

The evaluation of the Turkish broiler industry: the degree of market power

B. CANAN^{1*}, S. TURHAN¹

¹University of Uludag, Faculty of Agriculture, Department of Agricultural Economics, 16059, Gorukle, Bursa, Turkey, e-mail: bcanan@uludag.edu.tr

Broiler industry in Turkey in 1970s was mostly run by family farms with a limited capacity and high costs. There has been a significant structural change after the implementation of contract farming and the increase of integrated enterprises in 1980s. The investments that have been made in this sector helped Turkey to catch up with the world standards and the poultry industry has increased the production and reached its current situation. However, the industry has been going through a rough period because of the Avian Influenza crisis which occurred in 2005. All the necessary and possible precautions have been taken both by the public and private institutions in order the enterprises in the industry to be able to get over the crisis.

The aim of this study is to evaluate the current situation of the Turkish Broiler sector. In order to be able to analyze the Turkish Broiler Industry, concentration ratio (CR4), Hirschman-Herfindahl Index (HHI) and some indicators of competition power are calculated. The results are used to determine the type of oligopoly that exists in the Turkish Broiler Industry.

By using the data and the results in this study, the current situation of the Turkish Broiler Industry, which has the competitive power in foreign markets especially in the European Union, will be evaluated and the competitiveness of the industry will be determined.

Keywords: Broiler; market power; competitiveness; CR4; HHI.

Introduction

The Turkish broiler sector has developed rapidly within the last 50 years. The small scale enterprises, which were run in order to evaluate the family labor, have proceeded towards activities that have the purpose of profitability (Simons, 1997). The investments that have been made in this sector helped Turkey to catch up with the world standards and the poultry industry has increased the production and reached its current situation. The annual growth rate of the Turkish broiler industry for 1990-2000 is 14.4 %. The growth trend declined only during the crisis in 1994 and 2001. Turkey is the 25th in the world production in 2002 with a production of 696 160 tones. According to 2005 data, Turkey is among the first 20 countries in the world production (Civaner, 2005).

The Turkish broiler industry experienced a rapid development by the help of the facts such as the technology being at the same level as the developed countries, the products being able to be marketed in 30-45 day which is a short period of time and the continuous production all through out the year compared to the other agricultural activities which are dependent on seasonal factors (Rehber et. al, 2002).

The Turkish broiler industry, which was mostly composed of medium and small sized enterprises at the early stages, has experienced problems in basic areas such as infrastructure, animal health, feed supply and marketing and firms could not find permanent solutions to these problems. These firms have survived individually for a long run without getting involved in any kind of integration. They

could not establish unions that would be effective in production and marketing. They marketed their products in a market with prices controlled by large firms. Thus, most of the above mentioned firms went bankrupt as a result of economic reasons and the industry has gone under the control of a limited number of large scale firms as a result of contract farming (Sengor, 2002).

The number of slaughtered broilers in 2004 is approximately 600 million and the total production is about 876 774 tones. When compared with the 1990 data, we see that the number of slaughtered broilers is 3,65 times and the production is 4,4 times more in 2004. Firms with quality standards at the EU level have been established. The daily and annual average slaughter capacities of the Turkish broiler industry are approximately 3500 tones and 1 150 000 tones respectively. The capacity use ratio of the slaughterhouses and the breeding facilities in 2004 is approximately 84 % (<http://www.fao.org>, <http://www.besd-bir.org>).

In this study, the broiler industry will be evaluated in terms of production, consumption, exports and imports and necessary cautions that should be taken in order to improve the industry increase competition especially with the EU.

In addition, the market power will be determined by using CR4, HHI and some indicators of competitive power.

Evaluation of the Turkish broiler sector in terms of production and foreign trade

Broiler production have developed worldwide especially during the second half of the 20th century (Saner, 1999). The export opportunities that occurred after the 1980s, and the subsidies given by the government lead to an increase in the production and new firms were established.

Broiler meat production has increased to 940000 tones in 2005 and as a result the production facilities and the technology has reached to the level of the developed countries. 80 % of the broiler meat production is carried out in modern facilities (Canan and Yilmaz Dikmen, 2005). The sector closely keeps track of the latest developments in the world and thus the reflections on the production can be observed very quickly. The broiler meat consumption per capita is 3.85 kg/year in 1990 and it increased to 13.7 kg/year in 2004 (Table 1). It is expected that the consumption per capita in Turkey will reach to the level of EU consumption per capita in a short period of time. However, even though the Avian Influenza crisis slowed down the sector, the firms have taken necessary bio-safety precautions and the spread was prevented.

Table 1: Broiler production and consumption per capita in Turkey

Year	Production (ton)	Consumption per capita (kg/year)
1990	401658	3,85
1995	490000	6,69
2000	643439	11,68
2001	614726	9,01
2002	696160	9,60
2003	872392	11,41
2004	876774	13,70
2005	940000	

Source: <http://www.fao.org>, <http://www.besd-bir.org>

The export and import volumes of the Turkish Broiler Sector are presented in Table 2. When we look at the broiler meat export of Turkey, we see an increasing trend (Anonymous, 2001 and Turhan, 2005). One of the factors that caused an increase in the export volume is the chicken feet demand (Cobanoğlu et al., 2003). The top countries that import chicken feet from Turkey are China, Northern Cyprus Turkish Republic, Former Yugoslavia and Macedonia (<http://www.fao.org>). In order to be able to strengthen the competition with other countries; Turkey needs to get into the foreign market with prices close to the prices of other countries to which high subsidies are applied.

Table 2. Export and Import Volumes of the Turkish Broiler Sector

Year	Export		Import	
	Tones	Thousand US \$	Tones	Thousand US \$
1990	574	873	60	55
1995	4914	5114	38	91
2000	3659	5977	0	0
2001	21076	13968	108	108
2002	19260	11176	38	32
2003	24193	15269	62	46
2004	28594	18865	0	0

Source: <http://www.fao.org>, <http://www.igeme.gov.tr>.

Turkey has got the European Union appropriateness norm number after the inspection by the EU Food and Veterinary Office between 15-12 September 2003 and this situation has become certain in 2005. A significant increase in the export value is expected after Turkey has got the EU norm number. However, the high cost of production effects the export of Turkey negatively. EU and USA applies high subsidies around 310 \$ / ton and 600 \$ / ton. In order to increase the competitive power among these countries, 300 \$ / ton export return should be paid in addition to the present export returns.

The high feed price in Turkey is a factor that increases the cost of production. Feed cost is 70 % of the total production cost. Soy, corn, fish flour and premixes in the feed are materials that are imported. Average import raw material use in broiler production is 70 %. However, it is expected that there will be an increase in the export value and the number of export markets as a result of new modern facilities, product variety and products and methods that are in harmony with the international standards.

The Degree of Market Power

The slaughter houses which are equipped with the latest technology within the last five years, the increase in the capacities, the fact that the sector has become an industry has decreased the unfair competition caused by the firms that used to slaughter broiler under unhygienic conditions that are not appropriate for human health. The labor costs related to efficiency are expected to decrease by the assumption that the sector has developed and is going to develop more.

One of the most important issues in terms of the competitive power of the sector in foreign markets is that the slaughter houses have taken precautions that are not going to harm human health. Refining and utilization facilities for the wastes of slaughter houses that are likely to harm the environment are established by most of the firms. Considering that environment friendly firms are preferred by the buyers, it is important to give necessary importance to this issue.

The top twenty large scale broiler firms in Turkey produce 84% of the total production. This rate causes problems in the competition in the national market. In some situations many large scale firms might be controlling the numbers and vice versa. Concentration is usually measured by the sum of the shares of the top four or eight firms (CR4 or CR8) and by calculating Herfindahl-Hirschman Index (HHI).

The sum of the market shares of the top 4 firms (CR4) and the 8 firms (CR8) in the Turkish broiler sector are 39,7 % and 58,4 %. These concentration ratios imply that mergers or takeovers in the industry might increase concentration. The mergers and takeovers in the sector must be followed closely in order to protect competition. The top four firms dominate the Turkish broiler sector with a share of approximately 40%. HHI is calculated by adding the squared shares of all the firms in the sector. The HHI of the Turkish broiler sector is 665. A market with the HHI value below 2000 and CR4 below 40% refers to loose oligopoly (Shepherd, 1999). The CR4 of the Turkish broiler sector is 39,7 % and the HHI is 665 and these values imply that loose oligopoly exists in the Turkish broiler industry. The realm of loose oligopoly is wide ranging from moderate concentration to nearly pure competition. It generally fits the competitive model with prices forced down near cost.

The import values of Turkey are so low that they can be neglected. Thus, specialization coefficient, export volume and export market share ratios have been calculated. The specialization coefficient is calculated by dividing the total production by the national consumption as given below (Turhan, 2005).

$$\text{Specialization coefficient} = X_i^A / X_i^B$$

where X_i^A is the production of the i^{th} sector in Turkey

X_i^B is the national consumption

High specialization coefficient implies that the specialization level of the sector is high. If the coefficient is higher than 1, the country is accepted to be a net exporter for that sector. According to this, the specialization coefficient of the Turkish broiler sector for 2004 is 1,01. If the ratio is around 1, it means that the national consumption is met by the national production which implies that the level of specialization in this sector is high and the production is at a self-sufficient level.

Export volume ratio is calculated by dividing total production by total export volume. This ratio tells us whether that sector has tendency to exterior markets. The export volume is calculated by the formula given below.

$$\text{Export volume ratio} = X_i^A / X_i^C$$

where X_i^A is the production of the i^{th} sector in Turkey

X_i^C is the export amount of the i^{th} sector in Turkey.

The export volume ratio of the Turkish broiler sector in 2004 is 30,66. This ratio was 700 in 1990 and 175 in 2000. The Turkish broiler industry has increased its tendency towards exterior markets 23 times within the last 14 years.

Export market share ratio is calculated by dividing the export volume of that country by the export volume of the world. The development of the sector in the world market is investigated by this ratio. Export market share ratio is calculated by the formula given below.

$$\text{Export market share ratio} = X_i^C / X_i^D$$

where X_i^C is the export volume of the i^{th} sector in Turkey

X_i^D is the export volume of the i^{th} sector in the world.

The export market share ratio of the Turkish broiler sector in 2004 is 0.0002, 0.001 and 0.004 respectively in 1990, 1995 and 2004. These ratios imply that the share of the Turkish broiler sector in the world market has increased by 20 times within the last 14 years.

Results and discussion

The broiler production in Turkey has increased to 940 000 tones and the consumption per capita has increased to 13,7 kg/year as a result of the rapid development of the industry after 1990s. The broiler export value of Turkey has an increasing trend.

The low values of import show that Turkey is self sufficient in the broiler sector and the production meets the national consumption and also contributes to the economy with the export of broiler meat. The HHI and CR4 of the Turkish broiler industry are 665 and 39,7% and these results imply that loose oligopoly exists in the Turkish broiler industry. The specialization coefficient, export volume ratio and export market share ratio are calculated and these values show that Turkish broiler sector is self sufficient and has an increasing export potential.

The Turkish broiler has competitive advantages in terms of the integration structure, technology and efficiency of input use. However, the injection and feed costs are high as a result of the high import prices and high rates of taxes. If the taxes are induced and subsidized in the short-run and if the imported input especially feed can be produced in Turkey in the long-term, the Turkish broiler industry will be able to attain and increase its competitive power.

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