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The Impact of Trade Liberalization on Industrial Concentration (Iran Manufacturing 1994-2004)

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Abstract:

Concentration is regarded as one of the most important aspects of market structure and it helps us to consider market structure. It is usually used in empirical studies of market and industry structure to determine the degree of competition and monopoly. Also, it is possible to design appropriate program toward desired performance by studying time trend of concentration and recognition of effective factors on concentration variation. This study aims to investigate the effects of trade liberalization on industrial concentration in various levels of manufacturing industries (ISIC 4digits). for this purpose "Raw data comprehensive project of the industrial firms of Iran during 1994-2004" were used, Also, panel model with cross fixed effect was chosen for estimation, after doing stability test of Levin-Lin-Chu and specification tests of Chow, Brousch-Pagan and Hausman. The results show that trade liberalization has negative effect on industrial concentration and make the market structure more competitive. To investigate the effects of trade liberalization on industries with competitive and monopoly structure, two groups including low and high concentrated industries were considered. Results of this grouping show that the liberalization leads to a decrease in the level of concentration in the low concentrated group. Also, adjusted concentration index was used in order to investigate domestic market.

JEL classification**: F55, F23**

Keywords: *Industrial Concentration, Trade Liberalization, Manufacturing, Panel Model, Adjusted Concentration Index*

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1. Introduction

The word "Industrial Economics" first was proposed by Andres in 1951. The purpose of industrial economics is description of a situation between exclusive and comparative conditions. In experimental studies around industrial structures and markets, usually the concept of concentration is used for evaluation the degree of competition and exclusion in any markets. Also, some groups of economists especially structuralists, believe that the rate of concentration is index of concentrative power in any markets.

Studying about concentration helps to deep understanding of market structure and prepares researcher to determine competition and exclusion in real markets. Also, studying time trend of concentration shows which industries tend to competition or exclusion and finally it is possible to design appropriate program according to the desired performance, by recognition of effective factors on concentration variations. (Khodadadkashi, 1998, p 134)

In most countries, the rate of markets concentration on various industries is measured yearly, whose results guide governments for economics and industrial policymaking. Trade deregulation causes to eliminate the restrained factors and trade artificial obstacles, originated from function of limited policy, applying tariff and non- tariff protectable policies, limited exchange- trade regime and the like, and then economy advances to more competitive conditions. If domestic economy is more competitive, the existing companies will act with more competitive power and production level in international markets and thereby, the country will advance and grow rapidly. Imports decontrol decreases inflation and helps to economic stability by providing competition in domestic markets (Behkish, 2002, pp 169, 269).

With due attention to announce membership request formally in the World Trade Organization (WTO) from Iran and its investigation for formation of working group in Jun 2000, for membership, it is necessary to eliminatc of non- tariff barriers

and convert to tariff. In this way, development of government capacity for membership on WTO and management of deregulation process is fundamental actions of government and subtracting import tariffs has been inseparable part of both short-run and long- term Iran economics programs. (Khodadadkashi, 1998, pp 36-38)

2. Trade deregulation Program in Iran

While considering crisis issue of foreign debts and also monetary financial and foreign exchange policies instability in final years of first program, policies of economic liberalizing in second program, are followed slowly, and management of foreign debts crisis in second program is accomplished to control import. But the way of programming and total directing of this program was similar to first that. In second program, again policies are considered such as encouraging export, encounter monopolist and development of foreign investing.

trade policies have focused more attention on Iran's third developing program law (2000/01-2004/05). Also the exchange stabilization had led to encouraging export and eliminating import. Moreover, nullification of exchange contracting from 1994 is caused that 66 groups of exported goods are excepted from exchange warranty deed. Another important factor that denote to economic liberalizing was allocation of 500 million Dollars from exchange reserve account regarding warranty of seller and buyer credits to export guarantee fund.

3. Iran Industrial Structure and its resulting Problems

From including effective factors on monopoly can be pointed out to constitutional law, regulation and certain benefits and vertical merges due to high costs of legal contracts actions, government ruling, market limitations which requirement of removing limitations is economics liberalization on various dimensions. Business protections such as high tariff and quantitive protections including government trade protection have been caused monopoly even on private firms. Also, existing thought that

government political power is influenced by its economic power and economic rely on oil, have been increased trend of establishing monopoly institutions. (Behkish, 2002, p 217)

A problem that caused monopoly power on country industrial markets is not only in selling products, but also because most industrial institutions on market of factor purchasing have monopoly power and are monopolist purchaser, will be able to exploit unfairly medium institutions which are provider of initial material and become obstacle for growing small institutions.

On the other hand, existing monopoly in selling market of productions and factors purchasing has caused impact to industry section: first, monopolist firms which have no competitor on product market, are selling unsuitable quality goods with high price and is achieved monopoly benefit and isn't feel any reason for promoting productivity and improvement quality. From other hand, some firms that in purchase market of intermediate factors purchased from small firms, with their exclusive power, usually paid a price below real cost to them and by this view, they had exploit unfairly small institutions and thereby take away allowing growth of them.

4. Course Study and data collection

Time series- cross section data in various levels of manufacturing industries (as cross- section data of model), during 11 years period (as time- series of model) has been used, for investigating effect of trade liberalization on industrial concentration. In this article, export and import data on four digit code levels is required for Iran manufacturing, from 1994 to 2004, in order to accounted trade openness and import penetrating. But since statistic of export and import is gathered in terms of HS codes as yearly by Islamic Republic Customs of Iran, so this statistic necessarily should be changed to four digit ISIC codes. For this purpose, has been used by MATLAB 7.04 software.

For accounting industrial concentration (Herfindal-Hershman index) in terms of variable "output", has been used MATLAB

1.04 software after providing "raw data comprehensive project of the industrial firms of Iran".

It should be noticed that in gathering data of this research, there was problems and limitations which can be pointed out as following:

- Non availability statistics regarding industrial concentration index and requirement to its account.
- For calculating industrial concentration indexes has been used from 10 labors up raw data of the industrial firms and has been neglected from 10 labors down firms because of nonexistent statistic.
- Change of International Standard Industrial Classification (ISIC) during research time period (industrial classification has been performed till 1993, in terms of second version, that is 9 section with two- digital codes, and from 1994 since then has been done in terms of third version, that is 23 section with two-digital code). For this reason can't be used from statistic of years before 1994.
- In 2002, Statistical Community in comprehensive project questionnaire of industrial firms has been changed and number of firms has increased after this year which can be significant affect on trend of concentration rate.

5. Previous Literature

Jenny and Weber (1978), in an article called "determining concentration trend in French Industries" have engaged to determine concentration trend for four superior firms on manufacturing levels (with three-digit code) of France between 1961-1969. Internal firms in France have merged together, so that can be act better in competition with external institutions and was established bigger institutions (which were desired of France industrials authorities), while has been neglected some problems that accompanied by high concentration internal markets.

Bhattacharya and Bloch (2000), by article called "The Dynamics of industrial concentration in Australian Manufacturing", have applied dynamic model of concentration

with adjustment deviations of concentration from its steady state. In this article, Cross-sectional analysis is carried out against a sample of 102 Australian manufacturing industries at the Australian Standard Industrial Classification (ASIC) four-digit level over the period 1978-1985. In this model, effect of intensity import on concentration has been ambiguous. Import competition can cause removing ineffective small institutions or merging with other institutions (or other internal institutions), therefore, positive effect of concentration can be predictable. In other way, as de Milo and Urata (1984) has explained, if ineffective institutions increased their own production capacity and leading to more effectiveness, impact of import on concentration can be negative and then concentration decreases. So intensity of import, has been ambiguous affect on concentration.

Tanski and French (2001), in an article called "Capital Concentration and Market Power in Mexico's Manufacturing Industry", have evaluated trade Liberalization affect on capital concentration between 1970-1993. In this research, the mean overall tariff rate on has been negative and significant affect on concentration rate and this means that when tariff rate decreases (trade liberalizing), the mean concentration rate increases. But the tariff rate for industry class, have been positive and significant affect on concentration rate and indicated that protected industries in Mexico have tend to more concentration.

Ferreira and Facchini (2005), in an article called "Trade Liberalization and Industrial Concentration: Evidence of Brazil", have investigated relationship between industrial structure and extend of trade protection granted to Brazilian manufacturing industries during the 1988-1994 trade liberalization episode. Finally, this result has been taken out that more concentrated sectors have been able to obtain policy advantages that lead to a reduction in international competition. So that estimated coefficients implied that a sector twice as concentrated as another, would have nominal tariffs 30-45 Percent higher than the latter.

Ozmucur (2007), in an article called "Liberalization and Concentration: Case of Turkey", has investigated relationship between trade liberalization and sellers concentration on Turkey industries after trade liberalization episode (during the post-1980). Results of estimating panel data with fixed effect show that openness index has negative and significant impact on aggregate industrial concentration. This means that firms dealing with import competition, merged together in order to maintaining their own power and position and inefficiency producers force to withdraw, and internal production concentration increases in such industries. Of course with introducing dummy variables, has been achieved different affects on concentration in various sectors, so that trade liberalization have been negative and significant affect on concentration in competitive industries sectors, while this effect has been positive and significant on high concentrated sectors. On the other hand these sectors were industries that could compete with international market and merged with internal and external competitors and maintained their own market power.

6. Analytical framework

Usually for understanding markets are used concentration rate index. Also some economists, especially structuralism believe that concentration rate is an indicator of concentration power on any market. There are different standpoints about relationship between trade liberalization and market structure (such as competition, protection and monopoly), which have been surveyed in this section.

It can be stated that each parameters which causes long-run average cost curve shift toward left or right, is effective on industrial concentration. There is more importance regarding causes of concentration changes on two theories of Deterministic Approach and Stochastic Approach: (Khodadkashi, 1998, pp 66-74)

- **Deterministic approach:** In deterministic approach, economies of scale and technological changes are considered as determinant factor on market concentration. In this view,

technology has central role on determining optimum level of firm and thereby, the rate of market concentration is characterized by influencing this factor. If technology increases, it causes long-run average cost curve is shifted and the new optimum production take place on a level higher than initial production, and this leads to increasing sale of firm and consequently leads to increasing concentration.

Economical theorists such as Stigler and Bain are accounted these school adherents. Economists such as Street and Glad are discussed about relationship between international companies and conglomerate groups with market structure. They believe that internal firms combine with each other in order to act better in concise competition with external firms and with bigger one which leads to increasing market concentration.

Stochastic Approach: Stochastic approach has emphasized in this subject that there is uncertainty and various stochastic factors in any market that influence on firms decisions and their rate of growth. Also market concentration is changed depend on influencing that get from this factors. Including these stochastic factors can be pointed out to variance of exchange rate, government policies, changes of price competitions policies, successful extent on advertisements, labors strike, new productions… (Jenny & Weber 1978, pp 193-94). Also according to "Gibrat relative effects law", firm's relative growth is apart from their initial size and only chancy factor is proposed in this case.

Economists such as Demsetz and Brozen believe on entrance barriers resulting of government. According to this theory, tariff is obvious example of entrance obstacles, because it causes reduction in power of external producers to internal markets. In framework of analyzing orthodox economists is expected that trade liberalization increased competition and decreases tend to market concentration. Also according some theorists such as Edward Graham and Paul Krugman, international trade is increased competition and thereby results in decreasing trade power of internal producers. (Tanski, 2001, pp 676-680)

7. Market Power and Protection

In this view, protection has proposed as opposite point of liberalization and in such case has explained its linkage to market structure. There are two points of view among economists that believe in negative effect of trade liberalization on industrial concentration:

First view is in this basis that effects of protection on market power depend on the way of these protections, so that quantitive limitations of import such as import quota, is increased internal market power more than tariff situation. This subject primarily was proposed by Bagwati (1965) in a model that one monopolist is dealing with competition of external suppliers and was developed by Krishna studies (1984). Salnor and Rotenberg (1986) believed that because collusion behavior is facing with risk of firms obstruct, Therefore quoting of import can as decreasing parameter of cost thereby obstruct, be deal it with high impeding and increases competition.

Second view is based on that protection by generating initial monopolist rents, is provided extra entrance and this case, lead to production in small and inefficient scales. These suggestions, first was proposed by Eastman and Stykolt (1960) and was supported with experimental findings and was modellized by Dixit and Norman (1980). (Krugman Paul R, 1989, p 1187)

As another analysis, suppose that a country is in passing stage from protecting policy to liberal trade policy, therefore overall tariff rate decreased. Import goods are in competition with internal goods and be replaced by some goods that already was a part of internal industries (especially, some industries that have no competitive advantages). Producers with high expense are removed from industry and aggregate concentration rate will be increased. On the other hand, internal producers are transformed their production line toward protected industries. These producers enter to new industry as smaller producers and decrease concentration rate. (Tanski, 2001, p 691)

As a whole, concentration factors can be divided into two parts of natural root and public root. Natural concentration is

resulting from natural factors which can be result economies of scale, labor experiment and skill (labor productivity), better technology and advantages due to variety of productions. Wile public root of concentration consists of public policies, specific advantages and rules (rents). Also, market limitation is another factor of providing concentration that because of closeness of economies is formed by public, which requirement of remove of market limitation is economic liberalization in various dimensions.

8. Model Structure

For accounting concentration rate and impact of trade liberalization on it (on four- digit codes of manufacturing industries) is used from panel data (time series- cross section) model. Two indicators, namely openness and import penetration, are used to explain the effect of economic liberalization. Also for better specifying pattern is added variables output, firm medium size and Herfindal – Hershman index on every level of industry. Model pattern is defined as following: (Ozmucur, 2007, pp 8-14.)

$$HHI_{i,t} = b_0 + b_1.OPEN_{i,t} + b_2.IMP_{i,t} + b_3.OUT_{i,t} + b_4.SIZE_{i,t} + b_5.HHI_{i,t-1} \quad (1)$$

HHI: Herfindal- Hershman index , i = 1, ...100 , t = 1994/05, …, 2004/05

OPEN: economic openness index

IMP: import penetration

OUT: output

SIZE: medium size of firm, on four-digit codes

In order to description of trade liberalization, has been used market openness index in industry sector (MOI) to external world. This index indicates relation of any section of economic actions with external world especially global markets. This index is calculated by following formula:

MOI= (MI +XI)/ GDPI

Where MOI is index of market openness index in industry sector to external world, and MI, XI, GDPI are import, export and gross product of each industry levels, respectively in this article, gross product of internal industry is considered as output.

Another index that is considered as trade liberalization is import penetration that is calculated with following formula:

$$\text{Im } P = \frac{\text{Im } port}{Output - Exports + \text{Im } port} \quad (2)$$

Also, in this article for more explaining of the model has used from two variables of market size and firm size. Market size is total output in each industry levels, and firm size is mean output of each firm on each industry level.

In following, we introduce two concentration index applied to this article:

- **Rate of n concentration**: This index has based on sharing higher firm from internal production.

$$CR_n = \frac{\sum_{i=1}^{n} X_i}{X} = \sum_{i=1}^{n} S_i \quad (3)$$

S_i **:** share of firm i from industry production.

CR_n **:** Proportion of concentration firm n.

$\sum X_i$ **:** Production of higher n firm.

X : Total worth of industry Productions.

- **Herfindal –Hirshman index:** In calculating this index, information's relate to all industry firms is considered and a weight equivalent to it's market share is accrued to market share of each firm. So, this index can be accounted as a good index:

$$H = \sum_{1}^{N} \left(\frac{X_i}{X} * 100 \right)^2 = \sum S_i^{\,2} \quad (4)$$

H: Herfindral –Hirshman index.

X_i: production of i firm.

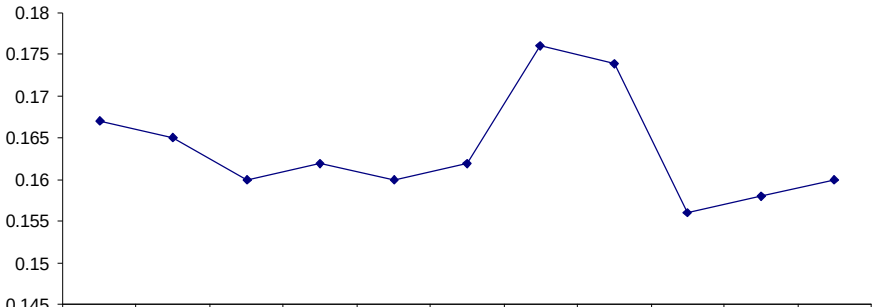
X: total industry productions

S_i: share of i firm form industry Production.

Theorical supports from Herfindral- Hershman index, has been taken Place by Cowling and Waterson (1976). but nevertheless, so many studies are used concentration rate that is announced by formal statistics. Theorical and experimental relation between indexes of concentration rate and Herfindral-Hershman has been found by Slevweagen and Dehandschutter

(1986) as non- linear link. This non- linear link is so that these two indexes can't be used instead of each other and Herfindral-Hershman index is higher. (Barbara M. Roberts. (1998) p4.)

Figure 1: Time trend curve of Herfindal- Hershman index during 1994/05-2004/05



	1994/05	1995/06	1996/07	1997/08	1998/09	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05
HHI	0.167	0.165	0.16	0.162	0.16	0.162	0.176	0.174	0.156	0.158	0.16

Above curve shows that concentration rate of Herfindal - Hershman in term of output variable, has reduced during period, so that from 0/167 in 1994/05 is reached to 0/160 in 2004/05

9. Stability Test

Before investigating relationship between variables, in order to prevent from unreal regression it is required to recognize variables stability degree. Levin, Lin and Chu (2002) test, has conducted panel data stability test, with this assumption that one common parameter was existed between cross- sectional samples.

With notice to results of investigating stability test of Levin, Lin and Chu (2002), with constant and time trend, for all variables of model, the assumption based on existing unit root on variable is rejected and shows that all of these variables are high significant stability I(0), therefore it can be estimated equation of trade liberalization effect on industrial concentration.

10. Methodology of estimation

When approved to all variables are stable on level, it should be determined appropriate method for estimating these panel data. It can be proposed that the reason of nominating this model into fixed effect (Least Squares Dummy Variables (LSDV)) is because of unobserved effects due to constant term of regression. Among all econometrics, Wallace and Hussain (1969), Nerlove and Amemiya (1971) has investigated following regression as two–way Error Component.

$$y_{it} = a + X'_{it}b + u_{it} \qquad u_{it} = m_i + l_t + v_{it}$$
$$i = 1,...,N \quad ; t = 1,...,T \tag{5}$$

Where M_i and l_t indicate to time and cross – sectional invisible effects, and V_{it} is explained other error components. when existing fixed effect model with Two–way error component, M_i and l_t are as estimated fixed parameters and V_{it} is indicated other error components which including $v_{it} \sim IID(0, s_v^2)$ distribution.

For selecting used method among existing methods in order to estimating panel data, conducted Broush-Pagan and Chow tests. Results of these tests rejected using Ordinary Least Squares (OLS) method. In the next stage, it should be selected among Random Effects and Fixed Effects which for this purpose is used Haussman Test. By considering statistics of this test, panel data with cross-sectional fixed effects has been applied for estimating equation.

11. Equation estimating

While by determinant form of equation estimation, then we are proceeding to estimating equation of trade liberalization effect on industrial concentration. Results arising from estimating equation of trade liberalization on industrial concentration are as follows:

Table 1: Equation estimating of HHI, panel model with cross-sectional fixed effect (EGLS method)

Variable	Coefficient	t-Statistic	
C	1097.50	21.13	a
OPEN	-5.47	-1.97	a
IMP	-5.31	-3.27	a
OUT	-0.04	-6.75	a
SIZE	0.42	1.80	c
HHI(-1)	0.42	15.99	a
R-squared			0.9058
Adjusted R-squared			0.8949
S.E. of regression			798.82
Cross-sections included			100
Sample			1994/5-2004/5

a: Significant at the 1% level. c: Significant at the 10% level.

b: Significant at the 5% level. d: Significant at above 10% level.

So that observed, results arising from estimation of model are described coefficient of determination 90%. It means that used variables in this function, is accounted over 90% of industrial concentration changes. For estimated coefficients of all variables, has obtained predictable and significant effects on concentration variable. Except coefficient of firm medium size (SIZE) that has been significant at the 10% level, all estimating coefficient has placed on 1% significant level.

According estimated equation, one percent increase in openness parameter, is lead to 5/47 percent decrease in concentration rate. Also if import penetration on internal market is increased one percent, concentration rate decrease 5/31 percent.

According to previous studies, researches results of Bhattachary Mita and Harry Bloch (2000), show that import penetration has unknown effect on concentration. Tanski and French (2001) explained that mean overall tariff rate, has

negative and meaningful effect on concentration rate. But tariff rate for industry class, has positive and significant effect on concentration rate. Findings of Ozmucur (2006) is confirmed that tariff and liberalization rate, have negative and significant effect on aggregate concentration and cause concentration rate decrease. Then estimated coefficient of trade liberalization index in this article, confirm previous research.

12. Manufacturing subgroups with low and partly high concentration

Effects of trade liberalization on sectors classified according to concentration rate may be different. This can be done with the help of classifying for the two Following groups. In order to each one of industrial levels that it's section of HHI (two- digital Codes) are belonged on two Following groups, has been classified:

$$CR4 \le \%50 \quad \& \quad HHI \le 1000 \quad \Rightarrow \quad LOW \;\; CONCENTRAT \;\; ION \tag{6}$$

$$CR4 > \%50 \quad \& \quad HHI > 1000 \quad \Rightarrow \quad HIGH \;\; CONCENTRATION \tag{7}$$

As previous, for estimating model, first it should be investigated variability's stability and used method.

Table 2: Equation estimating of HHI, panel model with cross-sectional fixed effect (EGLS method), for low and partly high concentration groups

Variable	low concentration groups			partly high concentration groups		
	Coefficient	t-Statistic		Coefficient	t-Statistic	
c	1185.56	18.58	a	1096.70	204.55	a
OPEN	-35.00	-2.88	a	-3.39	2.96	d
IMP	-68.29	-1.87	c	-5.84	1.70	a
OUT	-0.07	-7.39	a	-0.03	0.01	a
SIZE	1.49	1.42	d	0.28	0.22	d
HHI(-1)	0.24	6.27	a	0.51	0.09	a
R-squared		0.89		0.93		
Cross-sections included		45		55		

a: Significant at the 1% level. c: Significant at the 10% level.

b: Significant at the 5% level. d: Significant at above 10% level.

According these estimated equations, trade liberalization because decrease industrial concentration in low concentration industries, and its effect is unknown on high concentration industries. So that one percent increase in openness index is led to 35 percent decrease in concentration index on low concentration industries.

13. Adjusted model estimation

A problem of Herfindal- Hershman index is that it is considered only internal production concentration and by using this index, it can't be suggested something about internal market concentration. Therefore, by introducing import value in concentration index on each industry can be avoided from this problem. For this purpose, it can be used adjusted Herfindral - Hershman concentration index (HHI_{adj}).

$$HHI_{i,m,adj} = \sum_{m=1}^{M}\sum_{i=1}^{N} \left[\frac{Out_i}{Out_m + \mathrm{Im}\ ports_m}\right]^2 \qquad (8)$$

The results of adjusted model estimation have given on following table:

Table 3: Equation estimating of adjusted HHI, panel model with cross-sectional fixed effect (EGLS method)

Variable	Coefficient	t-Statistic	
c	555.24	18.86	a
OPEN	-4.53	-7.19	a
IMP	-1.12	-2.08	b
OUT	-0.03	-6.23	a
SIZE	0.35	1.43	d
HHI(-1)	0.46	16.62	a

a: Significant at the 1% level. c: Significant at the 10% level.

b: Significant at the 5% level. d: Significant at above 10% level.

Coefficient of determination is 89%. According estimated equation, One percent increase in openness index is caused 4/53 percent decrease on adjusted concentration index. On the other hand, trade liberalization is caused decrease power of firms production in internal market. Of course, coefficient of trade liberalization on concentration rate in recent estimated from is greater from this form (HHI_{adj}), it means that effect of trade liberalization on internal production concentration is more than market concentration.

If import share in internal market is increased one percent, concentration index decreases 5/31 percent. This means that whatever sharing import be higher in market of domestic consumption, power of internal firms in internal market decrease and is provided more competitive conditions in it. But it should be investigated effects of trade liberalization on internal concentration rate in two groups classified according to may be different.

According estimated equations for two groups (table 4); trade liberalization causes decrease of adjusted Herfidral- Hershman

industrial concentration index in both Low and high concentration of industries group. So that one percent increase on openness index is led to 65/66 percent decrease in adjusted concentration index in industries with low concentration, although this reduction is for industries group with partly high concentration of 3/61. Difference of this effect on two groups shows that trade liberalization in industries which as structural as are similar to competitive markets, causes more reduction on their market power than industries that have structural alike monopoly markets. On other hand, with occurrence of trade liberalization, generate better competitive conditions for them.

Table 4: Equation estimating of adjusted HHI, panel model with cross-sectional fixed effect (EGLS method), for low and partly high concentration groups

Variable	low concentration groups			partly high concentration groups		
	t-Statistic	t-Statistic		Coefficient	t-Statistic	
c	770.88	15.93	a	489.69	4.03	a
OPEN	-65.66	-5.08	a	-3.61	-3.66	a
IMP	-150.53	-4.27	a	-1.09	-2.09	b
OUT	-0.07	-6.11	a	-0.04	-2.19	b
SIZE	5.20	3.38	a	0.37	1.12	d
HHI(-1)	0.33	8.57	a	0.52	4.16	a
R-squared		0.881		0.880		

a: Significant at the 1% level. c: Significant at the 10% level.

b: Significant at the 5% level. d: Significant at above 10% level.

Also, import penetration has negative and significant effect on adjusted concentration. In industry group with low concentration, one percent increase on import penetration causes 150/53 percent decrease on concentration index, while this reduction is 1/09 percent on group with high concentration. Highness of coefficient in industries with low concentration is indicated that whatever import sharing was high in internal market, firm's market power

in industries with relatively competitive structure decrease more than industries with relatively monopoly structure.

14. Concluding remarks and policy implications

Results taken from trade liberalization indexes and concentration and surveying it's trend on Iran manufacturing industries are indicated that despite all program's which have designed for liberalizing and reduction of industrial concentration, neither trade liberalization has been occurred really in Iran and nor concentration has decreased noticeably. Inverse of Herfindal - Hershman concentration index indicated that market structure on Iran manufacturing industries is the same as market structure that total output have divided equally among about 6 firms.

In addition to calculating and investigating trend of industrial concentration, is performed surveying of effective factors on industrial concentration and this result obtained that by trade liberalizing processes, firms become more active and competence with external firms and other potential firms are allowed to move toward market and thereby market conditions are moving toward competitive market

Results obtained on industries with various structures (two groups) show that trade liberalization has negative and significant effect in low concentration industries and it has unknown effect on high concentrated industries. On the other hand, trade liberalization is caused reduction of industrial concentration on industries with relatively competitive structure, but on industries with relatively exclusive structure, it can't be proposed any views about trade liberalization.

While trade liberalization, because existence of many firms with small size and inefficient so, increasing of market range and easier accessibility to technology and production factors, some of these inefficient firms that include industries with relatively competitive structure, has been increased their production capacity and has led to more efficiently and Therefore, concentration rate decreases.

But, internal firms that are included among relatively concentrated industries, in order to act better in competition with external firms, is merged with each other and existing bigger one. In so structures, because of high initial investment (fixed cost), large size of firm and high level of technology, trade liberalization can be led to that inefficient producers are forced to retire. Also, internal firms in order to maintain their own situation, is combined with internal and external firms and thereby internal production concentration increase in these industries.

In summary, market structure in these cases of industries is so that while trade liberalizing can be merged with other internal and external firms and compete with their own international competitors and also maintain their market power and concentration.

However, the results of adjusted pattern in two groups with relatively competitive structure and relatively monopoly structure show that during trade liberalization episode, concentration rate of internal firm is decreased in internal market. But this reduction in industries with more competitive structure was higher. Therefore is can be stated that by trade liberalizing, competition of internal firms increase in domestic market. Also, it can be declared that in some industries that HHI is higher than adjusted HHI, domestic productions share into its global share and pure export has been lesser. Therefore, for success of countries in export, must be increased internal competition.

Finally, since competition in internal markets, by increasing number of external or internal suppliers, is require for export and competition in international markets and by considering that trade liberalization causes reduction of industrial concentration in low concentration industries, it should be implemented totally anti-trust legislation before providing of trade liberalization condition. Also government must provide market conditions so that firms have been more sound competition together in production of commodity.

Also by attention to result of adjusted pattern for competition and monopoly structure can be declared natural monopolistic firms are monopolized for minimum efficient scale and technology of high level, while trade liberalizing able to compete with other. But industries are monopolized for government interferences and protection, withdraw from market. Therefore politicians should design their economic policies with comparative and scientific method and by investigating cause and effect of monopoly appearance, identified industries with various structures so that more efficient economic policies brought for society.

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