

Competition and Concentration in Manufacturing Sector During First Socioeconomic and Cultural Development Plan of Iran

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Abstract

Increasing the private sector participation in economic activities and promoting competition were among the First 5 Year Socio-Economic Plan of Iran. This paper will examine the probable changes in monopoly and the size of government during this plan. By considering Concentration ratio as a proxy measure for the size of monopoly and competition, we found the Manufacturing sector of Iranian economy was highly concentrated in the beginning as well as at the end of the First Economic Plan. Furthermore, the share of government in economic activities increased during this plan, which is in contrast to the targets of the First 5 Year Socio-Economic plan and Iranian Structural Adjustment Program.

Key Words: Market Concentration, Competition Policy, Privatization, Public Sector, Manufacturing Sector, Structural adjustment.

1- Introduction

In 1979 while a considerable number of countries pursued privatization, deregulation, liberalization and elimination of various price distortions, Iran was expanding its already large public sector. Three factors account for this tendency: firstly the 1979 Islamic Revolution with its goal of social justice,

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secondly the income from oil, which is exclusively owned by government, and thirdly the Iraq-imposed war against Iran.

Immediately, after the revolution the government embarked on a wave of nationalization including heavy industries, banking, insurance. Under the influence of revolution it was widely believed that a large public sector and widespread subsidies would achieve social justice and more widespread economic welfare. The income from oil exports was another important driving force for nationalization. The oil fields had been owned by the government since the oil industry began in Iran and the government has exclusive rights over the discovering and extraction of oil. The condition of the Iranian oil industry had not changed since the revolution. The income from oil exports was captured by the government, which in turn encouraged the revolutionary-minded public manager to expand the public sector beyond that of before 1979. The Iraq war against Iran caused a large increase in subsidies of basic food and public utilities. Items such as bread, sugar, rice, egg, butter, red meat, milk, vegetable oil, public transport, water, electricity, gas and gasoline were among those subsidized. So were many agriculture and manufacturing inputs. To guarantee nationwide access to low price bread a huge amount of wheat was imported annually which imposed a severe burden on the government budget as well as the balance of payments. Alongside the Government Trade Company (GTC) which imported food items in large scale, some new public companies affiliated to Ministry of Commerce were founded to import various food and non food items. Not only was each of these three factors independently responsible for larger public sector but their effects reinforced each other and led to more state intervention in the economy. For example, both state's exclusive access to income from oil and the equity goals of the revolution facilitated widespread subsidies and encouraged state intervention.

Shortly after establishing the new regime, a new constitution was prepared by elected experts and was immediately approved by a referendum. The revolutionary goals of justice and equity have strongly affected the new constitution. According to Provision 44 of the new constitution the state has exclusive rights to act in numerous economic sectors such as heavy industries, mining, foreign trade, banking, electricity, water, dam and irrigation, insurance, communication, aviation, navigation and railways.

Conglomerates such as the Industrial Development and Renovation Organization (IDRO), and the National Iranian Industries Organization (NIIO), along with firms affiliated to state-owned Banks dominated the manufacturing sector of Iran. In addition some new quasi public charity organizations were founded to help vulnerable groups and certain households who had lost one or more of family members during Challenge against former Regime. These quasi-public organizations, through establishing many new firms and branches across the country, could monopolize economic activities. To monopolise foreign trade, the government established some public firms named “centre(s) for procurement and distribution of goods”. Each of these centres had the exclusive right to import certain goods. Widespread subsidies, which had adverse effects on private sector, were another aspect of the government’s intensive intervention in the economy. Financing the resources required to protect vulnerable groups burdened both the budget deficit and balance of payments.

For many years Iran was the world’s largest importer of wheat. The subsidies program was not well targeted. All households enjoyed the subsidies. What is more, the rich could enjoy this program more than the poor. Despite the advantages of access to easy credit and foreign exchange and various protections, the state-owned firms made huge losses every year because of x-inefficiency and inexpert managers. Since the rate of foreign exchange was officially determined both public and private firms had great incentive to import various kinds of goods such as raw material, final consumer and producer goods, and semi products. Despite unemployment being a severe problem for the Iranian economy many new firms with capital-intensive technology were established. But much of the new expensive equipment and capital goods was idle due to the lack of the knowledge and skills to work with them. Furthermore, much of the equipment which was imported by managers of public firms was not compatible with their firms’ existing technology and so remained idle. Therefore x-inefficiency dominated the whole economy, particularly state-owned firms.

In response to various distortions in the Iranian economy a new program named structural adjustment was accepted by Iranian political and economic authorities in 1988. It was expected that, by enforcing the new economic program, many problems of the Iranian economy such as distortions in relative prices would be eliminated. Increasing the role and place of private sector

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through privatization; floating the rate of foreign exchange; targeting protection on vulnerable households and eliminating various price distortions as well as eliminating monopolies were among the objectives of the structural adjustment programme in Iran.

Regardless of the government's success or failure in achieving other objectives, this paper focuses on the elimination of the public-firm monopoly and increasing the participation of private sector in economic activities. These were among the objectives of the structural adjustment programme and were emphasised in all 5 Year Economic development Plans of Iran. Indeed the whole of chapter four of the law of third 5 Year Economic Plan of Iran was about regulating monopolies and increasing the degree of competitiveness of the Iranian economy. According to Provision 35 of this legislation, the government was obliged to eliminate all monopolies except those specifically permitted by the constitution.

The organisation of this paper is as follows. In the next section, data will be introduced and in the third and fourth sections the market concentration in Iranian 4-digit industries will be investigated. The aggregate concentration index related to the manufacturing sector will be referred to in the fourth section. The influence of state-owned firms on market concentration will be assessed in the fifth section. The last section is devoted to the conclusion.

2- Data

The statistical centre of Iran is officially in charge of collecting the data related to the manufacturing sector. The measurement of market concentration indices is highly dependent on firm level information about sales, production, value added and employment. By using such information for the period 1989-1994, market concentrations will be calculated. In 1994, more than 12,000 firms (with 10 or more employees) were involved in manufacturing activities. On the basis of ISIC categories, the firms in Iran's manufacturing sector were classified into 81 "4-digit industries".

3-Concentration in Manufacturing Sector

So far, there have been lots of discussions about monopoly in the Iranian economy, but far too little attention has been paid to assessing the degree of

monopoly through measurable indices. To date various methods have been developed and introduced in literature to measure the value of competition and monopoly power, (Bain, Rothchild, Lerner, Papandreou as quoted in Koch 1980 and Masson 1984). Concentration is a practical criteria which is widely used by legal institutions. For example in US, since 1966-1980, horizontal mergers were usually stopped if the resulting firm would have more than 15 percent of the market (Shepherd, 1990, 473).

In this section it was decided to use concentration indices to evaluate the degree of monopoly in the Iranian economy. To control for possible biases we use two different indices such as n-firm concentration ratio (CR_n) and Herfindhal-Hirschman Index (H-H). The value of these indices will be calculated at the level of 4-digit industries. In addition to CR_n and H-H, aggregate concentration indices will also be applied at the level of whole manufacturing sector for a complementary discussion in the next section.

Table 1 shows the result of measuring the concentration indices for 81 industrial markets for the period from 1989 to 1994 (which is overlapped to the period of the First 5 Year Economic Plan). One question that needs to be asked, however, is whether the manufacturing sector of the Iranian economy is concentrated or not. To be able to answer this question we need a criteria to evaluate the degree of concentration in the markets. It was decided to consider markets with a concentration ratio of more than 40 percent as concentrated.

Table 1: Distribution of 4-digit industries in terms of concentration ratio*

	1989		1992		1993		1994	
	No. of Industries	Share%	No. of Industries	Share%	No. of Industries	Share %	No. of Industries	Share %
CR_4^*								
$CR_4^S > 40$	66	70.1	67	77.1			65	72
$CR_4^V > 40$	68	73.7	66	67			69	76.5
$CR_4^E > 40$	64	49	57	50			56	51
CR_5^*								
$CR_5^S > 40$	68	70.5	72	84	69	72.6	70	77.2
$CR_5^V > 40$	71	75	66	67.7	72	78.8	70	79
$CR_5^E > 40$	68	61	64	56	64	59.4	61	55

*. Source: SCI Manufacturing survey
Indices are Estimated by the author

CR_4 and CR_5 are respectively 4-firm concentration and 5-firm concentration ratio. The superscripts of S, V and E stand respectively for sale, value added and employment.

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As can be shown from the table (above), for a large number of industries, the value of the concentration ratios are greater than 40 percent during the period 1989-94.

For example, CR_4^S was greater than 40 percent for 66 industries in 1989. The share of these concentrated industries of total manufacturing sales in 1989 was 70.1%.

If we consider CR_4^V CR instead of CR_4^S , then the number of concentrated industries and their share of total manufacturing sector value added in 1989 will increase to 68 and 73.7 percent respectively. The extent of CR_4^V and CR_4^S indicate that that number of concentrated industries fell between 1989 and 1994. In spite of this, the share of the concentrated industries increased during the same period. On the other hand, both

CR_5^S and CR_5^V indicate that the number of concentrated industries as well as their share in sale and value added increased during 1989 to 1994.

It was widely expected that competition in the manufacturing sector would be promoted through implementing the First 5 Year Economic Plan. In fact this plan was the first step of structural adjustment in the Iranian economy and contained programs such as privatization and eliminating some state monopolies. Contrary to expectations, no great success in promoting competition was experienced. It is apparent from the data in Table 1 that the number of concentrated industries did not fall dramatically between 1989 to 1994. In addition, as can be seen from Table 1, the share of concentrated industries of both sale and value added of the manufacturing sector increased during the period of First 5 Year Economic Plan.

Herfindhal-Hirschman (H-H) is another index widely used to measure concentration in markets. For example, in US, to approve or reject a merge proposal, FTC applies the H-H Index (Stiglitz 1993). For a further investigation, the Herfindhal-Hirschman was applied to calculate the concentration of different markets in the manufacturing sector of the Iranian economy in 1994. The results obtained are shown in Table 2.

Table 2: Distribution of 4-digit industries in terms of H Index*

	H ^s		H ^v		H ^E	
	No.	Share	No.	Share	No.	Share
H < 1000	33	50.19%	28	40.81%	37	65.29%
1000 < H < 1800	17	34.02%	16	19.41%	20	19.3%
H > 1800	29	15.79%	36	39.7%	23	15.4%

* Source: SCI Manufacturing survey

Indices are Estimated by the author

On the basis of the values of HS, industries may be divided into low, mild and highly concentrated. As shown in the table above, in 1994, 46 of 4-digit industries were concentrated and 48.91 percent of manufacturing sale was under their control. Considering value added the number of concentrated industries and their share increases to 52 and 59.1 percent respectively.

The data in Table 1 and 2 reveal that the manufacturing sector of the Iranian economy is highly concentrated and implementing the First 5 Year Economic Plan led to no significant changes in concentration ratios or the share of concentrated industries of sale and value added. In the next section, by introducing supplementary indices, we will show that the concentration in the manufacturing sector was not changed dramatically during the First 5 Year Economic Plan.

4- Aggregate Concentration

In the previous section, the concentration levels in individual markets were considered. In this section an attempt has been made in order to calculate a single value of concentration for the whole manufacturing sector of Iranian economy. To this end a weighted average of concentration ratio was considered:

$$C_5 = \sum_i^{81} CR_{5i} W_i$$

Where C_5 stands for the weighted average of 5-firm concentration ratio; CR_{5i} is the 5 firm concentration ratio in i th industry and W_i is the share of i th

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industry of total manufacturing sector sale (value added or employment) (Sawyer 1971: 52-83). Table 3 shows the value of the sector aggregate concentration in terms of various variables such as sale, value added and employment for the period 1989 to 1994.

Table 3: Manufacturing sector aggregate concentration*

Year	C_5^S	C_5^V	C_5^E
1989	60.55	64	49.8
1992	58.09	55.65	48.76
1993	56.2	63.6	47.4
1994	58.77	64.5	46.3

* Source: SCI Manufacturing survey

Indices are Estimated by the author

Table 3 is quite revealing in several ways. First, from the data in this table, it is obvious that the manufacturing sector of Iran is highly concentrated. For example in 1994, C_5^V was 64.5 which means on average 64.5 percent of value added in each market belonged to 5 largest firms. Second, according to C_5^S , aggregate concentration decreased 1.78, whereas on the basis of C_5^V an increase equal to 0.5 was experienced. Finally, the aggregate concentrations in terms of employment were smaller than that of sale and value added. This result could be explained by the fact that the largest firms in each markets (almost state-owned) shown in the tendency towards capital-intensive technology.

In a further investigation into the probable change of concentration in manufacturing sector during the First Plan, other indicators were employed. These indicators are the share of 10, 20, 50, 100, 150 and 200 largest firms of total sale of manufacturing sector. It must be noticed that the largest firms are chosen on the basis of the rank of their sale (regardless of the markets they belong to). The result is shown in the following table.

Table 4: The share of n largest firms of total manufacturing sale*

n largest firms	Year				
	1988	1991	1992	1993	1994
10	20.7		19.42	17.25	18.6
50	37.28	37.4	38.1	34.23	36.3
100	48.05	47.9	48.68	44.68	47.26
150	55.7	55	55	52.03	54.29
200	61.4	60.4	61.06	57.69	59.61
* No of firms with 10 workers and more	10245	5687	6098	5922	12987

*. Source: SCI Manufacturing survey

Indices are Estimated by the author

*- variation in the number of the firms is due to variation of the sample in different years.

What is interesting in the data in Table 4 is that a small portion of the firms have a big share of the sector sale. For example in 1994, 18.6 percent of sale belonged to only 10 firms i.e. 0.7 percent of total firms. Similarly 200 largest firms, i.e. 1.5 percent of total firms had command over 59.6 percent of the market in the same year. Furthermore, the data in Table 4 reveal that the value of aggregate concentration at the beginning year of Economic Plan (1998) is similar to that at the end of this plan. As can be seen the data in Table 4 support the result derived from Table 1-3 in the sense that the manufacturing sector was highly concentrated and no successes in promoting competition and eliminating monopoly were achieved. There are several explanations for this result. The first and perhaps the most prominent obstacle to implementing this plan was the resistance of interest groups in and out of the governments. A lack of a consistent and cohesive privatization program was among the reasons for this failure.

5- Public Firms and Market Concentration

Since the income from oil exports belongs to government and Article 44 of the constitution of The Islamic Republic facilitates government intervention in economic activities, it is to be expected that a considerable proportion of the

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manufacturing sector was under the exclusive control of state-owned firms. To assess the influence of government on market concentrations, the shares of 200 largest state-owned firms in sale, value added and employment of total manufacturing sector were investigated.

Table 5: The share of 200 largest state-owned firms in manufacturing sector*

Year	Sale(%)	Value added (%)	Employment (%)
1988	54	57	49
1990	55	57	48
1991	58	61	49
1992	61	63	52
1993	57	65	50
1994	59	66	49
1995	54.9	57.1	37.2
1996	56.7	60.7	35.5

*. Source: SCI Manufacturing survey

Indices are Estimated by the author

The table above illustrates the dominance of state-owned firms in the manufacturing sector. As table 5 shows, at least 54 percent of sale, 57 percent of value added and 35.5 percent of employment of the sector belonged to just 200 largest state-owned firms during the period between 1988 to 1996. The share of government in the manufacturing sector would be increased if quasi public firms were taken into account*. By comparing the share of the 200 largest state-owned firms of sale of manufacturing sector (Table 5) with that of 200 largest firms (Table 4), it can be seen that all of the 200 largest firms, which are responsible for a great proportion of sale, value added and employment, are affiliated to government. In fact government could be the major factor, if not the only one, causing the highly concentrated manufacturing sector.

We now turn to studying the place of state-owned firms in individual markets. The intention is to calculate the share of state-owned firms of value

* quasi public firms are those firms affiliated to several Bonyads which established after the victory of Islamic Revolution of Iran.

added in each market. In Table 6, the number of industries, in which the state-owned firms have more than x percent of value added of those industries, are reported. The data in the following table reveals the growth in the number of such industries between 1989 and 1996. In 1996, the share of state-owned firms of total value added of the related industry was greater than 40 percent in 59 industries. Furthermore, the number of industries in which state-owned firms had more than 90 percent of the value added increased from 2 in 1989 to 17 in 1996. This data therefore shows the increasing role of the government in economic activities during 1989 to 1996.

Table 6: Frequency distribution of markets regarding the share of value added of state owned firms*

Share of state-owned firm (%)	1989	1990	1991	1992	1993	1994	1995	1996
> 40	45	44	48	47	51	46	57	59
> 50	35	37	40	35	40	36	49	51
> 60	26	34	30	28	28	24	35	36
> 70	18	24	20	18	17	16	25	29
> 80	12	11	9	9	9	7	23	22
> 90	2	2	3	3	1	2	15	17

*. Source: SCI Manufacturing survey
Indices are Estimated by the author

By comparing the share of three different entities i.e. government, private sector and cooperative sector, the relative size of government could be more identified. Table 7 reports the share of each agent in sale, value added and employment of manufacturing sector.

Table 7: Place of Government, Private Sector and Cooperation Sector in Manufacturing 1996*

	State-owned firms (%)	Private Sector (%)	Cooperative Sector 1996(%)
Sale	56.9	42.19	0.91
Value added	61.3	37.4	0.76
Employment	36	62.71	1.29

*. Source: SCI Manufacturing survey
Indices are Estimated by the author

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In 1996, a significant part of sale, value added and employment of the manufacturing sector belonged to government. For example, in this year 57 percent of sale and 61.3 percent of value added were managed by state-owned firms.

All data reported in Tables 1 to 7 show the large size of government and its role in concentrating the markets. If we include under 'government' the share of quasi- public firms in economic activities, the role and place of government in economy, will go beyond that illustrated.

By looking at the list of highly concentrated industries, the influence of government interventions and policies in driving away the markets from competition is clarified. For example, highly concentrated industries such as metallic mineral product, manufacture of basic metals, manufacturing of machinery and equipment; manufacturing of electrical machinery and apparatus; manufacturing of radio, television and communication equipment; and manufacturing of motor vehicles are among those industries protected by government from potential competitors. Through subsidies, and the imposition of tariffs, government has protected the firms in some industries from the threat of new entrants (both domestic and international). In addition, the enforcement of licensure for new entrants and the access of the incumbents to easy credit and foreign exchange reinforce their dominant status.

Conclusion

This study set out to determine the level of concentration in the manufacturing sector of the Iranian economy. To this end, different indices of concentration such as 4-firm and 5-firm concentration ratios as well as Herfindhal-Hirschman indices were employed. The value of these indices calculated for 81 "4-digit industries" indicated that manufacturing sector is highly concentrated. Similarly, the aggregate measure of concentration supported this result on the basis of Article 8 of First Socio-Economic Development Plan of Iran, Government was authorised to take appropriate measure to enhance efficiency and productivity and competition to streamline state in the area of policy making, to reduce non sovereign undertaking of government and to transfer some state-owned enterprises to private sector and to promote the role and scope of the private sectors in economic activities. In

contrast to the targets of First 5 Year Economic Plan (1989-1994), our findings indicated that no discernible changes in the level of concentration and promotion of competition were observed. Furthermore the share of concentrated industries in value added and sale of the manufacturing sector had increased at the end of the year 1994, indicating that the plan's targets were not achieved. In addition to determining the level of concentration, this paper sought to investigate the major cause of concentration. The results of this study shown that a significant part of value added, sale and employment belonged to state-owned firms. In fact it is government that monopolizes economic activities. There are several explanations for this government dominance in economic activities including the government's exclusive access to oil revenue, Article 44 of the new constitution which provides exclusive rights for government in various economic activities, and the 1979 revolution and goal of social justice which greatly supports government intervention in economic activities.

Although from 1989 to 1994 several attempts had been made for increasing the role of the private sector and eliminate some state-owned monopolies; the share of government in economic activities did not change due to the resistance of interest groups and proponents of a large public sector; the contradictory economic policies; the tension between Iran and USA and some legislative problems related to trade law, foreign direct investment law and labour law.

Similar to the First 5 Socio-Economic Plan of Iran, privatization enhancing competition and efficiency, promoting the role and scope of private sector were also emphasized in the next plans. For example, all chapter 4 of Third Plan, including Provision 28 to 35 was devoted to regulating monopolies and competitiveness of economic activities in Iran. Emphasising on privatization, regulating monopolies, enhancing efficiency, transferring state owned enterprise to private sector indicate that government did not succeed in achieving the ends of these plans.

An important limitation needs to be considered regarding the present paper is that in this study, to evaluate the performance of the First 5 Year Economic Plan of Iran in meeting the target of promoting competition we consider concentration ratio as a proxies for the degree of monopoly and of competition in markets. In fact it is to be expected a negative association between concentration ratio and the value of competition in markets exist.

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We should, however, have interpreted the data of concentration with caution, because in rare cases the association of competitive behaviour and high concentration is possible. Further work needs to be done to estimate the share of government in economic activities and concentration ratios for the period which was not covered in this paper. It is also suggested that the association between performance (price, profitability, x-efficiency), structure (barriers to entry, concentration, economies of scale) and conduct in Iranian markets be investigated in further studies. Evaluating the extent and nature of barriers to entry in markets of Iranian economy is vital for eliminating the obstacles of increasing the private sector participation.

References

- 1- Adelman, M. (1969) 'Comment on the "H" concentration measure as a member equivalent'. *Review of economics and Statistics*, 51: 99-101.
- 2- Attaran, M. (1998) 'Concentration trend and profitability in the US manufacturing sector: 1970-84'. *Applied Economics*, 20 (11): 1497-1510.
- 3- Bain, J.S. 'Relation of profit rate to industry concentration: American manufacturing, 1936-1940'. *Quarterly Journal of Economics*, 65: 293.
- 4- Bain, J.S. (1956) *Barriers to new competition*. Harvard University Press.
- 5- Bain, J.S. (1968) *Industrial Organization*. John Wiley.
- 6- Clark, R. and Davies, S. (1982) 'Market structure and price-cost margins'. *Economica*, 49: 277-87.
- 7- Clark, R., Davies, S. and Waterson, M. (1984) 'The profitability-concentration: market power or efficiency?' *Journal of Industrial Economics*, 32: 435-56.
- 8- Cook, P., Kirkpatrick, C., Minogue, M. and Parker, D. (2004) (ed.) *Leading Issues in Competition, Regulation and Development*. Edward Elgar.
- 9- Davies, S.W. (1979) 'Choosing between concentration Indices: the ISO concentration curve'. *Economica*, 46: 67-75.
- 10- Demsets, H. (1973) 'Industry structure, market rivalry and public policy'. : 1-39.
- 11- Demsets, H. (1989) *Efficiency, Competition and public policy*. Basil Blackwell.

- 12- Demsets, H. (1990) *Ownership Control and the Firm*. Basil Blackwell.
- 13- Geroski, P. (1981) 'Specification and testing the profit-concentration relationship: some experiments for UK'. *Economica*, 48: 279-88.
- 14- Geroski, P. (1991) *Market Dynamics and Entry*. Blackwell.
- 15- Masson, R.T. and Shaanan, J. (1984) 'Social cost of monopoly and the value of competition'. *Economic Journal*, 94 (375): 502-35.
- 16- Saving, T.R. (1970) 'Concentration ratios and the degree of monopoly'. *International Economic Review*, 11 (Feb): 139-46.
- 17- Sawyer, M.C. (1970) 'Concentration in British manufacturing industry'. *Oxford Economic Papers* 23 (Feb): 352-83.
- 18- Scherer, F.M. (1979) 'The causes and consequences of rising industrial concentration'. *Journal of Law and Economics*, 22: 191-208.
- 19- Shepherd, W.G. (1990) *The Economics of Industrial Organization*. Prentice Hall.
- 20- Stigler, G.J. (1964) 'A theory of oligopoly'. *Journal of Political Economy*, LXII(1): 44-61.
- 21- Stiglitz, J.E. (1993) *Economics*. Norton.
- 22- Koch, J.V. (1980) *Industrial Organization and Prices*. Prentice-Hall.