The relationship between product market competition and quality benefit accruals

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Abstract

The environment in which a company works could potentially affect the quality of earnings in either a good or bad way. For example, rapid technological advances in computer industries can lead to an increase in useless and inappropriate products. Contrarily, some other industries are much slower to advance technologically. Therefore, in these industries, technological advance is not an important factor when measuring the quality of earnings. Firms that work with technological growth compared with companies that work in industries with nearly stable technological growth are more likely to be faced with quality of earnings issues. Statistical population of present research consisted of all firms listed on the stock exchange. With respect to the fact that we were interested in variables trend in recent 7 years, all firms listed on the stock exchange in 2005-2011 period and traded their shares in this period were considered as statistical population of the present research. Using systematic elimination method, 90 firms were selected as statistical sample. This finding is consistent with theoretical bases mentioned in "Theoretical Bases and Background" section. The research results indicate a negative relation between industry concentration and accruals. This indicates that, in order to protect their competitive advantage in choosing their procedures, firms involved in concentrated industries are after methods that have lower quality and higher profit. Results also show that by increasing the industry's homogeneity, the company's profit quality also increases. The industry's homogeneity can reduce the impact of industry concentration over profit quality. There is also a significant relation between industry homogeneity and accruals quality. For a certain level of industry concentration, firms that have an offensive strategy have lower accruals quality than companies with a passive strategy.

Keywords: Accruals, industry concentration, industry homogeneity, Product market competition

Introduction

This study analyzes the relation between product market competition and profit accruals quality, which is one factor of profit quality. Industry concentration regards some of the company's distribution amount within certain markets or industries that is traditionally used to describe the competition's intensity among the industry (Carranza 2008). Economic theories indicate that a company's concentration in the market is one of the most important factors determining the market's structure and the competition's intensity.

Industry Concentration and Quality of Accounting Information

Industry concentration regards the distribution amount of a company in a certain market or in the past and is used to show competition intensity in a market (Carranza 2008). The industry type structure theory believes that industry concentration in the market is one of the most important factors in determining the market's structure and the competition's intensity.

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Based on this hypothesis that believes concentration via increasing the collusion attitude, can reduce the competition, high or low industry concentration when other conditions are the same, follows a high or low competition (Bean, 1956), (Bruisen, 1971) and (Demestez, 1973).

Paul Ho and Yin Man (2010) studied various measures for earnings quality and quality of accruals and concluded that there was a negative significant relationship between earnings quality and industrial homogeneity. Also firms operating in concentrated industries create an opaque information environment to keep their competitive advantage.

Industry homogeneity and quality of accounting information

Industries that include companies that have similar natures, technology, and products are called homogenous. These industries are very distinct from non-similar companies. Studies done on industry companies show that for a certain level of concentration in industry, the industries made from similar companies have a higher competitive state. Based on that, companies in a homogenous industry have similar structural costs and sell similar products

Based on the Parino research (1997), the current study's criterion for industry homogeneity is the correlation between stock returns of manufacturing companies in the Tehran Stock Exchange. Choosing a criterion based on changes in stock prices is regular for industry homogeneity criteria, because the stock price of a company reflexes its current left-over cash flow.

Approach to strategic competitiveness and the quality of accounting information

Industries that are in an exclusive group or multipolar competition, the companies' advantages, both as a necessity and also as a general industry, depend on the mutual cooperation of the companies. Under these conditions, a company's price is not only by its functional yield, but a function by the sum of factors that the competing companies face them with. Therefore, companies can increase their strategic attitude, by including actions that lead to an appropriate response from competing companies. Mutual strategic cooperation between companies in the production market can be divided as complementary strategic approach alternatives.

Relationship between industry concentration, industry homogeneity and strategic competition

Strategic competition calculates competition based on the mutual cooperation of companies within the market. At a certain level of industry concentration, companies could act completely similarly or completely differently in cost structures or, in response to competing companies, act very aggressively or compatibly. Based on the competition's effect on specific, agency, and political costs on a certain level of industry concentration, the accounting information is expected to have a higher level of quality for homogenous industries than the heterogeneous industries. Similarly, on a certain level of industry concentration, the quality of accounting information within companies relying on a supplement strategy is expected to be higher than that of companies with an alternate strategy.

Criteria of earnings quality

The relation between industry concentration and profit features include: Accruals quality, income predictability, stability, income, income smoothing, earnings relevance, timeliness, and profit conservatism. From among these, accruals quality was tested in this study.

Accruals quality

There is a theory that a manager's authority in using accruals reduces the benefit's ability to measure the business's performance. It must be pointed out that some accounting concepts, such as objectivity, the ability to demonstrate and evaluate the use of models, and historical cost, limit management's authority. These limits reduce the chance of inappropriate data usage in order to achieve personal gains. On the other hand, limiting management's authority reduces the effectiveness of reported benefits, and management would not be able to reveal all the specific information from the business based on reported benefits. Management's authority is not so limited that it could harm the benefit in this way.(Dicho 1994).

Research background

Dicho and Ross (2005) compared the ways of stabilizing benefit based on the balance sheet approach and income statements and showed that

benefit stability is affected by the amount and mark of accruals. Accruals improve the stability of benefit toward cash flows with high accruals, but in companies with low accruals, benefit's stability with cash flows is reduced.

Harris (1998), Bateson and Stanford (2005) said that companies involved in concentrated industries control their accounting information quality and keep their profitable data hidden. Companies that achieve unusual profits also face a high probability of boycotts, and the managers use accruals to reduce their amount of income.

Chan (1992) used a long approach that analyzed changes in political costs over time and discovered that managers set their optional accruals in response to distrust studies related to monopolizing and supporting political incentives expenditures. Briefly, specific, organizational, and political expenditures are three incentive costs that connect the market competition to the accounting information quality.

Research hypothesis

According to theory and research, the research hypotheses are presented as follows:

First hypothesis: There is a significant correlation between accruals and the level of concentration in an industry.

Second hypothesis: There is a significant relationship between accruals and industry homogeneity. *Third hypothesis:* There is a significant relationship between industry concentration, accruals, and the strategic competition.

Methodology

This is an experimental study, and its nature is descriptive − correlational. Because of the kind of data analyzed in this study, the combination data method, a method for combining sectional data and time series, was used.

The population and sample

The study population consisted of all companies listed in the stock exchange. Because the 7-year changing process of the analyzed criteria was considered, all companies whose shares were sold or bought in the exchange from 2005 up to the end of 2011 were included in the study population.

1- From early 2005 until the end of 2011, the stock was present on the exchange.1

2- In order for the information to be comparable, the company's financial year ending must be 29March and The Information about the selected variables in this study is available

3- Stock trading during the period had not been stopped for more than three months in the Tehran Stock Exchange

4- For the data to be homogenous, all companies must all be in production industries.

Based on the conditions and limits mentioned above, a total of 2011 companies were chosen from among the accepted companies of the Tehran Stock Exchange. In conducting statistical tests, in order to obtain values and coefficients for the statistical analysis including the "t" and "F" tests, estimates of the regression parameters, the correlation coefficients, etc., the statistical software STATA was used.

Applied Models

To test the study hypothesis in relation to the effects of different impacts from the competition in the product market on the quality of profits, the following empirical model was used:

1)$EQ_{it}=b_0+b_1SAZE_{it}+b_2\sigma(CFO)_{it}+b_3\sigma(SALES)+$ $+b_4OPCYCLE_{it}+b_5NEGEARN_{it}+b_6LEVERAGE_{it}+$ $+b_7MB_{it}+b_8COMPETTTION_{it}+e_{it}$

In this formula, EQ_{it} as a dependent variable is representative of the profit quality of the company "j" in the year "t" that is offered by accruals quality. The variable $COMPETITION_{it}$ is offered by different dimensions of the competition. For the first hypothesis $COMPETITION_{it}$ is offered by the industry concentration criteria (HI-CENSUS) and for the second hypothesis by industry homogeneity. To calculate profit quality, a few control variables were added to the above-mentioned formula and are presented in Table 1.

Research variables and how they are measured

Following Francis and colleagues (2006), the criterion of this research for accruals quality was based on the sectional model given by Dicho and Daicho (2002) to which the fundamental variables were added from Jones's adjusted model, meaning the property, equipment, and machinery (PPE) and income variations (all variables were divided by average assets):

2)$TCA_t=b_0+b_1CFO_{jt-1}+b_2CFO_{jt}+b_3CFO_{jt+1}+$ $+b_4\Delta REV_{jt}+b_5PPE_{jt}+e_{it}$

TCA_t in the above mentioned formula:Total current accruals for company "j" in year "t" that equals:

3) $TCA_t = \Delta CA_{jt} - \Delta CL_{jt} + \Delta CASH_{jt} + \Delta STDEBT_{jt} + e_{it}$

In the above mentioned formula TA_{jt} total accruals for company "j" in year "t" that equals:

4) $TA_{jt} = \Delta CA_{jt} - \Delta CL_{jt} + \Delta CASH_{jt} + \Delta STDEBT_{jt} - DEPN_{jt} + e_{it}$

Industry focus

The industry concentration was measured using the Herfindahl Index. Here, it equals the sum of squared market shares of all firms in the market that were calculated using Herfindahl's formula for calculating criteria as mentioned below:

5) $HI_i = \sum \left(X_j / \sum_{J=1}^{n} X_j \right)^2$

Industry homogeneity

Homogeneity is the average partial correlation coefficient ($r_{Rj, t, Rit/Rmt}$) for all firms in an industry in the Tehran Stock Exchange and is calculated by this regression:

6) $R_{jt} = b_0 + b_1 R_{it} + b_2 R_{mt} + e_{it}$

Partial correlation coefficient ($r_{Rj, t, Rit/Rmt}$) is the power of the linear relationship between company performance and industry returns after controlling to measure the impact of market returns. A higher homogeneity indicates higher homogeneity between companies within an industry.

Strategic competition

It demonstrate the way in which rivals react in response to changes by one of them in tactical variables such as price and quantity which is calculated according to the following formula (Besanko, Dranove and Shanley, 2000):

7) $S_{jt+1} - S_{jt} / S_{jt} = \alpha_j + \beta_j [\pi_{jt+1} / S_{jt+1} - \pi_{jt} / S_{jt}] + e_{jt}$

In the above equation, S_{jt} and S_{jt+1} The subsequent sale of two-year and and π_{jt+1}, The profits of two-year.

Variable introducing table

To provide an overview of the characteristics of the major variables, the number of observations, mean, standard deviation, minimum and maximum observations are given in table 1.

Table 1. Definitions of variables used in the models

Explanations	Type	Variable	Model
Natural logarithm of total assets of firm i in year t	Independent	SAZE	
Standard deviation of operating cash flows of the company over the past 7 years, in company t	Independent	$\sigma(CFO)$	
Company t sales SD during the last 7 years	Independent	$\sigma(SALES)$	
Logarithm of the sum of days accounts receivable collection period, expected inventory of the Company for year t	Independent	$OPCYCLE_{it}$	Main
Company's loss ratio during last 7 years for year t	Independent	$NEGEARN_{it}$	
Logarithm of total long-term and short-term debt divided by the market value of firm equity in year t	Independent	$LEVERAGE_{it}$	
Capital market value divided by book value of equity in year t	Independent	MB_{it}	
Average Total assets of company j in year t-1	Dependent	TCA_{jt}	
Cash flows from operating activities Net profit of firm j in year t is equal to the fraction before Extraordinary items (NIBE) minus total accruals (TA)	Independent	CFO_{jt}	1
Changes in revenues between year t-1 and year t for firm j	Independent	ΔREV_{jt}	
Gross value of property, machinery and equipment j in year t	Independent	PPE_{jt}	
Changes in current assets between year t-1 and year t firm j	Independent	ΔCA_{jt}	
Change in current liabilities between year t-1 and year t firm j	Independent	ΔCL_{jt}	2
Changes in cash between year t-1 and year t for firm j	Independent	$\Delta CASH_{jt}$	
Changes in liabilities to current liabilities between year t-1 and year t for firm j	Independent	$\Delta STDEBT_{jt}$	
Tangible and intangible assets amortization expense for company j in year t	Independent	DEPN	3
The sales of company j in industry i and n count of companies in this industry	Independent	Xi	4
Company j stock return in industry i for t months	Dependent	R_{jt}	5
Weighted average market return in month t	Independent	R_{mt}	

Descriptive Statistics

Table 2. Descriptive statistics for research variables

Variable	Symbol	count	Minimum	maximum	Average	SD
Accruals quality	AQUA	630	10663480-	7948999	44936.86032	721272.5143
Industry Focus	ICON	630	0.00152262	0.27237496	0.078464685	0.072869169
Industry homogeneity	IHOM	630	0.7299-	3.424	0.140813366	0.3954505187
Size	SIZE	630	4.244994166	8.476334278	5.676100393	0.665501054
Cash flow operations	CFO	630	6480.25	+13E2.64004	+11E1.90108	E+121.47835
Sales	SALES	630	14762.25	+13E4.10522	+12E3.81259	E+132.75186
Total days of receipt of accounts receivable and inventory waiting time	OPCYCLE	630	1.184280333	6.328613222	2.98411356	0.642193873
Loss ratio	NEGEAM	630	-5.7417	6.763607829	0.335580311	0.50271298
Long-term and short-term debt over market value of total equity	LEVERAGE	630	1.209162311	2.280966211	0.382384445	0.375202599
Market value over book value of equity	MB	630	4.129672125	78.17577301	4.129672125	6.348642729

Results

The results of first research hypothesis

To test this hypothesis, accruals quality was used as a criterion for profit quality. The results from the statistical analysis of the first research hypothesis are shown in Table 3. Based on the results reflected in Table 3, if accruals quality is used to measure profit quality, the panel data method should be used based on the Limmer F-test (sig<0.05). The calculated chance for the Hausman test shows that the random effects method is disapproved and the stable effects hypothesis is accepted. The chance is 0.003 (sig) which indicates a positive and significant relation with 95% certainty. Among control variables, those associated with size, operating cash flows, sales, loss of market value, and effect on book value of equity with 95% certainty have a significant relation.

Table 3. Results from the statistical analysis of the first research hypothesis

	Limmer F-test chance	Housman test chance	Icon	Size	Cof	Sales	Opcycle	Negearn	Leverage	MB	Cons	R^2	F Table
Accruals quality	0.000	0.010	2.61 0.300	0.000	0.000	0.000	0.000	0.000	0.803	0.411	0.000	0.37	0.000
	Panels	Stable effects	Significant	Significant	Significant	Significant	Insignificant	Significant	Insignificant	Insignificant	Significant	-	Significant

The results of second research hypothesis

To test this hypothesis the accruals quality criterion was used. The statistical analysis results of the second hypothesis are shown in Table 4. Based on the results reflected in Table 4, based on the Limmer F-test the panel data method should be used (sig<0.05). Moreover, the calculated chance from the Hausman test shows that the random effects

method is disapproved and the stable effects hypothesis is accepted. The results acquired from the regression method estimates using the panel — stable effect method; thus the second research hypothesis is accepted. The relation's direction between the dependent variable of accruals quality and the independent variable of industry homogeneity is negative. As seen in Table 4 the relation of the operating cash flows, sales and detriment to quality of accruals variables with a certainty of 95% is significant.

Table 4. Results from the statistical analysis of the second research hypothesis

	Limmer F-test chance	Housman test chance	Icon	Size	Cof	Sales	Opcycle	Negearn	Leverage	MB	Cons	R^2	F Table
	0.000	0.010	-2.42 0.02	0.185	0.000	0.000	0.234	0.049	0.398	0.315	0.000	0.37	0.000
Accruals quality	Panels	Stable effects	Significant	Insignificant	Significant	Significant	Insignificant	Significant	Insignificant	Insignificant	Significant	–	Significant

The results of third research hypothesis

To test this hypothesis, the accruals quality criterion was used. The statistical analysis results of the third hypothesis are shown in Table 5. Based on the results reflected in Table 5, if accruals quality is used to measure profit quality, based on the Limmer F-test the panel data method should be used (sig<0.05). Moreover, the calculated chance from the Hausman test shows that the random effects method is disapproved and the stable effects hypothesis is accepted.

Therefore the regression test should be done based on the panel data — stable effect method. The results acquired from the regression method estimates using the panel — stable effect method and shown in Table 5 indicate that there is no significant relation between the dependent variable of accruals quality and the independent variable of strategic competition. As shown in Table 5 the relation between operating cash flows and accruals quality with a certainty of 95% is significant.

Table 5. Results from the statistical analysis of the third research hypothesis

	Limmer F-test chance	Housman test chance	Scom	Icon	Size	Cof	Sales	Opcycle	Negearn	Leverage	MB	Cons	R^2	F Table
	0.000	0.181	1.64 0.101	0.919	0.546	0.000	0.678	0.628	0.526	0.084	0.942	0.137	0.14	0
Accruals quality	panels	Stable effects	Significant	Insignificant	Insignificant	Significant	Insignificant	Insignificant	Insignificant	Insignificant	Insignificant	Insignificant	–	Significant

Results of hypothesis testing

The first hypothesis states that there is a significant relation between industry concentration and accruals. Results acquired from the regression model estimates using the panel — stable effects method show that there is a significant and negative relation between the dependent variable of accruals quality and the independent variable of concentration arena in industry.

The second hypothesis states that there is a significant relation between industry homogeneity and accruals. Results acquired from the regression model estimates using the panel − stable effects method show that there is a significant relation between the dependent variable of accruals quality and the independent variable of industry homogeneity.

The third hypothesis states that there is a significant relation between strategic competition and accruals. Results acquired from the regression model estimates using the panel − stable effects method show that there is a significant and negative relation between the dependent variable of accruals quality and the variable of strategic competition in industry.

Conclusions

The main goal of this study was to analyze the effect of market competition over companies' accruals using a sample from companies accepted into the Tehran Stock Exchange. Research results indicate a negative and significant relation between industry concentration and accruals. This finding matches the theoretical basis pointed out in the research background. There is also a significant relation between industry homogeneity and accruals quality. Furthermore, for a certain level of industry concentration, companies which compete with an aggressive strategy have lower accruals quality than those who compete with a passive strategy.

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