

The Relationship between Earnings Management and Firm Performance in the Companies Listed in Tehran Stock Exchange: The Function of Firm Size

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Abstract

In the process of earnings management, the financial reports are changed in order to misguide shareholders about the firm basic performance, or to affect the contractual outcomes associated with reported accounting numbers, which can be positive or negative for firm performance under some conditions. In the present study, it was aimed to determine the relationship between earnings management and firm performance. The research population included the present listed companies on the Tehran Stock Exchange during 2013-2018. After screening, data related to 105 companies were analyzed through panel approach. Based on the results obtained, no relationship was discovered between profit management and company performance. Moreover, firm size indicated a significant relationship with performance. It seems that in the conditions of financial crisis and the instability of economic structures, some managers were interested in earnings management, which was implemented through various approaches in the firm ultimately affecting its performance. However, such an effect was not significant in the current study.

Keywords: Firm Performance, Earnings Management, Firm Size.

Introduction

Although, firm performance has been always identified as one of the major variables in management, it has been specifically addressed due to its broad meanings over the years (Owusu and Liu, 2017). Earnings management can significantly affect reported or predicted performance (Ding et al., 2018; Ujah et al., 2017). In a research, Leuz et al. (2003) indicated that in the presence of widespread earnings management, fiscal reports incorrectly reflected firm performance undermining the external capabilities of firm management (Otomasa et al., 2017). A widespread set of earnings managements in economic outcomes of firms in developed and developing countries depends on the nature of the intention to manipulate incomes in such countries (Sial et al., 2018). Ali and Zhang (2015) also provided evidence that executives manipulated earnings early in their tenure period to attract the market and gain reputation (Tabassum, 2015; Roychowdhury, 2006). Real earnings management enables a firm to maintain its reputation and positive political image, and, at the same time, achieve desirable performance outcomes (Ding et al., 2018). Poor firm performance can have a negative impact on the

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management compensation capacity, and is also associated with an increased risk of job-exit (Kato and Kubo, 2006; Grove et al., 1995). Some executives, therefore, may conceal real firm performance through earnings management to avoid such risks. Limited access to external financing influences the survival and growth of companies (Ding et al., 2018). In addition, when a firm becomes larger, its stock price becomes influenced by various factors. Larger firms also have more legal constraints, consequently, they may have more incentive to manipulate profits. Since managers may have more incentive for earnings management regulation (Tsai et al., 2012). In the current study, considering variables like earnings management and firm size, a panel approach was used to scrutinize the performance of listed companies in Tehran Stock Exchange. In the following, we will introduce the basics of the theory and backgrounds related to the current research, and after explaining the models and stating how the variables are measured in the methodology, we will analyze the outputs to provide a basis for discussion and conclusions.

Literatures Review

Tabassum et al., (2013) claimed that earning is the major factor that represents financial stability and power, as well, Akram et al. (2015) declared it as the health and financial strength of any firm. Based on earnings, different firms and future investors are attracted to companies for investment purposes, resulting in rising stock prices (Debnath, 2017). As earnings are the key index of stock prices, organizations tend to gain specific predicted earnings. Several different techniques and strategies whether legal and sometimes illegal are applied by managers to achieve specific earning goals; this phenomenon is called earnings management (Cimini, 2015; Tabassum, 2015). In the current global economy, there is a growing concern about the importance of financial reports from economic entities. Giving information to miscellaneous stakeholders and possible investors about how businesses perform financially, and also providing an opportunity to assess the financial health of a firm are the most important aims of any financial report (Wu et al., 2018). The main worrying issue is the existence of earnings management practices in financial reporting processes that manipulate reports and generate misleading financial reports to influence decisions made by investors and stockholders (Kumari and Pattanayak, 2017). In earnings management, accounting techniques are applied in order to provide financial reports and represent an excessively positive view of business activities and financial status of the firm (HassabElnaby et al., 2010).

Firm performance is often exposed to common markets or industrial shocks (Du and Shen, 2018). The main purpose of earnings management is usually to smooth earnings. Various approaches of earnings management may be used by firms to obtain this goal (Zang, 2012). Managers always tend to claim an increase or a decrease in the amount of earnings (Tabassum et al., 2013). The predictions made about earnings management are often regarded as an instance of private information for managers regarding firm performance (Otomasa et al., 2017). Additionally, earnings in practice are usually obtained from management performance in relation to a performance target or a performance standard (Iwasaki et al., 2016). Moreover, the predictions about earnings management are often related to performance evaluation system and firms' internal budgets (Merchant and Van der Stede, 2011). It can seriously affect accounting performance, and directly influence stock performance (Jara-Bertin and Sepulveda, 2016; Richardson et al., 2005; Healy and Wahlen, 1999; Sloan, 1996).

The results of Ogiriki and Toru research conducted in Nigeria show that there is a significant difference between the factors affecting the profit quality of Nigerian companies. Also, the results show that return on assets (ROA), return on capital employed (ROCE), company size and profit before tax on daily sales receivables index (DSRI), depreciation index (DEPI), leverage index (LVGI) influence has it(Ogiriki and Toru, 2022). The results of research

Javaheri and Zanjirdar also show that profit management has a significant relationship with company performance (Javaheri and Zanjirdar, 2017).

Based on research literature and focusing on the firm performance, the research hypotheses are presented as below:

H1: Earnings management is significantly related to firm performance.

H2: Firm size is significantly related to firm performance.

Material and Methods

Methodology

In the present study, listed companies in Tehran Stock Exchange during 2013-2018 were considered as the statistical population. The companies were sampled through screening method taking the following conditions into consideration:

1. The firms' final fiscal year should last until the final day of the year.
2. The firms should not change their fiscal year during the studied period (2013-2018).
3. The firms under investigation should not be a part of investing, holding, and financial intermediation companies.
4. Their information and data should be available.
5. The firms' trading shares should be carried out continuously in Tehran Stock Exchange with no trading gap occurring over three months on the above-mentioned stocks.

Finally, data of 105 firms were analyzed after applying the above conditions. Data and information related to research variables were collected from Tehran Stock Exchange (www.tse.ir) and the Central Bank of Iran (www.cbi.ir) websites.

The research hypotheses were tested by panel data approach initiated by doing the unit root test. After likelihood ratio test (LRT) to ensure the use of panel method, Hausman test was implemented for selecting random effects method or fixed effects method. In fact, the random effects method did not allow the unobserved effect to be correlated with independent variables, but fixed effects method allowed to do so (Wooldridge, 2009). Likewise, Pearson's correlation test was carried out to ensure the absence of multi-collinearity.

The research model was presented by focusing on the variable of earnings and performance management according to Ding et al. (2018). In addition, variables whose data could be extracted in Iran, were considered in the localization of research model.

The Equation 1 was applied to investigate the relationship between research variables:

$$ROA = \alpha_0 + \beta_1 EM_{i,t} + \beta_2 Size_{i,t} + \beta_3 LEV_{i,t} + \beta_4 Age_{i,t} + \beta_5 PPT_{i,t} + \varepsilon \quad (1)$$

Dependent variable

ROA was calculated from the earnings before subtracting the amount of interest and tax from total assets.

Independent variable

EM: This was a qualitative variable in which firms with earnings management were assigned one, and those without earnings management were given zero. Some researchers suggested that earnings management based on the modified Jones' model provided the most powerful model for describing and predicting earnings management. The first accruals estimation model was introduced by Jones in 1991. This model is based on the significant relationship between accruals and changes in sales revenue and fixed assets. But Dechow, Sloan and Sweeney adjusted this model and increased its accuracy by adding a new variable.

$$TA_{it} = \Delta CA_{it} - \Delta CL_{it} - \Delta CASH_{it} + \Delta STD_{it} - DEP_{it} \quad (2)$$

Where:

TA_{it} : Total accruals

Δ : Changes this year compared to last year. This method is rooted in the balance sheet approach and indicates that the fluctuations are caused by accruals.

ΔCA_{it} : Change in current assets

ΔCL_{it} : Changes in current liability

$\Delta CASH_{it}$: Changes in cash

ΔSTD_{it} : Changes in current long - term debt

DEP_{it} : Depreciation cost

After calculation of TA, the parameters α_1 , α_2 , and α_3 were estimated by Equation 3 to determine non-optional accruals:

$$\frac{TA_{it}}{A_{it}} - 1 = \alpha_1 \left(\frac{1}{A_{it}} - 1 \right) + \alpha_2 + \left[\frac{REV_{it} - REC_{it}}{A_{it}} - 1 \right] - \alpha_3 (PPE_{it} - A_{it} - 1) + \varepsilon_{it} \quad (3)$$

Where:

ΔREV_{it} : Changes in sales revenue

ΔREC_{it} : Changes in accounts receivable

PPE_{it} : Property, machinery, and gross equipment

A_{it-1} : Total book value of assets

ε_{it} : Unknown effects of random factors

α_1 , α_2 , and α_3 : Estimated parameters

After calculating the parameters α_1 , α_2 , and α_3 , the accruals were determined using least squares (OLS) method as follows:

$$NDA_{it} = \alpha_1 (1 - A_{it} - 1) + \alpha_2 [(REV_{it} - REC_{it}) / A_{it} - 1] - \alpha_3 (PPE_{it} / A_{it} - 1) + \varepsilon_{it} \quad (4)$$

Where:

NDA_{it} was non-discretionary accruals (NDA)

After determination of NDAs, discretionary accruals (DA) were calculated as follows:

$$FRQ_{it} = (TA_{it} - A_{it} - 1) - NDA_{it} \quad (5)$$

Control variables

Firm size, which was calculated from the natural logarithm of firm assets. Leverage, which was calculated from the amount of debt divided by assets. Firm age, which was measured from the number of years of firm participation in the stock exchange. PPT: property, plant and equipment scaled by total assets.

Results

The LLC (Levin et al., 2002) and IPS (Im et al., 2003) tests were used to test stationarity. The H_0 of these tests was that there was a unit root in the series. If H_0 was rejected, the series were stationary. Table 1 shows that all variables were stationary. AGE and PPT were integrated to the order of I(0) in both tests. EM, LEV, ROA, and SIZE were integrated to the order of I(0) in LLC test, while they were integrated to the order of I(1) in IPS test.

Before model estimation, it is necessary to verify the presence or absence of multi-collinearity between independent variables using Pearson's correlation. H_0 and H_1 specified the absence and presence of multi-collinearity between independent variables, respectively.

Table 1. Unit root test.

Variables	Trend and intercept			Decision for LLC	Decision for IPS
	Level		1st difference		
	LLC	IPS	IPS		
AGE	-21.3640 (0.0000)*	-1.9E+14 (0.0000)*		I(0)	I(0)
EM	-28.0864 (0.0000)*	-0.13285 (0.4472)	-6.88833 (0.0000)*	I(0)	I(1)
LEV	-25.5992 (0.0000)*	-0.33558 (0.6314)	-4.69462 (0.0000)*	I(0)	I(1)
PPT	-282.228 (0.0000)*	-9.83526 (0.0000)*		I(0)	I(0)
ROA	-9.52197 (0.0000)*	-1.45491 (0.9272)	-2.15887 (0.0154)**	I(0)	I(1)
SIZE	-19.1335 (0.0000)*	-1.38822 (0.9175)	-5.87165 (0.0000)*	I(0)	I(1)

Note: *represent 1%, **represent 5%, ***represent 10%. The values in parentheses are probability values, while the other values are the t-statistical values.

Table 2 shows the correlation coefficients between the research variables, all of which had values < 0.8. Thus, rejecting the presence of multi-collinearity between independent variables, H_0 was accepted, (Ebrahimi et al., 2018b). Moreover, the highest variance inflation factor (VIF) (Hair et al., 2016; Ebrahimi et al., 2018a) was 9.90 for the PPT variable. As suggested by O'Brien (2007), multi-collinearity was problematic when VIF exceeded a value of 10. Hence, multi-collinearity does not threaten the validity of the estimated variables significantly.

Table 2. Pearson's correlation matrix and descriptive statistics.

Variables	Mean	SD	ROA	EM	SIZE	LEV	AGE	PPT
ROA	0.157	0.131	1					
EM	6.216	3.853	-0.070***	1				
SIZE	5.919	0.603	0.080**	0.010	1			
LEV	0.901	0.378	-0.286*	-0.078**	0.238*	1		
AGE	29.220	11.100	0.083**	-0.052	0.054	-0.021	1	
PPT	5.177	0.704	0.035	-0.002	0.1783*	0.410*	0.046	1

Note: *represent 1%, **represent 5%, ***represent 10%.

Due to the significance of cross-section F (prob. < 0.05) in redundant fixed effects' tests (Table 3), the Hausman test was performed to select the type of model in the panel. The probability of the cross-section random (prob. < 0.05) in the Hausman test encouraged for the fixed effect model. Fixed effect panel data regression analysis can be seen in Table 3.

Moreover, to compare and ensure the accuracy of selecting fixed effects model, R^2 values for the random effects model is also represented in Table 4. R^2 value in the fixed effects model was much higher, so the results of research hypotheses were interpreted based on the fixed effects model.

Table 3. Panel Test

Cross-section fixed (dummy variables)	
R-squared	0.847
Adjusted R-squared	0.816
F-statistic	26.607*
Durbin-Watson (DW)	1.610
Cross-section F (Likelihood ratio test)	5.180*
Cross-section random (Hausman test)	9.776*
Observations	105
Cross-section included	630

Table 4. Cross-Section Random

Cross-section Random	
R-squared	0.068
Adjusted R-squared	0.060
F-statistic	9.127*
Durbin-Watson (DW)	1.644
Observations	105
Cross-section included	630

Table 3 indicates the results of model estimation using the cross-section fixed method and fixing the heteroscedasticity problem using cross-section weights. A significant level of F-statistic suggested that the model was confirmed at 95% confidence level. The r-squared of the regression explained 84.7 percent of the response. Furthermore, Durbin-Watson statistic (DW) showed no autocorrelation (between 1.5 and 2.5).

The results of research model estimation using the cross-sectional method and fixing the heteroscedasticity problem using cross-section weights are shown in Table 5. Given a significant level for F-statistic, it was determined that the model was confirmed with a confidence of 99%.

Table 5. Estimation results of panel regression analysis.

Panel EGLS (Cross-section weights)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
EM	0.000272	0.000509	0.533413	0.5940
SIZE	0.040348*	0.012865	3.136202	0.0018
LEV	-0.087441*	0.009939	-8.797449	0.0000
AGE	0.000389	0.000451	0.861393	0.3894
PPT	0.011588	0.012166	0.952504	0.3413
Constant	-0.075378	0.062357	-1.208811	0.2273

Note: *represent 1%, **represent 5%, ***represent 10%.

The significance level of t statistic related to profit management variable (0.5940) and is greater than 0.05 and its coefficient (0.0002) is positive. Considering the non-significance obtained for the profit management variable, the interpretation of the result is that at the 95% confidence level, it cannot be said that there is a significant relationship between the profit management and the dependent variable of the companies admitted to the Tehran Stock Exchange. The significance level of the t statistic related to the company size variable (0.0018) is less than 0.05 and its coefficient (0.0403) is positive. The interpretation of the result is that

with an increase of one unit in the Size variable, an increase of 0.04 units occurs in the (dependent) variable. Therefore, at the 95% confidence level, it can be said that there is a positive and significant relationship between the size and the dependent variable of the companies admitted to the Tehran Stock Exchange; So that with the increase in the size of the company, their dependent variable also increases. The noteworthy point is that with the increase in the value of the coefficient, the intensity of the relationship between the independent and dependent variable also increases. However, due to the low coefficient of the company size variable (0.0403), it can be said that the intensity of the relationship between the size and the dependent variable is weak. The significance level of the t-statistic related to the financial leverage variable of the company (0.0000) is less than 0.05 and its coefficient (-0.0874) is negative. The interpretation of the result is that with a decrease of one unit in the LEV variable, an increase of 0.08 units occurs in the (dependent) variable. Therefore, at the confidence level of 95%, it can be said that there is a negative and significant relationship between the financial leverage and the dependent variable of the companies admitted to the Tehran Stock Exchange; So that as the financial leverage of the company decreases, their dependent variable increases. The significance level of the t statistic related to the company's age variable (0.389) is greater than 0.05 and its coefficient (0.0003) is positive. The interpretation of the result is that at the 95% confidence level, it cannot be said that there is a significant relationship between the age and the dependent variable of the companies admitted to the Tehran Stock Exchange. The significance level of the t statistic related to the PPT variable of the company (0.341) is greater than 0.05 and its coefficient (0.1158) is positive. The unit of increase occurs in the (dependent) variable. The interpretation of the result is that at the 95% confidence level, it cannot be said that there is a significant relationship between PPT and the dependent variable of companies admitted to the Tehran Stock Exchange.

So, Concerning H_1 , earnings management was not significantly related to firm performance (t-statistic = 0.533; SD = 0.001; prob. = 0.594), thereby not supporting H_1 . Regarding H_2 , a significant relationship was supported between firm size and firm performance (t-statistic= 3.13; SD z= 0.012; prob. = 0.001). Given a positive coefficient, it could be deduced that larger companies have had better performance. In fact, firm performance had also improved with firm size.

Discussion and Conclusion

Performance evaluation is important at any firm (Glavan, 2012). Firms with better performance have higher productivity as well (Teng et al., 2015). Hence, it is essential to recognize and examine factors affecting firm performance, in particular financial performance (Bendickson and Chandler, 2019). The H_0 results of this research indicated that earnings management did not significantly affect the performance of listed firms in Tehran Stock Exchange. To justify the rejection of H_0 , it should be noted that the rise of economic crisis in Iran as a developing country in recent years has brought about lots of problems in the financial structure of many firms. It seems that some firms have used earnings management to manipulate financial statements for various purposes during the economic crisis. The quality of financial reporting is decreased by earnings management, and consequently, the resource allocation in the economy is negatively affected. Unluckily, in the situation of financial crisis and the instability of economic structures, some managers seem to be interested in earnings management, which is executed in various ways and eventually affected firms' performance.

In this survey, earnings management during 2013-2018 has had no effects on the performance of firms. In fact, unreal stocks or reports of negative items accumulation and so on have not influenced the performance of firms. Analysis of this issue signifies the important role of regulatory systems. Future investigations can further investigate the problem of earnings

management and, in general, the lack of transparency in reporting real earnings in the long run for the studied firms. Moreover, the extent to which monitoring systems and/or tax payments can play an effective role in this issue can be another topic of research.

Overall, the time managers do their judgements in financial reporting and transaction structures by themselves in order to change financial reports to misguide their shareholders about firm performance or to affect the results of contracts being dependent on reported accounting figures, earnings management happens. To answer the question that earnings management is good or bad, it can be argued that in the management of "bad" earnings, which is essentially earnings mismanagement, attempts is made to conceal the actual operating performance of firm through artificial accounting records or changing estimates to a reasonable amount. A "good" earnings management, on the other hand, is a wise and appropriate activity, which is a part of financial management process and restitution of shareholders' equity as features of good earnings management.

The results also showed that larger firms had better performance. Indeed, in the current political and economic conditions of Iran, large firms have only been able to invest and endure economic shocks. Small firms do not show a good performance in present-day economic conditions, necessitating paying attention to such firms with governmental support. In a global economic situation where, small firms are productive and profitable, small firms in Iran have not been able to compete with large firms in the economic shocks of recent years. Future researchers are recommended to investigate the performance of small and medium firms in Iran regarding different financial variables and compare them with large firms. As an important limitation, it is also demanded to be careful when generalizing these results because the investigation was conducted in Iran, which is different from other countries in terms of financial and cultural structures. The structure of this article includes abstract, introduction and research literature, methodology and introduction of variables and how to measure them, results and discussion and conclusion.

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