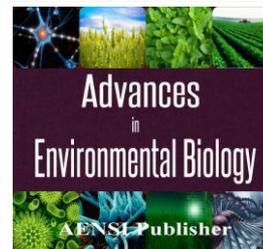




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Effect of Product Market Power, Concentration of Industrial Groups and Tax Policies of Leading Company in Industry on Tax Avoidance and Future Return of Shares of Companies First

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ABSTRACT

Tax payment and fulfilling legal duties is one of the issues that the managers always try to manage it in the economic system on behalf of active enterprises because these issues can affect the value of the company and the financial decision-makings. Product market power increases the costs of representation at the company's level and it could lead to reduction of tax-evasion activities because the degree of using tax avoidance performs itself as one of the governance mechanisms in these markets and impedes the companies to use more tax avoidance to prevent the price reduction by the shareholders. The companies have financial incentives to imitate the tax-evasion activities of the product market leaders in order to avoid appearing weaker according to the post-taxing performance criteria, but the imitation behavior happens most probably when the companies enjoy comparable resources and market situations, i.e., when the industry is highly concentrated. Thus we expect this imitation to be more tangible in concentrated industries. The goal of this study is to assess the effect of product market power, concentration of industrial groups and leading company's tax policies in industry on tax avoidance and future return of companies' shares. These studies were conducted using the financial information of 92 companies recognized by Tehran Stock Exchange Market between 2002 and 2012 and using the multi-variable linear regression analysis method. The results of this study indicate that there is a significant and reverse relation between tax avoidance and product market power and there is a direct and insignificant relation between tax avoidance in industrial companies and tax avoidance in leading companies in concentrated industries. Also there is a direct and significant relation between tax avoidance of the leading company and the companies' future return of shares in the industries with higher competitive level.

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INTRODUCTION

The issue of tax avoidance seems to be raised mainly in case of the companies that have ownership separation because natural persons are less found to be after tax avoidance and evasion due to higher possibility of being identified and fined in order to evade the risk and or internal incentives such as social duty, while the companies are usually expected because of their shareholders to look for personal interests and as long as the additional profits from reduction of possible debts are higher than the expected additional costs for them, they support reduction of tax debts and tax evasion. Thus, tax evasion could reflect the theory of the representation issue and it might lead to the tax decision to support the manager's personal interest. Hence, one of the challenges that the shareholders and members of the Board of Managers face is to find control methods and incentives to minimize the representation costs. Higher product market power in industry reduces the levels of competition. Product market power allows the companies to experience the margins of higher profit and lower capital costs and makes them show more dangerous behaviors. The former studies indicate that the existence of competition in the products market allows other existing companies in this industry to imitate other actions in order to maintain their competitive situation. Thus the goal of this study is to investigate the issue in the companies recognized by Tehran Stock Exchange Market.

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Statement of issue and reasons to choose the research topic:

Tax is like a channel to transfer company's cash toward the government. The companies always try to supervise the cash flows by using legal solutions to be able to reduce their tax expenses and increase their profit. One of these solutions is tax avoidance that could affect transparency and usefulness of financial information.

Product market power is one of the variables that could affect tax avoidance performance [1]. Product market power is defined as the company's ability to determine price, quality and nature of the product in the market. In other words, the higher the product market power in industry is, the more exclusive the market will be.

From one point of view, product market power could have direct relation with taxation due to the following reasons:

1. Product market power could lead to higher profitability. Consequently, higher profit will create the situation for the company to invest the obtained profits in a more costly tax evading activities [2, 3, 4].
2. Product market power leads to reduced capital costs of the companies and therefore reduces the total investment costs of the companies [2, 3, 4].
3. Product market power usually enables the companies to protect themselves against negative shocks of the cash flows because the product market power enables the companies to transfer this type of shocks through increased price to consumers [3, 4]. Thus product market power leads to lower investment costs and higher protection against negative shocks of cash flows.

But from another view, product market power also increases the costs of representation at the company level and this could lead to reduction of tax evading activities. When the costs of representation increase, the companies' managers are not inclined to use the activities that lead to tax evasion in order to prevent the reduction of prices on behalf of the shareholders.

The former researches indicate that the existence of competition in the products market will allow the other existing companies in industry to imitate their actions in order to maintain their competitive situation [5]

Since the tax outputs usually are considered as very important items in the financial statements of the companies and present the performance of the companies to some extent, the companies have higher incentives to imitate the tax evasion (tax avoidance) behaviors and activities of leading companies in the products market in order to avoid appearing weaker according to this assessment criterion and therefore the tax avoidance behavior of the leading companies in the market could create a model for other companies to enable them to maintain their competitive positions by imitating the behavior of the leading company.

But since the possibility of showing imitating behavior is higher in concentrated industries [5], we expect the companies that are not leading the product market to imitate the consequences of the leading product market tax and we expect this imitation to be more tangible in concentrated industries.

Tax avoidance creates a type of information imbalance. It seems that product market power affects the relation between tax avoidance and informative nature of the shares price through shares return (consequent) and since investors show more inclination to keep the shares of the companies with higher product market power, the price of shares of these companies is higher, but they have lower returns.

Theoretical grounds and research history:

In most countries, the major part of the government's income resources comes from tax. The conceptual distinction between tax evasion and avoidance to pay tax goes back to the legal or illegal behavior of the tax payers. Tax evasion is a type of offence, but when avoiding tax, the individual is not worried that his action is revealed. Tax avoidance originates from legal gaps in tax law. Tax avoidance is a type of official abuse of tax relations. For example, showing income of work power as capital income which has lower rate of tax is an example of tax avoidance.

In fact tax is departure of cash from the company and that is why the companies always try to supervise the cash flows using legal solutions to be able to reduce their tax expenses and increase their profits. One of these solutions is tax avoidance. In fact, beneficiaries find the possibility of avoiding tax in the companies with high product market power (exclusive companies) higher, thus these companies have higher representation costs. As a result, the managers of such companies reduce tax avoidance to reduce their representation costs.

On the other hand, the existing companies in one industry always try to imitate the behavior of the leading company in order to maintain their competitive positions, thus the tax avoidance behavior of the leading company can affect the tax evasion behavior of other industrial companies. The more concentrated the industries are, the higher the imitation of the leading company and its effectiveness will be.

On the other hand, since the investors are more inclined to maintain the companies' shares with higher product market power, the price of shares of these companies will go up, but will have lower return.

To avoid tax legally and to reduce tax commitments, the individual should bypass the law using all legal delicate strategies, but tax evasion or fraud is illegal and doing it intentionally is unlawful such as providing unrealistic report of income and sale, reduction in drawing up declaration letters and lists. The tax system should be able to confront both types of tax evasion and fraud under ideal circumstances.

[5]studied the reason why the companies imitate and explained his results according to two theories, one based on information and the other on competition. According to the first theory, the companies do so due to having superior information and according to the second theory they do so to restrict the competition and maintain the interests of the work, while the degree of imitation among companies depend on the type of industry and the degree of competition in that industry.

[6]studied the negative relation between the degree of managers' reward and the degree of tax coverage. This negative relation applies firstly to that group of commercial units that have weak company governance. Reward payment to the managers make them encouraged to plan for company's tax in order to avoid payment of more tax and their performance is improved to avoid tax. The negative relation between degree of tax payment to managers and tax avoidance due to creating representation costs indicates that in the companies with weak company governance, the degree of reduction of tax shield against inclination to pay tax is exchanged.

[7]studied the reaction of shares price to the news of tax avoidance and found out that the market shows negative reaction to the tax avoidance by the companies. However, reactions are different in different industries.

[8]studied the reaction of the shares market to the news about events regarding tax evasion and consequently found the response negative. However, these reactions are remarkably less than the other reactions of financial disgrace.

[9]found out the positive relation between tax evasion and company value only in the companies that are supervised well and that the reason of tax evasion is in favor of the shareholders if the management's opportunist approach is restricted.

[10]studied the relation between tax avoidance and risk of fall of shares price and found out that there is a direct and significant relation between risk avoidance and risk of fall of shares price. In other words, tax avoidance facilitates the managers' opportunist behaviors and leads to long-term accumulation of bad news. The outcome of issuing the bad news all in one go is the fall of shares price. However in the companies where a strong foreign supervision mechanism prevails such as institutional ownership, there is a positive relation between tax avoidance and danger of weak fall.

[11]found out in a paper under the title of "Does tax evasion reduce transparency?" that tax avoidance increases the organizational sophistication and the managers often cannot draw a link between effects of increased sophistication and foreign parties effectively. Some managers increase transparency to reduce the problems of created imbalanced information.

[12]found out in a paper under the title of "Do managers receive a considerable economic fraud through tax evasion?" that there is generally a positive relation between tax avoidance and future performance even in the companies that have weak company governance.

[13]studied the effect of product performance in market on company's capital structure. The outcomes indicated that the degree of sale growth does not have a significant effect on debts and that there is a negative correlation between growth of return sale and industry. In fact the increased sale growth faces reduced return in industry and this strategy leads to reduction of profitability cost in comparison with industry.

[14]Studied the actual documentaries of lack of transparency. The results indicated that non-transparent information environments are inclined toward increased tax avoidance.

[15]conducted a study about the effect of reduced tax rate in 2001 on the policy of profit distribution in the companies recognized by Tehran Stock Exchange Market. The results of the studies showed that the companies increase their paid profit considerably upon reduction of tax rate in 2001. In other words, there is a negative and significant relation between tax rate and distributed profit.

[16]studied the results of tax research and conservatism in financial reporting and the relevance of the accounting information indicated that the companies whose net operational cash current is much higher than the taxable income, show more conservatism in comparison with the other companies, but in case of the companies whose net operational cash current is much smaller than their taxable income, it cannot be said that they have less conservatism in comparison with the other companies. In addition, the research findings showed that tax not only does not reduce the relevance of accounting information that is presented by the companies, but also increases the relevance of information.

[17]conducted a study investigating the relation between effective tax rate and company's characteristics. The results of their research showed that the average effective tax rate is close to the legal rate of income tax, taking all the companies of the research into consideration. But the results of the study, taking the industrial field in which the company is active into account showed that almost every industry has a special effective tax rate. The results also showed that there is a negative and significant relation between effective tax rate and size and profitability of the company and there is a direct and significant relation between effective tax rate and the financial leverage. Meanwhile there is not a significant relation between effective tax rate and intensity of investment and ownership structure.

[18]studied the relation between transparency in financial reporting, tax avoidance and companies' value. They showed that there is a reverse relation between tax avoidance and company's value when the assessment criteria are tax avoidance and long-term cash effective tax rate. This reverse relation is statistically significant

and when tax avoidance is assessed against cash effective tax rate or tax permanent difference, there is not a significant relation between company's value and tax avoidance. Also there is no significant relation between tax avoidance and reporting transparency.

[19] studied the relation between tax avoidance and fraud in accounting of companies. The results indicated that there is a direct and significant relation between tax avoidance and fraud in accounting of companies when there is a criterion to assess the cash tax rate and tax permanent difference, but when the assessment criterion of cash effective tax rate is long-term, there is not a significant relation between tax avoidance and fraud in accounting of companies.

[20] studied in their investigation the effect of effective tax rate on profit distribution policy of the companies recognized by Tehran Stock Exchange Market. To assess the policy of profit distribution in this study, the companies used the ratio of distributed profit to net sale and used the relation of tax costs and net profit before deduction of tax to assess the effective tax rate. The results of the study showed that there is a significant and negative relation between effective tax rate and profit distribution policy. In other words, increased effective tax rate makes the companies reduce their distributed profits considerably.

[21] studied the relation between ownership structure and tax avoidance of companies and found out that there is a significant and negative relation between blocked ownership and tax permanent difference criterion and there is a positive and significant relation between blocked ownership and cash effective tax rate.

Research method:

The method of this research is of post event type which is within the domain of approvable accounting studies and is based on factual information of the financial statements of the companies recognized by Tehran Stock Exchange market. The study is of correlative type and using the collected information, the degree of relation between dependent and independent variables is tested.

Research domain:

- *Geographical domain:*

The geographical domain of this study is the recognized companies by Tehran Stock Exchange Market and accounting information is extracted from their financial statements.

- *Temporal domain:*

To study the research hypotheses, the study of a one 11-year period between 2002 and 2012 were used.

- *Thematic domain:*

Thematic domain of the current research is "effect of product market power, concentration of industrial groups and tax policy of the leading company in industry over the tax avoidance and future return of companies recognized by Tehran Stock Exchange Market".

Society, statistical sample and sampling method:

Statistical society is comprised of all the elements and individuals that have one or several characteristics in common in one geographical scale (internationally or regionally). The statistical society of this study is all groups of Stock Exchange Market industry of Tehran that were active between 2002 and 2012).

The statistical sample of the study is the companies recognized by Stock Exchange Market that have the following conditions:

1. They were present in stock exchange market between 2002 and 2012.
2. The sample companies should not have a pause of transactions for more than six months during the research period.
3. Their fiscal period ends on 20 March every year to eliminate the effects of seasonal fluctuations and there was no change in the research domain during the fiscal period.
4. The information about the data of financial statements are available from the beginning of the fiscal year between 2002 and 2012.
5. They are not financial broker companies, holdings, banks or leasing companies. Thus the investment companies, leasing companies, financial institutes are eliminated from the sample list.

They are among the companies that were registered on the date of conducting this study in Tehran Stock Exchange market and therefore, are selected according to the conditions and concerns in the selective sampling of 92 companies out of the statistical society to undergo the hypothesis test. We conducted total of 1012 observations and the period of research was consecutive 11 years. The method to determine the statistical sample is shown in table 1.

Table 1: Method to determine statistical sample.

Number	Stages to select the sample
516	Total recognized companies by Tehran Stock Exchange Market
(98)	Not to be present in stock exchange market between 2002 and 2012
(88)	Not to be financial brokers, holdings, banks and leasing companies
(120)	Their fiscal year does not end on 20 March and they changed through research domain during the fiscal period.
(116)	Companies whose transactional stop exceeded six months during the research period.
(2)	Required information of the preferred company is not accessible
92	Total selected sample

Introduction of variables and method of calculating them:

The variables of this study were classified according to the type of their relation with each other and the two independent and dependent variable types that are referred to in the following table:

Table 2: Introduction of variables and calculation method.

Method of calculation	Symbol	Title	Variable type
$ETR = \frac{TAXEXP}{EBIT}$ Tax on operation : TAXEXP Profit before taxation : EBIT	ETR	Effective tax rate	Tax avoidance indicators
$TAX_1 = 1 - ETR$	TAX1	Tax avoidance (1)	
$CETR = \frac{TAXED}{EBIT}$ Paid cash for tax : TAXE Profit before taxation : EBIT	CETR	Effective rate of cash tax	
$TAX_2 = 1 - CETR$	TAX2	Tax avoidance (2)	
Average tax on 3-year performance over average profit before taxation in 3 years	LRETR	Effective rate of long-term tax	
$TAX_3 = 1 - LRETR$	TAX3	Tax avoidance (3)	
LRCETR= Paid average cash for tax during three years over average profit before taxation during 3 years	LRCETR	Effective rate of long-term cash tax	
$TAX_4 = 1 - LRCETR$	TAX4	Tax avoidance (4)	
It is calculated through PCM.	LTAX	Tax avoidance of industry	
Net sale amount over cost price of sold goods	PCM	Product market power	
$HHI = \sum(S_i)^2$ Degree of sale of existing companies in every sample industry, the closer HHI is to one, the more concentrated the industrial group becomes.	HHI	Concentration of industrial group	
ROI is net profit over total assets.	ROI	Return of assets	Control variables
Logarithm of total value of shares market of companies	SAIZ	Company's size	
Total tangible fixed assets over total beginning of term assets	PPE	Being tangible	
The variable is virtual. If the company has operational loss, it is one and otherwise, it is zero.	NOL	Operational net loss	
Total shares market value over total value of shareholders' equities	MTB	Ratio of market value to book value of shareholders' equities	
Total non-current debts over total assets	LEV	Financial leverage	
$FCF = \frac{CFO - INT - T - DTV}{MVE}$ Operational cash flow : CFO Financial costs : INT Tax : T Distributed profit : DTV	FCF	Free cash flow	
End of term profit minus beginning of term profit over total value of shares market	Earn	Net profit changes	
$Beta = \frac{Cov(R_i - R_m)}{Var(R_m)}$	Beta	Systematic risk	
Total book value of shareholders' equity over total value of company's shares market value	BM	Ratio of book value to market value	

Descriptive statistics:

In this part, firstly the descriptive statistical indicators including central indicators (maximum, minimum, average) and dispersion indicators including variance, criterion deviation, skewness and traction indicators were discussed.

Table 3: Statistical index of dependent and independent variables.

SIZE	ROI	HHI	PCM	Tax4	Tax3	Tax2	Tax1	Symbol
26/94	0/13	0/28	1/33	0/82	0/87	1/16	0/81	Mean
31/02	0/83	0/84	4/84	0/85	0/995	0/86	0/88	Maximum
22/86	-0/34	0/0004	0/24	0/03	0/004	0/05	0/01	Minimum

1/42	0/13	0/74	0/43	0/20	0/243	0/23	0/59	Criterion deviation
BM	BETA	D-Earn	FCF	LEV	MTB	NOL	PPE	Symbol
0/616	0/72	0/39	0/14	0/25	1/96	0/06	0/72	Mean
3/576	9/98	0/81	1/63	2/52	10/41	1/00	2/23	Maximum
-1/789	-3/58	0/02	-0/89	0/00	0/49	0/00	0/001	Minimum
0/519	1/33	0/71	0/33	0/18	1/32	0/52	0/23	Criterion deviation

In the above table, descriptive statistics of variables is presented separately. Calculation of tax avoidance is made in four separate methods. In the first method, effective tax rate (ETR) is the average tax avoidance of 0.81.

Most of it is concerning Iran Carbon Company in Iran in 2009 and the least of it is concerning Saipa Azin Co. in 2011. In the second method, the cash effective tax rate (CETR) is the average of tax avoidance of 1.15. Most of it is concerning Behshahr Industrial Company in 2004 and least of it is concerning Saipa Azin Company in 2007. In the third method, long-term tax effective rate is the average tax avoidance of 0.87. Most of it is concerning Pars Electric Company in 2006 and the least of it is concerning Gas Pipe Company in 2006. In the fourth method, the long-term cash tax effective rate (LRCETR) is the average of tax avoidance of 0.82. Most of it is concerning Iran Tyre Co. in 2010 and the least of it is concerning Sahand Tyre Company in 2006. As it was noticed, the major sample companies have negative skewness as far as tax avoidance is concerned and in other words, they are skewed to left and have traction. The negative sign of skewness and traction is mostly applied to the normal distribution of this inference which means that the unavoidable weight load of the sample companies are mainly inclined toward the side where the companies are inclined to pay tax and most of the sample companies evade tax avoidance according to the mentioned criteria.

The average product market power in sample companies is 1.32. The highest degree of sample is about the pharmaceutical, chemical and cement production companies so that the first 56 ranks is concerning these industries. The least is concerning Pars Electric Companies that are active in communication tools industry and Sadra Sea Industry Contractor Company.

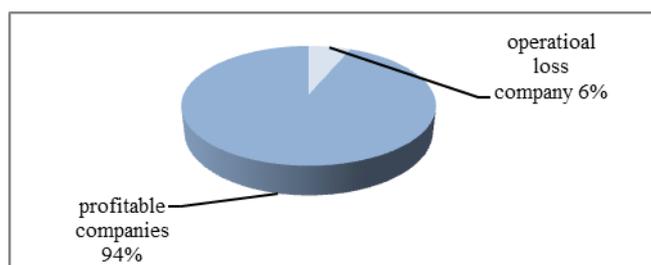


Fig. 1: Net operational loss.

The statistics of the samples show that 952 companies were of sample profitable companies and 60 companies of about 6% of the ones that sustained loss.

The average of the market value to book value is 1.68. It means that the market value of the companies shows 72% growth in comparison with their book value. The highest ratio of market value to book value is concerning Cement Industry Companies so that the average ratio of the market value in these companies is almost seven times more than their book value. While the least growth of the market value to book value is concerning Pars Electric Company where the average ratio of market value to book value of it is almost 0.62.

The average financial leverage is 0.25. This means that about 25% of the total book value of the assets of the company was supplied by long-term finance and long-term debts. The highest degree of financial leverage is about Gas Pipe Company, Qazvin Glass and Combine Making companies so that their average financial leverage is 115% and the least financial leverage amount is about the companies like Iran Chemical Industries and Darou Sobhan whose financial leverage is about 0%.

Test of hypotheses:

- *Main hypothesis:*

There is a negative relation between companies' tax avoidance and products market power.

- *Minor hypothesis:* There is a negative relation between tax avoidance (effective tax rate) and product market power.
- *Minor hypothesis:* There is a negative relation between tax avoidance (cash effective tax rate) and product market power.
- *Minor hypothesis:* There is a negative relation between tax avoidance (long-term effective tax rate) and product market power.

- Minor hypothesis: There is a negative relation between tax avoidance (long-term cash effective tax rate) and product market power.

Table 4: Result of test of hypotheses.

Model no. 4			Model no. 3			Model no. 2			Model no. 1			Descriptive variables
Amounts of P-Value	Amounts of t statistic	Variable coefficients	Amounts of P-Value	Amounts of t statistic	Variable coefficients	Amounts of P-Value	Amounts of t statistic	Variable coefficients	Amounts of P-Value	Amounts of t statistic	Variable coefficients	
0/01	2/76	0/35	0/20	1/28	0/27	0/00	8/06	1/48	0/28	1/09	0/89	Constant
0/01	-2/50	-0/02	0/00	-2/53	-0/01	0/00	-5/08	-0/002	0/00	-3/34	-0/02	PCM
0/28	-1/08	-0/06	0/29	-1/05	-0/11	0/01	-2/63	-0/29	0/71	-0/37	-0/08	ROI
0/00	-3/10	-0/02	0/01	-2/57	-0/02	0/22	-1/22	-0/01	0/90	-0/13	-0/004	SIZE
0/00	-3/61	-0/08	0/02	-2/30	-0/07	0/28	-1/08	-0/07	0/02	-2/34	-0/24	PPE
0/00	7/56	0/18	0/07	1/80	0/17	0/00	5/70	0/24	0/05	1/93	0/17	NOL
0/44	0/78	0/00	0/50	-0/67	-0/003	0/20	-1/29	-0/01	0/81	-0/24	-0/003	MTB
0/60	-0/52	-0/02	0/71	0/37	0/02	0/08	-1/76	-1/10	0/51	-0/65	-0/09	LEV
0/37	0/89	1E-7	0/71	0/32	1E-7	0/00	3/06	3E-7	0/06	1/86	6E-7	FCF
0/09	1/69	0/004	0/24	1/1	0/02	0/53	0/62	0/001	0/64	0/45	0/013	HHI
21/039			3/250			6/030			5/043			F test amounts
0/000			0/0007			0/000			0/000			Level of significance
0/245			0/237			0/267			0/382			Determination coefficient
2/146			1/929			1/797			2/253			Durbin-Watson

In model no. 1, since the F and t statistic amount is less than 0.05, the H₀ is rejected at 95% certainty level. It could be concluded that there is a reverse and significant relation between tax avoidance (tax effective rate) and product market power and the Durbin-Watson statistic confirms the absence of self-correlation among the model remnants. Also the determination coefficient of 38.1% indicates that the independent variables in this model are able to interpret almost 38% of the changes of effective tax rate of the companies.

In model no. 2, since the f and t statistic amount is less than 0.05, the H₀ is rejected at 95% certainty level. Thus the second minor hypothesis is accepted and in other words, there is a reverse relation between tax avoidance (cash effective tax rate) and product market power. Also the determination coefficient of 26.6% indicates that the independent variables in this model could interpret almost 27% of the changes of cash effective tax rate of the companies.

In model no. 3, since the F and t statistic amount is less than 0.05, the H₀ is rejected at 95% certainty level. Thus it could be said that the companies that enjoy good productivity in long-term, show good competitive power in the product market and show less tax evasion and Durbin-Watson statistic amount confirms the absence of self-correlation among the model remnants. Also the determination coefficient of 23.7% indicates that the independent variables in this model are able to interpret almost 24% of the changes of long-term effective tax rate of the companies

In model no. 4, since the f and t statistic amount is less than 0.05, the H₀ is rejected at 95% certainty level. Thus the fourth minor hypothesis is accepted and in other words, there is a negative relation between tax avoidance (long-term cash effective tax rate) and product market power. Durbin-Watson statistic amount confirms the absence of self-correlation among the model remnants. Also the determination coefficient of 24.4% indicates that the independent variables in this model are able to interpret almost 24% of the changes of long-term effective tax rate of the companies

Summary of four minor hypotheses is presented briefly in the following table:

Table 5: Summary of the first minor hypotheses.

Outcome	Type of relation	Degree of product market power	Tax avoidance variable	Minor hypothesis
Significant	Reverse	-0/023	Effective tax rate	1
Significant	Reverse	-0/002	Cash effective tax rate	2
Significant	Reverse	-0/009	Long-term effective tax rate	3
Significant	Reverse	-0/024	Long-term cash effective tax rate	4

Since in the above four models, the relation between tax avoidance and product market power is of reverse relation and it is statistically significant, the first hypothesis, i.e., there is a negative relation between tax avoidance of companies and product market power is confirmed.

- *Main hypothesis:*

There is a positive relation between companies' tax avoidance and tax avoidance of leading companies in industry.

- *Minor hypothesis:* There is a positive relation between tax avoidance (effective tax rate) and tax avoidance of leading companies in industry.
- *Minor hypothesis:* There is a positive relation between tax avoidance (cash effective tax rate) and tax avoidance of leading companies in industry.
- *Minor hypothesis:* There is a positive relation between tax avoidance (long-term effective tax rate) and tax avoidance of leading companies in industry.
- *Minor hypothesis:* There is a positive relation between tax avoidance (long-term cash effective tax rate) and tax avoidance of leading companies in industry.

Table 6: Result of test of hypotheses.

Model no. 8			Model no. 7			Model no. 6			Model no. 5			Descriptive variables
Amounts of P-Value	Amounts of t statistic	Variable coefficients	Amounts of P-Value	Amounts of t statistic	Variable coefficients	Amounts of P-Value	Amounts of t statistic	Variable coefficients	Amounts of P-Value	Amounts of t statistic	Variable coefficients	
0/03	2/23	0/34	0/03	2/21	0/44	0/10	1/66	0/76	0/78	0/28	0/29	Constant
0/00	5/02	0/17	0/01	2/26	0/09	0/00	3/48	0/15	0/00	5/61	0/17	TAX
0/27	1/11	25E-3	0/43	0/79	5E-3	0/86	0/18	11E-3	0/98	0/03	4E-4	LTAX
0/06	-1/88	-0/15	0/12	-1/57	-0/18	0/00	-3/89	-0/47	0/86	-0/18	-0/04	ROI
0/07	-1/83	-0/01	0/17	-1/39	-0/01	0/14	1/48	0/03	0/26	-1/14	-0/04	SIZE
0/14	-1/48	-0/05	0/03	-2/14	-0/08	0/36	-0/92	-0/05	0/03	-2/13	-0/24	PPE
0/00	7/36	0/23	0/00	4/63	0/18	0/00	4/18	0/21	0/09	1/70	0/17	NOL
0/71	0/37	0/002	0/74	-0/33	-0/002	0/84	-0/21	-0/002	0/72	-0/35	-0/01	MTB
0/94	-0/08	0/003	0/67	0/42	0/002	0/07	-1/83	-0/15	0/93	-0/09	-0/01	LEV
0/84	-0/21	-3E-8	0/97	0/04	1E-8	0/13	1/53	2E-7	0/40	-0/84	-3E-7	FCF
0/72	-0/35	0/0008	0/65	-0/46	0/001	0/18	1/35	0/03	0/68	0/41	0/02	HHI
9/609			3/703			2/209			5/058			F test amounts
0/000			7E-4			0/00			0/00			Level of significance
0/213			0/247			0/251			0/230			Determination coefficient
2/085			2/147			1/974			1/670			Durbin-Watson

In model no. 5, since the F and t statistic amount is less than 0.05, the H₀ is rejected at 95% certainty level. It could be concluded that there is a direct relation between tax avoidance (tax effective rate) and tax avoidance of the telecommunication industrial companies because the sign of its variable coefficient in this model is positive, but this relation is so weak that it is not significant statistically. Thus despite the positive relation between variable of tax avoidance and tax avoidance of industrial companies, the first minor hypothesis is rejected. The amount of Durbin-Watson statistic confirms the absence of self-correlation among the model remnants. Also the determination coefficient shows that the independent variables in this model could interpret almost 23% of the effective tax rate changes of the companies.

In model no. 6, since the f and t statistic amount is less than 0.05, the H₀ is rejected at 95% certainty level. Although there is a direct relation between tax avoidance (cash effective tax rate) and tax avoidance of the leading company, it is not statistically significant. Thus the second hypothesis is rejected and also the determination coefficient of 25.07% indicates that the independent variables in this model could interpret almost 25% of the changes of cash effective tax rate of the companies.

In model no. 7, considering the F and t statistic amount, the third minor hypothesis rejected. The amount of the statistic indicates the absence of self-correlation among the model remnants. Also the determination coefficient of 24.6% indicates that the independent variables in this model are able to interpret almost 25% of the changes of long-term effective tax rate of the companies

In model no. 8, since the f and t statistic amount is less than 0.05, the H₀ is rejected at 95% certainty level. In this model there is a direct relation between tax avoidance (long-term effective tax rate) and tax avoidance of industrial companies because the sign of its variable coefficient is positive in the model, but this relation is so weak that it is not statistically significant. Thus the first minor hypothesis is rejected despite the positive relation between tax avoidance variable and tax avoidance of industrial companies. Also the determination coefficient indicates that the independent variables in this model are able to interpret almost 22% of the changes of long-term effective tax rate of the companies

Summary of four minor hypotheses is presented briefly in the following table:

Table 7: Summary of the second minor hypotheses.

Outcome	Type of relation	Degree of tax avoidance of industrial companies	F test amounts	Minor hypothesis
Insignificance	Positive	0/00004	Level of significance	1
Insignificance	Positive	0/00011	Determination coefficient	2
Insignificance	Positive	0/00050	Durbin-Watson	3
Insignificance	Positive	0/00052	F test amounts	4

Despite the fact that the relation between tax avoidance and tax avoidance of industrial companies in the four models is of direct type, due to insignificance of the tax avoidance of industrial companies in the model, all minor hypotheses are rejected and as a result, the second main hypothesis, i.e., there is a positive relation between companies' tax avoidance and Companies' tax avoidance in industry is rejected.

- *Main hypothesis:*

There is a stronger positive relation between companies' tax avoidance and tax avoidance of leading company in concentrated industries.

- Minor hypothesis: There is a positive relation between tax avoidance (effective tax rate) and tax avoidance of leading company in concentrated industry.
- Minor hypothesis: There is a positive relation between tax avoidance (cash effective tax rate) and tax avoidance of leading company in concentrated industry.
- Minor hypothesis: There is a positive relation between tax avoidance (long-term effective tax rate) and tax avoidance of leading company in concentrated industry.
- Minor hypothesis: There is a positive relation between tax avoidance (long-term cash effective tax rate) and tax avoidance of leading company in concentrated industry.

Table 8: Result of test of hypotheses.

Model no.12			Model no. 11			Model no. 10			Model no. 9			Descriptive variables
Amounts of P-Value	Amounts of t statistic	Variable coefficients	Amounts of P-Value	Amounts of t statistic	Variable coefficients	Amounts of P-Value	Amounts of t statistic	Variable coefficients	Amounts of P-Value	Amounts of t statistic	Variable coefficients	
0/00	5/21	0/18	0/01	2/87	0/10	0/89	0/13	0/01	0/00	9/78	0/26	TAX
0/22	1/23	0/001	0/40	0/85	4E-9	0/55	0/60	3E-5	0/46	0/74	3E-9	LTAX
0/29	1/07	0/002	0/47	0/72	0/001	0/79	0/27	3E-6	0/46	0/73	0/002	LTAX*HHI
0/07	-1/81	-0/14	0/13	-1/51	-0/17	0/00	-3/23	-0/30	0/27	-1/10	-0/22	ROI
0/00	-18/54	-0/02	0/00	-18/06	-0/03	0/91	-0/11	-3E-8	0/01	-2/46	-0/05	SIZE
0/16	-1/41	-0/04	0/04	-2/05	-0/08	0/09	-1/69	-0/07	0/54	-0/61	-0/05	PPE
0/00	7/47	0/23	0/00	4/75	0/18	0/00	6/21	0/24	0/00	2/90	0/25	NOL
0/78	-0/28	-0/001	0/71	-0/37	-0/002	0/86	0/18	0/001	0/85	-0/19	-0/003	MTB
0/90	0/13	0/01	0/50	0/67	0/04	0/11	-1/59	0/09	0/27	1/11	0/15	LEV
0/92	-0/10	-8E-1	0/95	0/06	8E-1	0/01	2/61	7E-4	0/42	0/80	8E-3	FCF
0/75	-0/26	-3E-8	0/60	0/53	0/002	0/72	0/35	0/001	0/67	-0/43	0/003	HHI
4/475			4/133			5/437			6/841			F test amounts
0/000			0/000			0/000			0/000			Level of significance
0/109			0/042			0/074			0/090			Determination coefficient
2/088			2/145			1/823			1/831			Durbin-Watson

In model no. 9, since the F and t statistic amount is less than 0.05, the H₀ is rejected at 95% certainty level. It could be concluded that despite the direct relation between tax avoidance (cash effective tax rate) and tax avoidance of leading company in concentrated industries (LTAX*HHI), this relation is not statistically significant and the amount of Durbin-Watson statistic is 1.83 where the amount close to two indicates the lack of self-correlation between the model remnants. The determination coefficient is also 9.02%. This coefficient indicates that the independent variables in this model are able to interpret almost 9% of the changes of the effective tax rate of companies.

In model no. 10, since the F and t statistic amount is less than 0.05, the H₀ is rejected at 95% certainty level. Thus despite the positive relation between tax avoidance and tax avoidance of leading company in concentrated industries, the second minor hypothesis is rejected. The determination coefficient is also 7.3%. This coefficient indicates that the independent variables in this model are able to interpret almost 7% of the changes of the cash effective tax rate of companies.

In models no. 11 and 12, also the F and t statistic amount is less than 0.05, the third and fourth minor hypotheses are rejected. The summary of the fourth minor hypothesis is presented briefly in the following table:

Table 9: Summary of the third minor hypotheses.

Outcome	Type of relation	Degree of tax avoidance of industrial companies	Tax avoidance variable	Minor hypothesis
Insignificance	Positive	0/002	Effective tax rate	1
Insignificance	Positive	0/0006	Cash effective tax rate	2
Insignificance	Positive	0/001	Long-term effective tax rate	3
Insignificance	Positive	0/002	Long-term cash effective tax rate	4

Despite the fact that the relation between tax avoidance and tax avoidance of leading company in concentrated industries in the four models is of direct type, due to insignificance of the tax avoidance of leading company in concentrated industries in the model, all minor hypotheses are rejected and as a result, the third main hypothesis, i.e., there is not a positive relation between companies' tax avoidance and tax avoidance of leading company in concentrated industries.

- *Main hypothesis:*

In companies with higher competition rate, there is a direct relation between leading company's tax avoidance and future return of companies' shares.

Table 10: Results of the fourth hypothesis.

$RET_{i,t} = \alpha_0 + \beta_1 LTAX_{i,t-1} + \beta_2 PCM_{i,t-1} + \beta_3 (LTAX_{i,t-1} * PCM_{i,t-1}) + \beta_4 \Delta Earn_{i,t-1} + \beta_5 Beta_{i,t-1} + \beta_6 Size_{i,t-1} + \beta_7 BM_{i,t} + \beta_8 LEV_{i,t} + \beta_9 FCF_{i,t} + \varepsilon_{i,t}$				Model
Conclusion	Amounts of P-Value	Amounts of t statistic	Variable coefficients in the model	Descriptive variables
Significant at 95% level	0/00	6/30	0/29	Constant
Significant at 95% level	0/01	2/72	0/06	LTAX
Insignificance	0/07	1/83	0/08	PCM
Significant at 95% level	0/00	9/82	0/003	LTAX*PCM
Insignificance	0/72	0/36	1E-5	EARN
Significant at 95% level	0/03	2/17	0/05	BETA
Insignificance	0/69	-0/40	-0/01	SIZE
Insignificance	0/93	0/08	0/01	BM
Insignificance	0/92	-0/10	-0/03	LEV
Insignificance	0/40	-0/85	-1E-6	FCF
2/067	Durbin-Watson amounts		5/737	F test amount
0/189	R2 Determination coefficient amounts		0/000	Amounts of significance level
0/173	R2 Adjusted determination coefficient amounts			
Considering the amounts of F test and the amount of significance level which is less than 5%, the relation is significant.				Result of model sufficiency

The probability amount (or significance level) of F in model is equal to zero because these amounts are less than 0.05. Thus H0 is rejected at certainty level of 95%. It means that there is a significant model. In other words, the relation between dependent and independent variables of this model is of linear type.

As the above table shows, there is a significant and direct relation between LTAX*PCM and RET. Since coefficient of this variable in the model is positive, the relation is of direct type. This relation is statistically significant because firstly the amount of obtained t is higher than its corresponding amount in the table $96/1=0.975=at$ and secondly the calculated significance level in this variable is also less than 5%. Thus the fourth hypothesis is confirmed. In other words, in the industries with higher level of competition, there is a direct relation between tax avoidance of the leading company and future return of companies' shares. The amount of Durbin-Watson statistic is 2.06 and when the figure is close to 2, it shows that there is not self-correlation among the remnants of the model. Also the determination coefficient is 18.8%. This coefficient indicates that the independent variables in this model are able to justify almost 19% of the changes to return rate of the companies.

Sum up and comments:

In the first hypothesis, the researcher seeks to find out whether there is a negative relation between tax avoidance and product market power of the companies or not. In this direction, four criteria of tax avoidance including effective tax rate, cash effective tax rate, long-term effective tax rate and long-term cash effective tax rate were studied in four models. The outcomes of the statistical analyses for the four criteria of tax avoidance show that there is a reverse and significant relation between the effective tax rate, cash effective tax rate, long-term effective tax rate and long-term cash effective tax rate and the product market power. Hence the first hypothesis is accepted. Generally in the companies where there is a separation between its managers and owners, it seems that due to the existence of representation issue theory, tax avoidance occurs in them. Because

it always exists in this hypothesis that the managers of these companies try to make the information environments complicated in order to acquire more profits so that the companies pay less tax and as a result use the created resources to increase their personal resources and to use the information imbalance in their own interests. But the managers of the companies with the product market power try to remove the claim by reduction in tax avoidance and disclosure of more information. That is why in these companies, there is a reverse relation between tax avoidance and products market power.

In the second hypothesis, the researcher seeks to find out whether there is a negative relation between tax avoidance and the leading industrial company or not. In this direction, four criteria of tax avoidance including effective tax rate, cash effective tax rate, long-term effective tax rate and long-term cash effective tax rate were studied in four models. The outcomes of the statistical analyses for the four criteria of tax avoidance show that there is not a significant relation between the effective tax rate, cash effective tax rate, long-term effective tax rate and long-term cash effective tax rate and tax avoidance of the leading industrial company. Hence the second hypothesis is rejected. The outcomes of the second main hypothesis show that although there is a direct relation between companies' tax avoidance and leading industrial company, this relation is not statistically significant. Since tax is an important item in the profit and loss statement of the companies and the method and amount of paying it indicate the flexibility power of the companies, this issue creates incentive to imitate tax avoidance of the leaders of the product market. This incentive results from the pressure to report performance following the tax in a coordinated and higher form in comparison with the other companies in that industry. The results of this hypothesis indicate that the existing companies in industry try to minimize their attempts instead of optimizing tax expenses and to follow the leading company in industry and do not have any time left to spend for the tax of the leading company.

In the third hypothesis, the researcher seeks to find out whether there is a positive and stronger relation between tax avoidance of companies and the tax avoidance of the leading company in concentrated industries or not. In this direction, four criteria of tax avoidance including effective tax rate, cash effective tax rate, long-term effective tax rate and long-term cash effective tax rate were studied in four models. The outcomes of the statistical analyses for the four criteria of tax avoidance show that there is not a significant relation between the effective tax rate, cash effective tax rate, long-term effective tax rate and long-term cash effective tax rate and tax avoidance of the leading company in concentrated industries. Hence the third hypothesis is rejected. The results from the third main hypothesis are shown. In this hypothesis, the issue which is considered is whether in the industries where the degree of competition in them is almost similar or are more concentrated, the degree of tax avoidance in them is similar to the degree of tax avoidance in the leading company or not. The results indicate that in industries with higher competition or concentration, the companies are in the same direction to use tax avoidance like the leading company, but the degree of using them is not similar and there is a significant difference among them.

In the fourth hypothesis, the researcher wants to find out whether in industries with higher level of competition, there is a direct relation between tax avoidance of leading company and future return of shares of the companies or not. Since the independent variable coefficient in the model is significant, this hypothesis is accepted, i.e., in the industries with higher competition level, there is a direct relation between the tax avoidance of the leading company and future return of the shares of the companies. In the fourth hypothesis, it was found out that in industries with higher level of competition, implementation of tax avoidance plans did not enable the companies' managers to implement tax avoidance aiming at less legal payment of tax. Tax avoidance led to maintenance of more cash in the company and as a result, the shareholders were paid higher interests. Considering the high price of shares of these companies and the relatively low return of them, the leading companies try to pay more interest to them by using tax avoidance methods. Hence there is a direct relation between tax avoidance in these companies and future return of shares.

Research suggestions:

- *Suggestions from research:*

Considering the fact that product market power is a governance mechanism of the external company to reduce tax avoidance, the tax auditors are suggested to pay attention to the employers' product market power to assess tax auditing risk.

But since tax avoidance of the Group's companies does not depend on the degree of the leading company's tax avoidance, it is suggested not to imitate the leading company's tax avoidance in industry in order to assess the tax auditing risk, even under circumstances where the degree of concentration in industry is high.

Considering the obtained results from the fourth hypothesis, the investors are suggested to pay attention to the leading company of an industry and its level of tax avoidance to assess the return of active companies in that industry because the results indicate that there is a relation between the two factors, and in fact tax avoidance should enter into the decision making models of the enterprises in order to assess their future return to make more correct anticipations.

• *Scientific suggestions for future research:*

1. To study the relation between internal and external governance mechanisms of a company and the tax avoidance degree.
2. To study the ownership change from governmental to private and its effect on tax avoidance.
3. To study the effect of mother companies' tax avoidance on tax policies of minor companies.

Research restrictions:

The restrictions of this study could be expressed as follows:

1. In the current study, four criteria of effective tax rate, effective cash tax rate, effective long-term tax rate and effective long-term cash tax rate were used, thus using tax avoidance assessment criteria might bring about different outcomes.
2. Lack of access to tax recognition sheet in some observations caused the observations to be eliminated, thus the results have to be interpreted taking the necessary precautions into consideration.

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