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The examination of the relation between product market competition, type of industry and earnings management of the listed companies in Tehran stock exchange

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ABSTRACT

The aim of the investigation is to examine the relation between product market competition, type of industry and earnings management of the listed companies in Tehran stock exchange. The study is a kind of practical and semi-empirical research and it is done by post-event approach (via past data). All listed companies in Tehran stock exchange were selected as statistical population during 2006 to 2012. So, there are 74 listed companies in this research. So, two hypotheses are provided and related data are collected. Hence, product market competition, earnings management and type of industry are considered as independent, dependent and moderating variables, respectively. Also four control variables include firm size, financial leverage, firm age and sale growth were collected. Ordinary Least Squares (OLS) was selected to examine each hypothesis through EVIEWS 7. The results indicated that there is a significant relation between product market competition and earnings management of the listed companies in Tehran stock exchange. And, type of industry doesn't significantly impact on the relation among product market competition and earnings management of those companies.

KEYWORDS: Product market competition; Type of industry; Earnings management.

1- INTRODUCTION

In accounting literature, earnings management is an issue that is offered in the accounting earnings field. The field has been evolved after 20 century along with various researches by accounting experts. Each of these researches has dealt with special dimensions such as earnings manipulation, earnings smoothing and earnings management. Earnings management is in the center focus of attentions due to notorious of some firms in recent years. Some legislative references have their shade on this issue and have changed some legislative issue (Jasson et al, 2004).

Haily & Vallen (2008) defined earnings management as: "earnings managements is happened when managers use their personal judgment for financial reporting, consequently financial structure changes are happened. The changes are caused some misleading of stakeholders in financial reporting about business agency performance or impact on consequences of business unit contacts which is dependent on reported accounting numbers. Skipper (2001) defined earnings management as voluntary intervention during financial reporting process in order to gaining personal interests for shareholders and managers. When earnings management give private information to shareholders, or when it is used to prevent re-contract and costly borrowings which finally leads to decreased political costs, shareholders would be benefited from. Managers also can utilize earnings management for taking some privileges from shareholders such as increased reward, decreased probability of axing the poor performance managers (Titman et al, 2009).

On the other hand, competition in economics is existed between sellers to achieve some goals such as increased profit, market share, and sale volume through changing marketing components: price, product, distribution and advertisement (Karona, 2007). In his book titled "Wealth of Nations", Adam Smith defined competition as "allocation of product resources to their most valuable applications" (Nayama, 2006). Competitiveness is one of the important concepts for many of management, economic and international business researches and investigators and various definitions have been offered for them (Hay, 2011).

Taison (1993) regarded competitiveness as ability to producing products and competitive services at international markets so that creates persistent and growing life standards for citizens, while Crogman (1994) considered it as efficiency (Ghaffarlo, 2011). Market structure that is the indicative of market institutional characteristics includes a spectrum of complete competition to monopoly. Market competition means different firms have intense competition in producing and selling products and their products have no special excellence to each other (Boss & Zoo, 2009).

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On the other hand, competitiveness means that a firm couldn't create a production method to produce more quality products or offer its products with lower price than competitors', consequently couldn't dominate sale market (Ebrahimi, 2011). What we looking for in this research is examining the relation between product market competition, type of industry and earnings management of the listed companies in Tehran stock exchange. It seems that the answer of the question can be useful for executive and non executive managers, potential, actual and institutional investors as well as independent auditors.

2- RESEARCH BACKGROUND

Ghorbani et al, (2013) examined the relation between product market competition, board composition and quality of information disclosure of the listed companies in Tehran stock exchange. The results suggested that percent of non-executive board members has no significant relationship with disclosure quality, and product market competition wouldn't increase and improve the relation between these two variables.

Heshmatzadeh et al, (2013) examined the impact of product market competition on agency costs of the listed companies in Tehran stock exchange. The obtained findings showed that product market competition significantly and positively impact on the efficiency of operational cost. On the other hand, other results demonstrated that the intensity of competition in product market causes decreased audit fee, i.e. increase in product market competition is happened along with decrease in agency costs.

Khajavi et al, (2014) examined the relation between product market competition and earnings management of the listed companies in Tehran stock exchange. The results of their examination indicate that there is a reverse relation between Herfindahl-Hirschman index (HHI) and modified Lerner with earnings management of firms.

Jia & Shi (2014) examined the relation among social preference, product market competition and firm value. The results demonstrated that social investment has positive impact in financial performance of firms if it is performed regarding to products variety strategy.

Bostamant & Donanjo (2014) examined the relation between market competition and industry output. The results indicated that the impact of the firms one is higher than the latter. So, the firms in more competitive industries have less ROA.

3. RESEARCH METHODOLOGY

3-1- The research's hypotheses

- There is a significant relation between product market competition and earnings management of the listed companies in Tehran stock exchange.
- Type of industry significantly impacts on the relation among product market competition and earnings management of the listed companies in Tehran stock exchange.

3-2- Research population and statistical sample

The statistical population of the research includes all listed companies in Tehran stock exchange were selected based on systematic omission method during 2008 to 2012. The firms should have the following condition:

1- They should not have changed their activities during 2008 to 2012.
2- Their fiscal year should end in 19/3/… and they shouldn't change their fiscal year during the research.
3- They should not be part of investment companies, financial intermediary such as insurance or bank.
4- Their stocks should be traded in stock exchange.
5- Their information should be available in stock exchange.

According to the applied limitations, 331 firms were selected through the systematic method between 421 listed companies in Tehran stock exchange; finally 74 firms were picked up as ultimate sample through Cochrane method. The Cochrane method is as follows:

$$n = \frac{(331)(1.96)^2 \times (0.5)(0.5)}{(331)(0.1)^2 + (1.96)^2(0.5)(0.5)} \cong 74$$

Where, maximum permissible error (d) is 0.01, confidence coefficient is 95%, t=1.96 and the amounts of p and q are both 0.5, while the population volume is N. the amount of P is considered as 0.5, due to if p=0.5, N would find his maximum amount which causes the sample amount to be enough large. In this study, 46 companies have been regarded as the statistical sample.

3-3- Operational definition of the research variables

3-3-1- Earnings management variable

In this research, the modified Jones model is used to measure earnings management, because this model can solve the current problem. The model is as follows (Ghalibaf Asl et al, (2010) :

$$\frac{TAC_{it}}{TA_{it-1}} = a_0\left(\frac{1}{TA_{it-1}}\right)+\frac{a_1(\Delta REV_{it}-\Delta REC_{it})}{TA_{it-1}}+a_2\left(\frac{PPE_{it}}{TA_{it-1}}\right)+e_{it}$$

TAC_{it}: The sum of accruals (profit before unexpected items minus operational cash flows) in the year t for the studied firm i.

TA_{it-1}: The sum of assets in the year t-1 for the studied firm i.

ΔREW_{it}: Income changes during t-1 to t for the studied firm i.

ΔREC_{it}: Accounts and receivable documents during t-1 to t for the studied firm i.

PPE_{it}: Gross amount of properties, machines and equipments during the year t for the studied firm i.

Then, estimated coefficients obtained from firms' regressions are obtained through fraction of unmanaged accruals from sum of accruals in order to estimate the amount of managed accruals, as follows:

$$TEAM_{it}=\frac{TAC_{it}}{TA_{it-1}}-a_0\left(\frac{1}{TA_{it-1}}\right)+\frac{a_1(\Delta REV_{it}-\Delta REC_{it})}{TA_{it-1}}+a_2\left(\frac{PPE_{it}}{TA_{it-1}}\right)$$

TEAMit: It is the components of unmanaged accruals of the firm i in the year t which is equal with the sum of discretionary accruals.

3-3-2- Operational definition of product market competition variable

To estimate the above variable, HHI is used. The index is obtained from the sum of the squared market shares of all active firms in an industry:

$$HHI = \sum_{i=1}^{k} S_i^2$$

K= The number of active firms in market

S_i= The market share of the firm i.

$$S_i = \frac{X_j}{\sum_{i=1}^{n} X_j}$$

X_j= The sale of the firm j

i= Type of industry

This index measures the industry centralization amount. In this index, whatever the estimated index is higher, the centralization and competition would be higher and lower, respectively (vice versa) (Setayesh & Jahromi, 2011).

3-4- The research regression model

$$\text{Management Earnings}_{it} = \beta_0 + \beta_1 \text{Product market competition}_{it} + \beta_2 \text{SIZE}_{it} + \beta_3 \text{PROFIT}_{it} + \beta_4 \text{AGE}_{it} + \beta_5 \text{LEV}_{it} + \varepsilon_{it}$$

$$\text{Management Earnings}_{it} = \beta_0 + (\beta_1 \text{Product market competition}_{it} \times \text{Industry}_{it}) + \beta_2 \text{SIZE}_{it} + \beta_3 \text{PROFIT}_{it} + \beta_4 \text{AGE}_{it} + \beta_5 \text{LEV}_{it} + \varepsilon_{it}$$

3-5- Data analysis method

In this research, F-Limer test is used for selecting between common effects and fixed effects methods. If fixed effects model is selected, Hausman test would be used to select among fixed effects or random effects models. Also, model's error term autocorrelation, heteroskedasticity and data normality would have been examined. To illustrate the description power of descriptive variables, to examine the significance of variables and to investigate the adequacy of whole model, adjusted coefficient of determination (Adjusted R2), T-statistics and F-Fisher test are used, respectively. As well, statistical analyses are done through EVIEWS 7 and EXCEL software.

4- RESULTS

4-1- Examination of heteroskedasticity

To examine heteroskedasticity, Arch error terms test (LM) is performed. The obtained results are as follow:

Table 1-1: The results of Arch error term test (LM)

Description	Statistics amount	Probability
F-statistic	1.915116	0.162
Obs*R-squared	1.075814	0.162

* 5* error level

Regarding table 1-1, due to the significance level of f-statistics is not significant in 5% error level, homogeneity of variance is confirmed and heteroskedasticity of error terms are rejected.

4-2- Significance test of fixed effects method

Table 1-2: The results of F-Limer

Description	Statistics amount	Freedom degree	Probability
Cross-section F	2.281613	73	*0.026
Cross-section Chi-square	129.178442	73	*0.018

* 5% error level

Table 1-3: The results of Hausman test

Description	Statistics amount	Freedom degree	Probability
Cross-section F	5.161843	13	*0.034

* 5% error level

Regarding the results of both table (F and Hausman), the obtained probability were less than 5% in each tests, so fixed effects method should be used in the related regression model.

4-3- Research hypothesis test

Table 1-4: The firs hypothesis regression test

Variable	Impact factor	Estimation of deviation	t-statistics	Significance level
Fixed	0.495	0.113	4.381	*0.032
Product market competition	-1.714	0.269	-6.371	*0.000
Firm size	-3.628	0.715	-5.075	*0.013
Profitability	0.552	0.496	1.112	0.073
Firm age	0.917	0.862	1.063	0.086
Financial leverage	-0.638	0.135	-4.753	*0.028

* 5% error level

Table 1-5- Explanation and significance ability of whole model

R		DW	ANOVA	
Coefficient of determination	**Adjusted coefficient of determination**		**F**	**Sig.**
0.372	0.368	2.162	55.932	**0.000

** 1% error level

According to the table 1-4, the impact factor of product market competition variable on earnings management is equal with -1.714, indicating product market competition has negative and reverse impact on earnings management. On the other hand, due to significance level of t-statistics, product market competition on earnings management is 0.000; H0 is rejected in 5% error level with 95% confidence level, and it can be said that there is a significant relation between product market competition and earnings management of the listed companies in Tehran stock exchange. The empirical model of the research can be written as:

$$\text{Management Earnings}_{it} = 0.495 - 1.714\ \text{Product market competition}_{it} - 3.628\ \text{SIZE}_{it} + 0.552\ \text{PROFIT}_{it} + 0.917\ \text{AGE}_{it} - 0.638\ \text{LEV}_{it} + \varepsilon_{it}$$

4-4- Research hypothesis test

Table 1-6: The firs hypothesis regression test

Variable	Impact factor	Estimation of deviation	t-statistics	Significance level
Fixed	0.642	0.125	5.136	*0.008
Type of industry* product market competition	1.382	0.836	1.653	0.079
Firm size	-3.105	0.929	-3.342	*0.043
Profitability	0.475	0.432	1.057	0.091
Firm age	0.783	0.669	1.171	0.087
Financial leverage	-0.627	0.134	-4.682	*0.025

* 5% error level

Table 1-7- Explanation and significance ability of whole model

R		DW	ANOVA	
Coefficient of determination	**Adjusted coefficient of determination**		**F**	**Sig.**
0.297	0.284	2.251	49.125	**0.000

** 1% error level

According to the table 1-6, the impact factor of type of industry variable on the relation between product market competition and earnings management is equal with 0.129, indicating type of industry has positive and direct impact on the relation between product market competition and earnings management. On the other hand, due to significance level of t-statistics, type of industry on the relation between product market competition and earnings management is 0.000; H0 is not rejected in 5% error level with 95% confidence level, and it can be said that type of industry doesn't significant impact on the relation between product market competition and earnings management of the listed companies in Tehran stock exchange.

5- Conclusion and Recommendations

The research's results suggested that there is a significant relation between product market competition and earnings management of the listed companies in Tehran stock exchange and type of industry significantly impact on the relation among product market competition and earnings management of those companies. It is suggested to investors, shareholders and other stakeholders to pay their attention to the competition level in product market during buying and selling stocks, because they have lower earnings management level which leads to decrease investment risk. It is also suggested to Tehran stock exchange to rate firms based on their competition level in order to make investors, shareholders and etc. to knowingly make their decisions.

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