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Is It A Way Out of Crises for White Meat Producers to Focus On Export Strategies During Crisis Times?

Cüneyt Akar[a], Yener Pazarcık[b],Yavuz Tansoy Yıldırım[c,] a*

[a]IIBF, Balıkkesır University ,Bandırma,Balıkkesir, Turkey
[b]BIIBF, Canakkale Onsekiz Mart University, Biga, Çanakkale, Turkey
[c]Bandırma Meslek Yüksek Okulu, Balıkesir University, Bandırma, Balıkesir, Turkey

Abstract

The primary aim of this paper is to analyze whether exportation can be used as a successful strategy to move the chicken meat sector out of a crisis. The data for this study includes the export and production quantity of chicken meat for the country of Turkey from 1981 to 2010. Data was gathered from the Food and Agriculture Organization of the United Nations (FAO). The effect of the 1994, 2001 and 2005 crises on the production and export quantity of chicken meat is investigated by using the curve fitting approach. The results illustrate that chicken meat export quantity increased during the crisis time. At the same time, production quantity didn't decrease significantly. Thus, it can be concluded that exportation can be a strategy applied to eliminate the impact of a crisis.

* Corresponding author. Tel.: +90-266-7149302; fax: +90-266-7149304.
E-mail address: tansoy@hotmail.com.

1. Introduction

Companies may be faced with crises; some are predictable and some are unpredictable. These crises can be global, domestic or sectoral. Businesses often create alternative scenarios for crisis situations. The effects of a crisis may be similar to previously encountered crises. The basic objective of companies is to reduce the impact of a crisis.

Different strategies can be used to reduce the impact of crisis. One important strategy may be to focus on exports. This focus can be evaluated in two ways. First, one places more effort on the same, or different, customers in these markets. In this way, companies may prevent their production level from decreasing if the country they are exporting to is not affected by the crisis. Secondly, companies may reduce risks of interference from a crisis by diversifying exports to different countries and regions.

The main purpose of this study is to determine export trends during and after crises by analyzing the export data of the chicken meat sector in Turkey. The basic expectation of this research study is that the number of exports increases during crisis times and then returns to the old trend after the crisis. There should be no significant change in the amount of production during the periods. Hence, focusing on exports should be a good strategy during crisis times.

For this purpose, data from the chicken meat sector is examined for Turkey between the years of 1982 and 2010. Crisis periods are represented by dummy variables for the time trend curve fitting application. The rest of this article proceeds in the following manner. In the first part, we briefly review the literature regarding export strategies, crises and their effects on Turkish companies, as well as the link between exportation and crisis. Second part includes data and methodology. Third part draws conclusion and future research.

2. Literature Review

Crisis in Turkey: Turkey has been faced with significant crises during the past two decades. These crises resulted in crucial impacts on real sectors. In this study, the 1994 and 2001 crisis, which affected all sectors, and the 2005 sectoral crisis, which only impacted the chicken meat sector, are examined.

The main reason for the 1994 crisis was uncontrollably growing domestic debt stock. In addition, fiscal imbalances and the valuable exchange rate, together with the extensive short term borrowing of commercial banks, prepared the weak economic background that led to the 1994 crisis [1]. Decreasing wages, increasing unemployment, increasing devaluation and three-digit inflation terms were results of the 1994 crisis. These results affected the chicken meat sector, as well as other sectors in Turkey [2].

The 2001 economic crisis significantly affected Turkish companies. The reason for this crisis was the macroeconomic imbalance. An imbalance between the inflation and exchange rate affected the Turkish economy. Interest rates were increased by the Central Bank Policy. Then the Turkish economy encountered devaluation. As a result of 2001 crisis, commercial loan interest rates and unemployment increased, production decreased and many companies went bankrupt [3]. The 2001 crisis negatively affected the productivity and efficiency of the Turkish financial and non-financial sectors [4].

2005 was the year of the recession for the Turkish chicken meat sector, because of the sectoral crisis. The reason for this recession was the stress that the consumers had lived through due to the Avian Influenza cases. This big problem has been overcome without realizing the extreme decrease in the

production. Hence, it could be considered a successful result to live through a recession without major negative effects [5].

Link between export-based production strategy and the effects of a crisis: The most important feature of crisis periods is the decrease in production level due to shrinkage in domestic demand. When the production level decreases, companies may experience difficulty in sustaining their operations and paying their debt. One possible way out of a crisis that will cause minimal damage for companies is to increase the export quantity [6]. Exporting can help firms diversify their risk across several markets by reducing the dependency on a single domestic market.

Companies should attempt to strengthen its export production capacity through the careful design and implementation of export-based production activities in all strategic sectors to reduce the negative effects of the crisis [7]. In crisis times, companies accept the fact that export strategy is an efficient and acceptable alternative way to eliminate a decrease in their profit margins in the domestic market [8].

Countries encourage companies in a crisis to export to overcome the crisis. Export promotion initiatives are formed by governments to decrease the damage of a crisis. Export promotion is defined as an incentive program designed to attract firms into exporting by offering assistance in product and market identification and development, prescription and post-shipment, financing, training, payment guaranty schemes, trade fairs, trade visits, and foreign representation [9].

Export success during a crisis entails acting quickly, moving away from shrinking markets, and moving toward expanding markets. The ability to respond depends on each country's unique export mix, location, endowment and entrepreneurial and policy response capabilities [9]. Companies should implement export strategy as a long term strategy because of the crisis risk [10].

3. Data and Methodology

Data: The data for this study includes the export and production quantity data of the chicken meat industry in Turkey from 1981 to 2010. The data was gathered from the Food and Agriculture Organization of the United Nations (FAO). Annual production and export data is illustrated in Figures 1 and 2. These figures exhibit the typical exponential increase with time. The important point that Figure 2 illustrates is the existence of breakpoints for the years of 1994, 2001 and 2005. It is known that in 1994 and 2001, Turkey was faced with important economic crises, which affected almost all production sectors. In addition, the 2005 crisis was a sector specific crisis affecting the chicken meat sector, because of the Avian Influenza. In this paper, we attempt to fit an appropriate curve to the data by using a polynomial structure of a time trend and dummy variables that represent the crises.

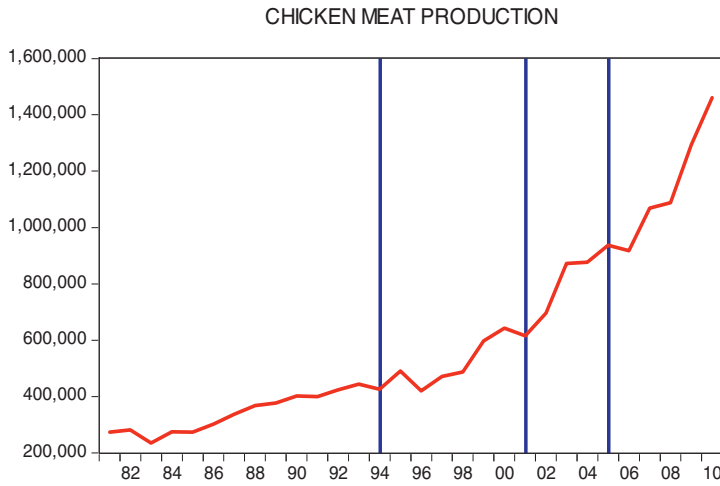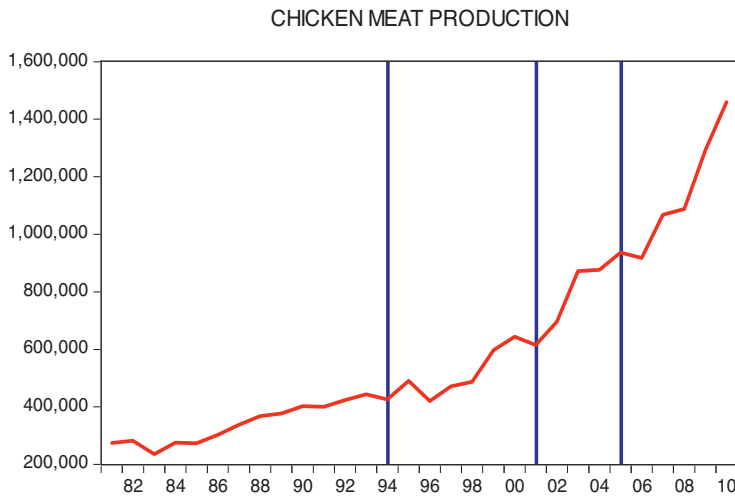*Figure 1*: Chicken Meat Production (Ton/Year)

CHICKEN MEAT PRODUCTION

Figure 2: Chicken Meat Export Data for Turkey(Ton/year)

CHICKEN MEAT PRODUCTION

Curve Fitting: Curve fitting is the process of constructing a curve that fits the data best. There are different ways of curve fitting, classified as parametric and non- parametric techniques. In this study, we use the parametric curve fitting techniques, namely polynomial regressions (polynomial curve fitting). The curve fitting equation can be written as follows:

$$EXP_t = \beta_0 + \sum_{i=1}^{T} \beta_i (TREND)^i + \delta_1 D_{94} + \delta_2 D_{2001} + \delta_3 D_{2005} + \varepsilon_t$$

(1)

Where: EXP_t is the chicken meat export quantity measured in tons and $TREND$ is a linear time trend which takes on the values of 0, 1, 2, T. $D_{94}, D_{2001}, D_{2005}$ are dummy variables which represent the 1994, 2001 and 2005 crises, respectively. The definition of dummy variables is presented in Table 1. ε_t is the error term, which follows a normal distribution with a zero mean and constant variance. In Equation (1), the model is linear with respect to the coefficients. In order to estimate Equation (1), we use the least squares method; the order of i is selected as the trial and error method for the best fit.

Table 1: Definition of Dummy Variables

Dummy Variable	Definiton	
D_{94}	1	for the year 1994
	0	otherwise
D_{2001}	1	for the year 2001
	0	otherwise
D_{2005}	1	for the year 2005
	0	otherwise

4. Results

The estimation results of Equation (1) for chicken meat exports and chicken meat production are presented in Tables 2 and 3. According to the estimation results, all coefficients, except the constant term, are statistically significant for the export data. The fitted curve based on the estimated parameters is illustrated in Figure 2.

Figure 2 demonstrates that the fitted curve is very close to the actual export data. We test the normality of residuals with a Jarque-Bera normality test. The test results show that the null hypothesis of the normally distributed residuals is not rejected. Thus, it can be concluded that the residuals are normally distributed. The crisis dummies are positive and significant for the years of 1994, 2001 and 2005. The estimated results for the production data are shown in Table 3. The results illustrate that the crisis dummies are statistically insignificant, meaning that chicken meat production didn't change significantly during the crisis period. These results indicate that the amount of white meat exports significantly increased in Turkey during the crisis period, while the production amount remained unchanged. The decrease in the production level can be compensated by the increase in the export level.

If we analyze the results in terms of policy implications, we can say that exportation may help the white meat producers to eliminate, or reduce, the damaging effect of crises in Turkey. The white meat producers may diversify the market with exportation. Thus, loss in any market can be compensated for by the profit obtained from another market.

Table 2: Curve Fitting Results for Chicken Meat Export

| Parameter	Value	Marginal Significance Level
β_0	-1869.19	[0.578]
β_1	6500.56	[0.016]
β_2	-1847.67	[0.003]
β_3	194.69	[0.000]
β_4	-8.69	[0.000]
β_5	0.142	[0.000]
δ_1	9801.07	[0.029]
δ_2	9749.54	[0.032]
δ_3	13939.86	[0.004]
Jarque-Bera Test	0.213	[0.898]
RMSE	3283.63	
MAE	2210.14	

RMSE: Root mean squared error   MAE: Mean absolute error

Table 3: Curve Fitting Results for Chicken Meat Production

Parameter	Value	Marginal Significance Level
β_0	234656.3	[0.001]
β_1	24991.86	[0.012]
β_2	-1733.42	[0.031]
β_3	77.71	[0.001]
δ_1	-12076.33	[0.802]
δ_2	-48076.21	[0.331]
δ_3	26428.39	[0.584]
Jarque-Bera Test	0.064	[0.968]
RMSE	39963.37	
MAE	31265	

RMSE: Root mean squared error   MAE: Mean absolute error

Figure 3: Export Data and Fitted Curve
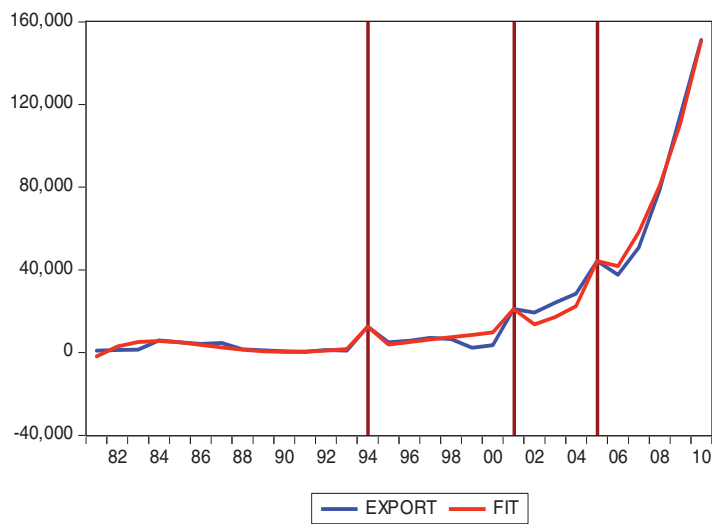
5. Conclusion

The findings indicate that the amount of chicken meat exports significantly increased during crisis times in Turkey, whereas the amount of production remained the same.   Chicken meat producers can either diversify their international markets or penetrate existing markets by using the export strategy to eliminate the negative effects of crises. As a result, a company's loss in the domestic markets can be compensated for with the profit obtained from another market. Hence, the companies should improve their production, marketing and all other business functions for the competitive and successful export strategy.

This study has some limitations. Firstly, we don't discriminate whether exports increased due to new export markets or existing markets. This kind of discrimination can be more helpful in determining the export strategy. Future studies may repeat the analysis based on the above discrimination.

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