

Earnings management and the effect of earnings quality in relation to bankruptcy level (Firms listed at the tehran stock exchange)

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Abstract

This paper investigates the relationship between earnings management and quality of earnings for the bankrupt and non-bankrupt firms listed in the Tehran Stock Exchange from 2007 to 2012. The earnings quality is measured by four separate accounting-based earnings attributes: accruals quality, earnings persistence, earnings predictability; earnings and is also examined by testing the relationship between discretionary accruals as a measure of earnings management, being opportunistic or efficient earnings management. Also, the future profitability was measured by each of the three variables, future change of earnings, future cash flow from operation, and future non-discretionary earnings. The results of estimating unbalanced panel data technique for 55 firms subjected to bankruptcy of Altman's model, and 198 non-bankrupt firms, shows that the bankrupt firms tend to use opportunistic earnings management, and the non-bankrupt choose efficient earnings management. Moreover, the results show that earnings management performs better than earnings quality in predicting future profitability. Meanwhile, the non-discretionary earnings more effectively than future change of earnings and future cash flow from operation for providing a picture of the future profitability of the firm.

Keywords

Bankruptcy level, Earning quality, Earnings management.

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Introduction

Earnings management is a global phenomenon in financial reporting or reporting of information related to profits. The purpose of earnings management is to demonstrate reasonable earnings quality that meets either the shareholders' expectations, or the requirement of obtaining relevant authorization from regulators.

It has much in common with earnings quality (represented by accruals quality, earnings persistence, earnings predictability, and earnings smoothness in our study) in the financial health assessment of a company (Lo, 2008, pp.121–151). For instance, highly managed earnings can yield low-quality earnings (Lo, 2008, pp.121–151), as the “artificial” information may lead to an incorrect decision. However, the absence of earnings management (less earnings management) is insufficient to guarantee high-quality earnings, because other factors (such as capital market and management compensation) contribute to the earnings quality (Lo, 2008, pp.121–151). If the effect of other factors is constant, a closer relationship can be drawn between earnings management and earnings quality (Li *et al.*, 2011, pp.366–391).

Firms during their operational life encounter many ups and downs, and some of them have been successful because of their strong performance as firms, whereas, some firms have failed due to their poor performance.

One of the methods of earnings management by some managers is inflating of estimations. Prior researches (such as Rosner, 2003, pp.361–408), literature and anecdotal evidence (most recently provided by allegations relative to Enron, Global Crossing, and WorldCom) suggest that failing firms (defined here as pre-bankruptcy firms) may be motivated to engage in financial reporting to conceal their distress. Also, it has been indicated that because of earnings management, the earnings quality of bankrupt firms is lower than in healthy firms (Garcia Lara *et al.*, 2009, pp.119–138, Li *et al.*, 2011, pp.366–391). When performance is desirable, management may use very conservative accounting techniques and estimates and increase the value of the firm through (Li *et al.*, 2011, pp.366–391).

Many studies demonstrate that earnings management includes both accrual-based and real activity earnings management (Schipper, 1989,

pp.97–111; Healy and Wahlen, 1999, pp.365–383). Accrual-based earnings management (manipulation of earnings through exploitation of accounting discretion) is easy to detect. Despite this earnings management that it is common over many years and everywhere, but little has been contested, measure of earnings quality is necessary to better understand the situation of the company and financial decisions. Increasing attention to the quality of reported earnings has important the earnings management study.

Regarding earnings management and earnings quality, a variety of studies have been conducted, and each of these studies addressed the issue of the specific dimension, but several unexplored dimensions still remain. Passing of earnings management from the perspective of bankruptcy, and close association with earnings quality, contributes to the literature in the following different ways.

This research contributes to the literature in the following three ways. First, it is the first study to classify the listed Iranian firms through Altman's bankruptcy model along with two classifications: bankrupt and non-bankrupt. Second, it extends the existing literature, such as Francis *et al.* (2004, 2005, 2007, 2008), Boonlert-U-Thai *et al.* (2006), Subramanyam, (1996), Siregar and Utama (2008) among others, by investigating the type of earnings management and the effect of earnings quality in listed Iranian firms. Finally, this research can be a reference to assist standard setters, security analysts, regulators, and other users of accounting information. In addition, it should not lose sight of expected operational application. For example, if in case of a reduction in earnings quality, the relevant authorities can investigate the cause, and improve earnings quality with the development of accounting standards and regulatory systems in order for the users to be safeguarded against losses resulting from poor earnings quality.

The remainder of the paper is organized as follows. In Section 2, we review the theoretical and empirical literature. Section 3 deals with the hypotheses development and research model. Section 4 shows the design research, statistical sample, and data and classification of observations through Altman's bankruptcy model. It introduces the

variables, explains the measures of earning quality and discretionary accruals (proxy of earnings management). Section 5 presents descriptive statistics and empirical tests of hypotheses. Finally, in Section 6, the conclusions are made.

Theoretical framework

In the theoretical literature, because of the extent of earnings management and earnings quality, the accepted definition of these two concepts have not been presented clearly. In order to provide an operational definition of earnings management and earnings quality fit with materials presented in the present study was to examine the most important definitions of these two subjects.

Healy and Wahlen (1999) offered the following definition of earnings management:

"Earnings 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."

Schipper (1989): "... a purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain (as opposed to, say, merely facilitating the neutrals operation of the process)...."

The management manages the earnings to profit-motivated, and implies earnings management reduces the information content of accounting items.

On the other hand, some researchers have informative look-out earnings management, and these are considered as a way to raise awareness of favorable financial conditions to shareholders, that it is done by management involvement in the process of income determination (Subramanyam, 1996, pp.249–281). So it should be expected that earnings management not only does not reduce the income information content, but it also helps investors in the better interpretation of reported items.

Accordingly, earnings management can be divided into two

separate and contrasting classifications (Subramanyam, 1996, pp.249–281):

- Efficient earnings management. The aims of increasing the quality of information to help investors better understand the power of profitability and financial condition of the company.
- Opportunistic earnings management. Managers apply it to maximize their own interests and not the interests of the company and the investors.

Concept of earnings quality is associated with earnings management, but it does not exactly mean this. Francis *et al.* (2004) characterize the seven attributes of earnings as either "accounting-based" or "market-based" to capture the differences in underlying assumptions about the function of earnings, which are, in turn, reflected in the way the attributes are measured. They refer to accrual quality, persistence, predictability and smoothness as "accounting-based". These take cash or earnings itself as the reference construct, and consequently, are measured using accounting information only (Francis *et al.*, 2004, pp. 967–1010). They refer to value relevance, timeliness and conservatism as "market based". These attributes take returns or prices as the reference construct; consequently, measures of these attributes are based on the estimated relation between accounting earnings and market prices or returns. Our measurement of earnings attributes follows prior research. Thus, our earnings quality is measured by four separate accounting-based earnings attributes.

Summary of prior research on earnings management and earnings quality. There are two types of earnings management: efficient earnings management (i.e., to improve earnings informativeness in communicating private information), and opportunistic earnings management (i.e., management reports earnings opportunistically to maximize his/her utility) (Scott, 2000).

Firms can use multiple earnings management strategies, that is, accrual-based and real earnings management, to manage their earnings (e.g., Badertscher, 2011; Cohen and Zarowin, 2010; Dechow, Ge and Schrand, 2010; Chi *et al.*, 2011; Kothari *et al.*, 2012; Wongsunwai, 2012; Zang, 2012; Braam *et al.*, 2015).

International comparative studies on earnings management have proved to be very important and fruitful (Wysocki, 2011; Gordon *et al.*, 2013). Several researchers have found evidence which suggests that the opportunistic perspective is a common motivation for earnings management. Gaver *et al.* (1995), and Holthausen *et al.* (1995), find evidence that accruals management focuses on the manipulation of bonus income. Balsam *et al.* (2002) examine a negative relationship between unexpected discretionary accruals, and stock returns around the date of announcement of earnings, and indicate that the market views discretionary accruals as opportunistic.

By contrast, other studies find evidence that earnings management is efficient, rather than opportunistic. Subramanyam (1996), Gul *et al.* (2000), Krishnan (2003), Siregar and Utama (2008), and Kothari *et al.* (2005), conclude that the behavior of discretionary accruals is consistent with efficient earnings management, as discretionary accruals have a significant positive relationship with future profitability. Siregar and Utama (2008) find evidence that the type of earnings management selected by the Jakarta Stock Exchange-listed firms tends towards efficient earnings management.

Francis *et al.* (2004) improve the literature on earnings quality by examining the relation between the cost of equity capital and seven attributes of earnings: accruals quality, persistence, predictability, smoothness, value relevance, timeliness and conservatism. Their empirical models predict a positive association between quality of information quality and cost of equity. They find that firms with the least favorable values of each attribute of earnings generally experience larger cost of equity than firms with the most favorable values of each attribute of earnings.

Francis *et al.* (2005) investigate the relation among the accruals quality as an earnings attribute, the cost of debt and cost of equity. Measuring accruals quality as the standard deviation of residuals from regressions, relating current accruals to cash flows, they find that poorer accruals quality is associated with larger costs of debt and cost of equity.

Boonlert-U-Thai *et al.* (2006) explore the effects of investor

protection on reported earnings quality, where the earnings quality is measured by four earning attributes (accruals quality, earnings persistence, earnings predictability, and earnings smoothness), finding that favorable values of each attribute of earnings occur in countries whose institutional characteristics provide relatively strong investor protection.

Francis *et al.* (2007) investigate the relations among voluntary disclosure, earnings quality, and cost of capital, and find that firms with favorable earnings attributes have more expansive voluntary disclosures than firms with poor earnings attributes.

Francis *et al.* (2008) also examine the link between the reputation of the Chief Executive Officer (CEO) and earnings attributes quality by considering a managerial human capital dimension (CEO reputation as proxy) in explaining the earnings quality (earnings attributes as proxy) of a firm's reporting decisions.

Garcia Lara *et al.* (2009) investigated earnings quality in ex-post failed firms. They found that these two types of firms lead to reduced earnings reliability. They showed that manipulation of accruals is more pronounced in ex-post bankrupt firms with low ex-ante probability of failure, and that ex-post bankrupt firms with high ex-ante failure probability, having likely exhausted the opportunities for manipulation of accruals, manipulate real operations more aggressively.

Li *et al.* (2011) examined the link between earnings and earnings for the Chinese firms listed in the Shanghai and Shenzhen stock exchanges from 2003 to 2007. They find that the stressed/ bankrupt firms prefer opportunistic earnings management; the non-stressed/non-bankrupt firms are more likely to choose more efficient earnings management than the stressed/ non-bankrupt firms. They also demonstrated that earnings management performs better than earnings quality in predicting future profitability, but this has deteriorated over the sample period.

Another recent study by Dechow *et al.* (2012) recommends incorporating accrual reversals in tests of earnings management. Campa and Camach (2013) investigate the techniques that Spanish

non-listed bankrupt firms employ to manage earnings, and when they start using earnings manipulation practices. They find that bankrupt firms manage earnings upwards more than their healthy pairs. They achieve that by employing both accrual and real activity manipulation.

Adut *et al.* (2013) argue that firms with predictive (opportunistic) earnings management, in which discretionary accruals do (do not) relate to future cash flows, and provide a more (less) ideal setting for the use of compensation as incentives. Overall, their results suggest that firms provide more incentives if their earnings are also more informative because of discretionary accruals.

Enomoto, Kimura & Yamaguchi (2013) show that managers in countries with stronger investor protection tend to engage in real earnings management instead of accrual-based earnings management. Kim and Sohn (2013) find that the cost of capital is positively associated with the extent of earnings management through real manipulation of activities after controlling for the effect of the accrual-based earnings management.

Yamaguchi (2014) has reported that firms in more competitive industries engage in greater income-increasing earnings management to achieve industry-average profitability. The evidence in this paper is important because it suggests that managers engage in earnings management with an awareness of the profitability of competing with firms in the same industry.

Shi *et al.* (2015) show that geographically dispersed firms has lower accrual-based management but higher real earnings management, when compared with geographically concentrated firms.

Hypotheses development

Earnings management is efficient if managers use their discretion to communicate private information about the firm's profitability which is yet to be reflected in the historical cost-based earnings, while it is opportunistic if managers use their discretion to maximize their utility, thereby garbling earnings (Subramanyam, 1996, pp.249–281). Therefore, if earnings management is efficient, a significant positive relationship between discretionary accruals and future profitability

will also be efficient, and if opportunistic, there will be a negligible or negative relationship between discretionary accruals with future profitability.

One of the methods of earnings management that applies to financially distressed firms to hide poor performance by the manager (in order to absorb opportunity and delay bankruptcy) and maximizing their interests, is inflation of estimates which is reduced with manipulating accounting earnings, and earnings quality. But managers in firms that are subject to the financial health and performance is good too, very conservative estimates of management accounting techniques may be used in order to increase quality and better convey information to the public, and understand the power of profit, that in the case the earnings management would be useful.

In summary, the four hypotheses lead to different predictions between the earnings management and earnings quality:

1. Earnings quality based on accruals quality indicates that earnings management is opportunistic for bankrupt firms and efficient for non-bankrupt firms.
2. Earnings quality based on persistence indicates that earnings management is opportunistic for bankrupt firms and efficient for non-bankrupt firms.
3. Earnings quality based on predictability indicates that earnings management is opportunistic for bankrupt firms and efficient for non-bankrupt firms.
4. Earnings quality based on smoothness indicates that earnings management is opportunistic for bankrupt firms and efficient non-bankrupt firms.

Research model

Francis *et al.* (2004) examine the relation between earnings attributes and investors' decisions of resource allocation, using the cost of equity capital as a summary indicator of those decisions. Siregar and Utama (2008) investigate whether firms listed on the Jakarta Stock Exchange conduct efficient or opportunistic earnings management by examining discretionary accruals' ability to signal future profitability

after controlling for current levels of operating cash flow and non-discretionary accruals. Li *et al.* (2011), by employing the measure based on these two studies examined earnings management and the effect of earnings quality in relation to stress level and bankruptcy. Therefore, following Li *et al.*, (2011, pp.366–391) and considering the various proxies of earnings quality, research models are formulated as follows:

$$X_{j,t+1} = \beta_0 + \beta_1 DAC_{j,t} + \beta_2 NDAC_{j,t} + \beta_3 CFO_{j,t} + \beta_4 Attribute_{j,t}^k + \varepsilon \quad (1)$$

where

$X_{j,t+1}$: Future profitability, measured by each of the following variables.

$DAC_{j,t}$: Discretionary accruals;

$NDAC_{j,t}$: Nondiscretionary accruals;

$CFO_{j,t}$: Cash flows from operating activities; and

$Attribute_{j,t}^k$: The firm j 's value of the k th earnings attribute in year t , $k = \{\text{Accruals Quality, Persistence, Predictability, Smoothness}\}$

DAC is the variable of interest, and if the type of earnings management is efficient, the coefficient (β_1) will be positive. If the earnings management is opportunistic, the DAC coefficient (β_1) will be either zero or negative (Siregar and Utama, 2008).

Sample and Data

The time domain of the research period is 2007–2011 (5 years). Since the computation of accruals quality and future profitability of the firms require prior and subsequent years' data, the analysis period is extended from 2004 to 2012 (9 years). The data consists of the listed firms in the Tehran Stock Exchange. Sampling conditions are:

- Fiscal year of selected firms must accord with solar year and should not change during the study period.
- Financial intermediaries (for example, investment firms, mutual funds, etc.) are excluded.
- Data of firms should be available for the period 2004–2012.

Data classification

We use the Altman's model to split the sample observation of the firm-year into bankrupt and non-bankrupt categories. The model is a predictive model which combined five different financial ratios to determine the likelihood of bankruptcy amongst firms.

$$Z' = 0.717 X_1 + 0.847 X_2 + 3.107 X_3 + 0.42 X_4 + 0.998 X_5 \quad (2)$$

when

X_1 = working capital/total assets;

X_2 = retained earnings/total assets;

X_3 = EBIT/total assets,

X_4 = book value of equity/total liabilities and

X_5 = sales revenue/total assets.

Rating Z under the 1/33 is represented in bankruptcy situations. The pattern for each of the studied sample firms during the research period was calculated and finally, 55 companies were classified as bankrupt and 198 firms were classified as non-bankrupt.

Variable measurement

Dependent variable

Future profitability is variable dependent with each of the following variables measured as:

ΔNI_{t+1} : One-year-ahead change in earnings ($EARN_{t+1} - EARN_t$)

CFO_{t+1} : One-year-ahead cash flows from operations

$NDNI_{t+1}$: One-year-ahead nondiscretionary net income

Net income unlike One-year-ahead cash flows from operations (CFO_{t+1}) and nondiscretionary net income ($NDNI_{t+1}$) have discretionary accruals within their income. So, if between the One-year-ahead net income (ΔNI_{t+1}) and current accruals is a significant positive relationship, one of the reasons for it can be the creating of new discretionary accruals in earnings management by administrators, and this is contrary to the efficient earning management. (Siregar and Utama, 2008, pp.1–27). CFO_{t+1} and $NDNI_{t+1}$ have lack of discretionary accruals, as a result they do not have inherent problems

of earning (Siregar and Utama, 2008. pp.1–27; Li *et al.*, 2011, pp.366–391). Evidence of the above indicates from the three criteria future profitability (ΔNI_{t+1} , CFO_{t+1} , $NDNI_{t+1}$). One-year-ahead cash flows from operations and nondiscretionary net income is more reliable as power for future profitability in comparison with One-year-ahead change in earnings, due to the lack of discretionary accruals. Therefore, in this study, the final conclusion to approve or reject research hypotheses will be based on two criteria.

Earnings Quality

Accrual Quality: Our measure of accrual quality is based on Dechow and Dichev's (2002) model relating current accruals to lagged, current and future cash flows from operations:

$$TAC_{j,t} = \beta_0 + \beta_1 CFO_{j,t-1} + \beta_2 CFO_{j,t} + \beta_3 CFO_{j,t+1} + \varepsilon \quad (3)$$

where

$TAC_{j,t}$: Firm J's total current accruals in t

$CFO_{j,t}$: Firm J's cash flow from operations in year t;

All the above variables are standardized by beginning with total assets. For each firm-year, we estimate Equation (1) using rolling three-year windows and measure the accruals quality (AQ) as the variable of interest, $AQ = \hat{\sigma}(\varepsilon)$ is equal to the standard deviation of estimated residuals.

Large (small) values of AQ correspond to lower (higher) accruals quality and lower (higher) earnings quality.

Earnings persistence: Kormendi and Lipe (1987) regress current earnings on last year's earnings to estimate the slope-coefficient estimates of earnings persistence. This study employs the measure in Kormendi and Lipe (1987) with the following equation:

$$EARN_{j,t} = \beta_0 + \delta_{1j} EARN_{j,t-1} + \varepsilon \quad (4)$$

where

- $EARN_{j,t}$: Firm J's net income before extraordinary items in year t; and
- $EARN_{j,t-1}$: Firm J's net income before extraordinary items in year t-1.

For each firm-year, we estimate Equation (2) using rolling three-year windows. The measure capturing earnings persistence is based on the slope-coefficient estimate. Values of $\delta_{1,j}$ close to one (or greater than one) indicate highly persistent earnings, while values close to zero imply highly transitory earnings. Following Francis *et al.* (2004), in order to conform this variable to our ordering of attribute, we use the negative autoregressive parameter, $Persist_j = -\delta_{1,j}$, so that larger(smaller) values of *Persist* correspond to less(more) persistence earnings. Persistence earnings are viewed as higher quality, while transitory earnings are viewed as lower quality.

Earnings predictability: Basing on Lip (1990), Francis *et al.* (2004) measure earnings predictability using the square root of the estimated error-variance from the earnings-persistence equation. In this study, earnings predictability is calculated using the square root of the error variance from the equation of earnings persistence:

$$PRED_{j,t} = \sqrt{\hat{\sigma}^2(\varepsilon)} \quad (5)$$

where

$\hat{\sigma}^2(\varepsilon)$: Estimated error variance of firm J in year t, calculated from Equation (4)

Our measure of earnings predictability is also derived from the firm- and year-specific models. Large (small) values of PRED imply less(more) predictable earnings. More predictable earnings are viewed as higher quality, while less predictable earnings are viewed as lower quality.

Earnings smoothness. Following Francis *et al.* (2004), we capture smoothness as the ratio of firm J's standard deviation of net income before extraordinary items divided by beginning total assets, to its standard deviation of cash flows from operations divided by beginning with total assets:

$$Smooth = \frac{\sigma(EARN_{j,t}/TA_{j,t-1})}{\sigma(CFO_{j,t}/TA_{j,t-1})} \quad (6)$$

Standard deviations are calculated over rolling three-year windows. Thus, large (small) values of Smooth indicate less (more) earnings smoothness and low (high) earnings quality.

Earnings management

Discretionary accruals (DAC) are defined as the residuals, and nondiscretionary accruals (NDAC) are fitted values, both from Kothari *et al.*'s model (2005).

Controls variable

Subramanyam (1996) demonstrates that discretionary accruals have the ability to signal levels of future profitability with a positive relation, after controlling for current levels of operating cash flows and non-discretionary accruals. Therefore, research control variables are the current operating cash flows and nondiscretionary accruals.

Empirical results and Test the hypothesis

The first hypothesis test and results

The first hypothesis test results are presented in Table 1.

Table 1. Regression on future profitability with Accrual Quality

$$X_{t+1} = \beta_0 + \beta_1 \text{DAC}_{j,t} + \beta_2 \text{NDAC}_{j,t} + \beta_3 \text{CFO}_{j,t} + \beta_4 \text{AQ}_{j,t} + \varepsilon_{j,t}$$

	variable	$\Delta \text{NI}_{j,t+1}$		$\text{CFO}_{j,t+1}$		$\text{NDNI}_{j,t+1}$		
		Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.	
Bankrupt	Intercept	-46432.6	0.5223	73700.09	0.0027*	13603.01	0.833	
	DAC	-0.9997	0.0000*	-0.1949	0.0225**	-2.1205	0.0000*	
	NDAC	0.2685	0.0000*	-0.0371	0.0001*	-0.011	0.9618	
	CFO	0.0808	0.2889	-0.0912	0.0003*	-0.2223	0.0184**	
	AQ	430036.2	0.3633	140860.9	0.5000	214500.6	0.6114	
	F-statistic	37.509*		3.842*		12.352*		
	D.W. stat	1.542		2.982		2.562		
	Adjusted R-squared	0.500		0.530		0.765		
	Non-Bankrupt	Intercept	-25945.4	0.3209	165931	0.0000*	363458.8	0.0000*
		DAC	-0.7814	0.0000*	0.1971	0.0205**	0.4111	0.0162**
NDAC		-0.1491	0.0000*	-0.01791	0.4558	0.1396	0.0039*	
CFO		0.1198	0.0000*	0.08815	0.0001*	0.0966	0.0283**	
AQ		132226	0.467	72156.27	0.6951	14186.21	0.9694	
F-statistic		32.1998*		11.6408*		21.1843*		
D.W. stat		1.956		2.0886		2.200		
Adjusted R-squared		0.1245		0.7091		0.8222		

*Statistical significance at the 0.01 level

**Statistical significance at the 0.05 level

The first column of the table, the regression results, shows with respect to the dependent variable $\Delta NI_{j,t+1}$, the second column $CFO_{j,t+1}$, and the third column, $NDNI_{j,t+1}$. The significance of the entire regression, according to the calculated value for F test, we can conclude that the null hypothesis cannot be confirmed at a significance level of 0.01 and the regression models are significant.

The comparison of adjusted R-squared of regression coefficient's first hypothesis was that the only difference in the dependent variables, indicates that the dependent variable $NDNI_{j,t+1}$ is the coefficient of the highest value. After that, $CFO_{j,t+1}$, and finally $\Delta NI_{j,t+1}$ is ranked in the end.

According to the coefficients calculated for each of the explanatory variables and their significance can be concluded when the dependent variable is $\Delta NI(t+1)$, β_1 for bankrupt firms and non-bankrupt is significant negative and When the dependent variable CFO_{t+1} and $NDNI_{t+1}$ is the differential DAC (β_1) for non-bankrupt firms, significant positive and negative and significant for the company is insolvent.

We examined the NDAC coefficient (β_2). Considering $NDNI_{t+1}$, the results showed that a coefficient is significant positive and nonsignificant negative for non-bankrupt firms. According to CFO_{t+1} , the results of the table indicate a significant positive coefficient for non-bankrupt and negative and significant for bankrupt firms.

The results are consistent with expectations, and this is referred to as non-bankrupt firms with higher accruals quality, and it is highly likely they will choose efficient earnings management, and it is likely that failed firms will prevent the removal of management earnings in an opportunistic way. So the first hypothesis is confirmed by research. In addition, the findings suggest that all three measures of the dependent variable and both bankrupt and nonbankrupt accruals, quality have no positive or negative correlation with future profitability. In other words, the prediction of future profitability, discretionary accruals (representing earnings management) acted better than earnings quality based on the accruals quality.

The second hypothesis test and results

The second hypothesis test results are presented in Table 2.

Table 2. Regression on future profitability with Earnings Persistence

$$X_{t+1} = \beta_0 + \beta_1 \text{DAC}_{j,t} + \beta_2 \text{NDAC}_{j,t} + \beta_3 \text{CFO}_{j,t} + \beta_4 \text{AQ}_{j,t} + \varepsilon_{j,t}$$

variable	$\Delta \text{NI}_{j,t+1}$		$\text{CFO}_{j,t+1}$		$\text{NDNI}_{j,t+1}$	
	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
Intercept	-3840.700	0.941	88365.510	0.000*	34950.200	0.453
DAC	-1.003	0.000*	-0.194	0.024**	-2.119	0.000*
NDAC	0.265	0.000*	-0.037	0.000*	0.020	0.932
CFO	0.076	0.317	-0.092	0.000*	0.224	0.018**
Persist	-27034.300	0.649	-2687.200	0.831	-11820.900	0.823
F-statistic	37.190*		3.817*		120.122*	
D.W. stat	1.530		2.986		2.560	
Adjusted R-squared	0.497		0.528		0.765	
variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
Intercept	-8281.950	0.649	180392.000	0.000*	371093.000	0.000*
DAC	-0.780	0.000*	0.197	0.020**	0.411	0.016**
NDAC	-0.149	0.000*	-0.019	0.428	0.139	0.004*
CFO	0.118	0.000*	0.085	0.000*	0.094	0.034**
Persist	21273.700	0.321	36065.620	0.020**	32270.470	0.299
F-statistic	32.330*		11.758*		21.223*	
D.W. stat	1.952		2.108		2.203	
Adjusted R-squared	0.125		0.711		0.823	

*Statistical significance at the 0.01 level

**Statistical significance at the 0.05 level

According to the calculated value for F test, we can conclude that the regression models are significant at the level of 0.01. We examined the NDAC coefficient (β_2). Considering NDNI_{t+1} , the results showed that a coefficient is positive and significant and non-significant and negative for non-bankrupt firms. According to CFO_{t+1} , the results of the Table indicate a significant positive coefficient for non-bankrupt and negative and significant for the bankrupt firms.

The results are consistent with expectations, and this is referred to as non-bankrupt firms with higher persistence, and highly likely will choose efficient earnings management, and likely that failed firms manage earnings in an opportunistic way. So the second hypothesis is confirmed by research. In addition, we interpret the results as suggesting that non-bankrupt firms are better indicators than bankrupt

firms in predicting future profitability in relation to earnings persistence.

The third hypothesis test and results

The third hypothesis test results are presented in Table 3.

Table 3. Regression on future profitability with Earnings Predictability

$$X_{t+1} = \beta_0 + \beta_1 \Delta NI_{j,t+1} + \beta_2 NDAC_{j,t} + \beta_3 CFO_{j,t} + \beta_4 AQ_{j,t} + \varepsilon_{j,t}$$

variable	$\Delta NI_{j,t+1}$		$CFO_{j,t+1}$		$NDNI_{j,t+1}$	
	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
Intercept	-43170.7	0.5761	99163.01	0.000*	41105	0.5499
DAC	-0.9926	0.000*	-0.194	0.0231**	-2.1155	0.000*
NDAC	0.2673	0.000*	-0.0371	0.0001*	-0.0181	0.9372
CFO	0.083	0.2781	-0.0912	0.0003*	-0.2226	0.0184**
Predict	443564.4	0.4515	-110195.3	0.5142	-45750.5	0.9305
F-statistic	37.375*		3.8407*		120.076*	
D.W. stat	1.537		3.005		2.552	
Adjusted R-squared	0.499		0.530		0.765	
variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
Intercept	-3063.9	0.8938	150231.3	0.000*	351751	0.000*
DAC	-0.7792	0.000*	0.1937	0.0226**	0.4093	0.0167**
NDAC	-0.1501	0.000*	-0.01633	0.4961	0.1404	0.0037*
CFO	0.1199	0.000*	0.0876	0.0001*	0.0964	0.0285**
Predict	-103746.5	0.5351	266302.1	0.1292	150896.5	0.6689
F-statistic	32.158*		11.688*		21.19*	
D.W. stat	1.956		2.1157		2.2014	
Adjusted R-squared	0.1244		0.711		0.8223	

*Statistical significance at the 0.01 level

**Statistical significance at the 0.05 level

According to the calculated value for F test, we can conclude that the regression models are significant at the level of 0.01.

Like the two previous hypotheses, the comparison of adjusted R-squared of regression coefficients third hypothesis indicates that the dependent variable $NDNI_{t+1}$ is the coefficient of the highest value. After that, CFO_{t+1} , and finally ΔNI_{t+1} is ranked in the final standing.

The findings are consistent with expectations. As can be seen in Table 4, the results reveal that non-bankrupt firms are more likely to have an efficient earnings management, and bankrupt firms are more likely to have opportunistic earnings management. In addition, the results show that discretionary accruals (representing earnings

management) performs better than earnings based on the predictability of future profitability.

The fourth hypothesis test and results

The fourth hypothesis test results are presented in Table 4.

Table 4. Regression on future profitability with Earnings Smoothness

$$X_{t+1} = \beta_0 + \beta_1 \Delta NI_{j,t} + \beta_2 NDAC_{j,t} + \beta_3 CFO_{j,t} + \beta_4 AQ_{j,t} + \varepsilon_{j,t}$$

	variable	$\Delta NI_{j,t+1}$		$CFO_{j,t+1}$		$NDNI_{j,t+1}$	
		Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
Bankrupt	Intercept	-33517.1	0.7185	76871.91	0.0019*	64192.07	0.443
	DAC	-0.9926	0.000*	-0.1917	0.0267**	-2.1204	0.000*
	NDAC	0.2676	0.000*	-0.0371	0.0001*	-0.0226	0.9219
	CFO	0.0804	0.2942	-0.0903	0.0004*	-0.2294	0.016**
	Smooth	37611.1	0.6522	11241.51	0.6444	-31318.1	0.6751
	F-statistic	36.903*		3.7760*		119.722*	
	D.W. stat	1.564		3.0145		2.586	
	Adjusted	0.497		0.5261		0.766	
	R-squared						
		variable	Coefficient	Prob.	Coefficient	Prob.	Coefficient
Non-Bankrupt	Intercept	-27184.9	0.355	121093.8	0.000*	378536.7	0.000*
	DAC	-0.7814	0.000*	0.2057	0.0153**	0.4057	0.0178**
	NDAC	-0.1493	0.000*	-0.019	0.4253	0.1395	0.0039*
	CFO	0.119	0.000*	0.0883	0.0001*	0.0963	0.0287**
	Smooth	19632.06	0.5168	67120.81	0.0184**	-11806.3	0.5733
	F-statistic	32.168*		11.761*		21.195*	
	D.W. stat	1.9543		2.1277		2.1991	
	Adjusted	0.1244		0.7115		0.8223	
	R-squared						

*Statistical significance at the 0.01 level

**Statistical significance at the 0.05 level

According to the calculated value for F test, we can conclude that the null hypothesis cannot be confirmed at a significance level of 0.01, and the regression models are significant.

The comparison of adjusted R-squared of regression coefficients fourth hypothesis was that the only difference in the dependent variables indicates that the dependent variable $NDNI_{t+1}$ is the coefficient of the highest value. After that, CFO_{t+1} , and finally ΔNI_{t+1} is ranked in the end.

According to the coefficients calculated for each of the explanatory variables and their significance, it can be concluded that when the dependent variable is ΔNI_{t+1} , β_1 for bankrupt and non-bankrupt

firms is significantly negative, and when the dependent variable CFO_{t+1} and NDNI_{t+1} is the differential DAC (β_1) for non-bankrupt firms, significant positive and negative and significant for the company is insolvent.

We examined the NDAC coefficient (β_2). Considering NDNI_{t+1}, the results showed that a coefficient is significant positive and non-significant negative for non-bankrupt firms. According to CFO_{t+1} coefficient (β_3), the results of the table indicate a significant positive coefficient for non-bankrupt and negative and significant for the bankrupt firms.

In general, the results show the impact of poor communication characteristics of each of the four variables, earnings quality with future profitability, and can be said to predict future profitability, discretionary accruals has been higher than quality of earnings. As shown in Table 8, the hypothesis of two state variables, the future profitability, CFO_{t+1} and NDNI_{t+1} is confirmed. But according to ΔNI_{t+1} there was no evidence to support the hypothesis.

Conclusions

This study investigates how management authority in reporting future profitability, and its relationship with earnings quality in Tehran Stock Exchange. In this research, earnings management known as management intervention on quality in reporting firms, and four types of earnings in bankrupt and non-bankrupt firms in Altman model have been studied. Four attributes of earnings quality that are based on accounting data, are accruals quality, earnings persistence, earnings predictability, and earnings smoothness.

Generally, about the relationship between earnings management and earnings quality there are two points of view; in one of them, earnings management has a useful aspect, and earnings quality is improved, and the other approach is due to the opportunistic nature and should improve earnings quality. The results are consistent with the hypothesis of opportunistic earnings management in accordance with the opinion of bankrupt firms and non-bankrupt firms. This finding is consistent with much of the external investigation. Li *et al.*

(2011) found that earnings management in Bankrupt- stressed firms with the low quality of most earning quality is the opportunistic, While the non-bankrupt firms - not distressed with the highest quality of earnings and non-bankrupt firms worn with low earnings quality, earnings management is more efficient (more efficient for non-bankrupt firms- not distressed).

Garsyalara *et al.* (2009) showed that in the four years prior to the bankruptcy of insolvent firms, in order to increase their profits and manage the reliability, as a result, accounting earnings will be reduced. Rosner (2003) also showed that bankrupt firms manage their earnings in a continuing way. Also, the results showed that the quality of earnings have not as much potential at predicting future profitability. In other words, in the prediction of future profitability, earnings management, that is better earnings quality. The results of the study by Li *et al.* (2011), showed that there is a weak relationship between earnings quality and future profitability. Studies also show that the net profit after the next year's discretionary accruals is more efficient than changes in net income and operating cash flow in the coming year, to depict the strength of future profitability.

This study is valuable in several ways; this paper is one of the first studies about separation between earnings management and earnings, and examine these from the perspective of bankruptcy, and investigators have practical value for standard makers and regulators, and auditors. These standards enable investors and regulators to expand and address more stringent corporate governance rules for opportunistic behavior of management firms that are experiencing financial deterioration. Auditors will better understand how managers use their powers to hide poor performance in accounting standards. It will be of help to researchers to pay more attention to the issue of earnings management and earnings quality and also helps improve bankruptcy forecasting models.

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