The effect of financial distress on earnings management and unpredicted net earnings in companies listed on Tehran Stock Exchange

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CHRONICLE	ABSTRACT
	Many financial crisis are related to public corporations, which are increasing. Many investors and creditors are having trouble predicting a financial crisis, especially when managing profits. Recent studies identify the factors associated with earnings management to determine the relationship between the factors and manipulated profits. In order to reduce the risk of financial crises and to help investors avoid large losses in the stock market, it is necessary to develop a model for predicting profit management. In addition, for traditional auditing technologies, it is also difficult to limit the time, human resources, costs, and the impact of abnormal behaviors on complex and large financial information. Therefore, developing a prediction model for managing profits for auditors is useful in identifying the degree of manipulation in financial statements. This paper examines the effect of corporate financial distress on unpredicted net earnings and corporate profits on accepted companies in Tehran Stock Exchange over the period 2010-2015. The models used to test the hypotheses of the research are linear regression using panel data. The results show that the coefficients of the financial distress, institutional ownership, annual sales growth, company loss, company size, the company's market share and firm fixed costs are statistically meaningful. In other words, these independent variables influence on unforeseeable profit and earnings management.

1. Introduction

Companies need sufficient resources to continue their operations, including sufficient cash to pay to lenders. If the company does not have enough resources to meet its needs, it will suffer from financial distress (Gordon, 1971; Lo. 2008; Newton, 2009). In the face of financial distress, companies manipulate accounting profit as a performance measurement item (Chan et al., 2001; Burgstahler & Eames. 2006). Under such circumstances, management manipulates accounts to manage profits, which aims to provide good news and information to the capital market, thereby preventing corporate depreciation (Campbell et al., 2015; Healy & Wahlen, 1999). With the development of companies, increased economic activity, the intensification of competition and the cycle of inflation and recession in recent decades, the number of financially helpless companies and the importance of helplessness are on the rise. The issue of bank-

ruptcy and financial distress is always a matter of concern, and investors, creditors, managers, accountants and employees are the most important groups that are heavily influenced by it (Howe & Houston, 2015).

Companies need sufficient resources to continue their operations, including sufficient cash to pay to lenders. If the company does not have enough resources to meet its needs, it will suffer from financial distress. In the face of financial distress, companies manipulate accounting profit as a performance measurement item. Under these circumstances, management manipulates accounts to manage profits, which aims to provide good news and information to the capital market, thereby preventing corporate depreciation. If the accounts are tampered with, the existential philosophy of the financial statements will be ruled out and their reliance can be eliminated (Roychowdhury, 2006).

Professional executives and publishers of accounting standards and corporate disclosure regulations claim that achieving the target profit in this way is difficult. Conforming to this view, reaching or exceeding the target profit can be a reason for using corporate profit management. In this regard, Jensen (2004) showed that managers who benefit from the thresholds are likely to be involved in profit management. He believes that profit manipulation is a widespread approach to reaching expected managers figures and expected outcomes in the capital market. He also proved that over the past two decades, about one-third of companies have been forced to refinance financial figures due to violations of accepted accounting principles.

Managers tend to report that the company reports at the end of the period, is at least as much as the forecasted previously by management or financial analysts (Jennifer Ho et al., 2012). Because the unexpected negative profits, may lead to adverse reactions for market players, resulting in undesirable evaluation of management performance and companies often use strategies that are likely to fail to reduce the realized profit (Bartov et al., 2002; Barton & Simko, 2002; Brown & Caylor, 2005; Brown & Pinello, 2007). The literature of accounting research has shown that companies in various ways may avoid unexpected negative profits (Howe & Houston, 2015). One of these strategies is the use of optional accruals to manipulate the incremental profit that is known as earnings management based on accruals. The second approach refers to the management of real profits, on the basis of which managers take real economic measures to achieve the desired level of profit. These measures could include, for example, a reduction in avoidable expenditures in the area of research and development, advertising and maintenance, as well as a reduction in the cost of finished goods sold through increased production in the current period. One of the other ways of realizing predicted profit is to manage market expectations and investors by providing their predictions at a lower level (Howe & Houston, 2015). Brown and Pinello (2007) showed that in the process of realizing the expected profit, the method of incremental profit management through optional accruals and the method of decreasing profit prediction method are used, alternately.

Boonlert-U-Thai et al. (2006) explored the impacts of investor-protection on reported earnings quality evaluated based on four accounting-based earnings attributes. They examined the hypothesis that favorable values of each earnings attribute may exist in countries whose institutional characteristics provide relatively strong investor-protection and reported mixed results. Earnings smoothness in their survey was less prevalent in strong investor-protection countries but both accruals quality and earnings predictability were better in countries whose institutional characteristics were weak. They found no association between investor-protection and earnings persistence. Clarkson et al. (1992) investigated the role played by direct disclosure in the valuation of initial public offerings (IPOs) by studying why some companies making an initial public offering in Canada provide an earnings forecast in the offering prospectus and others do not. Firth and Liau-Tan (1997) reported the results of empirical investigations of the theoretical models based on the data from Singapore. They reported some support for the retained ownership signal and, further, the entrepreneurs' shareholdings mitigate the adverse valuation impact of risk. Francis et al. (2004) tested the relationship between the cost of equity capital and seven attributes of earnings including accrual quality, persistence, predictability, smoothness, value relevance, timeliness, and conservatism.

They characterized the first four attributes as accounting-based since they were basically measured according to accounting information only. Dechow (1994) examined the role of accounting accruals by looking into accounting earnings and cash flows as measures of firm performance. Dechow et al. (1995) proposed a model for detecting earnings management. Dechow and Dichev (2002) investigated the quality of accruals and earnings by looking into the role of accrual estimation errors.

Habib (2004) studied the effect of earnings management on value relevance of accounting information in the context of Japan. Their results based on 5,318 consolidated firm-year observations from 1992 to 1999 indicated that, both earnings management measures and aggregate earnings management measures were negatively associated with the combined value relevance of book values of equity and earnings and value relevance of earnings. Klein (2002) made an investigation to find out whether audit committee and board characteristics were associated with earnings management by the firm and detected a negative association between audit committee independence and abnormal accruals. They also found a negative relationship between board independence and abnormal accruals. Li et al. (2011) examined the relationship between earnings management and earnings quality for the Chinese companies listed in the Shanghai and Shenzhen stock exchanges over the period 2003-2007. They reported that earnings management could perform better than earnings quality in forecasting future profitability. Moreover, they also determined that the earnings quality was deteriorated over the sample period. Livnat and Mendenhall (2006) demonstrated that the drift was substantially larger when defining the earnings surprise using analysts' forecasts and actual earnings. Matsumoto (2002) examined whether companies manage earnings upward or guide analysts' forecasts downward to prevent missing expectations at the earnings announcement and reported that both mechanisms played an essential role in avoiding negative earnings surprises.

2. The proposed model

This paper examines the effect of corporate financial distress on unpredicted net earnings and corporate profits on accepted companies in Tehran Stock Exchange over the period 2010-2015. The models used to test the hypotheses of the research are linear regression of multivariate using a static panel model. The proposed study uses the following regression models,

$$DA_{it} = \beta_0 + \gamma_0 OScore_{i,t} + \gamma_1 INST_{i,t} + \gamma_2 LTG_{i,t} + \gamma_3 LOSS_{Di,t} + \gamma_4 SIZE_{Ei,t} + \gamma_5 MS_{Di,t} + \gamma_6 FC_{Ei,t} + \varepsilon_{i,t}, \tag{1}$$

$$CHFOR_{it} = \beta_0 + \gamma_0 OScore_{i,t} + \gamma_1 INST_{i,t} + \gamma_2 LTG_{i,t} + \gamma_3 LOSS_{Di,t} + \gamma_4 SIZE_{Ei,t} + \gamma_5 MS_{Di,t} + \gamma_6 FC_{Ei,t} + \varepsilon_{i,t}, \tag{2}$$

where financial distress (*O-score*), institutional ownership (*INST*), annual sales growth (*LTG*), company loss (*LOSS*), company size (*SIZE*), the company's market share (*MS*) and firm fixed costs (*FC*) are independent variables. Also *DA* represents the earnings management used in the aggregate of the company's assets at the beginning of each period, and if non-contingent accruals are deducted from the total amount of accruals, accruals will be earned voluntarily. Moreover, changed forecasted profit (*CHFOR*) is the other dependent variable used. We first performed the root-one analysis on the data and Table 1 shows the results of our survey. As we can observe, all variables are stationary.

Table 1
The summary of the statistics

Variable	Im, Pesaran and Shin W-stat		
	Statistics	Sig.	
DA	–6.36494	0.0000	I(0)
CHFOR	–2.1E+15	0.0000	I(0)
O-score	–2.3E+14	0.0000	I(0)
INST	–10.1159	0.0000	I(0)
LTG	–22.8772	0.0000	I(0)
LOSS	–6.6E+14	0.0000	I(0)
SIZE	–8.80545	0.0000	I(0)
MS	–31.7695	0.0000	I(0)
FC	–3.50614	0.0002	I(0)

In the case of discovering the co-integration relationship between two variables, we can obtain performance estimates from the model factors. In this research, an augmented Dickey–Fuller test (ADF) is used to examine the existence of a long-term relationship between the variables. The results are presented in Table 2.

Table 2
The results of co-integration for the first and the second model

Model		t-Statistic	Prob
First model given in Eq. (1)	ADF	–4.774547	0.0000
Second model given in Eq. (2)	ADF	–18.03573	0.0000

As can be seen, based on the results of the model, the co-integration or the existence of a long-term equilibrium relationship between the variables of the study model at the 95% probability level is acceptable. To determine the method of applying combined data and homogeneous diagnosis or their heterogeneity, Chow test and F Limmer statistics were used and Table 3 summarizes the results of the survey.

Table 3
The results of Chow and F statistics

Model	Test	Statistics	Sig.
First model	Hausman test	3.458239	0.8396
	F	8.098360	0.0000
Second model	Hausman test	5.258698	0.6284
	F	1.344291	0.0055

Based on the results of the F test, with a 99% probability, we cannot accept the zero hypothesis that the individual effects are uniform. Therefore, the results of the least squares method are skewed and should be considered in order to take into account the individual effects caused by heterogeneity of the variables. Thus, it can be said that fixed and random effects methods that have high explanatory power and individual effects give more reliable results and are more efficient and appropriate than the previous method. However, Hausman's test is required to select the appropriate model between two fixed and random effects models. The results of the Hausman test for both models confirm the random effects model and Table 4 presents the results for the first model.

Table 4
The summary of the random effects on different variables for the first model

Variables	Random effect			
	Coef.	Std. Err.	t	P>|t|
Intercept	5.423940	0.140635	38.56752	0.0000
O-score	–0.179591	0.004050	–44.34085	0.0000
INST	0.757599	0.062170	12.18590	0.0000
LTG	0.647301	0.082707	7.826456	0.0000
LOSS	–0.779418	0.026361	–29.56741	0.0000
SIZE	0.146263	0.076123	1.921416	0.0554
MS	0.551942	0.091993	5.999822	0.0000
FC	–0.160975	0.046698	–3.447155	0.0006

$R^2 = 0.8286$ F-value = 5.65 (0.000) Durbin-Watson = 1.63

As we can observe from the results of Table 4, all independent variables, except the size, are statistically meaningful when the level of significance is five percent. The financial distressed companies tend to adopt different income management practices before and after determining the company as a non-financial firm in order to prevent the continued non-performing financial situation and the risk of removal from the Tehran Stock Exchange. Companies need sufficient resources to continue their operations, including sufficient cash to pay to lenders. If the company does not have enough resources to meet its

needs, it will suffer from financial distress. In the face of financial distress, companies manipulate accounting profit as a performance measurement item. Companies are always looking for profitability and gaining more wealth, but some companies are not able to continue to operate and fulfill their obligations until a foreseeable future, which can be seen by observing their financial statements and the accounts of auditors and inspectors. Corporate investment decisions require managers who are expected to anticipate future cash flows from potential investments. Although these projections are critical components of investment success, they are clearly not visible to external stakeholders.

Managers of helpless corporations are more concerned about losing their jobs than managers of non-traditional companies, hence the negative relationship between financial distress and profit management is justifiable. They are more willing to participate in revenue management, which allows them to meet expectations. Table 5 presents the results of the testing the model for the second model.

Table 5
The summary of the random effects on different variables for the first model

Variables	Random effect			
	Coef.	Std. Err.	t	P>|t|
Intercept	0.293365	0.049282	5.952752	0.0000
O-score	-0.261487	0.006249	-41.84196	0.0000
INST	0.501981	0.075928	6.611273	0.0000
LTG	0.209970	0.076388	2.748740	0.0062
LOSS	-0.060785	0.005606	-10.84305	0.0000
SIZE	0.416240	0.099889	4.167012	0.0000
MS	0.102959	0.034632	2.972957	0.0035
FC	-0.742049	0.030810	-24.08449	0.0000

R^2 = 0.8016 F-value = 6.747 (0.0007) Durbin-Watson = 2.05

As we can observe from the results of Table 4, all independent variables are statistically meaningful when the level of significance is five percent. Therefore, there is a meaningful relationship between the independent variables and change in forecasted profit as dependent variable.

5. Conclusion

According to the results of estimating the first and the second models, we can conclude that firms with financial distress are more involved in managing earnings than companies that are not distressed. Moreover, the unpredictable positive returns (big positive adjustments) are far less than those that are not affected by unforeseen profits for companies with financial distress. In addition, unpredictable negative returns adjustments are far more than companies with financially distressed than others. The reaction of investors in financially distressed companies to the lack of realization of management forecast is more than the response of other firms. Similarly, the reaction of investors in companies without financial distress to the lack of realization of management forecast is less than the response of other firms.

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