THE EFFECTS OF PRODUCT MARKET COMPETITION ON FUTURE EARNINGS RESPONSE COEFFICIENT AND STOCK PRICE CONCURRENCY

LOS EFECTOS DE LA COMPETENCIA EN EL MERCADO DE PRODUCTOS SOBRE EL COEFICIENTE DE RESPUESTA A LAS GANANCIAS FUTURAS Y LA CONCURRENCIA DE LOS PRECIOS DE LAS ACCIONES

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Abstract: *By providing the investors with more precise information on the corporation, this information will be reflected on the stock price once the investors proceed to investing. When more specific information on a corporation are available, the stock prices also form based on this information in a way that they would become less-dependent on the information at the market and industry level. Concurrency of stock prices is a criterion that evaluates the extent of dependency of stock prices on specific information and or market/industry level information. On the other hand, efficient disclosure of information results in a better ability for anticipation of future earnings by the investors and resultantly, the information related to the future earnings would be reflected in current stock prices (return). The relationship between current stock return and future earnings is defined as the response coefficient of future earnings which shows the extent of reflection of future earnings information in stock prices. In this regard, through its supervisory role, competition in product market is an element capable of influencing the concurrency of stock prices in addition to reaction coefficient of future earnings. In order to obtain the goals of this study, 100 companies have been selected from companies listed in Tehran's stock exchange during 2005-2016 as the sample of study. The multivariate regression and the combined data models have been used for testing the hypotheses. According to the findings, product market competition has a statistically significant and positive effect on the future earnings response coefficient; however the results have also shown that the amount of competition in product market has no statistically significant effect on concurrency of stock price.*
Keywords: *Stock price concurrency, reaction coefficient of future earnings, product market competition*

Abstracto: *Al proporcionar a los inversores información más precisa sobre la corporación, esta información se reflejará en el precio de las acciones una vez que los inversores procedan a invertir. Cuando se dispone de información más específica sobre una corporación, los precios de las acciones también se forman a partir de esta información de forma que dependan menos de la información a nivel del mercado y de la industria. La simultaneidad de los precios de las acciones es un criterio que evalúa el grado de dependencia de los precios de las acciones en información específica y / o información de nivel de mercado / industria. Por otro lado, la divulgación eficiente de la información da como resultado una mejor capacidad de anticipación de ganancias futuras por parte de los inversores y, en consecuencia, la información relacionada con las ganancias futuras se reflejaría en los precios de las acciones actuales (rendimiento). La relación entre el rendimiento actual de las acciones y las ganancias futuras se define como el coeficiente de respuesta de las ganancias futuras, que muestra el grado de reflexión de la información de las ganancias futuras en los precios de las acciones. En este sentido, a través de su función de supervisión, la competencia en el mercado de productos es un elemento capaz de influir en la concurrencia de los precios de las acciones además del coeficiente de reacción de las ganancias futuras. Con el fin de obtener los objetivos de este estudio, se seleccionaron 100 empresas de empresas que cotizan en la bolsa de Teherán durante el período 2005-2016 como muestra de estudio. La regresión multivariante y los modelos de datos combinados se han utilizado para probar las hipótesis. De acuerdo con los hallazgos, la competencia en el mercado de productos tiene un efecto estadísticamente significativo y positivo en el coeficiente de respuesta futura a las ganancias; sin embargo, los resultados también han demostrado que la cantidad de competencia en el mercado de productos no tiene un efecto estadísticamente significativo en la concurrencia del precio de las acciones.*
Palabras clave: *concurrencia del precio de las acciones, coeficiente de reacción de las ganancias futuras, competencia en el mercado de productos*

Introduction

One of the most important reported financial information by every corporation is accounting earnings. In fact most investors and parties, who somehow work with accounting data, consider earnings as an important source of information for evaluation of performance of corporations in their investment-related decisions. Therefore investigation of the relationship between earnings and stock-returns (resulting from actual decisions in the domain of investment) has historically been paid attention-to by accounting researchers. The initiation point of these studies is the well-known work by Ball & Brown (1968). The result of their study showed that price changes were consistent with changes in earnings showing the stock-returns of accounting earnings information. Ball & Brown (1968) clearly showed that there is a relationship between earnings and the stock-market's reaction, however only 10 to 15% of earning reports provide the market with new information, while most of the information content of earning is anticipated before earnings declaration through a variety of different methods. In other words, investors make decisions based on anticipated future earnings while a portion of the corporate stock returns contains information about future earnings (Collins et al., 1994). The relationship between stock-return and future earnings is referred to as the future earnings response coefficient (FERC), showing the amount of future-earnings-related information that has been reflected in stock prices. In other words, FERC is a criterion for measurement of the information content of stock prices (Haw et al., 2012; Gelb & Zarowin, 2002). On this basis, when investors have a higher anticipation capability, they will obtain more information about the future and based on this information, they will proceed with stock transaction. Resultantly the FERC would be higher (Choi et al., 2014).

Another phenomenon that has recently been taken into account in the context of stock price behavior is the so-called stock price concurrency. According to the efficient market theory, stock prices contain the entire general information and price changes are a consequence of flow of information to the stock-market. In a general classification, this information can be classified in to specific corporate information and market or industry level information (Piotroski & Roulstone, 2004). Due to high costs of obtaining the corporations' specific information, stock prices can't reflect the entire related information (Haggard et al., 2008). In such situations where there is not sufficient specific corporate information at hand, the stock prices of the corporation change in consistence with industry/market level prices. As a result the correlation between corporate stock returns and market and industry's returns would be increased. Furthermore, the R^2 of the regression model of the market would be increases as well. The regression model of market is a model that elaborates on the relationship between market returns and the stock returns of a specific corporation. Concurrency of stock prices is a criterion that is calculated using the R^2 and investigates the ratio between systematic fluctuation (R^2) and non-systematic fluctuations ($1-R^2$). In this regard, as the R^2 increases, the concurrency of stock prices raises higher (Chan et al., 2013). Concurrency of stock prices shows the amount of changes in the stock returns of a specific corporation that is explained by market and industry returns. With concurrency of stock prices one can measure the relative amount of specific corporate information (against market/industry level information) that has been reflected in stock prices. In this framework, stock prices with higher concurrency contain higher relative amounts of market/industry level information (specific corporate information) (Piotroski & Roulstone, 2004).

Previous experimental studies in the domain of FERC show that disclosure of information helps stakeholders with anticipating the future performance of corporations. By increased disclosure quality and quantity, investors would have more information for decision making and resultantly the future earnings response coefficient will increase (Choi et al., 2011; Lundholm & Myers, 2002).

Not only internal corporate elements, but also external factors such as the status of competition in product market are effective on the quantity and quality of disclosure. Therefore, product market competition can have effects on future earnings response coefficient (FERC).

By product market competition we refer to the tight competition between various corporation in production and sales of products while their products do not have significant advantages over one-another because if it is otherwise, the market would become oriented towards monopoly and or multilateral monopoly. On this basis competitiveness of product market is against monopoly of the product market (Pour-Heidari & Ghaffarlou, 2013). In other words, product market competition

shows that there are numerous companies active in a same product market competing each other for attraction of the rare economic resources that exist in the capital market (Laksmana & Yang, 2014).

Product market competition is a mechanism required for optimal allocation of resources while it also controls managers' behavior. In case of absence of a robust governance system, it is only the existence of a competitive market that regulates managers' behavior towards maximization of stakeholders' interests. In other words, competitive pressure in product markets can force the managers of corporations towards making more efforts for obtaining success in competitions as well as making more efficient decisions and managing their corresponding corporations in more efficient ways. Most probably these factors will improve the overall status of the corporation while increasing managers' tendency for disclosure of more information (Li & Zhan, 2015).

Ibrahimi et al., (2016) conducted a research study and investigated the influence of the auditors' expertise on quality of earnings and concurrency of stock prices. Findings of their study have shown that quality of earnings has a negative and statistically significant influence on concurrency of stock prices with the auditor's industrial expertise improving this effect as an intermediating variable. In other words, the interactive effects of auditor's industrial expertise and quality of earnings result in decreased stock price concurrency.

Forooghi and Ghasem Zadeh (2016) conducted a study titled as "the effects of comparability of financial statements on future earnings response coefficients". In this study the authors uncovered that the comparability of financial statements increases the future earnings' response coefficient. In other words, the former comparability causes the investors to anticipate future earnings with more precision resulting in reflection of more future-earnings-related information in stock prices.

Li & Zhan (2015) conducted a study titled as "product market competition and the risk of stock price collapse" and investigated the influence of product market competition (PMC) on the risk of stock price collapse. They showed that with increased product market competition pressure, the risk of stock price collapse increases as well. They further indicated that financial restraints intensify this effect.

Choi et al., (2014) carried out a research study under the title of "comparability of financial statements and profitability of stock prices in future earnings" and investigated the effect of comparability on higher levels of the information content of stock prices. They showed that with increased comparability, investors will have a better capability for the anticipation of future earnings while the information content of stock prices enriches as well. They further indicated that comparability has a negative effect on the concurrency of stock prices and concluded that comparability results in reflection of specific corporate information in stock prices.

In addition, results of other studies including the study by Li (2010) reveal that as product marker competition increases, the quality of information provided by firms increases as well. In other words, as competition increases, managers' tendency for acting towards stakeholders' increases as well. Considering the fact that with increases quality and quantity of disclosed information investors will have a better ability for anticipation of future performance of corporations, it can be concluded that product market competition can have effects on FERC.

Existence of competitive pressure in product market along with improved corporate performance will reduce managers' tendency for hiding or keeping the more specific information, therefore the corporate information will be reflected in the stock prices and resultantly the concurrency of prices would be declined (Li and Zhan, 2015). On the other hand Dhaliwal et al., (2014) manifested that in competitive markets managers will adopt conservative reporting behaviors and will rapidly identify the losses in order to be more flexible towards the competitive status of the corporation. Since conservative reporting prohibits the accumulation of bad and classified news within the organization which in turn also results in declination of concurrency of stock prices (Kim & Zhang, 2005), it can be concluded that product market competition can result in declination of stock price concurrency.

Anticipation is the main element in every economic decision making. In this context, anticipation of the accounting earnings that is the result of the performance of the firm and the efficiency of the management in exploitation of economic resources is of a high importance. Precise anticipations and identification of profitable units not only guarantee the future interests of both

investors and creditors, but also are considered as an important factor in the context of macro allocation of resources. In this regard, the stagnant savings and rare economic resources would be attracted to projects that have a logical return. Having efficiency in allocation of resources requires information efficiency. In this regard, a certain outer-organizational governance mechanism is considered to be the product market competitions which can in-turn improve the quality of information while also improving investors' anticipatory capability. Since the essence of decision making is to compare and select one of the many options and therefore, in a competitive market the investors try to compare the financial information of active corporations in order to make a suitable investment choice. The present study tries to cover the above mentioned counts through investigating the relationship between product market competition and future earnings' response coefficient.

Methods

The present study is an applied research and since it uses regression models for investigation of correlations between two or more variables, it is also considered as a descriptive-correlative study. Furthermore, since it has been conducted using the actual; data of companies listed in stock exchange, it is considered as a post-event study.

The employed sampling method in the present study was the systematic elimination method. To this end, the corporations meeting the following conditions were selected as samples:

- Having their financial year ending in March 29th.
- Having not changes their financial year during the period of research.
- Based on the requires time period, their stock transactions should not have been suspended in Tehran's stock exchange for more than 6 months
- Accessibility of the entire required data for the study
- Not being a financial intermediation corporation (e.g. banks)

Considering the above mentioned conditions, 100 corporations listed on Tehran's stock exchange were selected as the samples of study. The present study adopts the data mining method for investigation and collection of the required data and testing the hypotheses. Data collection has been completed using the software of Tadbir Pardaz and Rahavard Novin in addition to the websites of www.rdis.ir; www.seo.ir; www.codal.ir and; www.fipiran.com. In order to do the final analyses, the software of EViews v.8.0 and Stata v.13.0 were used. After calculation of research variables, the regression model will be applied for testing the hypotheses.

Results and Findings

Testing the 1st hypothesis

The first hypothesis of the present study investigates the effects of product market competition (PMC) on FERC. Considering the previously stated theoretical basics, product market competition is expected to be effective on FERC. In order to test the first hypothesis, the regression model shown in relation 1-1 has been used.

$$R_{i,t}=\beta_0+\beta_1 X_{i.t-1}+\beta_2 X_{i,t}+\beta_3 X_{i.t3}+\beta_4 R_{i,t3}+\beta_5 HHI_{i,t} \quad (1\text{-}1)$$
$$+\beta_6 HHI_{i,t}\times X_{i,t-1}+\beta_7 HHI_{i,t}\times X_{i,t}+\beta_8 HHI_{i,t}\times X_{i,t3}+\beta_9 HHI_{i,t}\times R_{i,t3}$$
$$+\beta_{10} Size_{i,t}+\beta_{11} Size_{i,t}\times X_{i,t-1}+\beta_{12} Size_{i,t}\times X_{i,t}+\beta_{13} Size_{i,t}\times X_{i,t3}$$
$$+\beta_{14} Grow_{i,t}+\beta_{15} Grow_{i,t}\times X_{i,t-1}+\beta_{16} Grow_{i,t}\times X_{i,t}+\beta_{17} Grow_{i,t}\times X_{i,t3}$$
$$+\beta_{18} Loss_{i,t}+\beta_{19} Loss_{i,t}\times X_{i,t-1}+\beta_{20} Loss_{i,t}\times X_{i,t}+\beta_{21} Loss_{i,t}\times X_{i,t3}$$
$$+\varepsilon_{i,t}$$

In order to investigate this hypothesis, the β_8 coefficient will be inspected. If β_8 was positive, the first research hypotheses would be accepted and vice versa.

Test of variances' heterogeneity

In order to test the variances' heterogeneity, the LR test has been used and the results are shown in table 1.

Table 1, results of the LR test

model	Statistic value	significance	result
Regression model of 1st hypothesis	271.26	0.000	heterogeneous

Since the LR test shows that variances are heterogeneous, therefore the EGLS method would be employed in the final regression model in order to overcome this issue.

Test of Autocorrelation

In order to investigate the issue of autocorrelation between the model residuals, the Wooldridge test in addition to the value Durbin-Watson (D-W) value obtained estimation of the final model have been used. As shown in table 2, results of the Wooldridge test show that there are no serial autocorrelation issues. In addition as shown in table 4, the value of D-W is equal to 2.448 and since it is located between 1.5 and 2.5 while being close to 2, it is concluded that there is also no autocorrelation issue.

Table 2, Wooldridge test results

model	Statistic value	significance	result
Regression model of 1st hypothesis	0.929	0.337	None

Selecting the model type through the F Limmer test and selecting a proper model through the Hausman test

In order select the type of combined data (panel or pool), the F Limmer test is used and also in order to determine the fixed or random effects of panel data, the Hausman test has been used. Results of these tests have been shown in table 3.

Table 3, results of the f Limmer and Hausman tests

Test	**F Limmer**		**Method**	**Hausman**		**result**
	value	**Sig**		**Value**	**Sig**	
Regression model of 1st hypothesis	1.902	0.000	Panel	140.934	0.000	Fixed effects

Considering the results of the F Limmer test it is clear that the data are of panel type with fixed effects.

Results of testing the 1st Hypothesis

Table 4 represents the results of testing the first research hypothesis.

Table 4, effects of product market competition on FERC, relation (1-1)

FERC	Dependent variable: current stock returns		
variables	coefficient	T statistic	Significance
	0.167	0.416	0.677
Xi,t-1	-0.099	-0.436	0.662
Xi,t	0.795	2.143	0.032
Xi,3t	0.338	3.319	0.001
Ri,3t	-0.124	-3.706	0.000

	-3.151	-2.065	0.0039
Xi,t-1	-0.364	-0.306	0.759
Xi,t	2.909	2.253	0.024
Xi,3t	1.387	3.477	0.000
Ri,3t	-0.331	-3.087	0.002
$Size_{i,t}$	-1.996	-10.716	0.000
$Size_{i,t}$ * Xi,t-1	1.036	4.56	0.000
$Size_{i,t}$ * Xi,t	1.196	4.009	0.000
$Size_{i,t}$ * Xi,3t	0.288	4.541	0.000
Growi,t	-0.046	-0.389	0.697
Growi,t * Xi,t-1	1.559	4.777	0.000
Growi,t * Xi,t	-0.504	-2.456	0.014
Growi,t * Xi,3t	0.013	0.346	0.729
Lossi,t	-0.041	-0.758	0.448
Lossi,t * Xi,t-1	0.568	5.889	0.000
Lossi,t * Xi,t	0.512	3.483	0.000
Lossi,t * Xi,3t	-0.263	-4.742	0.000
F statistic	8.887 (0.000)		
Determination Coefficient	0.69		
Adjusted determination coefficient	0.612		
D-W statistic	2.448		

Results of estimation of the model related to the 1st research hypothesis claiming the effectiveness of product market competition on FERC using the generalized least squares regression shows that the model is significant at the confidence level of 95% and the value of adjusted R^2 is equal to 0.612 and this shows that approximately 61% of the changes in the dependent variable are explained by the explanatory variables. The estimated coefficient in this model is equal to ($HHI_{i,t}$ * Xi,3t) β_8, which is statistically significant at the confidence level of interest and shows that product market competition results in increased anticipatory power of investors and is also followed by increased FERC.

On this basis, the first research hypothesis stating that product market competition is effective on FERC is accepted.

Testing the 2nd hypothesis

The second research hypothesis of the present study investigates the effects of product market competition on concurrency of stock prices. In order to test this hypothesis, the following relation has been used:

Relation (2-1):

$$Synch_{i,t}=\beta_0+\beta_1 HHI_{i,t}+\beta_2 Size_{i,t}+\beta_3 StdRoa_{i,t}+\beta_4 FCF_{i,t} \quad (1\text{-}2)$$
$$+\beta_5 MB_{i,t}+\beta_6 AvrSW_{i,t}+\beta_7 SkeSW_{i,t}+\beta_8 StdSW_{i,t}+\varepsilon_{i,t}$$

In order to investigate the 2nd hypothesis, the β_1 coefficient will be inspected. If β_1 was significant the confidence level of 95%, the second research hypothesis would be accepted and vice versa.

Test of variances' heterogeneity

In order to test the variances' heterogeneity, the LR test has been used and the results are

shown in table 5.

Table 5, results of the LR test

model	Statistic value	significance	result
Regression model of 2nd hypothesis	127.03	0.03	heterogeneous

Since the LR test shows that variances are heterogeneous, therefore the EGLS method would be employed in the final regression model in order to overcome this issue.

Test of Autocorrelation

In order to investigate the issue of autocorrelation between the model residuals, the Wooldridge test in addition to the value Durbin-Watson (D-W) value obtained estimation of the final model have been used. As shown in table 6, results of the Wooldridge test show that there are no serial autocorrelation issues. In addition as shown in table 7, the value of D-W is equal to 2.317 and since it is located between 1.5 and 2.5 while being close to 2, it is concluded that there is also no autocorrelation issue.

Table 6, Wooldridge test results

model	Statistic value	significance	result
Regression model of 2nd hypothesis	0.938	0.335	None

Selecting the model type through the F Limmer test and selecting a proper model through the Hausman test

In order select the type of combined data (panel or pool), the F Limmer test is used and also in order to determine the fixed or random effects of panel data, the Hausman test has been used. Results of these tests have been shown in table 3.

Table 7, results of the f Limmer and the Hausman tests

Test	**F Limmer**		**Method**	**Hausman**		**result**
	value	**Sig**		**Value**	**Sig**	
Regression model of 1st hypothesis	1.361	0.018	Panel	22.332	0.004	Fixed effects

Considering the results of the F Limmer test it is clear that the data are of panel type with fixed effects.

Results of testing the 2nd Hypothesis

Table 8 represents the results of testing the second research hypothesis.

Table 4, effects of product market competition on stock price concurrency, relation (1-2)

Synch	Dependent variable: current stock returns		
variables	coefficient	T statistic	Significance
	-0.527	-0.608	0.543
$HHI_{i,t}$	-6.632	-1.834	0.067
$Size_{i,t}$	-1.034	-2.656	0.008
$StdROA_{i,t}$	-0.688	-0.977	0.328
	0.874	2.612	0.009
$MB_{i,t}$	-0.045	-0.938	0.348

$AvrSW_{i,t}$	-26.105	-5.486	0.000
$SkeSW_{i,t}$	-0.074	-2.641	0.008
$StdSW_{i,t}$	-11.881	-8.801	0.000
F statistic	3.034		
Determination Coefficient	0.397		
Adjusted determination coefficient	0.266		
D-W statistic	2.317		

Results of estimation of the model related to the 2nd research hypothesis claiming the effectiveness of product market competition on concurrency of stock prices using the generalized least squares regression shows that the model is significant at the confidence level of 95% and the value of adjusted R^2 is equal to 0.266 and this shows that approximately 26% of the changes in the dependent variable are explained by the explanatory variables. The estimated coefficient in this model is equal to ($HHI_{i,t}$) β_1, which is not statistically significant at the confidence level of interest and this shows that product market competition has no statistically significant effects on concurrency of stock prices.

On this basis, the second research hypothesis stating that product market competition is effective on concurrency of stock prices is rejected.

Summary of results of testing the hypotheses

The summary of results of tests on first and second research hypotheses is presented on table 9.

Table 9, summary of hypothesis testing results

Hypothesis No.	Subject of hypothesis	result
1	Product market competition has significant effects on FERC	accepted
2	Product market competition has significant effects on concurrency of stock prices	rejected

Discussion and Conclusion

The first hypothesis of the study states that product market competition has effects on FERC. The theoretical basis of this theory states that higher competition in product market can create a flow of information towards investors as well as improving the quality of earnings and financial reporting in addition to improved capability for anticipation of future performance by investors. Results of testing this hypothesis indicated that product market competition does have a positive and statistically significant effect on future earnings' response coefficient (FERC). In other words in Iran's capital market, the product market competition plays a supervisory role and results in reflection of more future-earning-related information in stock prices. These results are consistent with the findings obtained by Chang et al., (2013); Ghayoori-Moghadam et al, (2015) and; Khajavi et al, (2014). These researchers have also pointed to the increase of clarity and quality of disclosed information as a result of higher product market competitions.

The second research hypothesis in the present study maintained that product market competition has significant effects on concurrency of stock prices. The theoretical foundations of this theory maintain that existence of competitive pressure in product market and improved corporate performance will improve managers' tendency for disclosing the specific information of their corresponding organizations and therefore, the organizations' specific information will be reflected in the stock prices and resultantly, the concurrency of stock prices would be declined as well. On the other hand, in competitive markets managers tend to adopt conservative behaviors. In this regard they will rapidly identify the losses in order to have more flexibility against the competitive conditions. It needs to be pointed out that conservative reporting prohibits the

accumulation of bad and classified news and information inside the organization and this in turn, results in declination of stock price concurrency. Considering these content, the results of testing the second research hypothesis have shown that product market competition has no statistically significant effects on stock price concurrency. This finding is consistent with findings obtained by Laksmana & Yang (2014); Chang et al., (2011) and; Ahmadpour & Peikarnegaar (2012).

Results of the present study manifest the significant importance of product market competition. On this basis, creating suitable infrastructures aiming to create a competitive atmosphere by the organizations that are in charge of determining economic policies and the rule-making organizations will result in motivation of managers towards providing more information for the investors. This will be followed by increased economic growth of industries and ultimately, helping the economic condition of Iran. On this basis, the organization of stock exchanges and the department of economic and holdings are among the organizations that are capable of deconcentralization from specific industries and increasing competitions in order to provide the investors with higher quantities of high quality information by the means of which, the investors would be able to make more suitable investment-related decisions. This would be followed by improved allocation of rare financial resources. In addition, the government and the other departments supervising the market can put more emphasis on the implementation of the privatization principle, in order to provide the necessary contexts for entrance of the economic activists to the markets. Resultantly more proper competitive atmospheres would be created. Managers are recommended to constantly try to provide investors with the most honest and precise information in order to prohibit the devaluation of their corresponding organizations and its negative consequences. This is because disclosing specific corporate information causes the stock prices to form based on actual data of the corporation and resultantly, the corporation's stock price would be closer to its inherent value.

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Recebido em 1 de fevereiro de 2018.
Aceito em 16 de fevereiro de 2018.