ARTICLE

EXAMINING THE RELATIONSHIP BETWEEN COMPETITION STRUCTURE OF PRODUCT MARKET AND LEVEL OF DISCLOSURE IN IRANIAN COMPANIES (CASE STUDY: COMPANIES LISTED ON TEHRAN STOCK EXCHANGE)

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ABSTRACT

Pricing power of product market is an important factor affecting earnings management. There have been used the adjusted Lerner index, Hirfendal-Hirschman index and measurement standard of optional abnormal accrual items according to Kaznic model (1999) to examine the effects of pricing power of product market, industry structure and earning management respectively. The research is correlation type that examines the relationship between independent and dependent variables. Its population consists of 114 companies listed in Tehran Stock Exchange, which they were studied from 2006 to 2013. For statistical analysis, there have been used quantitative methods including multivariate regression analysis based on panel data. To analyze, there have also been used E-Views, Excel and Stata software. The results show a significant effect pricing power of product market on earnings management, but industry structure has no a significant effect on excess returns.

INTRODUCTION

Calculating net profit of an enterprise is affected by accounting methods and estimations. This provides an opportunity for managers to manage the reported accounting earnings using variety of techniques[1]. Earnings management is defined as process of the informed decision-making by considering to the accepted accounting principles, in order to achieve the desired profit level. According to Melford and Kamiski [2], earnings management is an informed and active manipulation in accounting results to change representing business situation of an economic unit. Scott[3] has defined earnings management as selecting accounting policies to achieve some specific objectives. According to Wilde et al.[4] earnings management refers to public intervention in process of determining earnings often in line with management purposes.

The conducted research by Rocha and Diori showed that the extent of earnings management is beyond manipulation of reporting procedures and even includes manipulating real activities such as increasing production and inventory levels to reduce the final price. Thus, the different ways to conduct earnings management in form of increasing profits can be defined as follows:

o Recognizing costs later (i. e showing partial views to select depreciation method), recognition revenue sooner;
o Showing partial views to classify some cost items as of the period as product's final cost; Some fixed and intangible assets.

This will transfer part of costs in of the current period to the next period. As an indicator representing market organizational characteristics, market structure includes a wide range of from competition to perfect monopoly. Product market competitiveness means that different companies compete to produce and sell goods, while their goods are not preferred to the other. In other words, competitiveness means that the a company has failed to adopt production methods for producing better quality goods or supplying its manufactured goods with lower prices than other competitors in the market. As a result, it has failed to take possession market share.

In other words, this research seeks to find answer to the following question: can pricing power of product market and industry structure affect earnings management of the listed companies in Tehran Stock Exchange?

The present research is important because previous studies on earnings management have mainly examined the impact of product market competition on earnings management using Q-Tobin and the Hirfendal-Hirschman indices. However, there has not been conducted any study on the most important factor influencing earnings management, namely pricing power product market. There have been used the adjusted Lerner index, Hirfendal-Hirschman index and measurement standard of optional abnormal accrual items according to Kaznic model to examine the effects of pricing power of product market, industry structure and earning management respectively.

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THE RESEARCH THEORETICAL PURPOSES

1. Understanding the effects of pricing power of product market and industry structure on earnings management;
2. More familiarity with the concept of pricing power of product market, industry structure and earnings management as well as their evaluation criteria.

THE RESEARCH PRACTICAL PURPOSES

1. Legislator systems such as Audit Organization and Stock Exchange can use the research results to set their policies and make decisions about what type of information should be emphasized, in order to protect public interests and take optimal decisions.
2. The research results can help users of financial statements in making decisions.
3. The research results can help corporate executives to make decisions on how to manage good profits to provide company's interests.

RESEARCH HISTORY AND LITERATURE

Jagannathan et al. [5] argued that product market competitiveness is a systematization mechanism for managers and prevents them from useless spending.Using theoretical and empirical analyses, Bgggs et al. [6] showed that competition has a direct pressure on management efforts. They measured agency costs by separating companies with the same ownership and management and large corporations with diverse ownership. In both cases, the results showed a significant negative relationship between the agency costs with competitiveness of market.

In a research titled "competition in product market and earnings management", Tinakar and Tou (2009) examined the relationship between earnings management with competition. Their research results showed that competition reduces profitability of companies and therefore, earnings management is a factor to distort economic performance by managers.

In a research titled "competition in product market, information and earnings management", Markarian and Santalo[7] examined the effects of competition in product market on management incentives for earnings management. Their research results suggest two interactions: first, the results showed that how to increase manipulating profit due to pay more awards to management in more competitive markets; second, their research results showed that if investors have enough information about actual sales and efficiency of company, then competition may reduce the incentives of earnings management.

In an article titled "examining earnings management in the listed companies on Tehran Stock Exchange", Nowravesh et al. [8] examined earnings management from 1996 to 2003. Their findings show that large enterprises in Iran have taken necessary actions for earnings management and motivation of implementing earnings management is associated with increasing debt. Managers of these companies use accruals to lower tax of their corporate. Managers will be more interested on earnings management by increasing firm size [8].

In a research titled "the relationship between competitive structure of product market with return on equity", by applying Herfindal-Hirschman index, Lerner index and the adjusted Lerner index in 87 companies listed on Tehran Stock Exchange from 2002 to 2009, Namazi and Ebrahimi[9] concluded that there is a negative relationship between Herfindal-Hirschman with return on equity, but it is not significant. While, there is a significant negative relationship between Lerner index and the adjusted Lerner in with return on equity. The finding means that the more competition in industries, the more return on equity. In other words, companies in competitive industries achieve more efficiency that this is consistent with predicting hypotheses of creative destruction and barriers to entry.

In their research, Ghorbani et al. [10] examined the relationship between product market competition, board composition and quality of information disclosure of the listed companies on Tehran Stock Exchange. The results show that product market competition has a strategic effect and a U-shaped relationship with quality of information disclosure. However, on rule effects, the results show that the percent of non-executive board members has no significant relationship with disclosure quality and product market competition does also not improve and strengthen the relationship between both variables. Examining control variables indicates a positive and significant relationship with ROA; while there is a significant negative relationship between debt ratio and firm size with disclosure quality. However, there is a poor relationship between firm sizes with disclosure quality statistically.

Namazi and Rezaei [11] examined the effects of product market competition on companies' cash dividend policy. In this respect, there were studied 67 listed companies from 2004 to 2010. The research results showed a significant inverse relationship between product market competition with companies' cash dividend policy.

RESEARCH HYPOTHESIS

H_1: *pricing power of market product of companies based on the adjusted Lerner index is effective on earnings management.*
H_2: *industry structure is effective on earnings management.*

In the present research, earnings management of companies shows its dependent variable. Earnings management can be referred as one of criteria for financial decisions. Studies about earnings management are generally considered in accruals [12].

According to research question and objective, pricing power of product market and industry structure have been considered as independent variables. In this study, there have been used the adjusted Lerner index and Hirfendal-Hirschman index to examine the effects of pricing power of product market and industry structure respectively.In this research, investment opportunities, profitability and firm size were considered as control variables.

METHOD

The research method is correlation type that examines the relationship between independent and dependent variables. Its population consisted of companies listed on Tehran Stock Exchange.

In the present research, systematic elimination method has been used to determine statistical sample. Accordingly, those companies in the population with the following requirements were selected as statistical samples; others have been removed:

1. They should be accepted in Tehran Stock Exchange until ending March 2006 and their fiscal year has been ended to this date;
2. The companies should not change their fiscal year during the studied period;
3. The required information of the companies should be available from 2006 to 2013;
4. They should not be bank or financial institution or holding companies;
5. They should not have operation break more than six months.

Given the above-mentioned limitations, there were selected 144 companies as statistical sample. In the research, the required data was gathered from the audited financial statements of listed companies in Tehran Stock Exchange, board reports, databases, Internet websites such as Kodal, official website of the Stock Exchange and available software such as Tadbirpardaz and Rahavard Novin. In the research, there have been used quantitative methods of statistical analysis including multivariate regression analysis based on panel data. To analyze its analysis, there have also been used E-Views, Excel and Stata software. In the research, there has been collected the related data from 2006 to 2013. Its population consists of all companies listed on Tehran Stock Exchange.

MODELS TO TEST HYPOTHESES

In this study, among the existing methods of data analysis, we use panel/pool data method. This technique combines time series-cross section data that is now widely used by researchers. This method is used when items cannot be studied as time series-cross section data or when number of data is low. Time series-cross section data is mainly integrated and used because of increasing number of observations, raising degrees of freedom, reducing variance heterogeneity and reducing linearity between variables.

❖ TESTING THE RESEARCH HYPOTHESES IN POOL MODE

The following statistical procedure has been done to analyze and test hypotheses:

1. Providing descriptive statistics related to the research variables;
2. Conducting variables' reliability test using Leon, Lin and Choi method;
3. Examining the correlation between independent variables using Spearman correlation table;
4. Conducting F-Limer Test to examine POOLED or PANEL hypotheses;
5. Conducting variance heterogeneity and auto-correlation tests to verify auto-correlation of the research models;
6. Conducting EGLS test for final testing of the hypotheses.

❖ EXAMINING DESCRIPTIVE STATISTICS

Descriptive statistics create part of the conducted analysis by a researcher that Table 4.1 shows the statistics. As one of central parameters, the mean represents center of gravity of the society and. In other words, it expresses the fact that if the mean is considered instead of all observations in a society, it will not cause any change in total data of its population.

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Standard deviation is a number that represents data dispersion around the mean value of the same data. Among the research variables, investment opportunities had the lowest dispersion with standard deviation of 0.0047; therefore, they are more focused and more accurate. Meanwhile, firm size was more dispersed with standard deviation of 5.15 and less accurate than the other variables.

Undoubtedly, judgment about normality or abnormality data is one of the most important applications of indicator of descriptive statistics. Normal or abnormal data distributions can be realized using the provided values for the variables' skewness and kurtosis, but Jarkbra test is a test that is more common for the present research. As seen in indicator 1, the significance level of variables is less than 5%. Therefore, in confidence level of 45%, it can be said that these variables are not normally distributed.

Table 1: Descriptive statistics for the research variables and results of Jarekbra test

Variable name	Earnings management	Industry structure	Pricing power of product market	Investment opportunity	Profitability	Firm size
Mean	0.0222	0.0171	0.1740	0.0732	0.1456	12.46
Middle	0.0132	0.0030	0.1635	0.0775	0.1241	12.345
Max	0.3544	0.2337	0.4646	0.1574	0.6757	14.722
Min	-0.3670	0.000	-3.6574	0.050703	-0.2440	6.3247
SD	0.1347	0.0245	0.2325	0.0047	0.1243	1.544
Skewness	0.3414	6.012	-3.7454	1.3210	0.3473	04167
Jarekbra statistics	1360.364	45102.44	45222.17	3463.414	253.5365	142.77
Probability	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Number of visits	1142	1142	1142	1142	1142	1142

❖ EXAMINING VARIABLES' STATIONARY

The research variables refer to mean constants, variables' variance over time and their covariance in different years. As a result, using these variables in the model does not cause spurious regression. For this purpose, there have been used unit root tests of Lin, Levin, Chow and Philips Peron. Results of the tests in indicator 2 show that probability F-statistic is less than 5% for all variables, so all variables of the research are placed in a stationary level during the studied period. Also, due to stationary of variables, there is no need to steady long-term stationary of the research variables.

Table 2: Examining the variables' stationary

Variable name	Lin, Levin, Chow		Philips Peron		Conclusion
	Statistic	Probability	Statistic	Probability	
Earnings management	-13.3331	0.0001	334.347	0.0001	Stationary
Industry structure	-4.00233	0.0001	423.430	0.0001	Stationary
Pricing power of market	-4.56301	0.0001	437.152	0.0001	Stationary
Investment opportunity	-20.1224	0.0001	774.706	0.0001	Stationary
Profitability	-22.0211	0.0001	717.320	0.0001	Stationary
Firm size	-15.6334	0.0001	660.353	0.0001	Stationary

❖ EXAMINING LINEARITY (CORRELATION) OF THE RESEARCH EXPLANATORY VARIABLES

After describing data statistically and examining reliability of the research variables, there was tested correlation between the research independent variables. Correlation analysis is a statistical tool to determine type and degree of relationship between a quantitative variable with another quantitative variable. In general, correlation coefficients are changed from -1 to +1 and the relationship between two variables can be positive or negative. The correlation coefficient is a symmetrical relationship. When correlation coefficient is close 1, interdependence of two variables is higher, and vice versa. Higher correlation coefficient between independent variables in a model distorts the regression results.

Table 3 shows correlation between the independent variables. The Pearson correlation test and Spearman correlation test are used to evaluate correlation between parametric and nonparametric variables respectively. In parametric statistics, variables have quantitative (continuous) measure and observations are followed by normal distribution; but in nonparametric statistics, most of variables have qualitative scale and as they cannot be measured precisely, they do not follow any statistical distribution. It is called

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free statistics distribution. Given that all variables in this research follow abnormal distribution, as a result, Spearman correlation has been used to examine correlation between the independent variables. Table 6 shows that there is no strong correlation between independent variables; therefore, from this point of view, the designed models are desirable to test the hypotheses.

Table 3: Results of the correlation between variables using Spearman test

Variables	Accruals	Industry structure	The adjusted Lerner index	Investment opportunity	Profitability	Firm size
Accruals	1					
Industry structure	0.0037	1				
Market pricing power	0.0365	0.0610	1			
Investment opportunity	-0.0263	-0.2333	0.01024	1		
Profitability	0.372	0.1053	0.4357	-0.1244	1	
Firm size	0.0263	0.2334	-0.0103	-0.4444	0.1244	1

❖ F-LIMER TEST TO DETECT POOLED OR PANEL OF THE RESEARCH HYPOTHESES

F-Limmer test was used to distinguish the pooled and panel data model, which its results indicate panel model. Since model type should be determined from the fixed or random effects in panel patterns, the Hassman test was carried out that its results show selecting the fixed effects model. Results of both tests are shown in[Table 4].

Table 4: Results of F-test

Hypotheses	F-Limer test			Hassman test		Result
	Statistic probability	Statistic value	Method	Statistic probability	Statistic value	
H_1	0.0001	24.4506	Panel	0.0001	2.1423	Rejecting random effects model
H_2	0.0001	30.434	Panel	0.0001	2.143	Rejecting random effects model

❖ Heterogeneity Testing of the Research Hypotheses

Heterogeneity testing of variances is another classic hypothesis that must be studied before final test. For this purpose, we have used STATA program that H_1 indicates variance heterogeneity and necessity to use EGLS to estimate the model; while H0 indicates rejecting heterogeneity and use OLS. The test results are shown in [Table 5]. As all hypotheses in the research have heterogeneity problem, so we will use EGLS method to estimate the model.

Table 5: Results of heterogeneity testing of variances

Variables	F	F-value	Test result
H_1	665.34	0.0001	Heterogeneous
H_2	652.54	0.0001	Heterogeneous

❖ Autocorrelation Test of the Research Hypotheses

Investigating the autocorrelation of the designed models is another process of data panel before final testing of the research hypotheses. H_0 in autocorrelation test indicates lack of autocorrelation. The World Rage Test in STATA was used to test hypothesis of lack of autocorrelation. As shown in Table 6, the test results show autocorrelation in all hypothesis of the study. There is used the fixed effects' model by considering to AR (1) and AR (2) parameters to test all hypotheses in the research in regression final model. After studying classic hypotheses, we look for final testing of the research hypotheses.

Table 6: Results of autocorrelation test of the research hypotheses

Variables	F	F-value	Test result

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H₁	5.177	0.0243	Autocorrelation
H₂	5.050	0.0261	Autocorrelation

❖ Final Testing of the Research Hypotheses

H₁: *pricing power of market product of companies based on the adjusted Lerner index is effective on earnings management H₀ model:*

$$AAA_{it} = \beta_0 + \beta_1 LI_{IA} + \beta_2 MKBV_{it} + \beta_3 PROF_{it} + \beta_4 SIZE_{it} + \varepsilon_{it}$$

The conducted panel data process for the hypothesis is summarized as follows:

1. All variables are stationary and there is no need to study their long-term stationary.
2. There is no strong correlation between the independent variables.
3. They are panel data and panel data model is the fixed effects model.
4. The designed model to test this hypothesis suffers from variance heterogeneity problem.
5. The designed model to test this hypothesis suffers from autocorrelation problem.

Therefore, the estimation generalized least squares method (EGLS) and the fixed effects model by considering AR (1) parameter can be used to test H₁.

The results of the F-statistic probability (0.0001) indicate that the model is significant in general and its autocorrelation problem has been resolved, given the Durbin-Watson statistic (4.141). In addition, results of the adjusted coefficient of determination show that during the research period, 2.062% of changes in the dependent variable have been influenced by the independent variables and control the test [Table 7].

The results show that the adjusted Lerner index based on regression coefficient (-0.056) and probability (0.0001) has a significant negative impact on earnings management. This means that if the adjusted Lerner index is changed, earnings management will be changed with coefficient of -0.056. In addition, there is a profitability control variable has a significant positive impact on earnings management, but this impact is significant negative for variables of firm size and investment opportunities.

Table 7: Results of testing H₁

Variables	Coefficients	Statistic value	Statistic probability
Market pricing power	-0.056	-4.010	0.0001
Investment opportunity	-5.324	-3.200	0.0014
Profitability	0.433	17.367	0.0001
Size	-0.035	-3.403	0.0007
Constant	0.333	3.202	0.0014
Coefficient of determination	0.265		
The adjusted coefficient of determination	0.262		
Durbin-Watson statistic	1.441		
F-statistic	1.441		
F-statistic probability	0.00001		

H₂: *industry structure affects earnings management.*

The hypothesis model:

$$AAA_{it} = \beta_0 + \beta_1 HHI_{it} + \beta_2 MKBV_{it} + \beta_3 PROF_{it} + \beta_4 SIZE_{it} + \varepsilon_{it}$$

The conducted panel data process for the hypothesis is summarized as follows:

1. All variables are stationary and there is no need to study their long-term stationary.
2. There is no strong correlation between the independent variables.
3. They are panel data and panel data model is the fixed effects model.
4. The designed model to test this hypothesis suffers from variance heterogeneity problem.
5. The designed model to test this hypothesis suffers from autocorrelation problem.

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Therefore, the estimation generalized least squares method (EGLS) and the fixed effects model by considering AR (1) parameter can be used to test H_2.

The results of the F-statistic probability (0.0001) indicate that the model is significant in general and its autocorrelation problem has been resolved, given the Durbin-Watson statistic (4.13). In addition, results of the adjusted coefficient of determination show that during the research period, 2.044% of changes in the dependent variable have been influenced by the independent variables and control the test (Table 8).

The results show that Industry structure based on regression coefficient (-0.102) and probability (0.0051) has no significant impact on earnings management. Control variables of investment opportunity, profitability and firm size have significant impact on earnings management.

The results show that pricing power of product market has a significant effect on earnings management, but industry structure has no significant effect on returns excess.

Table 8. Results of testing H_2

Variables	Coefficients	Statistic value	Statistic probability
Market pricing power	-0.102	-0.657	0.510
Investment opportunity	-5.327	-2.722	0.0066
Profitability	0.347	17.474	0.0001
Size	-0.031	-2.301	0.0052
Constant	0.740	2.656	0.0030
Coefficient of determination	0.253		
The adjusted coefficient of determination	0.244		
Durbin-Watson statistic	1.43		
F-statistic	70.43		
F-statistic probability	0.00001		

CONCLUSIONS AND RECOMMENDATIONS

Today, earnings management has become one of challenging and attractive issues in accounting studies because investors consider earnings figure as one of important factors for decision-making. Research has shown that low fluctuation and earnings stability indicate the quality; accordingly, with more confidence, investors will invest on shares of those companies with more stable earnings trend. In this regard, earnings management can be considered as a way to arrange notification of favorable financial status of companies that is conducted by management intervention in process of determining earning [8].

❖ Suggestions for Future Research

It is suggested to pay more attention to the following issues, in order to better use the research results and help examining the effect of pricing power of product market and industry structure on earnings management in the future:

1. Examining the effect of economic conditions such as financial crisis on the relationship between pricing power of product market, industry structure and earnings management;
2. Examining and testing the relationship between pricing power of product market, industry structure and earnings management in loss companies compared with profitable ones;
3. The effect of factors affecting product pricing such as product value for consumer, cost considerations, firm excellent management and government on the relationship between pricing power of product market, industry structure and earnings management;
4. Examining and testing the relationship between pricing power of product market, industry structure and earnings management using time intervals and determining time intervals' incensement to improve predicting the model.

❖ The Research Limitations

1. In process of scientific research, especially humanities such as accounting, there are cases out of control of researcher that can affect research results potentially. The purpose of this research is to examine the effect of pricing power of product market and industry structure on earnings management. For this purpose, the researcher controlled some variables. Therefore, the research

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results would be changed, if there were implementing other possible factors affecting pricing power of product market, industry structure and earnings management such as economic conditions.

2. Due to the limited population of firms listed in Tehran Stock Exchange that their fiscal year ended in March, the results should be generalized on other companies with caution.

3. Data was extracted from financial statements from 1956 to 1963 that accounting standards have experienced many changes in this period. As a result, the extracted numbers might not be matched.

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