The Effect of Earnings Management on the Relationship between Earnings Forecast Error and Earning Persistence: Test of Management Overconfidence Theory

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ABSTRACT

Earning is one of the most important accounting information as well as a criterion for assessing financial reporting and has always been considered by the various interest groups in the company. Because the change in the balance sheet figures occurs due to the change in the profit and loss statement figures. The existence of an accrual accounting basis has led investors and financial analysts to focus on the quality of their earnings in addition to reported earnings values in determining the company's value. Hence, earnings persistence is one of the important indicators of earnings quality. From the perspective of investors, the earnings that is more stable, the earning is defined by the quality. Therefore, managers as top-level organizations have the power and authority to make decisions and influence financial reporting. As a result of their opportunistic behavior with excessive earning manipulation and confidence, they rely on their own beliefs to reduce their reliance on information and reduce the quality of earning. In this regard, the present study first explores the relationship between the Earnings forecast error and earning persistence in earning management. Then, in the following, the effect management overconfidence on the above relationship has been examined over a 9-year period from 2009 to 2017 in 115 companies from listed companies in Tehran Stock Exchange. The results of this study show that there is a significant and positive relationship between Earnings forecast error and the earning persistence in earnings management, also the overconfidence has a different significant effect on them.

Keywords: Earnings Persistence, Earnings forecast error, Real earnings Management, Accrual earnings Management, Management Overconfidence.

1. Introduction

Earnings quality is one of the important aspects of the financial health of business entities that is an

important subject for investors, creditors and other users of financial statements. Earnings quality refers to the ability of the reported earnings in reflecting the real earnings, usefulness in predicting future earnings, as well as to the stability, persistence, and volatility of the reported earnings (Izadinia & Raeisiyan, 2011). Therefore, the qualitative characteristics of accounting information have an undeniable role in enhancing the quality of financial statement information, especially in assessing the stewardship of a manager. On the other hand, the information provided by the company and therefore the earning is based on past events but the investors need to some information about the future of the company. Empirical evidences have shown that investors rely on information such as earnings forecasts per share and use it in stock pricing (Jag and McNumie, 2003). Earnings management, as one of the tools for reducing the quality of earnings, can affect the quality of accounting information and may reduce the quality of financial statement information. Past studies have shown that high difference between real earnings and predicted earnings may be due to earnings management (Geramlich & Sorensen 2004, Gang et al. 2009, Chang & Shiva 2010, and Han et al. 2013). Also, as managers predict future uncertainties (such as demand, cash flows, competition, etc.) in their forecasts, these forecasts may be influenced by managers' overconfidence and to some extent include personal beliefs of management that may create some errors in them. The idea that management's psychological bias may have a negative effect on managers' decisions and forecasts has been confirmed in many accounting studies (Ben David et al., 2007; Deshmukh et al., 2010). In the present study, the relationship between earnings forecast error and the impact of earnings management and overconfidence on the relationship between this error and earnings quality (earnings pesistence) has not been studied. However, earnings management and managers' overconfidence are one of the main variables of the earning forecasting error. In other words, the difference between the real earning and the predicted earning is due to the managed earnings as a result of managers' overconfidence. Therefore, it is expected that earnings

management as a moderator variable will be able to increase earnings forecast error and thus reduce earnings quality. And secondly, the effect of overconfidence as a moderator variable can exacerbate the effect of earnings management on earnings forecast error and thus reduce earnings quality. In other words, earnings management and the impact of the manager's overconfidence will lead to the management of the business unit not to conduct its stewardship function in line with the objective of the business unit and its shareholders interests. Investors, analysts, and other users in decision making rely on information such as forecasting earnings per share. As a result, the quality of financial reporting is important to users from the standpoint of earning persistence and accuracy of this forecast, in line with the management's stewardship, because investors make the decision to buy, sell, or hold stock based on this information. Therefore, profit forecasting error is an important factor in secondary market performance (Jag and McNumey, 2003). This importance and the lack of sufficient research on this topic prompted the authors to examine the effect of earnings management on the relationship between earnings forecast error and earnings persistence (as a qualitative feature of accounting information) by considering the examination of management overconfidence theory.

Therefore, the first purpose of this study examination of the relationship between earnings forecast error in earnings management and earnings persistence as well as the effect of overconfidence on this relationship. The second purpose of this study is to inform investors, creditors, financial analysts and other users of the information about this effect. It is expected that the results of this research have the following scientific and value added achievements.

First, the results of this study can provide a good awareness of the earnings quality advantages as one of the indicators of manager's stewardship evaluation, to investors, creditors, analysts, government and other users considering overconfidence as one of the most important findings of the psychology in the area of judgment and decision making for investment, lending, dividend policy, corporate valuation, tax calculations and other corporate decisions. Secondly, the results of the present study provide awarness to the accounting standards and capital market regulators with regard to the overconfidence effect on the managers reporting method, considering the different levels of authorized

reporting authority (different levels of regulation and supervision) and its impact on the user's decision making by examining the relationship between earnings forecast error and earnings quality in a varity of earnings management. Third, the results of the study may offer new ideas for new research in the area of forecast error and earnings quality as well as the effect of overconfidence on them. The theoretical foundations, methodology and research findings are presented in the next sections of this paper.

2. Theoretical Foundations and Review of Research Background

2.1. Manager's Overconfidence

Overconfidence is one of the most important findings of psychology in the field of judgment and decision making. Overconfidence is a personal attribute that can be defined as behavioral bias and having unrealistic (positive) beliefs about any aspect of an outcome under uncertainty conditions. Accordingly, the average estimation will be exaggerated (Shaka, 2008). Overconfidence or over self-esteem can be defined as delusive beliefs about individual's cognitive abilities, judgments, and intuitive reasoning. The concept of overconfidence has been studied in a wide range of psychological and cognitive experiments and tests, which show that individuals are overestimating both their ability to predict and the accuracy of their information. They also do poorly in probability estimation, and believe that most events that are less than 100% probable will occur inevitably. In short, these people believe that they are smarter than they actually are and believe they have better information. For example, when deciding to invest in a particular company, they often ignore the expectation of loss and feel surprised or dissatisfied if the company performs poorly (Pompian, 2006). Hence one of the first applications of the concept of overconfidence in financial literature was proposed by Roll (1986). He states that management overconfidence is one of the causes of managers' involvement in appropriate education process and overpaid to the target companies. Most managers think that their own company is more likely to succeed than other companies (Ho and Chang, 2009). So the more people are aware of or skilled in something, their optimism increases. Also, if people are involved or have a stake in the project, they are optimistic about

the results and underestimate the risk of the project, so managers overconfident are more likely to cheat and manipulate accounts (Graham and Harvey, 2010). Overconfident manager's more than rational managers believe to the high likelihood of future cash flows. Overconfident managers in bad circumstances (when firm performance is poor) report more earnings than rational managers. In good circumstances (when the company is performing well), when cash flows are high, overconfident managers take more steps in comparison to the past in reported profits paying , so overconfident managers, manage the earnings more than rational managers, (Crista, 2014). As a result, this can overshadow profitability (as a qualitative feature of accounting information) that improves the quality of financial reporting.

2. 2. The Concept of Earning Persistence:

Earning persistence is one of the most important indicators of earnings and from the investors' perspective, earnings that is more stable has more quality in valuation and prediction models, the persistent earning is used better (Tommy, 2012). This feature indicates the stability and durability of earnings. From the investors' point of view, durable and stable returns are desirable because of their continuity. Regardless of the amount and direction of earnings changes, persistence indicates to what extent the earnings changes are stable over time series of earning. Beaver et al (1980) were the first authors who studied the persistent earnings and experimentally examined the securities values. They used the theory of unadjusted earnings (persistent earnings) to predict the future expected earnings and linked the expected persistent earnings to the equilibrium model. Highly persistent profit figures are viewed by investors as persistent earning to the extent that such earnings are used as a basis for applying a short-term valuation method (such as the price-to-earnings coefficient) (Francis et al., 2008). As a result, executives are always responsible for selecting and applying basic estimates and judgments and accounting principles, so they are ultimately responsible for the quality of their earnings. Therefore, the integrity of management improves the reported quality of earnings (earnings persistence) and the inaccuracy of managers creates a basis for using questionable accounting methods. In addition, sudden changes in management can disrupt the continuity of business operations and has a

negative impact on earning persistence. Also, if corporate managers fail to understand and respond to social, political and economic changes and, most importantly, customer needs in a timely manner, earning persistence (as a qualitative feature of earning) will be in doubtful (Bakhtaki, 2007).

2.3. Relationship between the Management's Forecast Earnings Error in Different Earnings Managements and Earning Persistence by Examination of The Overconfidence Theory:

Overconfidence is one of the most important findings of psychology in the field of judgment and decision making. Physiological findings show that overconfidence causes people ignore risks and to be overconfident of their knowledge by overestimating their events-controlling illusions, thus putting the beneficiaries at high risk and thus expose them at a higher level of loss. Overconfident managers are keen to show their performance and knowledge more than actually, but they underestimate the value of financial crises (Serpil Tomak, 2013). Investors, on the other hand, are the main pillars of markets and financial institutions, and are always looking for information that will help them make the right decisions. Appropriate decision making requires access to relevant and reliable information. Hence, the companies with low quality earnings in the post-earnings reporting periods suffer from less return because investors realize the problem of low quality earnings of companies and adjust the stock price accordingly (Lee, Abyskrava, 2011). Earning persistence is one of the most important indicators of earnings quality and in the view of investors, an earnings that is more persistent is defined as a high quality earnings because is used better in valuation and forecasting models (Tommy, 2012). On the other hand, as the business units expanded and specializing the business units activities, the owners give the task of managing of their units under their jurisdiction to specialist managers. As a result, the owner give them power of decision making. The manager as the owner's agent and steward is responsible for directing and managing the business activities in the owner's interest. It is also the duty of the manager to safeguard and secure the interests of stakeholders and other

parties to the contract, such as the creditor, government, customers, employees, the community, and etc,(Yaghoubi et al., 2015). Managers are therefore high-level individuals with greater authority and decision-making power whose personal preferences can influence the organization's selective policies and practices. Whereas the main purpose of financial reporting is to provide the relevant information to the users of financial information for their decision making. Financial reporting may be in the form of financial statements and other information transfer tools that are provided by management.

Earning is one of the major items of financial statements that attract users of financial statements. Therefore, the manager may misrepresent the company's earnings for some reasons such as job security, remuneration, company value enhancement, attraction of capital and other factors, because the investors and analysts in their evaluations of the analysis Performance use of operation analysis(Etemadi et al., 2012). Therefore, since earnings contain important information for internal and external users, they are managed by managers to inform foreign investors that the performance of the company is favorable (Sanjay & Saraghi, 2012). It is worth noting that the information provided by the company and therefore the earning is based on past events but investors need information about the future of the company.

In the theoretical literature of the accounting, similar to earnings management, there are two distinct approaches to forecasting earnings that are the messaging (efficiency) approach and the opportunistic management approach. The most well-known consequence of management's opportunistic behavior with regard to the forecasted earnings is the management of investor perceptions or expectations, thus managers direct the beliefs and expectations of the investors in a way that is desirable for them. For example, if the current performances of a company has an adverse reaction and have a negative impact on returns and stock prices, this in turn leads to a reduction in the management interests. Managers using a variety of measures such as earnings management and expectations management avoid such a reactions of investors by offering aggressive forecasted earnings as well as other methods. The application of each of these methods depends on the managers' ability to apply them and the relative cost of applying them

(Maham and Zolghadr, 2012). It is worth noting that management forecasts affect stock prices, stock market liquidity and analyst forecasts. The obtained results indicate that the earnings that are predicted by the companies have information content and efficiency and hence the importance of accounting earnings prediction is more prominent due to its role and impact on the decision making of users especially investors (Lotfi et al., 2010). On the other hand, managers' information about the company's earnings prospects can be associated with errors due to the uncertainty of the company's economic and operating environment. As a result, managers may overlook the use of accounting choices in making operational decisions or earnings forecasts. In addition, managers' forecasting can be influenced by self-service motivation rather than the correct earnings prediction motivation (Sun et al., 2012). Accordingly, considering earnings persistence as one of the qualitative characteristics of earnings, as well as the important role of the manager and its overconfidence on financial reporting (including earning persistence), ultimately leading to earning quality of companies , that is an important issue for investors and analysts and other users in evaluating the Manager's stewardship.

2.4. Research Background

Hajiha and Gilavi (2011) in their paper studied the effect of managers' ability on earning persistence of industrial companies listed in Tehran Stock Exchange. The following results were obtained: 1) the ability of managers has a positive and significant relationship with earnings persistence.2) the ability of managers has a negative relationship with earning persistence of the companies that have reported loss. 3) There is a positive and significant relationship between interaction of manager's ability and earning persistence. Etemadi.et al (2013) investigated the impact of earnings management on four earnings characteristics, including accruals quality, persistence, predictability and smoothness, and in particular tested the hypothesis of opportunistic earnings management that impacts on earnings management. At the core, earnings management reduces the quality of earnings for companies. In the meantime, the quality of accruals is influenced by earnings management more than any other attribute. These results support the opportunistic theory of earnings management and

show that earnings management undermines the accounting information content. Izadinia et al. (2014) in a study entitled "The Impact of Management Ability on Earnings Quality in Companies Listed in Tehran Stock Exchange" concluded that managerial ability has a negative effect on financial statements (profit and loss) as one of the criteria of earning quality, which means that more capable managers will have less financial re-presentation and therefore higher earnings quality. There is also insufficient evidence to acknowledge the impact of management ability on earnings persistence as a measure of earnings quality. Mansourfar et al. (2015), in a study investigated "The effect of management ability on the quality of earnings of companies listed in Tehran Stock Exchange". In this study, the ability of management was measured by data envelopment analysis method and earnings quality using three criteria of renewal of earning persistence, and earning accruals quality. The results show that the ability of management has a positive and significant effect on earnings quality and also results in higher earnings persistence and better accruals quality. According to this analysis, no significant relationship was found between the ability of management and the criterion of earning persistence. Sadat and Amri (2016) in a study investigated the effect of management overconfidence on earnings quality and earning persistence in listed companies in Tehran Stock Exchange". The findings of this study indicate that management's overconfidence behavior has a negative and significant effect on earnings quality and earning persistence. In other words the more the manager's overconfidence, the less the company's earning persistence and quality.

Beneish and Vargo (2002) investigated the impact of earnings management on earnings persistence.This researchers found that earnings accruals were less (more) stable when earnings management is increasing (decreasing) and managers have sold (bought) stocks. Also, accruals pricing is done incorrectly due to incremental earning management. Dechow & Ross (2005) showed in their research that earning persistence is affected by the amount and mark of accruals, in such a way that, in companies with high accruals, accruals improve earning persistence over cash flows. Demirjian et al. (2013) in a study entitled "Management Ability and Earnings Quality" concluded that management ability was positively related to earning quality. Also, the greater the

manager's ability, the lower the financial statements re-submissions, earning persistence, and the higher the accruals stability and the quality of the accruals estimate. Feng Li et al. (2014) in a study investigated "The Impact of Financial Situation on Earnings Quality of Chinese Accepted Companies, their results show that the accruals quality, earnings predictability and income smoothing between healthy and bankrupt companies have significant differences," but they have not earning persistence. also additional analysis shows that the classification of companies (healthy, financially troubled and bankrupt) according to financial status does not show distinct differences in the qualitative characteristics of earning. (Rezaei and Tuo2017) investigated about this subject that "whether the quantity and quality of earnings persistence disclosures relate to their intrinsic and voluntary earning?"Their findings indicate that the level of persistence disclosure has a positive relationship with intrinsic earnings quality and has a negative relationship with managerial earnings manipulation and opportunistic and unethical reporting behavior. Persistence disclosure quality can reinforce the positive relationship between intrinsic earnings quality and level of persistence disclosure and reduce the negative relationship between optional earnings quality and persistence disclosure.Finally, with further tests they concluded that the relationship between level of earnings quality and earning persistence disclosure is moderated by corporate structure and persistent performance at the last year. Lee (2019) in a study on the effect of real earnings management on earnings persistence and information content has found that real earnings management has a negative relationship with earning persistence and this effect is largely achieved through the impact of real earnings management on cash flows, rather than acruals. The decrease in current earning persistence resulting from real earnings management indicates a poor ability to predict future cash flows, indicating that the information content of current earnings on future cash flows is reduced.The negative effect of the abnormal reduction in discretionary expenses on earnings persistence and its relationship to future cash flows from operations in the post-SOX period (investor protection law from fraudulent reporting by companies) is also more pronounced. Overall, their results show that real earnings management is accompanied by abnormal reductions in optional costs with poor quality

earnings. Chernopoulos and Siegel (2019) in a study "management forecasts and the persistence of earnings and earnings components "examined the effects of voluntary forecasting activity, especially managerial errors direction (ie, pessimistic versus optimistic managers) on the accuracy of real reported figures, in a study entitled profit management and persistence Forecasts and Components. That management's forecasts of real accounting figures will enhance the quality of reporting. As well as pessimistic managers, they provide more stable accounting figures than optimistic managers. Finally, the results show that forecasting activity can be used as a useful tool for obtanining profitable investment strategies. According to the literature review , it can be concluded that overconfidence theory can provide theoretical bases on the role of earnings management in the relationship between earnings forecast error and earnings persistence. Hence, the research hypotheses are as follows:

3. Research Hypotheses

1) There is a significant relationship between management forecast earnings error and earnings persistence in real earnings management.
2) There is a significant relationship between management forecast earnings error and earnings persistence in accrual earnings management.
3) The effect of manager's overconfidence on the relationship between management forecast earnings error and earnings persistence in real earnings management is different.
4) The effect of manager's overconfidence on the relationship between management forecast earnings error and earnings persistence in accrual earnings management is different.

4. Research Methodology

The statistical sample of the present study includes the companies listed in Tehran Stock Exchange. This sample includes companies that meet the following requirements:

1. The end of the financial year of the company is the end of March of each year and the company did not change the financial year during the period under review.2-The investigated company is not one of the

investment, holding and financial agencies and insurance. 3-their information and data is available 4- Company's stocks traded continuously on the Tehran Stock Exchange and no more than three months trading stoppage on the said stocks.5- the company is among the existing industries, the industry that has remained in that industre after applying the above menationed restriction to select a sample of at least 9 companies. Due to the above conditions and limitations, from the listed companies in Tehran Stock Exchange a total of 115 companies in the period 2009- 2017 were selected as statistical sample.This research is a library research because it uses the financial resources and financial statements of the listed companies. This is an applied research and has a deductive-inductive approach and is a part of the regression analysis among all types of correlational researches. Inregard to the issues of study and collection of data, including descriptive research, is an observation of the kind of correlation that relationship between variable is investigated. And from data nature perspective is a quantitative research.

5. Model of Hypotheses Test and Research Variables

In this study, the following models were used to test the hypotheses:

1)
$$persistence_{i,t} = \beta_0 + \beta_1 MFE_{i,t} + \beta_2 RM_{i,t} + \beta_3 MFE_{i,t} \times RM_{i,t}$$
$$+ \beta_4 Size_{i,t} + \beta_5 ROA_{i,t} + \beta_6 M/B_{i,t} + \beta_7 Z_{i,t-1}$$
$$+ \beta_8 Age_{i,t} + \beta_9 Horizon_{i,t} + \beta_{10} Sale\text{-}Gr\text{-}Vol_{i,t-1}$$
$$+ \beta_{11} Cfo\text{-}Vol_{i,t-1} + \beta_{12} op\text{-}Cycle_{i,t-1} + \varepsilon_{i,t}$$

2)
$$persistence_{i,t} = \beta_0 + \beta_1 MFE_{i,t} + \beta_2 AM_{i,t} + \beta_3 MFE_{i,t} \times AM_{i,t}$$
$$+ \beta_4 Size_{i,t} + \beta_5 ROA_{i,t} + \beta_6 M/B_{i,t} + \beta_7 Z_{i,t-1}$$
$$+ \beta_8 Age_{i,t} + \beta_9 Horizon_{i,t} + \beta_{10} Sale\text{-}Gr\text{-}Vol_{i,t-1}$$
$$+ \beta_{11} Cfo\text{-}Vol_{i,t-1} + \beta_{12} op\text{-}Cycle_{i,t-1} + \varepsilon_{i,t}$$

3)
$$persistence_{i,t} = \beta_0 + \beta_1 MFE_{i,t} + \beta_2 RM_{i,t} + \beta_3 MFE_{i,t} \times RM_{i,t}$$
$$+ \beta_4 MO_{i,t} + \beta_5 MO_{i,t} \times MFE_{i,t} \times RM_{i,t} + \beta_6 Size_{i,t}$$
$$+ \beta_7 ROA_{i,t} + \beta_8 M/B_{i,t} + \beta_9 Z_{i,t-1} + \beta_{10} Age_{i,t}$$
$$+ \beta_{11} Horizon_{i,t} + \beta_{12} Sale\text{-}Gr\text{-}Vol_{i,t-1}$$
$$+ \beta_{13} Cfo\text{-}Vol_{i,t-1} + \beta_{14} op\text{-}Cycle_{i,t-1} + e_{i,t}$$

4)
$$persistence_{i,t} = \beta_0 + \beta_1 MFE_{i,t} + \beta_2 AM_{i,t} + \beta_3 MFE_{i,t} \times AM_{i,t}$$
$$+ \beta_4 MO_{i,t} + \beta_5 MO_{i,t} \times MFE_{i,t} \times AM_{i,t} + \beta_6 Size_{i,t}$$
$$+ \beta_7 ROA_{i,t} + \beta_8 M/B_{i,t} + \beta_9 Z_{i,t-1} + \beta_{10} Age_{i,t}$$
$$+ \beta_{11} Horizon_{i,t} + \beta_{12} Sale\text{-}Gr\text{-}Vol_{i,t-1} + \beta_{13} Cfo\text{-}Vol_{i,t-1}$$
$$+ \beta_{14} op\text{-}Cycle_{i,t-1} + e_{i,t}$$

5.1. Dependent Variables:
The dependent variable in this study is earning persistence. In its measurement the model of researchers such as Penman and Zhang (2002) and Francis et al. (2004) was used as follows:
5)
$$E_{i,t} = \beta_0 + \beta_1 E_{i,t-1} + \varepsilon$$

In this model, Ei, t represents net earnings in the current year (t) and $E_{i,t-1}$ represents net earnings in the previous year (t-1). $\varepsilon_{i,t}$ also represent the model error values. To homogenize the data, divide the amount of current year earning and previous year earnings total assets beginning of the year. β_1 is the earning persistence coefficient of and the higher the β_1, the closer the value to 1, the more stable the earning and the higher the quality. However, if β_1 is too small or negative, the quality of earnings will also be lower. In this case, the model error values increase.

5.2. Independent Variable
MFEi, t (earnings forecast error): Percentage error index is used to measure earnings forecast error. In this study, the expected annual earnings is the criterion, and if the company has revised its forecast, is regarded as the first forecast is in this study. The following equation shows how this index is calculated: (Gang et al., 2009).

$$MFE_{i,t} = a_{i,t} - f_{i,t}/f_{i,t}$$
$f_{i,t}$ = earnings forecast of company
$a_{i,t}$ = real earnings of company

MOi,t (Manager Overconfidence): This criterion which shows the amount of additional investment in assets, revenue from sales is derived from the residual growth regression of total asset-to-sales growth estimated for each industry-year separately, that is based on the research of Hong et al. (2011). The

residual error of this model is considered as the criterion of overconfidence that if it is positive equals one and the manager is considered overconfident; otherwise it will be zero which indicates lack of management overconfidence. The use of this index is based on this method that in companies where assets grow at a higher rate than sales, managers invest more than their counterparts in compony.

6)

$$Newinvst_{i,t} = \beta_0 + \beta_1 Grow_{i,t} + \beta_2 Lve_{i,t} + \beta_3 Cash_{i,t} + \beta_4 Age_{i,t}$$
$$+ \beta_5 Size_{i,t} + \beta_6 Return_{i,t} + \beta_7 Squnewinvst_{i,t} + \varepsilon_{it}$$

Newinvst$_{i,t}$ = means the additional investment of a company over a year that is calculated by the following equation:

Newinvst$_{i,t}$ = net purchase or acquisition of tangible fixed assets - sales of tangible fixed assets - Accumulated depreciation

Grow$_{i,t}$: is defined as the growth of a company that is calculated by incom growth that is obtained through revenue from sales and services earning. Lve$_{i,t}$: is defined as the financial leverage that indicates the amount of debt used to finance assets. Financial leverage is calculated by dividing total liabilities into total assets. Cash$_{i,t}$: Is the Cash held by the company, which is a natural logarithm of the sum of cash invested in short-term near money -securities. Age$_{i,t}$: Is defined as the natural logarithm of the number of years of establishment of the company until this year. Size$_{i,t}$: natural logarithm of the book value of total assets, has been used for companies' size measurement which is used as a independent variable in the calculation of overconfidence and in the original model is used as a control variable. Return$_{i,t}$: is the annual yield of stocks considered in this study the return on the previous year or t-1 has been considered. For the purpose of annual stock returns, begging of period and end-of-period price changes plus other earnings from share purchase such as the rights, bonus and dividends yield (Izadinia & Rasaeian, 2010).

Squnewinvst$_{i,t}$: This variable refers to the investment in the previous year in which the short-term investments were used.

RM$_{i,t}$: (Real Earnings Management): The three-part model introduced by Roychowdhury (2006) and by other researchers such as Cohen and Zarowin (2010) and Zhang (2012) was used to calculate an integrated

criterion of different components of real earnings managements with summing up the remaining three models, as follows:

Measurement of abnormal operating cash flows

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$$\frac{CFO_{i,t}}{TA_{i,t-1}} = \beta_0 + \beta_1 \frac{1}{TA_{i,t-1}} + \beta_2 \frac{Sales_{i,t}}{TA_{i,t-1}} + \beta$$

CFO$_{i,t}$: Operating Cash Flows, TA$_{i,t-1}$: Total Assets for the previous year, Sales$_{i,t}$: Sales, ΔSales$_{i,t}$: Changes in company sales in the current year in comparison to the previous year, $\varepsilon_{i,t}$: Model residuals (has been considered as the criterion of abnormal operating cash flows).

Measuring abnormal production costs

8)

$$\frac{CGS_{i,t}}{TA_{i,t-1}} = \beta_0 + \beta_1 \frac{1}{TA_{i,t-1}} + \beta_2 \frac{Sales_{i,t}}{TA_{i,t-1}}$$
$$+ \beta_3 \frac{\Delta Sales_{i,t}}{TA_{i,t-1}} + \beta_4 \frac{\Delta Sales_{i,t-1}}{TA_{i,t-1}} + \delta_{i,t}$$

CGS$_{i,t}$: Cost of goods sold
δ: Model residual (considered as an abnormal production expenses criterion).

Measuring abnormal discretionary expenses

9)

$$\frac{DISEXP_{i,t}}{TA_{i,t-1}} = \beta_0 + \beta_1 \frac{1}{TA_{i,t-1}} + \beta_2 \frac{Sales_{i,t-1}}{TA_{i,t-1}} + \lambda_{i,t}$$

DISEXP$_{i,t}$: Discretionary expenses is equal to total distribution, sales and general (operational) expenses
$\lambda_{i,t}$: Model residuals (considered as an abnormal optional expenses criterion).

The data in each of the three above models is cross-sectional, with real earnings management calculated as follows:

$$RM_{i,t} = \varepsilon_{i,t} \times (-1) + \delta_{i,t} + \lambda_{i,t} \times (-1)$$

RM$_{i,t}$: Real Earnings Management

The remainders of the seventh and ninth models have to be multiplied by negative one, since it has an adverse effect on the earnings.

AM$_{i,t}$ **:** (accrual earnings management): Kutari et al. (2005) regression model is used for its measuring in

which the residual component of the regression equation ($\varepsilon_{i,t}$) represents discretionary accruals.

10)

$$\frac{TA_{i,t}}{Assets_{i,t-1}} = \beta_0 + \beta_1 \frac{1}{Assets_{i,t-1}} + \beta_2 \frac{(\Delta REV_{i,t} - \Delta REC_{i,t})}{Assets_{i,t-1}}$$

$$+ \beta_3 \frac{PPE_{i,t}}{Assets_{i,t-1}} + \beta_4 \frac{NI_{i,t}}{Assets_{i,t-1}} + \varepsilon_{i,t}$$

$TA_{i,t}$: Total revenue accruals, $Assets_{i,t-1}$: Total assets in the previous year, $\Delta REV_{i,t}$: Changes in sales for the current year compared to the previous year,
$\Delta REC_{i,t}$: Changes in accounts and notes receivable and for the current year compared to the previous year, $PPE_{i,t}$: gross amount of property, plant and equipment, $NI_{i,t}$: net earning, i : company, t : year, t-1 : year ago.

5.3. Control Variables

$Size_{i,t}$: (company size): The natural logarithm of total assets book value is used to measure the size of the company. Larger companies are more likely to have higher persistent earning than smaller ones. For this reason we use this variable to control firm size (Feng Lee et al., 2014; Etemadi et al., 2012; James & Moon, 2014; Rezaei & Tuo, 2017; Elsadi et al., 2017). $ROA_{i,t}$: t (Return on Assets): To measure it, the ratio of firms' pre-tax earnings to total assets is used, companies with higher return on assets have lower earning persistence (Rezai and Tuo, 2017; Alsaadi et al., 2017).

$M/B_{i,t}$: the ratio of the equity market value (the stock market price on the last trading day multiplied by the number of shares) is to its book value. In companies where the ratio of market value to book value is higher, information asymmetry and information uncertainties are more therefore they likely have a negative impact on earnings persistence (Alsaadi et al., 2017; Rezaei & Tuo, 2017). $Z_{i,t-1}$: Crisis Financial index): In order to control the potential effects of the financial crisis, the Financial Crisis Index provided by Soleimani Amiri and modified by Haghighat and Mousavi (2007) is considered as a control variable. The empirical analysis shows that the financial crisis has a negative impact on earnings quality and earnings persistence (Feng Li et al., 2014).

$$Z_{i,t-1} = -1.1 - 2.1 WCTA + 0.92 CACL + 2.13 PBTA + 0.76 TE$$

WCTA (Ratio of Working Capital to Total Assets), CACL (Ratio of Current Assets to Current Liability), PBTA (Ratio of Earnings before Interest and Taxes to Total Assets), TETA (Ratio of Equity to Total Assets), STA (Ratio of Sales) To total assets). $Horizon_{i,t}$: The natural logarithm is defined as the number of days that management predicts before the real declaration of earnings per share . By reducing the forecast period to the real earnings announcement, less ambiguity will resut in more accurate forecaste (Khoshtinat and Akbari, 2008; Haghighi et al., 2011; James & Moon, 2014; Haribar Yang, 2016). $Age_{i,t}$ (Company Age): Is obtained through natural logarithm of the number of years of establishment of the company until the present year. Longer-lived companies have higher accounting conservatism than shorter-lived ones. For this reason, we use this variable to control firm life (Moradi & Alexander, 2012; Foroughi & Abbasi, 2011). $Sale\text{-}Gr\text{-}Vol_{i,t-1}$: (Sales growth Volatility): The standard deviation of sales growth over the past 5 years (including year t-1) divided by the average sales growth over the same period. Operating cash flow fluctuations indicate earnings uncertainty and lower earning persistence. We use this control variable to control operating cash flow fluctuations (Feng Li et al., 2014; James & Moon, 2014). $CFO\text{-}Vol_{i,t}$: (Operating Cash Flow Volatility): Standard Deviation of Operating Cash Flow (divided by total early-period assets) over the past 5 years (including year t-1) divided by average operating cash flow (divided by total early-period assets) During the same period. Operating cash flow fluctuations indicate earnings uncertainty and lower earning persistence. We use this control variable to control fluctuations in operating cash flow (Feng Li et al., 2014; James & Moon, 2014).
$Op\text{-}Cycle_{i,t}$: (Operating Cycle): Calculated as follows:

$$OPCYCLE = Ln\left(\frac{360}{\frac{Net\ sales}{Average\ accounts\ receivable}} + \frac{360}{\frac{Cost\ of\ goods\ sold}{Average\ inventory}} \right)$$

The longer operating cycle indicates greater earning uncertainty and lower earning persistence. For this reason, we use this variable to control the length of the operating cycle (Feng Li et al., 2014; James & Moon, 2014).

6. Research Findings

6.1.Descriptive Statistics of Research Variables

Table 1 presents some of the concepts of descriptive statistics of variables, including mean, median, minimum observations, maximum observations, and standard deviation. For example, the results show that according to Panel A in the examined companies, the mean of earning persistence variable is 0.316 which accoeding to standard deviation (0.548) indicates that the earning persistence coefficient of the studied companies is relatively low and volatilities during the period under review.Also, the mean variable of return on assets of 0.107 and a maximum of -0.630 and a

minimum of 0.368, which is highly volatile due to the standard deviation (0.138). The results from Panel B also show that the managers of 25.1 percent of companies have overconfidence behavior.

6.2. Correlation Coefficients of Researches Variables

The results obtained from Table 2 of correlation coefficient show that at 95% confidence level, the forecast horizon, sales volatility, and earnings persistent are significant and inversely correlated. However, accruals earning management, return on assets, market value to book value ratio and financial crisis index have a direct and significant correlation with earning persistence. The results also show that management forecast earnings error, manager overconfidence, real earnings management, company size, company age, operating cash flow volatility and operating cycle are not significantly correlated with earnings persistence.

Table 1- Covariance Analysis Statistics

Std. Dev	Minimum	Maximum	Median	Mean	Observations	Variables
Panel A: Continuous Variables						
0.548	-1.089	2.837	0.342	0.316	1035	PERSISTENCE
0.418	-1.440	1.040	-0.290	-0.382	1035	MFE
0.341	-0.768	0.589	-0.260	-0.333	1035	RM
0.269	0.004	0.668	0.157	0.229	1035	AM
1.455	10.100	19.110	13.750	13.932	1035	SIZE
0.138	-0.340	0.630	0.090	0.107	1035	ROA
0.813	0.570	5.790	1.470	1.710	1035	MTB
1.911	-0.950	39.01	0.470	0.725	1035	Z
0.582	0	3.689	2.565	2.497	1035	AGE
0.305	3.850	5.642	4.934	4.927	1035	HORIZON
0.440	0.010	4.830	0.250	0.351	1035	SALE_GROW_VOL
0.072	0.010	0.500	0.070	0.094	1035	CFO_VOL
0.625	3.820	6.890	5.550	5.498	1035	OPCYCLE

Frequency Percentage	Frequency	Type of floor	Variable
Panel B: Bivariate Variables			
25.1%	260	1	MO
74.9%	775	0	

Source: Researcher Findings

Table 2- Correlation coefficients of researches variables

(١٤)	(١٣)	(١٢)	(١١)	(١٠)	(٩)	(٨)	(٧)	(٦)	(٥)	(٤)	(٣)	(٢)	(١)	متغیرها	ردیف
													1	Persistence	1
													----	prob	
												1	-0.080	MFE	2
												----	0.064	prob	
											١	0.033	0.036	MO	3
											----	0.442	0.405	prob	
										1	-0.012	-0.048	-0.056	RM	4
										----	0.783	0.271	0.198	prob	
									1	-0.028	0.073	-0.062	0.092	AM	5
									----	0.523	0.091	0.153	0.032	prob	
								1	-0.19	-0.004	-0.027	-0.009	0.081	SIZE	6
								----	0.658	0.925	0.529	0.818	0.061	prob	
							1	0.106	-0.42	-0.260	0.108	-0.024	0.356	ROA	7
							----	0.013	0.329	0.000	0.012	0.572	0.000	prob	
						1	0.392	-0.139	0.043	-0.185	0.139	0.085	0.262	MTB	8
						----	0.000	0.001	0.315	0.000	0.001	0.048	0.000	prob	
					1	0.215	0.491	-0.061	-0.029	-0.044	0.082	-0.047	0.123	Z	9
					----	0.000	0.000	0.159	0.504	0.309	0.057	0.272	0.004	prob	
				1	-0.166	-0.059	-0.047	-0.045	0.013	-0.017	-0.072	0.056	0.037	AGE	10
				----	0.000	0.169	0.279	0.301	0.756	0.702	0.094	0.198	0.394	prob	
			1	-0.082	-0.121	-0.198	-0.276	0.031	0.062	0.144	0.018	-0.037	-0.158	HORIZON	11
			----	0.059	0.005	0.000	0.000	0.472	0.154	0.000	0.672	0.398	0.000	prob	
		1	0.061	0.121	-0.052	-0.017	-0.184	0.074	0.086	0.105	-0.148	-0.079	-0.116	SALE_GROW_VOL	12
		----	0.159	0.004	0.228	0.701	0.000	0.089	0.046	0.015	0.000	0.068	0.007	prob	
	1	0.068	-0.003	-0.075	-0.035	0.063	-0.009	0.015	0.014	0.045	-0.032	0.052	0.022	CFO_VOL	13
	----	0.116	0.943	0.082	0.415	0.146	0.998	0.721	0.746	0.301	0.463	0.232	0.618	prob	
1	-0.027	-0.011	0.001	0.132	-0.119	0.041	0.056	-0.065	-0.026	-0.015	-0.41	-0.065	0.058	OPCYCLE	14
----	0.539	0.803	0.982	0.006	0.347	0.193	0.134	0.545	0.735	0.338	0.133	0.182	prob	

Source: Researcher Findings

6.3. Testing the Assumptions of the Linear Regression Model

It includes a set of assumptions that are used in examination of this fact that whether they are the best unbiased estimator of regression coefficients for linear regression models. Accordingly, the type of test and statistics used in this study and their results are described in Table 3.

Table 3 Testing the assumptions of the linear regression model

Result	The type of used statistics	Type of used test
In all four models, the homogeneity of the component error variance is rejected and generalized least squares regression is used in both models.	White Test	Error component variance constant test (residuals)
Lack of error component autocorrelation in both models	Breusch-Godfrey Test	Error component autocorrelation test (residuals)
Inflation rate of variance of independent and control variables of research models were less than 10 and were in their authorized limit.	Variance Inflation Factors	Test for non-linearity between explanatory variables

Source: Researcher Findings

6.4. Estimation Pattern Selection Test

The data of this study are of panel type. But before estimating models, it is necessary to identify the (pool or panel) estimation method. For this purpose, Chow (F-Limer) and Hausman tests were used. As shown in Table 4, the probability of F-Limer for both models is greater than 5%, so the mixed method is used to estimate these models. Using of Hausman test is not necessary.

Table 4: Estimation pattern selection test

Result	prob	Statistic	Test	Model
pool	0.7519	0.4016	F-Limer	1
pool	0.6337	0.5721	F-Limer	2
pool	0.7781	0.3653	F-Limer	3
pool	0.6611	0.5312	F-Limer	4

Source: Researcher Findings

6.5. Research Hypotheses Test

The hypothesis test results that are shown in Table 4 show that in all models, probability value F is less than 0.05, so the hypothesis is confirmed at confidence level of 95%, in other words the models are significant for hypotheses test. Also Durbin-Watson statistic value of all models is between 1.5 and 2.5, indicating a lack of autocorrelation of residuals. The results of the adjusted coefficient also indicate that approximately a few percent of the variations are dependent on the independent variables of the model (in first model is 14.9%, in the second model is 64.3%, in the third model is 57.7%, and in the fourth model is 75.2%).

The first hypothesis test results : The results of control variables show that at confidence level 95% company size, return on assets, market value to book value ratio, financial crisis index and company age have a positive and significant effect on earning persistence while, sales growth volatility And operating cycle have a significant and negative impact on earnings persistence. Overall, the results show that, given the interactive coefficient of earnings management forecast earnings error × real earnings management error (0.205) and t-student statistic and its probability value (0.000) at 95% confidence level 95% is confirmed. As a result, real earnings management has a positive and significant effect on the relationship between earnings forecast error and earnings persistence in other words the real earning

management fosters the positive relationship between earning forecasting error and earning persistence.

The second hypothesis test results: The obtained results of control variables show that at 95% confidence level, company size, return on assets, market value to book value ratio, financial crisis index, company age and operating cash flow volutility have a positive and significant effect on earning persistence. However, sales growth volatility has a significant negative effect on earning persistence. Generally, the obtained results indicate that with respect to the interactive coefficient of management forecast earnings error × accrual earnings management (0.350) and t-student statistic and its probability value (0.019), at confidence level 95% the second hypothesis is confirmed. Therefore, the accrual earning management has a positive and significant effect on the relationship between earnings forecast error and earning persistence.

The results of the third Hypothesis: The obtained results of control variables show that at confidence level 95%, company size, return on assets, market value to book value ratio, financial crisis index and company age have positive and significant effects on earning persistence, while, sales growth volatility has a negative impact on the earning persistence. Generally, the results of present study show that with respect to the interactive variable coefficient of management forecast earnings error × real earnings management (-0.368) and t-student statistic and its probability value (0.025), at confidence level 95%, the third hypothesis is confirmed. As a result, manager's overconfidence has a negative and significant effect on the relationship between earnings forecast error and earning persistence in the real earnings management.

The results of the fourth hypothesis: The obtained results of control variables show that at confidence level 95% , company size, return on assets, market value to book value ratio, financial crisis index, company age and operating cash flow volatility have a positive and significant impact on earning persistence while, sales growth volatility has a negative impact on the earning persistence. Generally the obtained results indicate that the interactive coefficient of managers' overconfidencee variable × management forecast earnings error × accrual earning management (0.504) and t-student statistic and its probability value (0.000) the fourth hypothesis is confirmed at confidence level

95%. As a result, manager's overconfidence has a positive and significant effect on the relationship between the earnings forecast error and earnings persistence in accrual earnings management.

Table 4- Model estimation test and hypotheses testing

moodel 4 (Based on accrual earning management effect)			moodel 3 (Based on real earning management effect)			moodel 2 (Based on accrual earning management effect)			moodel 1 (Based on real earning management effect)			Variables
Prob	t-Statistic	Coefficient	Prob	t-Statistic	Coefficient	Prob	t-Statistic	Coefficient	Prob	t-Statistic	Coefficient	
0.000	-4.348	-0.656	0.000	-3.924	-0.597	0.000	-4.545	-0.716	0.000	-3.956	-0.567	C
0.005	-2.776	-0.095	0.173	1.363	0.031	0.003	-2.926	-0.103	0.079	1.756	0.039	MFE
0.005	2.808	0.205	0.369	0.899	0.034	0.003	2.909	0.226	0.138	1.482	0.047	RM or AM
0.049	1.972	0.273	0.000	3.689	0.187	0.019	2.342	0.350	0.000	4.411	0.205	MFE×RM or AM
0.000	4.475	0.094	0.025	2.249	0.061							MO
0.001	3.262	0.504	0.001	-3.311	-0.368							MFE×MO×RM or AM
0.000	7.449	0.037	0.000	5.311	0.032	0.000	6.501	0.038	0.000	0.035	0.035	SIZE
0.000	10.225	0.603	0.000	8.540	0.647	0.000	10.47	0.655	0.000	0.628	0.628	ROA
0.000	11.385	0.111	0.000	7.934	0.101	0.000	9.579	0.104	0.000	0.104	0.104	MTB
0.001	3.201	0.008	0.000	5.346	0.010	0.001	3.214	0.008	0.000	0.009	0.009	Z
0.000	8.508	0.145	0.000	7.0554	0.121	0.000	8.338	0.145	0.000	0.132	0.132	AGE
0.062	-1.865	-0.039	0.854	-0.183	-0.004	0.275	-1.091	-0.024	0.556	-0.012	-0.012	HORIZON
0.000	-4.0471	-0.108	0.000	-4.184	-0.117	0.000	-3.790	-0.103	0.000	-0.101	-0.101	SALE_GROW_VOL
0.005	2.815	0.276	0.340	0.953	0.108	0.004	2.882	0.302	0.238	0.141	0.141	CFO_VOL
0.280	-1.080	-0.013	0.237	-1.183	-0.015	0.160	-1.406	-0.017	0.025	-0.026	-0.026	OPCYCLE
0.752			0.577			0.643			0.564			Adjusted R-squared
93.332			42.579			64.994			47.104			F-statistic
0.000			0.000			0.000			0.000			Prob(F-statistic)
2.159			2.173			2.187			2.117			Durbin-Watson statistic

Source: Researcher Findings

7. Discussion and Conclusion:

The present study at first has investigated the relationship between earnings forecast error and earning persistence in earnings management. Then, the effect of manager's overconfidence on the aforementioned relationship has been examined. The research results indicate that there is a significant (positive) relationship between earnings forecast error and earning persistence in earnings management. In other words, as the effect of real and accrual earnings management on the earning forecasting error increases, the accounting persistence increases. Then, the effect of overconfidence on the relationship between earning forecasting error and earning persistence in earnings management was tested, indicated a significant (different) relationship. In other words, with increasing the manager's over-confidence effect on the relationship between real earning management in the forecasting error, the earning persistence will decreases. And with increasing the manager's overconfidence effect on the relationship between accrual earning management in forecasting error, the earning persistence will increases. Therefore, the manager is ultimately responsible for the quality of earning with regard to his role as an agent or broker and by considering the power that has been vested in him, by regard to this fact that the quality of earning such as high persistence earning figures is considered as high lasting earning from the perspective of investors. Therefore; investors and analysts use more carefully from the earning that are predicted by managers. Because the earnings forecast error can be hidden from earning manipulation through earning management (real and accrual) and earnings managers are looking for opportunistic behavior to create forecast error to mislead financial analysts and investors because they don't attend to accounting earnings figure as the only deterministic index in determining the future cash flow, but for them the reported earning persistence and repeatability are important. They pay more attention to the constituent items than the final earning figure. Therefore, if the expected future earnings and earning persistence increase, the business enterprise

investment is expected to increase. Whereas the results of the research on managers' overconfidence show that manager's overconfidence has a great impact on the company and stakeholders. Given that managers are influenced by overconfidence, they exaggerate their abilities, including their predictive power, information perception, and knowledge. And on the other hand, they have more risk appetite. Therefore, given that earnings accruals are largely effective on the control of management, the manager can improve the performance of the company and enhance the persistence of future earnings by accepting the consequences (that such an actions will in some cases be in clear contradiction with accounting standards and will most likely be discovered by auditors and other financial auditors.) manipulate in earning accruals that do not have a direct effect on the Company's cash flow, so-called earnings management. In other words, managers strive to create predictable results and a growing trend by choosing permitted accounting methods, and also seek to enhance earning persistence through accrual earnings management. Because profit persistence is used as a basis for applying a shortcut method to valuation (such as coefficient of price to earnings).

Therefore, the results of this study in accrual earnings management and its significant relationship with earning persistence are in direct relation with the findings of Dechow and Ross (2005) and in inderect relation with the findings of Etemadi et al. (2012), Beniesh and Vargo (2002). Also the results of this study in the real earning management and its inverse relationship with earnings persistence are in indirect relation with the findings of Lee (2019) who in his study concluded that the amount of real earnings management has a negative relationship with earning persistence and this effect is largely created through the impact of real management on cash flows, rather than accruals. And in terms of management forecasting errors, when considering the effect of earnings management, it is in line with the findings of Chernopoulos and Siegel (2019) in that it indicates a significant relationship between forecasting error and reporting quality (earnings persistence). And the manager's overconfidence is in line with the findings of Sadat & Amri (2016) from the viewpoint of having a significant relationship with earnings quality and earnings persistence (and in part, the effect of real earnings management on forecast error is negatively

related to earnings persistence and the effect of accrul earnings management on forecast error is positivily related to earnings persistence). Predictive error is positively correlated with earnings persistence, as well as research results on manager's overconfidence in terms of being an indicator of managers' overconfidence in their ability to evaluate manager stewardship, the present study is in line with the findings of Hajihaand Gilavi (2011), Mansourfar et al. (2015) and Demirjian et al. (2013), the results of which show a significant relationship between managers ability and earning persistence that is in line with the findings of Izadinia et al (2014), At continue it is recommended that government and auditing organizations adjust some regulations, and standards for better controlling corporate management behavior in selecting multiple accounting methods and governmental regulations that could lead to misleading and offering the unrealistic earnings. Due to the non-disclosure of the earnings forecasts by Iranian capital market rules , our findings suggest that more disclosures of the earnings forecasts, leads more accurate earnings forecasts and it can improve usefulness of earnings information for investors. Meanwhile, Iranian economy has high inflation and interest rates, so under this condition ,declare of earnings forecasts may result in more efficient decision making by investors.

This paper may improve earnings forecast errors and earnings management literatures by using a sample of Iranian listed firms. We emphasize that the Iranian capital market's choices must improve the earnings forecast disclosure for investors, at least this may decrease information asymmetry and motivate foreign investors to invest. Furthermore, the results document the importance of CEO's personality in shaping of accounting information. These findings confirm that oversight of management behavior can improve earnings forecast accuracy. We believe that the analysis of earnings forecast errors by capital market may oversight management's behaviors , and will improve disclosure quality.

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