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Summary

Turkey's exports of organically produced agricultural products have been rapidly growing particularly in response to increasing demand in the European Union countries. Common view and findings of the research on organic trade in Turkey confirms that European market is expanding.

A lacking component of the existing research on Turkey's organic exports is that none of the studies focused on modeling the export market for organic products which would enable to make forecasts as well as to make analysis for policy implications. Another missing component of the stream of studies on trade of Turkish organic commodities is the lack of understanding of the present situation of the competitiveness of Turkish exports in the European Union market. The study therefore focuses on estimating an econometric export demand function for organic products and exploring the competitiveness and export performance of Turkish exports as well as understanding the components of export performance. An effort to estimate an econometric export demand model for Turkey's organic exports and revealing sources of export performance and competitiveness is what makes the present study a unique one.

The project has three major objectives and thus seeks to produce three outputs: *The first objective is to estimate an export demand model for Turkish organic products in the European Union market.* It is therefore possible to estimate price and income elasticities of demand as well as to make projections. *The second objective is to explore Turkey's export competitiveness in organic products in the European Union market.* In order to fulfill this objective, we will estimate indices to measure Turkey's competitiveness. *The third objective is to investigate export competitiveness and determine the components of export performance.* Through constant market share analysis, we seek to determine the key factors underlying the growth of Turkey's organic exports.

The study reveals that export demand for the Turkish organic products are growing and sensitive to price and income changes in target countries. Turkey has a clear comparative advantage against the rival EU countries in selected products. Competitiveness is particularly due to relative prices, thus does not indicate a sustainable competitiveness due to lack of added value in the export items.

KEY WORDS: Organic Agriculture, Turkish Agriculture, Export Demand, Competitiveness, Turkish Organic Exports

Introduction

Studies on the economics of organic agriculture in Turkey have started in early 1990s. The studies cover topics such as differences in production costs (Akgüngör, 1996); domestic market demand (Akgüngör, et.al, 1999; Koç et.al., 2001) and export (Gündüz, 2001).

The common finding of the studies is that organic agriculture in Turkey has grown rapidly both in terms of production and exports. The studies point out that Turkey has a comparative advantage in export markets both with respect to product variety and product quality. There has not been a systematic study on how Turkey's organic exports are sensitive to changes in relative prices and consumers' disposable income. A sound export policy should take into consideration of how prices and income changes affect export competitiveness. Existing research emphasizes the growing potential of Turkish organic exports yet does not look into estimating the parameters of demand for organic food imports of the EU countries of Turkish origin.

Another missing component of the existing research is that they do not analyze the level of competitiveness of Turkey's exports against its major rivals and whether and how have

competitiveness changed over time. Existing studies also miss the analysis of determining the major determinants of export growth.

Objectives

The aim of the study is to estimate an econometric export demand function for organic products and explore competitiveness and export performance of Turkish organic exports to the European Union market.

The paper has three major objectives:

- The first objective is to estimate an econometric export demand model for Turkish organic products in the European Union market. This objective aims to reveal price and income elasticities of demand as well as to make export forecasts.
- The second objective is to understand Turkey's export competitiveness of organic products in the European Union market.
- The third objective is to uncover the components of export performance.

Methodology

1. Method in estimating price and income elasticity estimates: Price and income elasticity estimates are determined through estimating an econometric export demand model for Turkey's organic product exports to the EU market. We also use Linear Approximation (LA) / Almost Ideal Demand System (AIDS) model is a convenient tool to estimate organic products' price and income elasticities (Deaton and Muellbauer). Details regarding econometric model and LA/AIDS model are explained in relevant sections as presented below.
2. Method in estimating export competitiveness of Turkey's organic products in the EU market against its major competitors: To explore the export competitiveness of Turkey's organic products in the EU market, we use competitiveness indices such as revealed comparative advantage index and comparative export performance index. Details regarding indices are explained in relevant sections as presented below.
3. Method in estimating the sources of export performance: Constant market share analysis seeks to reveal the sources of existing export performance. The constant market share analysis developed by Tysznski (1951) and further developed by Leamer ve Stern (1970) Richardson (1971) explores whether the growth in exports are due to export performance or the country's export competitiveness.

Data

In estimating the export demand function and LA/AIDS model, we use export data that is compiled by the Aegean Region Exporters' union and published by Turkey's Ministry of Turkey's Agricultural and Rural Affairs. Systematic data collection on organic exports has started in 1999. The data set on organic food exports therefore covers the period of 1999-2005. The income and population series of the EU countries were obtained from International Financial Statistics. Consumer price index series to convert dollar values into constant prices are from US Bureau Labor Statistics for the CPI for Urban Consumers (1984-86). All data covers annual observations for the 1999-2004 period.

In estimating export competitiveness and constant market share analysis, we need data for world organic food exports as well as organic exports of individual countries. The indices require incoming and outgoing export flows for Turkey and selected rival countries in four target countries. Since Eurostat database does not include organic trade flows, and no other data set were complete and sufficient enough to do the computations, we proxy conventional products in place of organic external trade flow. We therefore use Eurostat external trade data set (Comext) without being able to distinguish across organic and conventional food exports.

Process of Product and Target Country Selection

In selecting the highest percentage of organic products in total organic exports, we determine products with higher than 10% of organic exports. The products with exports shares over 10% for the 1998-2004 period are, raisins, dried figs, dried apricots and hazelnuts. These four products make up 77.7% and 59.7% of total organic product exports in 1999 and 2004, respectively.

The demand model is estimated for the 4 EU target countries with highest shares in Turkey's total organic exports to the EU. Germany, Netherlands, France and United Kingdom are the four countries with highest shares in Turkey's total organic exports (60-70% over the years).

Results

1. Export Demand Function for Turkey's Export into the EU Market

1.1. Demand Function

To understand the effect of price and income changes on Turkey's organic food exports in target markets, we estimate an econometric demand function for Turkey's organic food. The estimated demand function is actually an import demand function for Turkish organic foods in the target EU countries. The function enables us to explore how relative prices affect Turkey originated organic imports as well as to be able to make predictions on market share of Turkish imports on total organic imports.

A demand function for the aggregate EU market is not a practical option since the number of observations on prices and quantities imported (exported from Turkey) do not cover a long time span (data is limited to annual organic food export data for the 1998-2004 period). In order to avoid the problem regarding degrees of freedom, we construct two sets of panel data. The first data set covers four target countries that Turkey has the highest import share (Germany, Netherlands, France and Great Britain). The second data set covers four product groups (raisins, dried figs, dried apricots and hazelnuts).

The econometric demand function is presented below for selected products and countries.

$$X_{it}^d = \alpha_i^d + \gamma_1 P_{it} + \gamma_2 P_{it}^w + \gamma_3 X_t^{AB} + Y_t^{AB} + \varepsilon_t$$

Where,

X_{it}^d = export demand for product i (quantity) at time t.

P_{it} = Real export price of product i at time t.

P_{it}^w = Real world price of product i at time t.

X_t^{AB} = Total demand of the EU for Turkish exports (quantity demanded) at time t.

Y_t^{AB} = Disposable income in the EU target countries at time t.

The above equation can be estimated in one stage under the assumption that the price is exogenous. In order to find out whether there is a problem of simultaneity; we use the test developed by Hausman and explore whether Turkey's export price is independent of quantity exported. In order to proceed, an instrument for the price variable is developed using the supply equation as presented below.

$$P_{it} = \alpha_i^s + \beta_1 X_{it}^s + \beta_2 E_t + \beta_3 P_t^{dom} + \beta_4 DC_t + \beta_5 Y_t^{dom} + \beta_6 PC_t + u_{it}$$

Where,

P_{it} = Real export price of product i at time t.

X_{it}^s = Export supply for product i at time t.

E_t = Real exchange rate at time t.

P_t^{dom} = CPI in Turkey at time t.

DC_t = Export incentives

Y_{dom}^t = Quantity produced in the domestic market

PC_t = Production cost

The demand function is estimated through two different sets of panel data. The dependent variable of the first set of panel data has the quantity exported (quantity imported by the EU target countries) of four products. The second set of panel data has the quantity exported (quantity imported by the EU target countries) by the four target countries.

The first set of panel data estimates the import demand function for the four selected products (organic raisins; organic apricots, organic figs and organic hazelnuts). The dependent variable is per capita imports of product i from the selected target countries (kg/population). Here, i denotes organic raisins; organic apricots, organic figs and organic hazelnuts. The independent variables of the model are price and income variables. The price variable measures the ratio of the export price of product i to country j to the world price of product i. The income variable measures the per capita purchasing power parity of consumers in target country j.

The second set of panel data estimates the import demand function of the four selected countries (Germany, Netherlands, France and United Kingdom). The dependent variable is Turkey's aggregate export of four products to target country j. The independent variables of the model are price and income as defined above.

1.2. LA/AIDS Model

In addition to the estimates derived from the export demand function we use LA/AIDS model to predict price and income elasticities within a closed system of demand equations for organic products. The model consists of the consumers' budget shares of the products, product prices and consumers' disposable income:

$$w_i = \alpha_i + \sum_j \gamma_{ij} \log p_j + \beta_i \log(x/P)$$

Where w_i is the budget share of the i th good, x is the total consumption expenditure, p_j is the price of the j th good and P is the Stone's approximation of the price index specified as below:

$$\log P = \alpha_0 + \sum_i \alpha_i \log P_i + 1/2 \sum_j \sum_k \gamma_{jk} \log p_j \log p_k$$

The model has the following restrictions:

$$\sum_{i=1}^n \alpha_i = 1$$

$$\sum_{i=1}^n \gamma_{ij} = 0$$

$$\sum_{i=1}^n \beta_i = 0$$

$$\sum_j \gamma_{ij} = 0$$

$$\gamma_{ij} = \gamma_{ji}$$

Under the above restrictions, the AIDS equation is a demand system. The price and income elasticities are defined as below following Gren ve Alston (1990 and 1991):

Expenditure elasticity:

$$\varepsilon_i = \left(1 + \frac{\beta_i}{w_i} \right)$$

Price elasticity:

$$\varepsilon_{ij} = \delta_{ij} + \frac{\gamma_{ij}}{w_i} + \frac{\beta_i w_j}{w_i}$$

Using the LA/AIDS model, we get income and price elasticities of Turkey's exports of organic products to the four importing EU countries, under the assumption that the consumer expenditure for the organic products can be modeled independent of the consumers' other expenditures.

1.3. Model Estimation and Findings

The coefficient estimates of the demand function and LA/AIDS model are presented below.

1.4.1. Demand Function Estimates

As explained above, the demand functions are estimated for Turkey's four largest organic exports (raisins, dried figs, dried apricots and hazelnuts) and largest EU importing countries for Turkey's organic exports (Germany, Netherlands, France and United Kingdom). Export demand equation is estimated for the aggregate of the four products as well as the aggregate for the four countries. The demand functions are specified as below:

$$PCQ_{jit} = \alpha_0 + \alpha_1 PR_{jit} + \alpha_2 YR_{jit} + u_t$$

Where,

t : time (t = 1998 , ..., 2004)

j : countries (j = Germany, Netherlands, France and United Kingdom)

i : products (i = raisins, dried figs, dried apricots and hazelnuts)

PCQ_{jit} : per capita exports of good i to country j in year t (Kg.)

PR_{jit} : relative export price of good I in country j in year t (US\$/Kg)

YR_{jit} : Per capita real income of country j in year t according to purchasing power parity (US \$).

Relative export prices (PR_{jit}) is determined by the ratio of price series (export value (\$) divided by quantity exported (kg)) and world price of the product. Since organic product price series does not exist, we use conventional product export price as a proxy for organic food. Since it is expected that price series of the organic products and conventional products are correlated, such proxy is considered to be the second best for using the organic price series.

The exogeneity of the price variable is tested by the test developed by Hausman. The Hausman test suggests endogeneity so a two stage least squares methods is used to estimate the demand equation.

The demand function is estimated under two different specifications. The first specification includes the aggregate of four product imports by the selected countries. Country demand functions are thus estimated. The second specification includes the aggregate of four countries for the four products. Product demand functions are estimated using two sets of panel data for the 1998-2004 period. Since the fixed effect model is a more efficient estimator than the random effect model, we estimate the fixed effect panel model. The cross section heterogeneity problem is corrected by the method developed by White.

- Product Demand Functions

The product demand function estimates are presented in Table 1.

(Table 1)

The results indicate that per capita real income variable is positive and significant as expected. Similarly, the relative price variables on all products except for dried figs are negative and significant. The high value of the per capita income variable is particularly related to the fact that the organic products that are covered in the study are considered to be luxury products, thus suggesting high income elasticities. The products that are most sensitive to price changes are raisins and hazelnuts.

- Organic Product Demand for Countries

The country import demand functions are estimated and results are presented in Table 2:

(Table 2)

All four countries have negative price coefficients and positive income coefficients. All variables are statistically significant except for per capita and price variable in Netherlands and per capita income variable of France.

1.4.2. LA/AIDS Model

The LA/AIDS model is specified as below:

$$w_i = \alpha_i + \sum_j \gamma_{ij} \log p_j + \beta_i \log(x/P)$$

(i = raisins, dried figs, dried apricots and hazelnuts)

(j = Germany, Netherlands, France and United Kingdom)

The demand system under the LA/AIDS model covers five products. Those are, raisins, dried figs, dried apricots, hazelnuts and all other products. The assumption is that the consumer expenditure for organic products in selected countries can be modeled independent of all other products and expenditures. The budget shares of the products in selected countries are presented in Table 3.

(Table 3)

The elasticities are estimated using the coefficients estimated by the LA/AIDS model as explained above. The elasticity estimates are summarized in Table 4.

(Table 4)

The main diagonal of Table 4 indicates own price elasticities of the products where the off diagonal elements are cross price elasticities. The last column can be interpreted as income elasticities for the products. All coefficients of the price expenditure estimates are lower than 1 as expected and except for the price elasticity of raisins, all have negative values that is consistent with economic theory. The findings regarding cross price elasticity estimates suggest that the sign of the coefficients are negative and that the products are not considered to be substitutes.

Per capita expenditure elasticities of the products are positive as expected by the economic theory. This indicates that real per capita income increases would cause higher demand for the organic products. Here, the income elasticity of dried apricots is 1,24 (elastic); income elasticity of raisin is 1,03 (unitary elastic); income elasticity of dried figs and hazelnuts are 0,51 and 0.33 (inelastic).

Consequently, a relative increase in per capita income of Germany, France, Netherlands and United Kingdom would cause a larger increase in per capita consumption of dried apricots and a smaller increase in per capita consumption of dried figs and hazelnuts.

3. Export Competitiveness of Turkish Organic Products

Export competitiveness indices that are used in the context of the research are “revealed comparative advantage index” and “comparative export performance index”. The indices are calculated for the 1999-2005 period using European Commission Intra and Extra Trade (COMEXT) database.

3.1. Revealed Comparative Advantage (RCA) Index

The revealed comparative advantage index explores whether the country has a comparative advantage over the rival countries. The formula of the RCA index is presented below:

$$RCA = \ln \left\{ \frac{(X_i^B)}{(X^B)} / \frac{(X_i^A)}{(X^A)} \right\}$$

Here,

X_i^B = Turkey's export of product i to the EU market.

X^B = Turkey's total exports to the EU market.

X_i^A = Rival countries' export of product i to the EU market.

X^A = Rival countries' total exports to the EU market.

The positive index values indicate a comparative advantage.

3.2. Comparative Export Performance (CPA) Index

The index is presented below. A value greater than 100 indicates a comparative advantage

$$CPA = (X_{it} / X_t) / (X_{iw} / X_w) \times 100$$

Here,

X_{it} = Turkey's export of product i (Exports to the world and exports to the EU)

X_t = Turkey's total exports (Exports to the world and exports to the EU)

X_{iw} = World (and EU) exports of product i

X_w = World (and EU) total exports

3.3. Constant Market Share Analysis

The CMS equation is specified below:

$$\Delta q = \sum_i \sum_j s_{ij}^0 \Delta Q_{ij} + \sum_i \sum_j Q_{ij}^0 \Delta s_{ij} + \sum_i \sum_j \Delta s_{ij} \Delta Q_{ij}$$

Where,

q = target country's organic exports (value)

s_{ij} = Turkey's export market share of product i (selected four products) in country j (selected four countries)

Q_{ij} = Total imports of market j

Δ = annual change

0 = base year

The first term of the above equation represents "structural effect", second term represents "competitiveness effect" and the third term represents "secondary effect (combination of both effects)" (Chen and Duan, 2001).. Structural effect represents export growth due to total growth in the EU market. Competitiveness effect represents export growth due to Turkey's export competitiveness. The secondary effect represents combination of both the structural and competitiveness effect.

3.4. Selection of Rival Countries in Target Markets

To determine Turkey's export competitiveness in the EU market, there is a need to know the rival countries in selected target EU countries. In determining rival EU countries, we select the ones whose export shares are larger than 20% for the selected products in selected target countries during the 1999-2004 period.

The analysis is done for two distinct markets: intra and extra EU markets. Countries whose export shares are larger than 20% separately for the intra and extra EU market are selected. Table 5 summarizes the distribution of value of selected products imported for the selected countries. As the import value figures in Table 5 indicates, the vast majority of exports are made from the extra EU countries.

(Table 5)

Turkey has the highest share of imports of the selected four products in selected target markets. However, small as they are, the EU member countries whose export shares in intra-EU trade are higher than 20% are presented in Table 6.

(Table 6)

3.5. Findings

- Revealed Comparative Advantage (RCA) Index

Tables 7, 8, 9 and 10 summarize the RCA index for selected rival countries and products.

All rival countries have comparative advantage over Turkey when exports of selected four products are compared with the total of four (RCA 1). When exports of selected four products are compared with the total exports of fruits and vegetables, RCA 2 reveals that Turkey has a comparative advantage over the rival countries. Similar results prevail with respect to dried apricots, dried figs and hazelnuts. The results are consistent with the fact that Turkey's majority of fruit and vegetable exports consist of the selected four products, thus representing traditional export items and less variety in fruit and vegetable exports. When fruit and vegetable sector exports as a whole are taken into consideration, Turkey has a clear comparative advantage over the competing countries with respect to raisins, dried figs, dried apricots and hazelnuts.

(Table 7)

(Table 8)

(Table 9)

(Table 10)

- Turkey's Export Performance (CEP index)

The findings from the CEP index are consistent with the findings from the RCA index. Turkey has a clear comparative advantage in the EU market in selected four products against rival EU member countries.

(Table 11)

(Table 12)

(Table 13)

(Table 14)

Turkey's export competitiveness of raisins is high against rival EU countries. The country in close performance with Turkey is Greece. Yet Greece has lower values of CEP index indicating that Turkey has a clear comparative advantage with respect to prices and market share in the EU market against its closest rivals.

Above findings indices indicate that Turkey has comparative advantage over the rival EU exporting countries. The section below seeks to explore the source of export competitiveness.

- Constant Market Share Analysis (CMS)

Constant market share analysis is used to explore the factors that affect a country's export performance. The analysis assumes three factors to explain the reason why a country exports grow faster than world exports: The first reason is related to the growth of the export market relative to the world export growth (structural effect). The second reason is improvements in competitiveness of the exporting country (competitiveness effect). The third reason is a combined effect of competitiveness and structure. Table 15 and 16 summarizes the results of CMS analysis. The CMS analysis reveal that all of Turkey's

export growth in the selected four products is due to the growth of the EU 25 market. Turkey's comparative advantage is not due to increase in its competitiveness but is related to the gradual growth of EU export market.

(Table 15)

(Table 16)

4. Final Remarks

The findings show that Turkey's exports of organic products to the EU market are growing however is limited to traditional export items (dried products) over the years. The growth in exports is particularly due to relative prices. Had Turkey's prices become relatively higher than the rival countries, it is quite likely that Turkey would lose its market share.

Except for hazelnuts and dried figs, the expenditure elasticity of selected products (raisins, dried figs and apricots) are higher than unity thus suggesting that consumers tend to demand more when their incomes increase. The CMS analysis show that competitiveness is particularly due to relative prices thus does not indicate a sustainable competitiveness due to lack of added value in the export items.

Although the paper reveals evidence of cost competitiveness, it cannot compare the conditions of Turkey and the rival EU countries for sustained competitiveness. Sustainability in competitiveness depends on the political, legal and macroeconomic foundations as well as microeconomic conditions for prosperity, such as company operating practices and strategies, quality of inputs, infrastructure and institutions. Competitiveness must therefore shift from comparative advantage (low cost labor or natural resources) to competitive advantage due to more productive and distinctive products and processes. The focus of further research should consider exploring the conditions for sustainable competitiveness with respect to microeconomic foundations of productivity and investigate the sophistication of the environment within which the firms in respective countries compete.

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Table 1 – Import Demand Coefficients for Selected Organic Products

Coefficient	<i>Raisins</i>	<i>Dried Apricots</i>	<i>Dried Figs</i>	<i>Hazelnuts</i>
Relative price (t statistic)	-3.83190 (-4.506503)	-0.51582 (-1.706358)	1.49839 (1.000027)	-1.72648 (-2.812257)
Real Per Capita Income (t statistic)	12.189510 (6.092963)	8.61162 (7.164771)	12.77593 (2.933813)	5.86772 (2.246187)

Table 2 – Organic Import Demand Coefficients for Selected Countries

Coefficient	Countries			
	Germany	Netherlands	France	United Kingdom
Relative price (t statistic)	-0.439526 (-2.471176)	-0.209861 (-0.989804)	-0.665028 (-4.806804)	-0.832126 (-4.454662)
Real Per Capita Income (t statistic)	1.672867 (0.903075)	5.879414 (0.461628)	9.178942 (10.23006)	5.798229 (2.996906)

Table 3: Budget Shares of the Target Countries (%)

Germany						
	Raisins	Dried Figs	Dried Apricots	Hazelnuts	Other Organic Products	Total
1998	14.8	16.0	15.3	30.7	23.2	100
1999	13.6	19.3	11.6	23.0	32.5	100
2000	17.7	10.7	15.6	25.1	30.8	100
2001	18.3	9.9	15.3	23.4	33.1	100
2002	18.8	12.5	19.0	12.4	37.3	100
2003	24.4	11.7	17.0	16.4	30.5	100
2004	17.9	16.6	14.0	22.4	29.2	100
France						
	Raisins	Dried Figs	Dried Apricots	Hazelnuts	Other Organic Products	Total
1998	20.40	13.00	25.80	9.90	30.90	100
1999	12.80	7.90	14.80	12.90	51.60	100
2000	17.30	13.70	22.80	21.50	24.60	100
2001	21.40	11.00	26.00	22.40	19.30	100
2002	16.50	19.70	36.10	14.20	13.40	100
2003	23.50	15.40	31.50	14.10	15.60	100
2004	19.60	28.60	20.70	16.40	14.80	100
Netherlands						
	Raisins	Dried Figs	Dried Apricots	Hazelnuts	Other Organic Products	Total
1998	36.60	9.60	3.70	21.20	28.90	100
1999	26.40	5.30	3.10	12.70	52.40	100
2000	28.40	3.40	7.00	12.60	48.60	100
2001	26.60	2.80	7.90	22.00	40.70	100
2002	28.20	1.20	4.50	18.50	47.60	100
2003	18.50	4.30	0.20	10.90	66.00	100
2004	14.20	5.60	5.10	13.80	61.40	100
United Kingdom						
	Raisins	Dried Figs	Dried Apricots	Hazelnuts	Other Organic Products	Total
1998	23.40	19.10	5.30	11.20	41.10	100
1999	28.00	26.80	5.60	4.70	34.90	100
2000	40.20	17.90	6.10	4.70	31.00	100
2001	31.70	20.30	1.70	3.60	42.70	100
2002	33.00	22.70	8.60	4.80	31.00	100
2003	24.10	35.60	7.40	7.90	25.00	100
2004	27.00	29.80	6.90	5.70	30.70	100

Table 4: Price and Expenditure Elasticity Estimates

Product	Price elasticity 1	Price elasticity 2	Price elasticity 3	Price elasticity 4	Price elasticity 5	Expenditure elasticities
1. Raisin	0,322376	-0,565286	-0,03903	-0,71081	0,198181	1,030152
2. Dried Apricot	-0,18686	-0,785876	0,492266	0,49808	-0,20693	1,244081
3. Dried Fig	-0,64962	0,5945413	-0,61122	-0,29826	-0,46101	0,513532
4. Hazelnut	0,917386	-0,426732	0,108115	-0,88962	-0,61329	0,326822
5. Diğer Ekolojik ürünler	-1,1529	0,2344764	-0,22388	0,41458	-0,70931	1,292636

Table 5: Distribution of EU Imports of Hazelnuts, Dried Figs, Raisins and Dried Apricots Across Intra and Extra EU Countries

	1999		2005	
	Intra E	Extra EU	Intra E	Extra EU
<i>Product: Hazelnuts</i>				
Target Market: France	19,421	40,167	27,273	20,261
Target Market: Netherlands	3,859	8,183	5,423	15,713
Target Market: Germany	43,708	210,123	90,769	160,797
Target Market: United Kingdom	446	9,126	4,343	11,079
<i>Product: Dried Figs</i>				
Target Market: France	1,157	12,855	1,151	16,506
Target Market: Netherlands	139	3,513	338	3,998
Target Market: Germany	3,409	14,318	3,069	14,687
Target Market: United Kingdom	1,257	3,769	3,358	2,889
<i>Product: Raisins</i>				
Target Market: France	8,230	18,907	5,619	23,395
Target Market: Netherlands	11,364	38,653	6,651	36,466
Target Market: Germany	16,624	56,403	11,285	59,833
Target Market: United Kingdom	33,747	111,164	23,309	105,391
<i>Product: Dried Apricots</i>				
Target Market: France	755	14,163	650	18,447
Target Market: Netherlands	1,288	5,431	334	54,457
Target Market: Germany	1,524	12,521	3,513	15,235
Target Market: United Kingdom	3,527	16,773	7,471	18,231

Table 6: Rival Country Selection

Target country/Product	Hazelnut		Dried Figs		Raisins		Dried Apricots	
	Rival Countries (Intra EU) ¹	Rival Countries (Extra EU) ²	Rival Countries (Intra EU) ¹	Rival Countries (Extra EU) ²	Rival Countries (Intra EU) ¹	Rival Countries (Extra EU) ²	Rival Countries (Intra EU) ¹	Rival Countries (Extra EU) ²
France	Italy (%64)	Turkey (%98)	Netherlands (%29)	Turkey (%99)	Greece (%38)	Turkey (%59)	Netherlands (%30)	Turkey (%99)
	Spain (%20)		Italy (%22)		Belgium (%33)	S. Africa	Germany (%42)	
			Germany (%35)				Belgium (%43)	
Netherlands	Germany (%72)	Turkey (%88)	Germany (%87)	Turkey (%99)	Greece (%75)	Turkey (%68)	France (%37)	Turkey (%90)
	United Kingdom (%26)		Italy (%26)			USA	Germany (%35)	
							United Kingdom (%49)	
Germany	Italy (%76)	Turkey (%81)	France (%22)	Turkey (%99)	Netherlands (%26)	Turkey (%67)	France (%64)	Turkey (%95)
			Netherlands (%53)		Greece (%52)		Netherlands (%45)	
			Austria (%41)		Belgium (%33)			
United Kingdom	Italy (%76)	Turkey (%99)	France (%63)	Turkey (%96)	Greece (%87)	Turkey (%61)	France (%89)	Turkey (%97)
			Netherlands (%28)			ABD		

¹ Figures in parentheses represent export share of intra EU countries within the total intra EU exports.

² Figures in parentheses represent export share of extra EU countries within the total extra EU exports

In exports of hazelnuts, dried figs, dried apricots and raisins, Turkey's rival EU member countries are Germany, Belgium, France, Netherlands, Spain, Italy and Greece. The competitiveness indices are obtained for these rival EU member countries.

Table 7: Turkey's Export Competitiveness of Raisins Against Rival Countries (RCA Index)

Years	Greece	Netherlands	Belgium
Four products*			
1999	-1.280	-0.841	-1.082
2000	-1.102	-0.731	-1.011
2001	-1.383	-0.725	-1.172
2002	-1.280	-0.518	-0.884
2003	-1.110	-0.481	-0.735
2004	-1.129	-0.555	-0.691
2005	-1.394	-0.348	-1.137
Sector**			
1999	0.513	3.272	3.557
2000	0.886	3.376	3.293
2001	0.839	3.230	3.366
2002	0.941	3.265	3.476
2003	0.936	3.443	3.447
2004	0.928	3.540	3.518
2005	0.787	3.688	3.481

***RCA 1**= (The ratio of Turkey's dried apricot exports to the EU 25 and Turkey's total exports of the four products to the EU 25)/(The ratio of rival countries' dried apricot exports to the EU 25 and the rival countries' total exports of the four products to the EU 25)

** **RCA 2**= (The ratio of Turkey's dried apricot exports to the EU 25 and Turkey's total sectoral export to the EU 25)/(The ratio of rival countries' dried apricot exports to the EU 25 and the rival countries' total sectoral export to EU 25)

Note: For the definition of the "sector", see Comext code 08.

Table 8: Turkey's Export Competitiveness of Dried Apricots Against Rival Countries (RCA Index)

Years	Rival Countries				
	Netherlands	Germany	Belgium	France	United Kingdom
Four products*					
1999	0.060	0.296	0.999	-1.669	-0.672
2000	-0.058	0.056	0.981	-1.762	-0.947
2001	-0.123	-0.345	1.109	-1.890	-1.505
2002	0.009	-0.148	1.019	-1.348	-1.214
2003	0.057	0.391	0.272	-1.115	-0.956
2004	0.222	0.002	0.571	-1.139	-0.530
2005	-0.151	-0.359	0.788	-1.411	-0.526
Sector**					
1999	4.173	2.803	5.638	2.374	2.104
2000	4.048	2.769	5.285	2.172	2.213
2001	3.831	2.769	5.646	2.002	1.482
2002	3.791	3.004	5.378	2.504	1.939
2003	3.981	3.213	4.454	2.409	1.915
2004	4.317	2.752	4.780	2.344	2.342
2005	3.886	2.492	5.406	1.779	2.437

***RCA 1**= (The ratio of Turkey's dried apricot exports to the EU 25 and Turkey's total exports of the four products to the EU 25)/(The ratio of rival countries' dried apricot exports to the EU 25 and the rival countries' total exports of the four products to the EU 25)

** **RCA 2**= (The ratio of Turkey's dried apricot exports to the EU 25 and Turkey's total sectoral export to the EU 25)/(The ratio of rival countries' dried apricot exports to the EU 25 and the rival countries' total sectoral export to EU 25)

Note: For the definition of the "sector", see Comext code 08.

Table 9: Turkey's Export Competitiveness of Dried Figs Against Rival Countries (RCA Index)

	Rival Countries				
Years	Netherlands	Italy	Germany	France	Austria
Four Products*					
1999	-0.472	2.740	0.218	-0.884	-0.835
2000	-0.206	2.504	-0.016	-0.706	1.648
2001	-0.586	1.641	-0.183	-1.062	-0.156
2002	-0.345	3.026	-0.314	-0.644	-0.063
2003	-0.251	3.242	-0.234	-0.292	-0.812
2004	0.182	2.224	-0.359	-0.748	-1.044
2005	-0.109	1.784	-0.407	-0.520	-1.125
Sector**					
1999	3.641	5.853	2.725	3.159	3.045
2000	3.900	5.935	2.697	3.229	3.424
2001	3.369	5.241	2.932	2.830	2.485
2002	3.437	5.963	2.838	3.208	3.617
2003	3.672	5.952	2.588	3.233	2.698
2004	4.277	4.952	2.391	2.735	2.315
2005	3.927	4.704	2.444	2.670	2.140

***RCA 1**= (The ratio of Turkey's dried fig exports to the EU 25 and Turkey's total exports of the four products to the EU 25)/(The ratio of rival countries' dried fig exports to the EU 25 and the rival countries' total exports of the four products to the EU 25)

** **RCA 2**= (The ratio of Turkey's dried fig exports to the EU 25 and Turkey's total sectoral export to the EU 25)/(The ratio of rival countries' dried fig exports to the EU 25 and the rival countries' total sectoral export to EU 25)

Note: For the definition of the "sector", see Comext code 08.

Table 10: Turkey's Export Competitiveness of Hazelnuts against Rival Countries (RCA Index)

Years	Rival Countries			
	Italy	Spain	Germany	England
Four Products*				
1999	-0.515	-0.411	-0.143	0.578
2000	-0.525	-0.473	-0.076	1.292
2001	-0.359	-0.178	0.173	2.378
2002	-0.570	-0.379	0.174	2.091
2003	-0.672	-0.452	-0.067	0.791
2004	-0.634	-0.483	0.113	1.100
2005	-0.452	-0.407	0.062	1.152
Sector **				
1999	2.597	4.615	2.363	3.354
2000	2.905	4.267	2.637	4.452
2001	3.241	5.182	3.288	5.365
2002	2.367	5.098	3.327	5.243
2003	2.037	4.961	2.754	3.662
2004	2.094	4.625	2.863	3.972
2005	2.468	3.893	2.913	4.115

***RCA 1**= (The ratio of Turkey's hazelnut exports to the EU 25 and Turkey's total exports of the four products to the EU 25)/(The ratio of rival countries' hazelnut exports to the EU 25 and the rival countries' total exports of the four products to the EU 25)

** **RCA 2**= (The ratio of Turkey's hazelnut exports to the EU 25 and Turkey's total sectoral export to the EU 25)/(The ratio of rival countries' hazelnut exports to the EU 25 and the rival countries' total sectoral export to EU 25)

Note: For the definition of the "sector", see Comext code 08.

Table 11: Turkey's Export Competitiveness of Raisins Against Rival Countries (CEP Index)

Years	Greece	Netherlands	Belgium	Turkey
Four Products*				
1999	219.7	142.9	181.2	155.4
2000	217.5	149.6	196.2	182.8
2001	213.8	114.9	175.6	176.8
2002	270.0	130.9	185.6	189.0
2003	266.3	145.4	185.9	182.9
2004	270.6	156.5	178.2	197.1
2005	329.5	120.7	257.1	214.4
Sector**				
1999	1182.8	75.0	56.4	1976.6
2000	1044.3	86.6	94.1	2533.4
2001	1018.3	93.3	81.4	2357.1
2002	1228.8	120.3	97.4	3148.5
2003	1311.0	106.8	106.3	3341.4
2004	1260.2	92.5	94.6	3188.6
2005	1320.2	72.5	89.3	2898.9

***CEP 1**= (The ratio of Turkey's raisin exports to the EU 25 and Turkey's total exports of the four products to the EU 25)/(The ratio of EU 25 raisin exports and EU 25 total exports of the four products)

** **CEP 2**= (The ratio of Turkey's raisin exports to the EU 25 and Turkey's total sectoral exports to the EU 25)/(The ratio of EU 25 raisin exports and EU 25 total sectoral exports)

Note: For the definition of the "sector", see Comext code 08.

Table 12: Turkey's Export Competitiveness of Dried Apricots Against Rival Countries (CEP Index)

Years	Netherlands	Germany	Belgium	France	United Kingdom	Turkey
Four products*						
1999	131.24	103.64	51.34	739.74	272.91	139.40
2000	122.36	109.09	43.28	672.38	297.55	115.42
2001	86.13	107.56	25.13	503.78	342.93	76.14
2002	122.08	142.81	44.45	474.09	414.56	123.14
2003	131.96	94.45	106.46	426.19	363.35	139.71
2004	108.61	135.34	76.65	423.63	230.47	135.61
2005	116.80	143.91	45.71	411.83	170.08	100.48
Sector**						
1999	65.32	257.07	15.10	394.86	517.16	4,240.45
2000	67.22	241.66	19.52	438.72	421.43	3,851.79
2001	66.55	192.52	10.84	414.46	697.10	3,069.67
2002	106.88	234.75	21.86	387.25	681.56	4,736.11
2003	91.21	196.49	56.81	438.97	719.67	4,884.60
2004	59.71	285.39	37.56	429.50	430.34	4,474.77
2005	66.43	267.70	14.53	545.94	282.80	3,234.90

***CEP 1**= (The ratio of Turkey's dried apricot exports to the EU 25 and Turkey's total exports of the four products to the EU 25)/(The ratio of EU 25 dried apricot exports and EU 25 total exports of the four products)

** **CEP 2**= (The ratio of Turkey's dried apricot exports to the EU 25 and Turkey's total sectoral exports to the EU 25)/(The ratio of EU 25 dried apricot exports and EU 25 total sectoral exports)

Note: For the definition of the "sector", see Comext code 08.

Table 13: Turkey's Export Competitiveness of Dried Figs Against Rival Countries (CEP Index)

Years	Netherlands	Italy	Germany	France	Austris	Turkey
Four products*						
1999	150.00	6.04	75.26	226.58	215.86	93.61
2000	109.59	7.29	90.55	180.52	17.16	89.15
2001	99.40	10.72	66.45	160.04	64.64	55.33
2002	124.97	4.29	121.13	168.43	94.25	88.47
2003	128.30	3.90	126.08	133.56	224.66	99.79
2004	80.20	10.41	137.87	203.35	273.44	96.25
2005	111.67	16.82	150.36	168.39	308.22	100.09
Sector**						
1999	74.66	8.18	186.69	120.94	135.54	2,847.53
2000	60.21	7.87	200.58	117.78	96.93	2,974.96
2001	76.81	11.81	118.93	131.67	185.97	2,230.80
2002	109.42	8.75	199.11	137.58	91.45	3,402.64
2003	88.69	9.08	262.28	137.57	235.02	3,488.90
2004	44.09	22.44	290.73	206.17	313.64	3,176.14
2005	63.52	29.18	279.70	223.23	379.15	3,222.45

***CEP 1**= (The ratio of Turkey's dried fig exports to the EU 25 and Turkey's total exports of the four products to the EU 25)/(The ratio of EU 25 dried fig exports and EU 25 total exports of the four products)

** **CEP 2**= (The ratio of Turkey's dried fig exports to the EU 25 and Turkey's total sectoral exports to the EU 25)/(The ratio of EU 25 dried fig exports and EU 25 total sectoral exports)

Note: For the definition of the "sector", see Comext code 08.

Table 14: Turkey's Export Competitiveness of Hazelnuts Against Rival Countries (CEP Index)

Years	Italy	Spain	Germany	United Kingdom	Turkey
Four products*					
1999	209.67	188.96	144.56	70.29	125.27
2000	199.26	189.12	127.11	32.36	117.83
2001	220.65	184.13	129.59	14.30	154.12
2002	194.18	160.37	92.27	13.57	109.80
2003	187.84	150.85	102.66	43.52	95.96
2004	180.80	155.47	85.68	31.94	95.91
2005	163.49	156.24	97.76	32.88	104.01
Sector**					
1999	283.78	37.73	358.58	133.19	3,810.50
2000	215.18	55.17	281.58	45.84	3,932.08
2001	243.08	34.91	231.96	29.06	6,213.53
2002	395.78	25.80	151.68	22.31	4,223.02
2003	437.38	23.51	213.57	86.19	3,355.13
2004	389.83	31.03	180.68	59.63	3,164.73
2005	283.71	68.27	181.85	54.67	3,348.61

***CEP 1**= (The ratio of Turkey's dried fig exports to the EU 25 and Turkey's total exports of the four products to the EU 25)/(The ratio of EU 25 dried fig exports and EU 25 total exports of the four products)

** **CEP 2**= (The ratio of Turkey's dried fig exports to the EU 25 and Turkey's total sectoral exports to the EU 25)/(The ratio of EU 25 dried fig exports and EU 25 total sectoral exports)

Note: For the definition of the "sector", see Comext code 08.

Table 15: Turkey's Export Share of Four Products in the EU 25 Export Market

Product	Year	Turkey's exports of four products to the EU 25 Market	EU 25's total imports of the four products	Turkey's Market Share in the EU 25 Market	Change in Turkey's Market Share	Change in the value of EU 25 imports from Turkey
Raisins	1999	164.096,27	384.245,79	0,43	0,03	1.388,66
	2005	176.014,88	385.634,45	0,46		
Dried Apricots	1999	57.863,37	71.644,05	0,81	-0,04	28.209,42
	2005	77.096,07	99.853,47	0,77		
Dried Figs	1999	53.873,66	66.875,91	0,81	-0,06	17.693,48
	2005	63.283,43	84.569,39	0,75		
Hazelnuts	1999	375.602,81	493.820,24	0,76	-0,15	309.800,34
	2005	494.011,19	803.620,58	0,61		

Table 16: Sources of Export Competitiveness of Turkey in EU 25 Market (CMS Analysis)

	Değer	% pay
Change in Total Exports (total of four products)	158.969,46	100,00
Structural Effect	273.265,96	171,90
Competitive Effect	-67128,8	-42,23
Secondary Effect	-47167,7	-29,67

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