

# **Relations between Earnings Management, Pricing Power and Competition Of Industries**

**Saeed Abdolrahimi<sup>1</sup>**  
**Mohammad Amin Khanlarkhani<sup>2</sup>**  
**Mohammad Mehdi Momenzadeh<sup>3</sup>**

## **Abstract**

*Earnings management has a negative effect on earnings quality and it may weaken validity of financial reports. The main focus of researches about earnings management is why companies manipulate earnings. Pricing power of companies can potentially affect earnings management. Since the relation between product pricing power and earnings management has not been studied in Tehran Stock Exchange, this research tries to find a relation between product pricing power and earnings management and a relation between existing competition in industries and earnings management in Tehran Stock Exchange.*

*The results show that there is not a significant relation between pricing power and earnings management. This is due to the mandatory nature of rules and regulations of product pricing in many internal industries. Also, those companies in more competitive industries may manage earnings in order to limit their competitors in obtaining precise information. The results of the present research show that there is a significant relation between existing competition of industries and earnings management in industries such as vehicle & parts, cement, gypsum & lime, chemicals, main metals, tile & ceramic, machinery & equipment, and pharmaceuticals.*

---

<sup>1</sup>. MA in Accounting, Imam Khomeini International University, saeed.abdolrahimi@eypars.net

<sup>2</sup>. PhD Student in Accounting, University of Allameh Tabatabayi, aminkhanlarkhani@yahoo.com

<sup>3</sup>. MA in Auditing, University of Allameh Tabatabayi, momezadeh2000@yahoo.com

*On the other hand, the results from the research model indicate no direct relation between the competitive pressure and earnings management.*

**Keywords:** *Earnings management, pricing power, competition.*

## **1. Introduction**

Earnings management is one of the ways for presentation of a good image of a business. One of the categorization methods for earnings management is categorizing by efficiency and being opportunistic. Earnings management is “efficient” if manager screens earnings during transferring information to external beneficiaries in such a manner that the company’s value increases by future profitability power; Earnings management is “opportunistic” if manager uses his personal judgment for increasing its benefits (Subramanyam, 1996). Managers may direct earnings management flow for their personal benefits. For example, Bartov and Mohanram (2014) suggest that managers engage in earnings management when they decide to increase stock call option. Earnings management points to low quality of accounting information (Dechow and Dichev, 2002). This may cause many informed dealers engage in the company’s stock transactions, which is similar to the decrement of desires of non-informed dealers to engage in the company’s stock transactions. Due to the close relation of earnings management with earnings quality, earnings management is usually measured by earnings quality (Lo, 2017).

On the other hand, the researches of Akdogu & MacKay (2015), Datta et al. (2013), Haushalter et al. (2008), Grullon & Michaely (2007), and Fama (1980) showed that the existing competition in market affected investment, finance, earnings distribution, corporate governance, and anticipation of analysts. However, the effects of market pricing power on earnings management of companies in Tehran Stock Exchange have not been studied. The main focus of studies about earnings management is the manipulation of earnings by companies. The pricing potential of companies can possibly affect earnings management in order to attain some of the goals. Thus, this research is going to find if there is a relation between product pricing power and earnings management, and between the existing competition of industries and earnings management in Tehran Stock Exchange. This research intends to clarify the theoretical fundamentals and relations of product pricing power, competition, and earnings management.

### **Research goals**

The main goal of this research is studying the relation between competition of industries, product pricing power, and earnings management in the listed companies in Tehran Stock Exchange to show managers, investors, and stakeholders that:

- Earnings management decreases by increment of pricing power;
- Earnings management increases by increment of competition of industries;
- Earnings management decreases by increment of competition pressure in market.

### **Research hypotheses**

The hypotheses of the research are:

- There is a significant relation between pricing power and earnings management.
- There is a significant relation between competition of industries and earnings management.
- There is a significant relation between competition in market and earnings management.

## **2. Theoretical fundamentals**

The previous studies show that earnings was managed in order to affect decisions of extra-organizational parties. Financial reporting is a main source of data for capital market. Earnings manipulation destructs the goal of financial reporting by deviating real performance of the company. This increases data asymmetry in the capital market. Graham et al. (2005) showed that earnings management is a comprehensive subject. They argued that most managers smooth earnings to affect the stock price and the company's risk premium. Skinner and Sloan (2002) showed that earnings manipulation was done to prevent manifesting real value of the company, because earnings' reporting bears fewer penalties for the company by financial markets. There are many researches that show managers engage earnings management for different reasons, including preventing the breach of debt contracts, escaping legal interventions, manipulating impressions of market stakeholders, transferring internal data, and maximizing management reward (Fang, 2012). If managers manipulate earnings, its effect will be reflected in the next periods.

Datta et al. (2013) studied the relation between market power and earnings management. They assumed that there was a significant relation between product pricing power and earnings management and between competition of industries and earnings management. Their results showed that companies with

lower pricing potential engaged earnings management more. In other words, there was a negative relation between pricing power and earnings management. In addition, their findings showed that there was a positive significant relation between competition of industries and earnings management.

In another research, Fang (2012) studied the effect of stock liquidation on the ability of stock price to transfer data about future earnings and accrual-based earnings management. He assumed that higher liquidation boosts the relation between stock price and future earnings, and there was a negative relation with accrual-based earnings management. He used top-down and John's Adjusted Model for measuring the stock liquidation and earnings management. His findings showed that higher liquidation related with higher future earnings and decreased accrual-based earnings management.

### **2.1. Concept of earnings management**

Generally, we can say that earnings management is deliberate actions of management in reporting earnings to achieve special goals according to the accounting principles. Flexibility of accounting permits innovations. Deviations such as earnings management occurs when individuals misuse this flexibility and use the deviations for covering real financial variations. This prevents revealing of real results of the management performance (Noravesh et al. (2005).

### **2.2. Types of earnings management**

There are many researches about earnings management. Nevertheless, there are fewer researches about the effective factors in the selection of a special type of earnings management. Scott (2000) considers earnings management process in two forms: 1. Opportunistic earnings management: that is manipulating and reporting earnings to obtain maximum benefits; 2. Efficient earnings management: that is modifying and reporting earnings by confidential and private data to obtain maximum benefits. Balakrishnan (2011) suggested that an independent auditor is often used as a representative of corporate governance methods and plays an important role in encouraging managers toward opportunistic earnings management. The other corporate governance representatives are: independent board of directors' ratio, and the existence of an audit committee (Veronica & Sidharta, 2008).

Jeyranpour et al. (2008) used representation theory to identify the type of earnings management and suggested that there was a reverse relation between the representation cost and earnings management; and in companies with lower representation cost, managers obtain more earnings and vice versa.

### **3. Product pricing power**

Product pricing power occurs when a company tries to price its products according to the prices of competitors. The simplest definition for price is the monetary and material value of a product or service. Therefore, pricing is a process for determination of a suitable monetary value for a product or service. There are several important aspects in industrial market for pricing, which we point them out here.

The first important aspect in industrial market is that by view of some of the buyers of industrial products, price has lower importance against other subjects such as on-time delivery, quality, after-sales services, and technical assistance of manufacturers. The other important subject in the process is pricing by negotiation. Many industrial products are sold by negotiated prices, which were agreed between sellers and buyers.

The second important aspect in industrial market is the difference between the official price and the real price. The official price is the announced price by companies; and the real price is the paid price by consumers. Due to different discounts in industrial markets, these two prices differ.

#### **Effective factors in pricing industrial products**

Companies expose 6 factors for pricing industrial products:

- Expected value for customers
- Competition
- Costs
- Pricing goals
- Top management
- Government

Any pricing without considering the above items is unreal and delusive, and bears loss for the company. The most important factor in pricing industrial products is the expected value of the product for customers. Industrial buyers

will not pay an amount more than the expected value of a product. Therefore, the expected value for customers is an upper limit for pricing a product.

## **4. Research history**

### **4.1. External researches :**

1. Datta et al. (2013) studied the relation between market power and earnings management. They assumed that there was a significant relation between product pricing power and earnings management and between competition of industries and earnings management. Their results showed that companies with lower pricing potential engaged earnings management more. In other words, there was a negative relation between pricing power and earnings management. In addition, their findings showed that there was a positive significant relation between competition of industries and earnings management.
2. Fang (2012) studied the effect of stock liquidation on ability of the stock price to transfer data of future earnings and the accrual-based earnings management. He assumed that higher liquidation boosts the relation between the stock price and future earnings, and there was a negative relation with the accrual-based earnings management. He used top-down and John's Adjusted Model for measuring the stock liquidation and earnings management. His findings showed that higher liquidation related with higher future earnings and decreased the accrual-based earnings management.
3. Tang & Lee (2011) studied the relation between market competition, structure of the board of directors, and disclosure quality. They found that market competition had a significant effect on disclosure quality and enforced relation between structure of the board of directors and disclosure quality.
4. Lakesman (2010) studied the relation between market competition and earnings management. He found that competitive companies were more eager for earnings management than exclusive companies.

5. Lee (2010) studied the effect of market competition on voluntary disclosure quality and quantity. He found that market competition decreased/increased quantity/quality of the voluntary disclosure.
6. Tinakar (2009) studied the relation between market competition and earnings smoothing. He found that competition increased profitability of companies and earnings management was a factor for deviation of the economic performance by managers.
7. Shin & Funky (2008) studied the relation between market modifications and much investment against weak growth. They found that market modifications increased demand significantly in midterm and long-term.
8. Shleifer (2004) studied the relation between market competition and earnings smoothing. He found that market competition pressure increased earning manipulation contingency in companies.
9. Allen & Gala (2000) studied the relation between market competition and the corporate governance mechanism. They found that market competition as a corporate governance mechanism was more effective than a controller entity or the market.
10. Kelenj & Verrecchia (1997) studied the relation between market competition and offering data for market demand volume. They found that companies tried to neutralize favorable news and signs and tried to highlight unfavorable news and signs of market demand.

#### **4.2. Internal researches**

1. Valipur et al. (2015) studied the relation between competition in market and representation costs and found that competition in market had a positive significant effect on the efficiency of operational costs. On the other hand, they found that competition in market decreased audit fees; namely, the more competition in market, the less the representation costs.
2. Ghorbani et al. (2013) studied the relation between competition in market and the board's composition with disclosure quality and found that competition in market had no governance effect and would not improve the relation between the board's composition and disclosure quality.
3. Namazi & Ebrahimi (2012) studied the relation between competition in market and the stock return and found that there was a non-significant negative relation between Herfindal-Hershiman Index and the stock return,

- and there was a significant negative relation between Learner Index and Adjusted Learner Index with the stock return.
4. Heydari & Ghafarlou (2011) studied the relation between product competition structures and conditional conservatism, and found that there was a positive significant relation between competition structures and conditional conservatism in financial reporting.
  5. Setayesh & Jahromi (2011) studied the effect of competition in market with the capital structure and found that there was a negative significant relation between them.

## **5. Methodology**

The goal of this research is studying correlation between operational variables in a sample of companies with historical data. Since the researcher will not manipulate variables for measurement of its effects on the other variables, this is a descriptive-correlational research. The statistical society of this research includes the listed companies in Tehran Stock Exchange from 2005 to 2015. The purposeful sampling method (systematic deletion) was used. To do this, merely the companies with the following specifications were selected from the statistical society:

- The company's financial year ends to March 20;
- The company has been listed in the Exchange from 2005 to 2015;
- The company was active during research period and its stock has been transacted in the Exchange;
- The company's data was available during research period;
- The company was not included in banks, leasing companies, and financial credit institutions;
- The company's financial year has not been changed during research period;
- There were at least 9 companies after applying the above restrictions.

After applying the above restrictions, the sample includes 100 companies.

## **6. Research model**

1. The following equation was used for examination of hypothesis 1:



$$\begin{aligned}
Abs\ Disc\ Accruals_{jt} &= \beta_0 + \beta_1 Market\ Power_{jt} + \beta_2 Growth_{jt} \\
&\quad + \beta_3 Market - to - book_{jt} \\
&\quad + \beta_4 Volatility_{jt} + \beta_5 Size_{jt} \\
&\quad + \beta_6 Leverage_{jt} + \varepsilon_j
\end{aligned}$$

in which,

$Abs\ Disc\ Accruals_{jt}$	: Absolute value of discretionary accruals
$Market\ Power_{jt}$	: Product pricing power
$Market - to - book_{jt}$	: Stock market value to its book value
$Volatility_{jt}$	: Sale volatility
$Size_{jt}$	: Company size
$Leverage_{jt}$	: Financial leverage
$\varepsilon_j$	: Error

2. The following equation was used for examination of hypothesis 2:

$$\begin{aligned}
Abs\ Disc\ Accruals_{jt} &= \beta_0 + \beta_1 Indusrty - Level\ Competition_{jt} \\
&\quad + \beta_2 Growth_{jt} + \beta_3 Market - to - book_{jt} \\
&\quad + \beta_4 Volatility_{jt} + \beta_5 Size_{jt} + \beta_6 Leverage_{jt} \\
&\quad + \varepsilon_j
\end{aligned}$$

in which,

$Indusrty - Level\ Competition_{jt}$	: Industry competition level
--------------------------------------	------------------------------

3. The following equation was used for examination of hypothesis 3:

$$\begin{aligned}
Abs\ Disc\ Accruals_{jt} &= \beta_0 + \beta_1 Market\ Power_{jt} + \beta_2 Growth_{jt} \\
&\quad + \beta_3 Market - to - book_{jt} \\
&\quad + \beta_4 Volatility_{jt} + \beta_5 Size_{jt} + \beta_6 Leverage_{jt} \\
&\quad + \beta_7 Industry - Level\ Competition_{jt} + \varepsilon_j
\end{aligned}$$

**Calculation of earnings management:** Discretionary accruals are used for measuring this variable. Firstly, real accruals are calculated by the following

relation to estimate discretionary accruals from the reported earnings (Gauth & Olson, 2009):

$$SAT_{i,t} = \Delta CA_{i,t} - \Delta CL_{i,t} - \Delta CASH_{i,t} + \Delta STD_{i,t}$$

in which,

$SAT_{i,t}$	: Short-term accruals
$\Delta CA_{i,t}$	: Changes of current assets
$\Delta CL_{i,t}$	: Changes of current debts
$\Delta CASH_{i,t}$	: Changes of cash flows
$\Delta STD_{i,t}$	: Current portion of long-term debts
$i, t$	: Company $i$ and period $t$

Expected (non- discretionary) accruals are calculated as follows:

$$SAT_{i,t} = \alpha_0 + \alpha_1 1/TA_{t-1} + \alpha_2 (\Delta Sales_{i,t} - \Delta AR_{i,t}) + \alpha_3 ROA_{i,t-1} + e_{i,t}$$

in which,

$TA_{t-1}$	: Total assets
$\Delta Sales_{i,t}$	: Changes of sale
$\Delta AR_{i,t}$	: Changes of accounts receivable
$ROA_{i,t-1}$	: Return of Assets (net profit divided by total assets)

Then, “discretionary accruals” is calculated by difference of real accruals and expected accruals.

**Market power:** This variable indicates the company’s power in pricing its product, which is calculated by the following equation:

$$PCM = LI = \frac{Sales - COGS - SG \& A}{Sales}$$

in which,

$PCM (LI)$	: Sale price margin
$Sales$	: Sale
$COGS$	: Finished price of sold product
$SG\&A$	: Sale and administrative costs

$$MarketPower = LI_{it} - \sum_{i=1}^N \omega_{it} LI_{it}$$

in which,

$\omega_{it}$  : Sale percentage of company  $i$  in the related industry  
 $N$  : Number of companies in the related industry

**Competition index:** This is a descriptive variable which is calculated by the following relation (Fosa, 2013):

$$HHI_{jt} = \sum_{i=1}^{N_j} \left( \frac{Sales_{ijt}}{\sum_{i=1}^{N_j} Sales_{ijt}} \right)^2$$

in which,

$Sales_{ijt}$  : Sale of company  $i$  at year  $t$   
 $N$  : Number of companies in the related industry

**Growth:** This variable is measured by ratio of total assets in year  $t$  to total assets of previous years.

**Leverage:** This variable is measured by ratio of total debts to total assets.

**Market-to-book:** This variable is measured by ratio of the stock price to its book value.

**Size:** This variable is measured by sale SD at year  $t$  and its two previous years.

## 6.2. Hypotheses test results

**Hypothesis 1:** There is a significant relation between the pricing power and earnings management.

$H_0$  : There is not a significant relation between the pricing power and earnings management.

$H_1$  : There is a significant relation between the pricing power and earnings management.

Chaw-Hussmann (F-Limmer) Test was used for determination of model type. Table 1 shows the results.

**Table 1 : Results of Chaw-Hussmann Test**

Test	Statistic	Error level	Accepted method
Chaw Test	9.1814	0.0000	Panel Data
Hussmann Test	16.7918	0.0101	Fixed Effects

According to Table 1, F is significant in 5% error level. Thus, Panel Data Method is accepted. Next, Fixed Effects Method was tested against Random Effects Method. The obtained statistic is significant in 5% error level. Therefore, random effects assumption is rejected.

### Results of regression of hypothesis 1

**Table 2: Results of regression of hypothesis 1**

Variable	Coefficient	Index	
		t	$\epsilon$
Intercept ( $\beta_0$ )	0.029	0.164	0.869
Market power ( $\beta_1$ )	0.043	0.866	0.386
Growth ( $\beta_2$ )	0.008	0.971	0.331
Market-to-book ( $\beta_3$ )	0.000	0.086	0.931
Volatility ( $\beta_4$ )	-0.051	-1.050	0.293
Size ( $\beta_5$ )	5.267	0.798	0.425
Leverage ( $\beta_6$ )	0.033	0.928	0.353
AR(1)	0.126	4.010	0.000
Adjusted Coefficient of Determination	0.479		
F	8.793		
F error level	0.000		
Durbin-Watson	2.141		

According to the obtained F (8.793) and its error level (0.000) in Table 2, it can be said that the research pattern is confident by 95%. Also, the adjusted coefficient of determination is 0.479; thus independent and control variables totally describe 47.9% of changes of dependent variable. Furthermore, Durbin-Watson statistic is 2.141; thus, there is no first-level auto-correlation between

residuals. In addition, regarding the error level of 0.386 for pricing power of company, it can be said that there is not a significant relation between pricing power and earnings management. Thus, hypothesis 1 is rejected.

**Hypothesis 2:** There is a significant relation between competition of industries and earnings management.

$H_0$  : There is not a significant relation between competition of industries and earnings management.

$H_1$  : There is a significant relation between competition of industries and earnings management.

Since the competition index shall be examined in different industries, this hypothesis was tested for different industries. The study condition is activation of at least 9 companies in an industry. Thus, food industries (except sugar), basic metals, tile & ceramic, machinery & equipment, chemicals, cement, gypsum & lime, and vehicle & parts were studied.

Chaw-Hussmann (F-Limmer) Test was used for determination of model type. Tables 3-1 to 3-8 show the results.

### **Vehicle and parts industry**

**Table 3-1 : Results of Chaw-Haussmann Test**

Test	Statistic	Error level	Accepted method
Chaw Test	6.562	0.0000	Panel Data
Hausmann Test	2.406	0.038	Fixed Effects

According to the above table, F is significant in 5%. Thus, Panel Data Method is accepted. Then, Fixed Effects Method was compared with Random Effects Method. The obtained statistic by Hausmann Test is significant in error level 5%. Therefore, random effects hypothesis or lack of systematic difference between different sections is rejected. Finally, final estimation takes place by fixed state.

### **Cement, lime, and gypsum industry**

**Table 3-2 : Results of Chaw (F-Limer) Test**

Test	Statistic	Error level	Accepted method
Chaw Test	0.929	0.497	Polling Data

According to the above table, F is not significant in 5%. Thus, Polling Data Method is accepted and Hausmann Test is not necessary. Finally, final estimation takes place without considering fixed or random effects and is done by simple state.

### **Chemical industry**

**Table 3-3: Results of Chaw (F-Limer) Test**

Test	Statistic	Error level	Accepted method
Chaw Test	7.42	0.695	Polling Data

According to the above table, F is not significant in 5%. Thus, Polling Data Method is accepted and Hausmann Test is not necessary. Finally, final estimation takes place without considering fixed or random effects and is done by simple state.

### **Food industry less sugar**

**Table 3-4: Results of Chaw (F-Limer) Test**

Test	Statistic	Error level	Accepted method
Chaw Test	0.087	1.653	Polling Data

According to the above table, F is not significant in 5%. Thus, Polling Data Method is accepted and Hausmann Test is not necessary. Finally, final estimation takes place without considering fixed or random effects and is done by simple state.

### **Basic metals industry**

**Table 3-5: Results of Chaw (F-Limer) Test**

Test	Statistic	Error level	Accepted method
Chaw Test	0.653	0.748	Polling Data

According to the above table, F is not significant in 5%. Thus, Polling Data Method is accepted and Hausmann Test is not necessary. Finally, final estimation takes place without considering fixed or random effects and is done by simple state.

### **Tile&ceramicindustry**

**Table3-6: Results of Chaw (F-Limer) Test**

Test	Statistic	Error level	Accepted method
Chaw Test	1.416	0.203	Polling Data

According to the above table, F is not significant in 5%. Thus, Polling Data Method is accepted and Hausmann Test is not necessary. Finally, final estimation takes place without considering fixed or random effects and is done by simple state.

### **Machineryandequipmentindustry**

**Table3-7: Results of Chaw (F-Limer) Test**

Test	Statistic	Error level	Accepted method
Chaw Test	0.582	0.789	Polling Data

According to the above table, F is not significant in 5%. Thus, Polling Data Method is accepted and Hausmann Test is not necessary. Finally, final estimation takes place without considering fixed or random effects and is done by simple state.

### **Pharmaceuticindustry**

**Table3-8: Results of Chaw (F-Limer) Test**

Test	Statistic	Error level	Accepted method
Chaw Test	1.106	0.358	Polling Data

According to the above table, F is not significant in 5%. Thus, Polling Data Method is accepted and Hausmann Test is not necessary. Finally, final

estimation takes place without considering fixed or random effects and is done by simple state.

### Results of regression of hypothesis 2

**Table 4: Results of regression of hypothesis 2**

Variable	Industry	Coefficient	Index	
			t	$\epsilon$
Intercept ( $\beta_0$ )	Vehicle & parts	0.034	0.119	0.905
	Cement, gypsum, lime	-0.937	-1.312	0.193
	Chemicals	0.181	1.531	0.128
	Food industries (ex. sugar)	-0.108	-0.135	0.892
	Basic metals	0.000	2.270	0.025
	Tile & ceramic	0.000	-1.671	0.098
	Machinery & equipment	0.000	-0.632	0.529
	Drug	0.000	0.501	0.616
Industry-level-competition ( $B_1$ )	Vehicle & parts	1.518	2.438	0.015
	Cement, gypsum, lime	3.769	2.483	0.015
	Chemicals	0.655	3.701	0.000
	Food industries (ex. sugar)	1.800	0.556	0.579
	Basic metals	6.130	3.814	0.000
	Tile & ceramic	9.007	2.046	0.046
	Machinery & equipment	1.846	-3.167	0.002
	Drug	0.684	0.374	0.008
Growth ( $\beta_2$ )	Vehicle & parts	-0.031	-0.660	0.509
	Cement, gypsum, lime	-0.012	-0.203	0.839
	Chemicals	0.071	2.919	0.004
	Food industries (ex. sugar)	0.130	1.637	0.104
	Basic	0.000	1.800	0.075



Variable	Industry	Coefficient	Index	
			t	ε
	metals			
	Tile & ceramic	0.000	0.443	0.658
	Machinery & equipment	0.000	0.812	0.418
	Drug	0.000	0.285	0.775
Market-to-book ( $\beta_3$ )	Vehicle & parts	0.000	0.100	0.920
	Cement, gypsum, lime	-0.003	-1.195	0.235
	Chemicals	-0.0009	-0.353	0.742
	Food industries (ex. sugar)	0.003	0.733	0.464
	Basic metals	0.000	1.012	0.314
	Tile & ceramic	0.000	0.085	0.932
	Machinery & equipment	0.000	-0.562	0.575
	Drug	0.000	0.565	0.572
Volatility ( $\beta_4$ )	Vehicle & parts	-0.009	-0.081	0.935
	Cement, gypsum, lime	-0.116	-0.323	0.747
	Chemicals	-0.005	-0.100	0.920
	Food industries (ex. sugar)	-0.270	-1.402	0.163
	Basic metals	0.000	0.723	0.471
	Tile & ceramic	0.000	1.183	0.240
	Machinery & equipment	0.000	-0.315	0.753
	Drug	0.000	-0.558	0.577
Size ( $\beta_5$ )	Vehicle & parts	-4.626	-0.495	0.620
	Cement, gypsum, lime	14.947	0.624	0.533
	Chemicals	-5.132	-1.265	0.208
	Food industries (ex. sugar)	1.274	0.056	0.955
	Basic metals	-0.102	-3.598	0.000
	Tile & ceramic	-0.044	-1.314	0.194
	Machinery & equipment	0.041	0.739	0.463

Variable	Industry	Coefficient	Index	
			t	ε
	Drug	-0.056	-0.219	0.029
Leverage ( $\beta_6$ )	Vehicle & parts	-0.093	-1.033	0.302
	Cement, gypsum, lime	0.185	7.741	0.085
	Chemicals	0.008	0.255	0.799
	Food industries (ex. sugar)	-0.021	-0.178	0.859
	Basic metals	-0.306	-2.967	0.003
	Tile & ceramic	0.000	0.891	0.375
	Machinery & equipment	0.000	-1.579	0.118
	Drug	0.000	-1.100	0.273
Adjusted Coefficient of Determination	Vehicle & parts	0.271		
	Cement, gypsum, lime	0.068		
	Chemicals	0.151		
	Food industries (ex. sugar)	0.125		
	Basic metals	0.282		
	Tile & ceramic	0.558		
	Machinery & equipment	0.467		
	Drug	0.154		
F	Vehicle & parts	11.921		
	Cement, gypsum, lime	2.084		
	Chemicals	4.545		
	Food industries (ex. sugar)	3.376		
	Basic metals	7.480		
	Tile & ceramic	7.794		
	Machinery & equipment	5.716		
	Drug	2.434		
F error level	Vehicle & parts	0.000		

Variable	Industry	Coefficient	Index	
			t	ε
	Cement, gypsum, lime	0.052		
	Chemicals	0.000		
	Food industries (ex. sugar)	0.002		
	Basic metals	0.000		
	Tile & ceramic	0.000		
	Machinery & equipment	0.000		
	Drug	0.028		
	Durbin-Watson	Vehicle & parts	2.154	
Cement, gypsum, lime		2.329		
Chemicals		2.366		
Food industries (ex. sugar)		2.076		
Basic metals		2.561		
Tile & ceramic		2.181		
Machinery & equipment		1.984		
Drug		2.261		

#### a) Examination of hypothesis 2 in vehicle & parts industry

According to the obtained F (11.921) and its error level (0.000) in Table 4, it can be said that the research pattern is confident by 95%. Also, the adjusted coefficient is 0.271; thus independent and control variables totally describe 27.1% of changes of the dependent variable. Furthermore, Durbin-Watson statistic is 2.154; thus, there is no first-level auto-correlation between residuals. In addition, regarding the positive sign ( $\beta_1$ ) of the competition index and error level of 0.015, it can be said that there is a significant relation between the competition index in vehicle & parts industry and earnings management. Thus, hypothesis 2(a) is confirmed.

**b) Examination of hypothesis 2 in cement, gypsum & lime industry**

According to the obtained F (2.084) and its error level (0.052) in Table 4, it can be said that the research pattern is confident by 95%. Also, the adjusted coefficient is 0.068; thus, independent and control variables totally describe 7.0% of changes of the dependent variable. Furthermore, Durbin-Watson statistic is 2.329; thus, there is no first-level auto-correlation between residuals. In addition, regarding the positive sign ( $\beta_1$ ) of the competition index and error level of 0.015, it can be said that there is a significant relation between the competition index in cement, gypsum & lime industry and earnings management. Thus, hypothesis 2(b) is confirmed.

**c) Examination of hypothesis 2 in chemicals industry**

According to the obtained F (4.545) and its error level (0.000) in Table 4, it can be said that the research pattern is confident by 95%. Also, the adjusted coefficient is 0.151; thus, independent and control variables totally describe 15.1% of changes of the dependent variable. Furthermore, Durbin-Watson statistic is 2.366; thus, there is no first-level auto-correlation between residuals. In addition, regarding the positive sign ( $\beta_1$ ) of the competition index and error level of 0.000, it can be said that there is a significant relation between the competition index in chemicals industry and earnings management. Thus, hypothesis 2(c) is confirmed.

**d) Examination of hypothesis 2 in food industry**

According to the obtained F (3.376) and its error level (0.002) in Table 4, it can be said that the research pattern is confident by 95%. Also, the adjusted coefficient is 0.125; thus, independent and control variables totally describe 12.5% of changes of dependent variable. Furthermore, Durbin-Watson statistic is 2.076; thus, there is no first-level auto-correlation between residuals. In addition, regarding the positive sign ( $\beta_1$ ) of the competition index and error level of 0.579, it can be said that there is a significant relation between the competition index in chemicals industry and earnings management. Thus, hypothesis 2(d) is rejected.

**e) Examination of hypothesis 2 in basic metals industry**

According to the obtained F (7.480) and its error level (0.000) in Table 4, it can be said that the research pattern is confident by 95%. Also, the adjusted coefficient is 0.282; thus, independent and control variables totally describe 2.82% of changes of the dependent variable. Furthermore, Durbin-Watson statistic is 2.561; thus, there is no first-level auto-correlation between residuals. In addition, regarding the positive sign ( $\beta_1$ ) of the competition index and error level of 0.000, it can be said that there is a significant relation between the competition index in basic metals industry and earnings management. Thus, hypothesis 2(e) is confirmed.

**f) Examination of hypothesis 2 in tile & ceramic industry**

According to the obtained F (7.794) and its error level (0.000) in Table 4, it can be said that the research pattern is confident by 95%. Also, the adjusted coefficient is 0.558; thus, independent and control variables totally describe 55.8% of changes of the dependent variable. Furthermore, Durbin-Watson statistic is 2.181; thus, there is no first-level auto-correlation between residuals. In addition, regarding the positive sign ( $\beta_1$ ) of competition index and error level of 0.046, it can be said that there is a significant relation between the competition index in tile & ceramic industry and earnings management. Thus, hypothesis 2(f) is confirmed.

**g) Examination of hypothesis 2 in machinery & equipment industry**

According to the obtained F and its error level (0.000) in Table 4, it can be said that the research pattern is confident by 95%. Also, the adjusted coefficient is 0.467; thus, independent and control variables totally describe 46.7% of changes of the dependent variable. Furthermore, Durbin-Watson statistic is 1.984; thus, there is no first-level auto-correlation between residuals. In addition, regarding the positive sign ( $\beta_1$ ) of the competition index and error level of 0.002, it can be said that there is a significant relation between the competition index in machinery & equipment industry and earnings management. Thus, hypothesis 2(g) is confirmed.

### **h) Examination of hypothesis 2 in drug industry**

According to the obtained F and its error level (0.028) in Table 4, it can be said that the research pattern is confident by 95%. Also, the adjusted coefficient is 0.154; thus, independent and control variables totally describe 15.4% of changes of the dependent variable. Furthermore, Durbin-Watson statistic is 2.261; thus, there is no first-level auto-correlation between residuals. In addition, regarding the positive sign ( $\beta_1$ ) of the competition index and error level of 0.008, it can be said that there is a significant relation between the competition index in drug industry and earnings management. Thus, hypothesis 2(h) is confirmed.

**Hypothesis 3:** There is a significant relation between competition in market and earnings management.

$H_0$  : There is not a significant relation between competition in market and earnings management.

$H_1$  : There is a significant relation between competition in market and earnings management.

Chaw-Hussmann (F-Limmer) Test was used for determination of model type. Table 5 shows the results.

**Table 5: Results of Chaw-Hussmann Test**

Test	Statistic	Error level	Accepted method
Chaw Test	4.194	0.0000	Panel Data
Hussmann Test	3.509	0.834	Fixed Effects

According to Table 5, F is significant in 5% error level. Thus, Panel Data Method is accepted. Next, Fixed Effects Method was tested against Random Effects Method. The obtained statistic is not significant in 5% error level. Therefore, random effects assumption is not rejected.

### **Results of regression of hypothesis 3**

**Table 6: Results of regression of hypothesis 3**

Variable	Coefficient	Index	
		t	$\epsilon$
Intercept ( $\beta_0$ )	0.145	1.260	0.207
Market power ( $\beta_1$ )	0.033	0.826	0.408
Growth ( $\beta_2$ )	0.013	1.448	0.147
Market-to-book ( $\beta_3$ )	0.000	0.364	0.715
Volatility ( $\beta_4$ )	-0.117	-2.734	0.006
Size ( $\beta_5$ )	-6.426	-1.530	0.126
Leverage ( $\beta_6$ )	0.007	0.284	0.775
Industry-level-competition ( $\beta_7$ )	1.101	12.970	0.000
Adjusted Coefficient of Determination		0.145	
F		25.221	
F error level		0.000	
Durbin-Watson		1.831	

According to the obtained F (25.221) and its error level (0.000) in Table 6, it can be said that the research pattern is confident by 95%. Also, the adjusted coefficient is 0.145; thus, independent and control variables totally describe 14.5% of changes of the dependent variable. Furthermore, Durbin-Watson statistic is 1.831; thus, there is no first-level auto-correlation between residuals. In addition, regarding the error level of 0.408 for pricing power of company, it can be said that there is not a significant relation between industries' competition index and earnings management. Thus, hypothesis 3 is partially accepted.

## Conclusion

**Results of hypothesis 1:** The results indicate that there is not a significant relation between pricing power and earnings management. This is due to the mandatory nature of rules and regulations of product pricing in many internal industries. In addition, lack of complete competition state in Iranian market causes the lack of relation between pricing power and earnings management. The results of the present research are not compatible with those of Datta et al. (2013). They studied the relation between market power and earnings management and found that there was a significant relation between pricing power of company and earnings management. Their results showed that

companies with lower pricing power are engaged in earnings management more. In other words, there was a negative relation between pricing power and earnings management.

**Results of hypothesis 2:** Those companies in more competitive industries may manage earnings in order to limit their competitors in obtaining precise information. The results of the present research show that there is a significant relation between existing competition of industries and earnings management in industries, such as vehicle & parts, cement, gypsum & lime, chemicals, base metals, tile & ceramic, machinery and equipment, and pharmaceuticals. On the other hand, competition in food industries is low in Iran due to the lack of governmental protection. This caused the lack of a significant relation between pricing power and earnings management.

**Results of hypothesis 3:** This hypothesis intends to find a relation between market pricing power and earnings management in the listed companies in Tehran Stock Exchange. The results indicate that there is no direct relation between competition pressure and earnings management.



## References

1. Akdogu, E.; MacKay, P. (2015), Product markets and corporate investment: Theory and evidence, *Journal of Banking and Finance*, 45, 439-453.
2. Bartov, E.; Mohanram, P. (2014), Private information, Earnings Manipulation and Executive Stock-option Exercises, *The Accounting Review*, 79, 889-920.
3. Balakrishnan, K.; Cohen, D. (2011), Product Market Competition, Financial Accounting Misreporting and Corporate Governance: Evidence from Accounting Restatements, Working Paper. New York University.
4. Becker, C.; DeFond, M.; Jiambalvo, J.; Subramanyam, K. (1998), The effect of auditquality on earnings management, *Contemporary Accounting Research* 15, 1-24.
5. Belkoui, A., Picur, R.D., (1984), The smoothing of income numbers: Same empirical evidence on systematic differences between core and periphery industrial sector, *Journal of business finance and accounting*, Vol. 11, winter 1984, p. 527.
6. Chung, H.; Her-Jiun, S.; Juo-Lien, W. (2009), Do firms' Earnings Management Practices affect their equity liquidity?, *Financial Research Letters*, 6, 152-158.
7. Collins, D.; Hribar, P. (2000), Earnings-based and accrual-based market anomalies: one effect or two?, *Journal of Accounting and Economics*, 29, 101-124.
8. Datta, S.; Iskandar-Datta, M.; Sharma, V. (2012), Product market pricing power, industry concentration and analysts' earnings forecasts, *Journal of Banking and Finance*, 35, 1352-1366.
9. Dechow, P.; Dichev, I. (2002), The Quality of Accruals and Earnings Management: The role of accruals estimation errors, *The Accounting Review*, 77, 35-59.
10. Dechow, P.; Sloan, R.; Sweeney, A. (1996), Causes and consequences of earnings manipulation: An analysis of firms subject to enforcement actions by the EC, *Contemporary Accounting Research*, 13, 1-36.
11. Datta, S.; Iskandar, M.; Singh, V. (2013), Product market power, industry structure, and corporate earnings management, *Journal of Banking & Finance*, 37, 3273-3285.
12. Fama, E.F. (1980), Agency problems and the theory of firm, *Journal of Political Economy*, 88, 288-307.
13. Gosh, Dipankar; Olsen, Lori (2009), Environmental uncertainty and managers' use of discretionary accruals, *Accounting, Organizations & Society*, Vol. 34, 188-205.
14. Fang, J. (2012), Stock liquidity, price information, and accrual-based earnings management. *A Dissertation Doctor of Philosophy in Louisiana State University*.
15. Haushalter, D.; Klasa, S.; Maxwell, W.F. (2008), The influence of product market dynamics on a firm's cash holdings and hedging behavior, *Journal of Financial Economics*, 84, 797-825.
16. Ghorbani, Saeed et al. (2013), Market competition, board composition, and data disclosure quality, *Journal of Accounting and Audit Researches*, No. 19. (in persian)
17. Graham, J.; Harvey, C.; Rajgopal, S. (2005), The economic implications of corporate financial reporting, *Journal of Accounting and Economics*, 40, 3-73.
18. Grullon, G.; Michaely, R. (2007), Corporate payout policy and product market competition, Working Paper, Rice University.
19. Jiraporn P.; Miller, G.A; Yoon, S.S.; Kim, Y.S. (2008), Is earnings management opportunistic or beneficial? An agency theory perspective, *International Review of Financial Analysis* 17, 622-634.

20. Lakesman, R.; Rajgopal, S.; Venkatachalam, M. (2010), Accounting discretion, corporate governance and firm performance, *Contemporary Accounting Research*, 26(2), 351-405.
21. Lo, K. (2017) Earnings management and annual report readability, *Journal of Accounting and Economics*, 63, 1-25.
22. Moradi, Mahdi et al. (2008), The effects of stock market cycles on reactions of investors towards unexpected variations of accruals, *Journal of Knowledge and Development*, Year 15, No. 25. (in persian)
23. Namazi, Mohammad; Ebrahimi, Shahla (2012), Study of relation between competition structure in product market and stock return”, *Journal of Financial Accounting Knowledge*, Issue 2, No. 1. (in persian)
24. Noravesh, Iraj et al. (2005), Study of earnings management in listed companies in Tehran Stock Exchange, *Journal of Social Sciences, University of Shiraz*, Issue 22, No. 2. (in persian)
25. Perry, S.; Williams, T. (1994), Earnings management preceding management buyout offers, *Journal of Accounting and Economics* 18, 157-179.
26. Pourheydari, Omid; Ghafarlu, Abbas (2011), Study of relation between product competition structures and conditional conservatism, *Journal of Financial Accounting Researches*, 4<sup>th</sup> Year, No. 2. (in persian)
27. Roychowdhury, S. (2006), Earnings management through real activities manipulation, *Journal of Accounting and Economics*, 42, 335-370.
28. Setayesh, Mohammad Hossein; Kargar Fard Jahromi, Mohadeseh (2011), Study of effect of market competition on capital structures of listed companies in Tehran Stock Exchange, Faculty of Economy, Management, and Social Sciences, University of Shiraz, MA thesis. (in persian)
29. Shabahang, Reza (2008), Accounting theory (1), Publications of Specialty Accounting and Audit Researches Center of Audit Organization. (in persian)
30. Skinner, D.; Sloan, R. (2002), Earnings surprises, growth expectations, and stock returns or don't let an earnings torpedo sink your portfolio, *Review of Accounting Studies*, 7, 289-312.
31. Tinakar, A. (2008), Disclosure, liquidity, and the cost of capital, *Journal of Financial Accounting*, 101, 1325-1359.
32. Veronica, S.; Sidharta, U. (2008), Type of earnings management and the effect of ownership structure, firm size, and corporate governance practices: Evidence from Indonesia, *The International Journal of Accountin*, Vol. 43, issue 1, pp. 1-27.

