schaller, H., Chirinko, R. (2007). Equity Overvaluation and Capital Misallocation? A Raveled Preference Approach, Working paper retrieve from http://ssrn.com/abstract=970623.
Shiue, M., Lin, C., & Liu, Y. (2009). Board Characteristics and Overvalued Equity: Evidence from Taiwan. *International Research Journal of Finance and Economics, 32,* 104-113.
Skinner, D., Sloan, R. (2002). Earnings surprises, growth expectations, and stock returns or don't let an earnings torpedo sink your portfolio. *Review of Accounting Studies, 7,* 289–312.
Watts, R., Zimmerman, j. (1990). Positive accounting theory: A ten year perspective. *Accounting Review, 65,* 131-156.
Cheng, Q., Warfield, T, D. (2005). Equity incentives and Earning Management. *The Accounting Review, 80*(2), 441-476.