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THE EFFECT OF ECONOMIC COMPETITIVENESS ON EARNING MANAGEMENT

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ABSTRACT

The main purpose of this study is to investigate the effect of economic competitiveness on the earning management of listed companies in Tehran Stock Exchange. For this purpose, the information of 100 listed companies in exchange between 2004 and 2010 were extracted and then analyzed using explanatory statistical methods and panel data model. The results showed that by increasing the economic competitiveness of the company, managers are less likely to participate in opportunistic processes of earning management and the higher the company's efforts for presence in market competition is, the less earning management by managers will be. In other words, economic competitiveness has an inverse effect on earning management and results manipulation. Therefore, it is advised to different groups of investors, creditors, analyzers and others to keep in mind that if the analyzed company has a high competitiveness in market competition, the probability of earning management is reduced and the chance that reported earnings are close to the actual earnings is increased. Thus, they should consider items such as firm's position in its respective industry, firm's status in product market and firm's economic competitiveness in order to make logical decisions. Among other results of this study is the direct effect of debt in financial structure, assets profitability, sales growth and inverse effect of loss report and ineffectiveness of firm's size on earning management.

Keywords: *Economic Competitiveness, Earning Management, Market competition.*

INTRODUCTION

Earnings management occurs when managers use judgment in financial reporting and may mislead some stakeholders about the economic performance of companies or influence those contracts which are linked to the reported accounting numbers (Tinaikar & Xue, 2009). In this regard, based on rules such as the Sarbanes-Oxley law, law enforcement agencies in the United States forced corporate executives to ensure financial reporting, empower corporate governance and improve auditor independence, in order to reduce earnings management and improve the quality of financial reporting. According to the Sarbanes-Oxley law, empowerment of corporate governance is one of the mechanisms to reduce the agency problem. Corporate governance mechanisms can reduce the opportunities for earnings management and thus increase the quality of earnings (Hassas Yegane, 2006).

Corporate governance mechanisms will regulate the corporate managers' decisions and activities and somehow reduce the costs of agency that are imposed on the owners. These mechanisms consist of several components. One of the corporate governance mechanisms that are designed to reduce agency problems is the economic competitiveness of companies which has an inverse relationship with the degree of market competition (Datta et al, 2013). Based on existing literature, economic competition has been suggested as a mechanism of governance and a critical factor in decisions concerning the disclosure of information by companies. Not only economic competitiveness makes the organization widely dependent on external competitive advantage, but also encourages the owners to strengthen internal corporate governance mechanisms and reduces opportunistic behavior by managers. Thus, the economic competitiveness has a disciplinary effect on reducing benefits of private management and strategic effects which can have an effect on earning management (Teng & Li, 2011).

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In this regard, Jagannathan and Srinivasan (2000) argued that economic competitiveness is like a regulatory mechanism for managers and keeps them from wasteful spending. Also, He (2009) acknowledged that the degree of competition in the market acts as an efficient mechanism to reduce agency problems. On the other hand, several studies also suggest that earnings management can be limited by corporate governance (Beasley, 1996), (Dechow et al, 1996), (Klein, 2002) and (Uzan et al, 2004). Therefore according to the theoretical framework, it is expected that economic competitiveness as one of the corporate governance mechanisms, have an inverse effect on earning management. For instance, the higher economic competitiveness will create a positive attitude in market competition which result in more monitoring over the activities of the company and the managers of such companies will see their positions at risk more than the others, since the stakeholders and beneficiaries of such companies cannot tolerate the mistakes and inadequacy of managers as much. Therefore, managers are trying to work more efficiently and effectively which in turn leads to a reduction in agency costs and ultimately will reduce earnings management (Datta et al, 2013).

Nevertheless, another part of the economic and financial literature has addressed the issue that economic competitiveness can create agency problems and these problems will lead the managers to misrepresent the performance results in order to protect their personal benefits. In fact, dealing with the pressures and competitive threats is a source of earnings management emersion, and since the managers' job security depends on a favorable image of the company's performance in the current period or future periods, therefore their failure in providing a favorable performance and obtaining weak results in the current period, or to predict the failure in future periods, always makes the management position at risk which can lead the manager toward the earning misrepresentation.

Indeed, although there are some theoretical background about the practical validity of the inverse effect of economic competitiveness on earning management, another part of the theoretical background suggests the direct impact of economic competitiveness on earning management. In fact, since corporate governance practices and the competitive structure of the market in countries are different, the results are not the same in all countries and there is no consensus on this issue yet. A group of researchers believe in the direct effect of economic competitiveness on earnings management and others believe in its inverse effect. Therefore, In line with new insight into the importance of economic competitiveness as one of the mechanisms of corporate governance, this study examines the impact of economic competitiveness on the earning management of the listed companies in Tehran Stock Exchange.

Research Literature and Theoretical Basis

Tinaikar and Xue (2009) suggest that the high market competitiveness improves the flow of information between the company and stakeholders. Because one of the main methods that are used by consumers to evaluate the performance of managers is analytical testing. Analytical testing means to compare the information provided by the company, industry, competitors, budgets and previous information of the company. Therefore more competition will lead to more comparisons between the company and its competitors and thus the assessment process becomes easier, and simple evaluation process will also lower the possibility of opportunistic behavior by managers. In addition, more competition will put companies at risk of disbanding and removal of the competitive market. Therefore, it will prevent companies from wasteful spending and the managers will do their best to sign more efficient contracts and increase their companies' efficiency. Moreover, in a competitive environment, managers will treat their free cash flow more accurately because investment in projects with negative net current value would be seen more than ever and the managers would get punished by the regulatory powers of the competitive market.

Darrough and Stoughton (1990), Feltham and Xie (1992) and Evans and Sridhar (2002) also stated that companies faced with economic pressures try to dissuade competitors to enter the industry. In fact, managers are motivated to stand in front of a wealth transfer because this kinds of transfers decrease the company's values consistently. They also want to prevent the additional competition, because competition will decrease the company's value and the manager's salary as well. This is a clear example of the old

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saying "War is expensive", because in case of a new competitor's arrival, the industry must allocate a portion of their sales to a new competitor. Therefore, with a decrease in economic competitiveness of an industry, companies operating in that industry tend to offer lower profits. The underlying reason is that companies are not willing to let new companies enter the market and take their market shares. So they try to not act as a stimulus by offering lower profits.

There are at least two reasons that higher reported earnings will increase the competition. The first one is the possibility of antitrust actions which can lead to company's fragmentation or some governmental actions which will increase the competition. Earnings reported will be used by judicial department to identify the market power and by individuals to find which companies can be looked upon for probable antitrust violations. Those managers that use exclusive economic rent are motivated to present the reported earnings lower than their actual values in order to avoid antitrust actions which can reduce the company's value (Hagerman & Zmijewski, 1979). Therefore according to this outlook, there is an inverse relationship between economic competitiveness and earnings management. On the other hand, there is another outlook that economic competition between companies is one of the reasons for increasing the temptations of earning management. In fact, an increase in competition will reduce the current profit and puts the company at higher risks of disbanding in the future. The probability of merging and disbanding of companies with weak management will increase in competitive markets, hence the earning management will occur.

Research Background

Datta et al (2013) in a study examined the relationship between industry structure economic competitiveness and earning management. The results show that firms with higher economic competitiveness have larger discretionary accruals. It means that the rate of earning manipulation is higher in industries with higher economic competition. Lee and Liu (2013) investigated the relationship between capital market feedback competition and earning management in a study. The results showed that companies with a higher ratio of market value to book value have a greater tendency to manipulate and manage earnings. In other words, there is a negative relationship between competition and earnings management. Karuna et al (2012) investigated the relationship between product competition market and earning management in a study. The results showed that there is a positive relationship between product market competitiveness and earnings management and the type of industry plays a vital role in the corporate earning management. Markarian and Santalo (2010) investigated the effect of competition in product market on the earning management in a study. The results of using 70,000 year-company and the Jones model in order to measure earnings management showed that increasing competition in the market has increased the amount of manipulation and earnings management. Tinaikar and Xue (2009) investigated the effect of competition in product market on the earning management in a study. The results showed that an increase in import penetration and a decrease in import prices forces the managers of industrial companies to a dauntless earning management. This means that with increasing economic competitiveness, corporate profitability is reduced and the reduced profitability will lead managers to the earning distortion. Park & Marciukaityte (2009) investigated the effect of competition in market on the earning management. The results showed that competition in product markets reduces the agency problems by diminishing the likelihood of deceptive earnings management and increasing the information content of earnings.

Hassani and Najd (2013) studied the role of agency costs in using earning management in listed companies in Tehran Stock Exchange in a research. The results showed that there is a significant and positive relationship between size, leverage and profitability, and earning management. Mojtabehzadeh and Valizadeh (2010) investigated the relationship between earning management and future return on assets and future operational cash flow in a research. The results showed that there is no significant relationship between return on assets and earning management. Moradzadehfard et al (2009) investigated the relationship between institutional ownership and earning management in listed companies in Tehran Stock Exchange in a study. The results showed that there is a significant and negative relationship

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between leverage ratio average and earning management. But no evidence were found to confirm a significant relationship between firm's size and earning management; the relationship between them was positive though. Noravesh et al (2005) studied the earning management in listed companies in Tehran Stock Exchange in a research. Research findings showed that large firms in Iran tried the earning management and higher debts make them more motivated to do so. The results also show that the managers of large companies use accruals to lower their companies' taxes. The larger the company becomes, the more their managers tend toward the earning management.

RESEARCH METHODOLOGY

The current research is an applied one in regard to the purpose, is a quantitative one in regard to the process, is a inductive one in regard to the logic, is a descriptive one in regard to the method, and since the relationship between variables are analyzed based on the research purpose, it is a causal regression and correlation research.

Research Population and Sample

Statistical population of the research is the listed companies in Tehran Stock Exchange between 2004 and 2010. Research sampling in purposeful; which means that the population was screened based on some conditions and the companies that had the desirable conditions were analyzed as the statistical samples using the systematic elimination method. Selection conditions of the research statistical sample companies are as follows:

- 1- Companies should attend on the Stock Exchange for the entire period of investigation.
- 2- They should not have changed their fiscal year during the study.
- 3- Their financial information should be available and they should not be among financial intermediaries and insurance and pension finance industries.

Considering these criteria, 100 companies across 6 industries were finally selected from all of the listed companies in Tehran Stock Exchange as the research statistical population.

Research Variables

Earning management is the dependent variable and economic competitiveness is the independent variable of the research. Moreover, since earning management can be affected by other factors and in order to analyze the effect of economic competitiveness on earning management more accurately, possible affecting variables such as debt ratio, loss report, return on assets ratio, sales growth and firm's size enter the model so their effects can be controlled and the research Hypothesis can be tested more accurately.

$EM_{i,t}$: Earning management, which is usually calculated using discretionary accruals. Kothari (2005) declares in his research that company's efficiency is affecting the discretionary accruals estimation. When the company's efficiency and the relationship between accruals and efficiency is not normal, it is possible to wrongly categorize non-discretionary accruals as discretionary accruals. Kothari adjusted Jones model by adding the return on assets as a controlling variable for the nonlinear effect of firm's efficiency on accruals. The model of Kothari et al has been used in this study. This model is as follows:

$$Accrual = a_1 + a_2 (\Delta REV - \Delta REC) + a_3 PPE + a_4 ROA + \varepsilon$$

Where 'Accrual' is the total accruals which is equal to the difference between firm's operational profit and cash flow from operational activities, ' ΔREV ' is changes in income of current year compared to the previous year, ' ΔREC ' is changes in accounts receivable of current year compared to the previous year, 'PPE' is gross value of property, machinery and equipment, 'ROA' is return on assets ratio, and ' ε ' is residual values of the model which is an indicator determining the amount of earnings management.

Independent variable of this research is the economic competitiveness which is evaluated based on three criteria: the industry that the company belongs to (PMCS), operational costs to sales ratio (PMCOE) and Tobin's Q ratio (PMCQ).

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$PMCS_{i,t}$: The company sales to total sales of the company industry ratio. It is among the most important measures of evaluating industry concentration and the degree of competition in a market. The larger this ratio for a company is, the higher concentration and less competition in the industry would be, and vice versa. It should be noted that there is an inverse relationship between the degree of market competition and economic competitiveness. Therefore, if the calculated index is higher, it represents the company's higher economic competitiveness (Heshmatzadeh et al, 2013).

$PMOE_{i,t}$: Operational expenses to sales ratio. This represents a large proportion of the company's operations in the product market competition. In other words, this ratio shows how much money is spent as operational costs for earning a sale profit of one unit in product market competition. Competitors in competitive markets try to lower their prices to sell their products and increase their product market share, and show their cost more than its actual value to prevent the arrival of new competitors and to convince the customers to increase prices. This results in an increase in operational expenses to sales ratio. Therefore, it is expected that the more this ratio is, the more market competition and the less economic competitiveness of the company will be (Bresnahan & Reiss, 1991).

$PMCQ_{i,t}$: Tobin's Q index which is the market value to book value of equity ratio. In fully competitive markets, Tobin's Q index for all companies would be one. Therefore it is expected that competitive advantages of firms with higher Tobin's Q ratio is decreased. Which means that a higher index indicates that there is more focus and less competition in the industry and vice versa. Due to the inverse relationship between the degree of market competition and economic competitiveness of the company, is expected that the larger this index for a company is, more economic competitiveness this company would have. Lindenberg & Ross (1981) showed that theoretically, Tobin's Q index is the strongest measure of company's competitiveness.

In their researches, Frost (1997), Koch (2005) and Rogers & et al (2005) expressed that the managers of those companies that have a weak performance or financial problems have the most motivation to meet the market needs in regard to the earning. Therefore, debt ratio, loss report, return on assets and sales growth have been used in this study in order to control the effects of weak performance and financial problems. These variables are calculated as follows:

$DEBT_{i,t}$: Debt ratio reflects a combination of debt and equity used to finance a company's assets. In this study, the total debt to total assets ratio is used to calculate the debt ratio.

$LOSS_{i,t}$: Virtual variable: If the inspected company is considered to be at loss, it will have a value of one and otherwise the value is zero.

$ROA_{i,t}$: Return on assets represents the profit per unit of invested assets. In this study, the earnings before interest and tax to total assets ratio is used to calculate return on assets ratio.

$SG_{i,t}$: Sales growth is considered to be an influential factor in company's performance; it is expected that the companies with higher sales growth percentages have a better performance compared to the companies with lower sales growth percentages. In this study, sales growth is the ratio of the difference between the sales revenue of the current period compared with the previous period to the sales revenue of previous period.

Additionally, company's assets is used to measure the size of the firms in this study. Moreover, this measure have been used after logarithms (natural logarithm) in order to facilitate the scale elimination statistical testing (Kimiagari and Einali, 2008).

Research Hypotheses

1. There is a significant relationship between economic competitiveness and earning management.
2. There is a significant relationship between debt ratio and earning management.
3. There is a significant relationship between firm's size and earning management.
4. There is a significant relationship between firm's loss report and earning management.
5. There is a significant relationship between return on assets and earning management.
6. There is a significant relationship between sales growth and earning management.

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STATISTICAL ANALYSIS METHODOLOGY

Combinatorial data analysis is used in this study considering the type of data and the available analysis methods. In order to choose the best model for regression models fitting, Chow test and Hausman test is used for choosing between combinatorial model with effects and hybrid model without effects and between model with fixed effects and model with random effects respectively. Additionally, White test is used in order to eliminate any Heteroscedasticity and Hadri unit root test is used for variables stationary test. After regression models fitting, Fisher-statistic is used for assessing overall significance of the model, t-student statistic is used for assessing the significance of explanatory variables coefficients of the model, Durbin-Watson statistic is used for assessing serial autocorrelation of models' residuals and adjusted coefficient of determination is used for assessing the explanatory power of the models. Considering the mentioned hypotheses regarding the effect of economic competitiveness on earning management and considering the fact that economic competitiveness is measured based on three criteria of firm's sales to total industry sales ratio, operational costs to sales ratio and Tobin's Q ratio, regression models of the research hypotheses will be studied as follows:

First regression model:

$$EM_{i,t} = \beta_0 + \beta_1 PMCS_{i,t} + \beta_2 DEBT_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 LOSS_{i,t} + \beta_5 ROA_{i,t} + \beta_6 SG_{i,t} + \varepsilon_{i,t}$$

Second regression model:

$$EM_{i,t} = \beta_0 + \beta_1 PMCOE_{i,t} + \beta_2 DEBT_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 LOSS_{i,t} + \beta_5 ROA_{i,t} + \beta_6 SG_{i,t} + \varepsilon_{i,t}$$

Third regression model:

$$EM_{i,t} = \beta_0 + \beta_1 PMCQ_{i,t} + \beta_2 DEBT_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 LOSS_{i,t} + \beta_5 ROA_{i,t} + \beta_6 SG_{i,t} + \varepsilon_{i,t}$$

Research Findings

Explanatory statistics of the research variables are presented separately in table 1. The result of explanatory variables shows that the average amount of earning management in investigated companies is around 0.001 unit which is a positive number. Although earning management is not a frequent event because the number is very lower than 1. The reason of this positive number is that based on the Kothari model that was considered in this study, actual amount of accruals are higher than the predicted amount of accruals. Since according to the theoretical background, earning management by managers happens by managers' manipulation in accruals, therefore the higher amounts of actual accruals than predicted accruals represents earning management in actual conditions. However it is necessary to note that although this average number is positive, but the results showed that parallel to the observations with positive amounts of earning management (maximum), there are observations with negative amounts of earning management (minimum) which show that their earning management is low or there is no earning management at all.

Table 1: explanatory statistics of research variables

Statistic	EM	PMCS	PMCOE	PMCQ	DEBT	LOSS	ROA	SG	SIZE
Mean	0.0010	0.0085	0.79852	3.6696	0.6693	0.757	0.1141	0.1875	13.23
Median	0.0055	0.0038	0.83137	3.9425	0.6695	0.000	0.0931	0.1531	13.02
Maximum	0.5418	0.1023	1.73293	46.108	1.7158	1.000	0.6308	9.4684	19.61
Minimum	-0.453	0.0000	0.00438	-310.01	0.1970	0.000	-0.3127	-1.0000	10.82
Variance	0.1061	0.0133	0.19548	16.494	0.1675	0.264	0.1218	0.4833	1.327
Skewness	0.0585	3.1668	-0.7875	-14.431	0.3480	3.207	0.8331	11.030	1.249
Kurtosis	5.1280	14.604	6.47635	250.10	5.5836	11.28	5.7722	200.86	5.077
Jarque-bera	132.48	5097.9	424.236	180528	208.82	3204.	305.13	115633	308.0
S.prob	0.0000	0.0000	0.00000	0.0000	0.0000	0.000	0.0000	0.0000	0.000
N.obs	700	700	699	700	700	700	700	700	700

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The first measure for economic competitiveness the ratio of firm’s sales to the total sales of its respective industry. Average sales of analyzed companies in this study is 0.85 percent of total sales of their respective industry. This number is lower than 1 percent and it shows that possibly the competition between analyzed companies of each industry is high. The second measure for economic competitiveness is operational costs to sales ratio. Average operational costs of the analyzed companies is 79 percent of their sales. This number shows that operational costs constitute a big portion of firm’s sales profit. This suggests the high amount of activities by these companies in product market competition. The third measure for economic competitiveness is Tobin’s Q ratio. Market value of the shares of the analyzed companies is 3.6 times higher than the book value of their equity on average. This number shows that the analyzed companies had a good growth opportunity. Moreover, result shows that variables of the study except for second measure of economic competitiveness (operational costs to sales ratio) and third measure of economic competitiveness (Tobin’s Q ratio) do have a positive skewness. The result shows that none of the research variables are normal according to the skewness and kurtosis statistics. Nevertheless, this issue was also studied by using statistical testing. The normal distribution test according to Jarque-bera statistic and its probability (statistic probability lower than 5 percent) shows that none of the research variables are normal, confirming the results of skewness and kurtosis statistics. However, in large number of data, data normality assumption is ignored.

Research variables stationary test

The results of research variables stationary test using Hadri unit root test are presented in table 2. According to the z-statistic and its probability (statistic probability lower than 5 percent), research variables are stationary.

Table 2: The results of research variables stationary test

statistic	EM	PMCS	PMCOE	PMCQ	LEV	LOSS	ROA	SG	SIZE
z-statistic	12.4	16.959	13.1892	18.5899	13.175	6.95313	13.287	14.04	16.182
S. prob	0.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.000	0.0000

The first hypothesis tests

In the first research hypothesis, the effect of company sales to industry sales ratio as a measure of economic competitiveness on earning management has been tested using combinatorial regression method. Before the model’s final fitting, the appropriateness test of combinatorial model over hybrid model and appropriateness test of combinatorial model with fixed effect over combinatorial model with random effects were performed and their results are presented in table 3.

Table 3: The results of appropriate regression model choice

The effect of economic competitiveness (company sales to industry sales ratio) on earning management

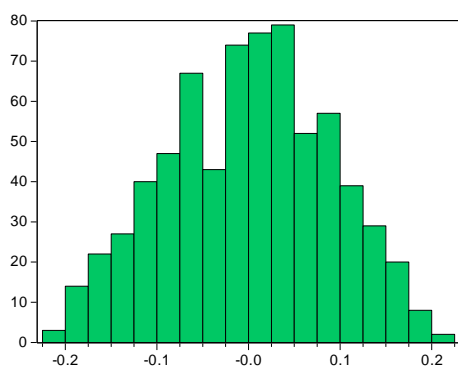
Test statistic	Type	Statistic amount	Degree of freedom	Probability
F-Limer statistic (Chow test)	Crossover	2.088114	(594.99)	0.0000
S.Chi-squared (Hausman test)	Crossover	52.063005	6	0.0000

The result shows that according to the F-Limer statistic (2.088) and its probability (0.000) (statistic probability less than 5 percent error level), the use of combinatory model is appropriate; the result also shows that according to Chi-squared statistic (52.063) and its probability (0.000) (statistic probability less than 5 percent error level), the method with fixed effects is appropriate. Finally, the first research model fitting is performed by choosing the combinatorial multiple regression model with fixed effects. The results of this model fitting is presented in table 4.

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Table 4: The effect of economic competitiveness (company sales to industry sales ratio) on earning management test results

Dependent variable: Earning Management (EM)				
Explanatory variables	Coefficients	S.E	T statistic	S. prob
Y-intercept©	-0.244129	0.117322	-2.080839	0.0379
(company sales to industry sales) (PMCS)	-0.259793	0.743899	-0.349232	0.7270
Debt ratio (DEBT)	0.77465	0.035130	2.205085	0.0278
loss (LOSS)	-0.015581	0.007818	-1.992934	0.0467
Return on assets (ROA)	0.293289	0.045366	6.464972	0.0000
Sales growth (SG)	0.023395	0.007740	3.022757	0.0026
size (SIZE)	0.011996	0.008169	1.468449	0.1425
Fisher statistic	4.573595	Coefficient of D.S	0.4470045	
Fisher statistic probability	0.000000	Durbin-Watson	2.235755	



Series: Standardized Residuals	
Sample	1383 1389
Observations	700
Mean	-1.03e-18
Median	0.002415
Maximum	0.205942
Minimum	-0.205173
Std. Dev.	0.089327
Skewness	-0.086112
Kurtosis	2.371143
Jarque-Bera	12.39940
Probability	0.002030

$$EM = -0.244129133244 - 0.259793064357 * PMCS + .0774654537249 * DEBT - .0155808870206 * LOSS + 0.293289200806 * ROA + 0.0233953818308 * SG + 0.0119963548426 * SIZE + [CX=F]$$

The result shows that there is no significant (statistic probability less than 5 percent error level) relationship between company sales to industry sales ratio as a measure for economic competitiveness and earning management based on t-statistic (-0.349) and its probability (0.727). Even though the relationship is not significant, the relationship is negative (impact factor -0.259). This means that according to the obtained results, by increasing (decreasing) the company sales to industry sales ratio, earning management will decrease (increase). Since company sales to industry sales ratio is an inverse measure of market competition and a direct measure of economic competitiveness, therefore according to the results, a decrease (increase) in earning management can probably be due to an increase (decrease) in economic competitiveness, but this impact is not statistically significant.

The second hypothesis test

In the second research hypothesis, the effect of company's operational costs to sales ratio as a measure of economic competitiveness on earning management has been tested using combinatorial regression method. Before the model's final fitting, the appropriateness test of combinatorial model over hybrid model and appropriateness test of combinatorial model with fixed effect over combinatorial model with random effects were performed and their results are presented in table 5.

Table 5: The results of appropriate regression model choice
The effect of economic competitiveness (company's operational costs to sales ratio) on earning management

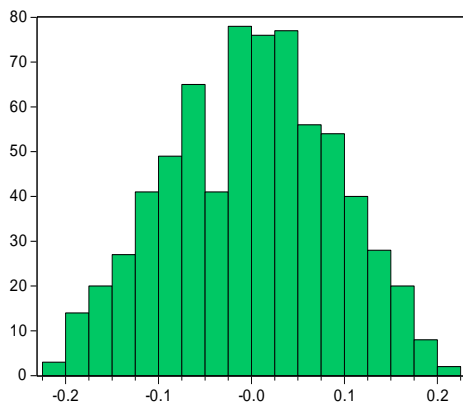
Test statistic	Type	Statistic amount	Degree of freedom	Probability
F-Limer statistic (Chow test)	Crossover	2.137958	(593,99)	0.0000
S.Chi-squared (Hausman test)	Crossover	52.849188	6	0.0000

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The result shows that according to the F-Limer statistic (2.137) and its probability (0.000) (statistic probability less than 5 percent error level), the use of combinatory model is appropriate; the result also shows that according to Chi-squared statistic (52.849) and its probability (0.000) (statistic probability less than 5 percent error level), the method with fixed effects is appropriate. Finally, the second research model fitting is performed by choosing the combinatorial multiple regression model with fixed effects. The results of this model fitting is presented in table 6.

Table 6: The effect of economic competitiveness (company’s operational assets to sales ratio) on earning management test results

Dependent variable : Earning Management (EM)				
Explanatory variables	Coefficients	S.E	t.statistic	S. prob
Y-intercept©	-0.236855	0.118610	-1.99693	0.0463
(company’s operational assets to sales) (PMCOE)	0.011044	0.032527	0.339536	0.7343
Debt ratio (DEBT)	0.080582	0.033837	2.381498	0.0176
loss(LOSS)	-0.014890	0.008064	-1.84661	0.0653
Return on assets(ROA)	0.309389	0.057648	5.366850	0.0000
Sales growth(SG)	0.022551	0.008177	2.757787	0.0060
size(SIZE)	0.010331	0.009203	1.122565	0.2621
Fisher statistic	4.524125	Coefficient of D.S	0.444774	
Fisher statistic probability	0.000000	Durbin-Watson	2.241971	



Series: Standardized Residuals	
Sample 1383 1389	
Observations 699	
Mean	-1.43e-18
Median	0.003920
Maximum	0.205197
Minimum	-0.212848
Std. Dev.	0.089240
Skewness	-0.091024
Kurtosis	2.374980
Jarque-Bera	12.34291
Probability	0.002088

$$EM = -0.236855470984 + 0.0110440600454 * PMCOE + 0.0805821324543 * DEBT - 0.0148902866191 * LOSS + 0.309389451169 * ROA + 0.0225508158076 * SG + 0.0103310167914 * SIZE + [CX=F]$$

The result shows that there is no significant (statistic probability less than 5 percent error level) relationship between company’s operational assets to sales ratio as a measure for economic competitiveness and earning management based on t-statistic (-0.339) and its probability (0.734). Even though the relationship is not significant, the relationship is positive (impact factor 0.011). This means that according to the obtained results, by increasing (decreasing) the company’s operational assets to sales ratio, earning management will increase (decrease). Since company’s operational assets to sales ratio is a direct measure of market competition and an inverse measure of economic competitiveness, therefore according to the results, a decrease (increase) in earning management can probably be due to an increase (decrease) in economic competitiveness, but this impact is not statistically significant.

The Third hypothesis test

In the third research hypothesis, the effect of company’s Tobin’s Q ratio as a measure of economic competitiveness on earning management has been tested using combinatorial regression method. Before the model’s final fitting, the appropriateness test of combinatorial model over hybrid model and appropriateness test of combinatorial model with fixed effect over combinatorial model with random effects were performed and their results are presented in table 7.

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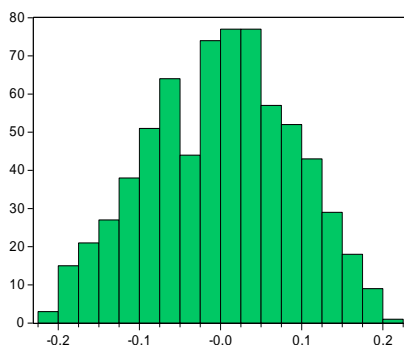
**Table 7: The results of appropriate regression model choice
 The effect of economic competitiveness (company’s Tobin’s Q ratio) on earning management**

Test statistic	Type	Statistic amount	Degree of freedom	Probability
F-Limer statistic (Chow test)	Crossover	2.112261	(594.99)	0.0000
S.Chi-squared (Hausman test)	Crossover	52.841394	6	0.0000

The result shows that according to the F-Limer statistic (2.112) and its probability (0.000) (statistic probability less than 5 percent error level), the use of combinatory model is appropriate; the result also shows that according to Chi-squared statistic (52.841) and its probability (0.000) (statistic probability less than 5 percent error level), the method with fixed effects is appropriate. Finally, the third research model fitting is performed by choosing the combinatorial multiple regression model with fixed effects. The results of this model fitting is presented in table 8.

Table 8: The effect of economic competitiveness (company’s operational assets to sales ratio) on earning management test results

Dependent variable : Earning Management (EM)				
Explanatory variables	Coefficients	S.E	t-statistic	S. prob
Y-intercept©	-0.218730	0.127740	-1.71230	0.0874
(Tobin’sQ) (PMCQ)	-0.000222	0.000122	-1.83034	0.0677
Debt ratio (DEBT)	0.082288	0.034972	2.352945	0.0190
loss(LOSS)	-0.015757	0.008253	-1.90927	0.0567
Return on assets(ROA)	0.302110	0.047516	6.358053	0.0000
Sales growth(SG)	0.022465	0.007574	2.965958	0.0031
size(SIZE)	0.009666	0.009526	1.014670	0.3170
Fisher statistic	4.635858		Coefficient of D.S	0.450389
Fisher statistic probability	0.000000		Durbin-Watson	2.241767



Series: Standardized Residuals	
Sample	1383 1389
Observations	700
Mean	7.14e-19
Median	0.004102
Maximum	0.205704
Minimum	-0.205183
Std. Dev.	0.089446
Skewness	-0.093606
Kurtosis	2.356924
Jarque-Bera	13.08404
Probability	0.001442

$$EM = -0.218730481491 - 0.000222419552915 * PMCQ + 0.0822878929781 * DEBT - 0.0157569759581 * LOSS + 0.302109767623 * ROA + 0.0224653517162 * SG + 0.00966578283123 * SIZE + [CX=F]$$

The result shows that there is a significant (statistic probability less than 10 percent error level) and negative (impact factor -0.0002) relationship between company’s Tobin’s Q ratio as a measure for economic competitiveness and earning management based on t-statistic (-1.830) and its probability (0.067). This means that according to the obtained results, by decreasing (increasing) the company’s Tobin’s Q ratio, earning management will increase (decrease). Since company’s Tobin’s Q ratio is an inverse measure of market competition and a direct measure of economic competitiveness, therefore according to the results, an increase (decrease) in earning management can probably be due to a decrease (increase) in economic competitiveness, although this impact is statistically significant at 10 percent error level. Tobin’s Q ratio means that the companies managed to create value by performing their operational

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activities. In these circumstances, the company's market value is increased above their book value and there is a focus-oriented perspective in the market competition. This focus-oriented view on the company will result in less applied competitions. Accordingly, in environments with little competition, managers are less involved in opportunistic processes regarding earning management and finally the earning management will decrease.

The result shows that there is a significant (statistic probability less than 5 percent error level) and positive relationship between debt ratio and earning management. This means that the less (more) debt exists in company's finance structure, the less (more) earning management will happen in the company. In other words, whenever the companied finance through external sources and increase their debts in company's capital structure, they would have a higher earning management. The result shows that there is a significant (statistic probability less than 10 percent error level) and negative relationship between loss report and earning management. This means that the companies that are in loss, have had less earning management. The result shows that there is a significant (statistic probability less than 5 percent error level) and positive relationship between return on assets and earning management. This shows that if the profit obtained from using companies assets decreases (increases), earning management by companies will decrease (increase). This conclusion is confirming the results of loss report variable. A significant and negative relationship was observed for loss report, and a significant and positive relationship was confirmed for profitability. The result shows that there is a significant (statistic probability less than 5 percent error level) and positive relationship between sales growth and earning management. This shows that if the companies have less (more) sales in their operational activities, they would have less (more) earning management. The result shows that there is no significant (statistic probability less than 5 percent error level) relationship between firm's size and earning management. Even though the relationship is not significant, the relationship is positive. This means that according to the obtained results, a decrease (increase) in earning management can be due to a decrease (increase) in firm's size. But this relationship is not statistically significant.

The overall results of research hypotheses tests

In this research, the relationship between economic competitiveness and earning management was tested in 3 models by considering control variables. In this section, the overall results of research hypotheses tests are described in table 9.

Table 9- Summary of the overall results of research hypotheses tests

Hypothesis	Hypothesis Description	Test Result
First	There is a significant relationship between economic competitiveness (Tobin's Q ratio) and earning management	Confirm
Second	There is a significant relationship between debt ratio and earning management	Confirm
Third	There is a significant relationship between firm's size and earning management	Decline
Fourth	There is a significant relationship between loss report and earning management	Confirm
Fifth	There is a significant relationship between return on assets and earning management	Confirm
Sixth	There is a significant relationship between sales growth and earning management	Confirm

Since there is an inverse relationship between product market competition and economic competitiveness, we can suppose that according to the results of this research, product market competition has a direct impact on earning management. This conclusion is consistent with the results of the studies by Tinaikar & Xue (2009), Markarian and Santalo (2010), Karuna et al (2012) and Datta et al (2013), while it is not

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consistent with the results of Park & Marciukaiyte (2009) and Lee and Liu (2013). The results of this research showed that there is a significant and positive relationship between debt ratio and earning management. This result is consistent with the results of the studies by Noravesh et al (2005) and Hassani and Najd (2013), while it is not consistent with the results of Moradzadehfard et al (2009). The results of this research showed that there is no significant relationship between firm's size and earning management. This result is consistent with the results of the studies by Moradzadehfard et al (2009), while it is not consistent with the results of Hassani and Najd (2013) and Noravesh et al (2005). The results of this research showed that there is a significant and negative relationship between loss report and earning management and a significant and positive relationship between return on assets and earning management. This result is consistent with the results of the studies by Hassani and Najd (2013), while it is not consistent with the results of Mojtahedzadeh, Valizadeh and Larijani (2008). The results of this research showed that there is a significant and positive relationship between sales growth and earning management. This result is consistent with the results of the studies by Datta et al (2013).

OVERALL CONCLUSION AND RESEARCH SUGGESTIONS

The results obtained from tests showed that a significant relationship between economic competitiveness and earning management only exists when considering Tobin's Q ratio as the measure of economic competitiveness. Tobin's Q ration means that the companies managed to create value by performing their operational activities. In these circumstances, the company's market value is increased above their book value and they have presented a positive perspective from themselves in market competition. This focus-oriented perspective on the company will lead to more monitoring over company's activities. Therefore, managers will try to minimize their involvement in opportunistic activities regarding earning management in order to avoid any danger (losing company's reputation, risk of lawsuit ...) and earning management will decrease at last. In other words, when market competition is lower, in fact the company's economic competitiveness is higher, hence there would be less earning management by the managers. Therefore, different groups of investors, creditors, analyzers and other groups are assured that if the company which is under evaluation enjoys high competitiveness, the probability of earning management is reduced and the reported earnings are close to the actual earnings. This subject will make this assurance that the managers of such companies do not have opportunistic behaviors of financial reporting based on personal benefits.

On the other hand, it is necessary to note that despite the absence of opportunistic behavior by managers of firms that are highly competitive, the existence of high focus in products competition will cause the market to face a loss of efficiency. This is especially important for countries in transition such as Iran. In this circumstance, trying to reach a competitive market is desirable, which according to the results of this study will lead to a decrease in economic competitiveness and consequently an increase in earning management. Therefore, if a company has a lower competitiveness in product competition, the probability of earning management is increased and the chance that the reported earnings are close to the actual earnings is reduced; because increased competition leads to a decrease in products sales and consequently a decrease in company's profitability, and according to the research results and since managers' job security depends on presenting a good image of company's performance, it is possible that the increase in sales and obtaining a good return on assets are not due to following the marketing policies and good sales and the efficiency of operations in product competition.

Additionally, the existence of necessary motivations in managers of in loss companies and those managers who increased the company's debts level in capital structure potentially confirm that these managers will show opportunistic behaviors in earning reporting based on personal benefits. Therefore it is advised to the organizations that are deciding about economic activities of companies in internal economics field that along with the privatization process and creating a competitive economics, provide the necessary foundations to prevent managers from using opportunistic behaviors in market competition. This can be done through controlling mechanisms. Some of these mechanisms are an adequate auditing system, an adequate internal control system, Monitoring of Corporate Governance and so on. Ultimately,

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this controls will lead to an adequate financial reporting in companies and limit the opportunistic course for managers.

Suggestions for future research

Each of the cases discussed below can be considered as suggested research topics for future studies:

1. Given that a similar study has been found in the field of economic competitiveness effect on earnings management, it can be stated that similar investigations at various time intervals in Iran can help to explain issue in our country.
2. Kothari's model is used in this study in order to measure earning management. It is recommended to use other models such as Jones (1991), adjusted Jones (1995), Kuznick (199) and Decho and Richardson (2002) for a better assessment of research topic. Therefore, external validity of this research may increase or new results may obtain.
3. The results of hypotheses tests showed that economic competitiveness is sensitive to the type of indicator used for its evaluation. Therefore it is recommended for the researchers to use other measures of evaluating product competition and economic competitiveness such as n-firm concentration ratio index, Lerner index, newcomer's obstacles, number of active companies in the industry, and other economical indexes.
4. Investigating the effect of economic competitiveness on earning management due to actual activities.
5. Investigating the effect of economic competitiveness on earning management in boom and depression periods.
6. Investigating the effect of investment strategies on earning management.
7. Investigating the effect of economic competitiveness on investment efficiency.

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