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COMPETITIVENESS OF EGYPTIAN GRAPE EXPORTS IN MAIN FOREIGN MARKETS

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Abstract:- Grape is one of the major fruit crops in Egypt, where it occupies the second rank after citrus fruits in terms of relative importance. Studying the geographic distribution and market share of Egyptian grape exports indicates that more than 75% of Egypt's total grape exports go to countries of the European market. The research depended mainly on Barten model to measure the competitiveness of Egyptian grape exports in both the British and Dutch markets. A substitution relationship was found between Egyptian grape exports and both Turkish and Greek grape exports to the British market; whilst a complementary relationship was found between Egyptian and Chilean grape exports to the same market. Based on the achieved results, it is recommended to: Adopt price and export policies that help realize the desired competitive advantage of Egyptian grapes in main foreign markets in order to face competing countries, especially Turkey, Chili, Greece and India., Negotiate with the European Union in order to either extend the custom exemption period., Open new grape export windows, especially in the Arab markets, Adopt early production of grapes in new regions in order to gain a better advantage in foreign markets.

Keywords: Egyptian Grape Exports, Competitiveness, Barten model.

INTRODUCTION

Grape is one of the major fruit crops in Egypt, with average production representing 5.1% of global fruit production over the period 2010-2013. In Egypt, grape occupies the second rank after citrus fruits in terms of planted area, which amounted to 156 thousand fruit feddan producing some 1399 thousand tons during the mentioned period. The export importance and high profitability of grapes resulted in expansions in grapes planted area in many Egyptian Governorates, the most important of which are Behera, Sharkia, Fayoum, Menoufia, Gharbia, and Dakahlia. Despite the numerous aspects of success and development in the field of modernizing production and marketing systems of export-led horticultural crops, grape exports still did not achieve the hoped for success, where it keeps fluctuating due to fluctuations in planted area, and due to the modest experience most export producers have (Mohamed El-Demirdash El-Khishin, 2002).

RESEARCH PROBLEM:

Grape is one of the promising horticultural crops, especially after signing up the Egyptian-European Partnership agreement that grants Egypt an open, free-of-custom-tariff export quota starting from February till mid July each year. Despite grapes average production of the period 2010-2013 amounted to 1399 thousand tons, grape exports represented only 16.3% of the total produced quantity, estimated at 228 thousand tons worth US\$ 205.44 million for the same mentioned period, which requires studying the current situation of grape exports in the main importing markets in order to identify the reasons for such low market shares of Egyptian grapes inside those markets.

RESEARCH OBJECTIVES:

The research aims to identify the current situation of Egyptian grape exports through identifying the main importing markets; identify the competitive position and market share of Egyptian grape exports inside the main importing markets; and to measure the impact of change in the export prices of competing countries, and the impact of change in total import expenditure made by importing countries on Egypt’s market share.

METHODOLOGY AND SOURCES OF DATA

The research depended mainly on secondary data published by the Egyptian Ministry of Agriculture and Land Reclamation, and data published on the United Nations’ Website. As for the methodology, the researcher relied on descriptive and quantitative statistical analysis methods such as simple regression, market share indicator, market penetration rate for Egypt and competing countries’ export quantities inside the main import markets of Egyptian grapes. The researcher also applied Barten model (Barten, 1964) to measure the impact of changes in both the export prices of competing countries inside a certain market and the total expenditure an importer pays for importing the commodity as the explanatory variables, and demand for that commodity as the dependent variable.

Model Description

Barten Mixed Demand Model is considered a mixture between the Rotterdam Demand Model and Ideal Demand. The model measures the impact of the changes in both the export prices of competing countries inside a certain market and total expenditure an importer pays for importing the commodity as the explanatory variables, and demand for that commodity as the dependent variable. The model takes the following form (Angus and John, 1980):

$$\omega^* DQ_{it} = \alpha + \sum_{j=1}^n \pi DP_{it} + B_i DQ_{it} + \delta_1 \omega_{it}^* DQ_t^* + \delta_2 \omega_{it}^* D (P_{it} / P_t^*)$$

$$H_0 \delta_1 = 0 \quad \delta_2 = 0 = \text{Rotterdam Model}$$

$$H_0 \delta_1 = 1 \quad \delta_2 = 1 = \text{AIDS Model}$$

Where,

Q_{it} : Quantity demanded from the competing country's commodity inside the market (i= 1, 2, 3,..n, t=1)

P_{it} : Export price of country i

y_{it} : Expenditure of importing countries on commodity imports from country (I)

$$y_{it} = P_{it} Q_{it}$$

y_t : Total expenditure an importing country pays to import the commodity from all the mentioned exporting countries

$$y_t = y_{1t} + y_{2t} + \dots \dots \dots y_{nt}$$

ω_{it} : Expenditure on country (i) commodity as a percentage of total expenditure on imports of the commodity

$$\omega_{it} = (y_{it} / y_t)$$

ω_{it}^* : Weighted arithmetic mean of the expenditure on country (i) commodity as a percentage of total market expenditure to import the commodity

$$\omega_{it}^* = (\omega_{it} / \omega_{it-1}) / 2$$

P_t^* : The Divisia Index

$$P_t^* = \prod_{i=1}^n \Delta P_{it}^{w_i^*}, \ln P_t^* = \sum_{j=1}^n \omega_{it}^* \ln (P_{it} / P_{it-1})$$

$\omega_{it}^* DQ_{it}$: Logarithmic change in the country's quantity (Q_i) weighted in the arithmetic mean of the percentage expenditure by the importing countries' market on the given commodity.

DQ_t^* : Logarithmic sum of the quantities of commodities from exporting countries to the market (Q_n) weighted in the arithmetic mean of the percentage expenditure on the given commodity

$$DQ_t^* = \sum_{i=1}^n \omega_{it}^* DQ_{it}$$

Model results give the following elasticities:

Price elasticity	=	π_{ii} / ω_i
Cross elasticity	=	π_{ij} / ω_i
Expenditure elasticity	=	$1 + (B_i / \omega_i)$

The demand function must satisfy the following properties, which represent conditions in the same time:

(1) Adding Up

Meaning that the sum of percentage expenditure on a commodity imported from competing countries (n) inside the market must equal one.

(2) Homogeneity

Meaning that when both the prices and income increase at the same percent, quantity demanded from the given commodity remains constant because the demand function is homogeneous of degree zero in prices and income:

$$\sum_{j=1}^n \pi_{jt} = 0$$

(3) Symmetry

The symmetry condition reflects the change in quantity demanded as a result of change in its price and the prices of other goods, i.e., the substitution effect and the income effect. $\pi_{ij} = \pi_{ji} \quad i \neq j$

(4) Negativity

The negativity condition implies a negative relationship between quantity demanded of the commodity and its price: $\pi_{ij} < 0$

The study detects all of the autocorrelation problem of the first degree using Breush-Gad-Frey test which follows the chi square test and heterogeneity between variables using Angel test in addition to the problem of non-normal distribution limit error using the Jarque-Beratest test which follows the chi square test. If the test for any of the value of the three tests is not significant statistically it means the absence of standard problems of equation (Mohamed Khairy El Ashry, 2002).

RESEARCH FINDINGS

Evolution of Egyptian Grape Exports

Value of Egyptian grape exports is influenced by both the exported quantity and export price. Results of studying evolution of the three aforementioned variables over the period (2000-2013) are indicated in Table (1). It is

clear that quantity exported of Egyptian grapes followed a statistically significant increasing trend at an annual rate of 19.6% of the period's average, estimated at 73.5 thousand tons. The value of Egyptian grape exports also followed a statistically significant increasing trend at an annual rate of 20.3% of the period's average, estimated at US\$70 million. Finally, Egyptian grapes' export price followed a statistically significant increasing trend at an annual rate of 8.6% of the period's average, estimated at US\$895.4 million.

Table 1: Regression Equations Estimated For the Quantity and Value of Egyptian Grape Exports over the Period (2000-2013).

Variable	Equations	R ²	F	Average	Annual rate of change (%)
Export quantity (1000 tons)	$\hat{y} = -70.85 + 14.43x_i$ (1.20) (2.8)	0.31	**7.81	73.5	19.6
value of exports (US \$ million)	$\hat{y} = -72.40 + 14.24x_i$ (3.030) (6.81)	0.73	**46.3	70	20.3
export price (US \$ /ton)	$\hat{y} = -125.43 + 77x_i$ (0.53) (3.75)	0.45	**14.05	895.4	8.6

Where: T: T estimated value, F: F calculated value, R: correlation coefficient

Y[^] = Independent variable, X_i = Time, ** sig. at level 0.01

Source: compiled and calculated by the United Nations on the site of the International Network for Information, www.un.org (2000-2013).

Foreign Markets for Egyptian Grape Exports

Table (2) indicates the relative importance of Egyptian grape export markets over the period 2010-2013. It is clear that British market ranked first, with import quantity estimated at 74615.75 tons worth US\$72296.5 thousand, representing 32.7% and 35.19% of the period's average export quantity and value. The Dutch market ranked second, with import quantity estimated at 41033 tons worth US\$40604.2 thousand representing 17.99% and 19.72% of the period's average export quantity and value. Italy ranked third with imports representing 9.72% and 7.8% of the total quantity and value of Egyptian grape exports. German and Belgian markets followed with imports representing 8.63%, 8.58%, 5.76%, and 3.89% of the total quantity and value of Egyptian grape exports, respectively.

It is clear that the British and Dutch Markets import half of Egypt's total grape exports. Therefore, the study shall focus on these two markets.

Table 2: Geographic Distribution of Average Egyptian Grape Exports for the Period 2010-2013.

country	Quantity (ton)	%	Value (1000\$)	%	Export price (\$/ton)
England	74615.7	32.7	72296.5	35.19	968.9
Netherlands	41033	17.99	40604.25	19.76	989.5
Italy	22181.25	9.72	16028.75	7.8	722.6
Germany	19681.75	8.63	17631	8.58	895.8
Belgium	13141.5	5.76	8011.25	3.89	609.6
Russia	12592.75	5.52	10014.75	4.87	795.3
Emirates	7118.5	3.12	6445.5	3.13	905.4
Sudan	3967.25	1.74	3312.25	1.61	834.4
Slovenia	3358.25	1.47	3398.25	1.65	1011.9
Kuwait	3293.25	1.44	3183	1.54	966.5
Other	2703.35	11.9	24513	11.93	904.76
Total	228076.6	100	205438.5	100	900.74

Source: compiled and calculated by the United Nations on the site of the International Network for Information, www.un.org (2010-2013).

Market Shares, Market Penetration, and Relative Price of Main Grape Exporting Countries in the British

Market Market share is one of the competitiveness indicators, where raising its value is one of the main objectives of the whole export process as it reflects the competitive position of the exporting country. Market share is used for assessing the potentials for improving the competitive position of agricultural commodities' exports in foreign markets. Market share is calculated according to Sohair Mohamed El-Qady (2005) as follows:

$$\text{Market Share} = \frac{\text{Quantity Exported of a Certain Commodity to a Certain Market}}{\text{Market's Total Imports Of The Given Commodity}} * 100$$

On the other hand, market penetration measures the extent to which an exported commodity is absorbed in foreign markets, the possibility of finding a real market for the given commodity, and the potentials for absorbing extra quantities by the importing market, which all help policy makers design proper export policies. Market penetration can be calculated as follows:

$$MP = E \times E_j / (Q_j + EM_j - Ex_j) * 100$$

Where:

MP: Market Penetration Coefficient

$E \times E_j$: Quantity of the commodity exported by one country to country (j)

Q_j : Quantity of the commodity produced by country (j)

EM_j : quantity of the commodity imported by country (j)

Ex_j : quantity of the commodity exported by country (j)

Studying the market shares of the main grape export countries to the British market indicated that Turkey is the main import country, with a market share representing 18.8% of Britain's average grape imports estimated at 360 thousand tons for the period 2010-2013 (Table 3). Chili, South Africa, Spain, and Greece followed with market shares representing 15.2%, 13.2%, 9.9%, and 6.4% of Britain's total grape imports, respectively. Egypt's market share of the British grape market over the same period reached 5.6%. It is clear from the table that Egypt's calculated penetration coefficient in the British market is 0.04, whilst reached 0.33, 0.4, 0.2, 0.13, and 0.11 for Chili, Turkey, South Africa, Spain, and Greece, respectively, which reflects the very low penetration coefficient and market share of Egyptian grapes in the British market. It is also obvious that Egyptian grape does not enjoy a price advantage relative to all other competing countries in the British market due to the high price level, where the calculated relative price reached 115.5% of Britain's average import price of grapes estimated at US\$2530 per ton, which is considered the main reason for such low market share and market penetration of Egyptian grapes in the British market. This fact calls for reconsidering the export price of Egyptian grapes to that market.

Market Shares, Market Penetration Coefficient, and Relative Price for Main Grape Export Countries to the Dutch Market

The Netherland's average grape imports for the period 2010-2013 reached 377.7 thousand tons. Table (4) Studying the market shares of the main grape exporting countries to the Dutch market indicated that South Africa is the main country of grape imports, with a market share representing 25.7% of the Netherlands' total grape imports. Chili, Turkey, Greece, and India followed with market shares representing 20%, 7%, 6.1%, and 6% of the Netherlands' total grape imports, respectively. Results indicate that Egypt's market share of the Netherlands' grape market over the same period reached 3.4%, which is very low.

It can be noted from the same Table that Egypt's calculated penetration coefficient for the Dutch market is 0.03, whilst reached 0.23, 0.14, 0.35, and 0.11 for Chili, Turkey, South Africa, and Greece, respectively. It was also found that Egyptian grapes enjoy a price advantage, where the calculated relative price reached 93.3% of the Netherland's average import price of grapes estimated at US\$2699 per ton, whilst reached 104%, 102.9%, 114.4%, and 105% for South Africa, USA, Peru, and Brazil, respectively. However, Egyptian grape does not enjoy a price advantage relative to Chili, Turkey, Greece, and India. It is therefore clear that Egyptian grape exported to the Dutch market suffers low market penetration coefficient and low market share.

Table 3: Market Shares, Market Penetration Coefficient, and Export Prices Of Main Export Countries to the British Market over the Period 2010-2013

Exporting State	Market share (%)	Market penetration coefficient	Relative price
Turkey	18.8	0.4	90.62
Chilean	15.2	0.33	95.2
South Africa	13.2	0.2	110.4
Spain	9.9	0.13	106.4
Greece	6.4	0.11	101.65
US	6.3	0.064	104.9
Egypt	5.6	0.04	115.49

Source: compiled and calculated by the United Nations data on the International Network for Information. www.un.org (2010-2013).

Table 4: Market Shares, Market Penetration Coefficient, and Export Prices Of Main Export Countries to the Dutch Market over the Period 2010-2013.

Exporting State	Market share (%)	Market penetration coefficient	Relative price
South Africa	25.7	0.35	104.3
Chilean	20	0.23	88.3
Turkey	7	0.14	82.9
Greece	6.1	0.11	78.7
India	6	0.06	74.08
Brazil	5.2	0.06	105.3
Peru	5.1	0.05	114.4
Egypt	3.4	0.03	93.2
US	0.7	0.01	102.99

Source: compiled and calculated by the United Nations data on the International Network for Information. www.un.org (2010-2013).

Time Competitiveness of Egyptian Grape Exports in Main Foreign Markets

Time competitiveness in 2013 has been divided into two types, partial and complete.

(a) Countries partially competing Egyptian grape exports: this means the partial competition between certain countries' exports of a certain crop and exports of the same crop by another country, i.e. a competition during a part of the crop's export season, estimated herein as half of the export season (European Union's Office in Cairo, Egypt, 2013). In other words, if Egyptian grapes export season extends for six months, from May to October, partial competition is then three months or less. Accordingly, it can be said that grape exports from Chili, Greece, and Turkey are partial competitors for Egyptian grape exports to the British and Dutch markets. Chilean grapes are available together with the Egyptian grapes in both markets during May and Jun, whilst Greek grapes start appearing in both markets during August and September, which are the end months for Egyptian grapes' season in the two markets. As for the Turkish grapes, it appears in the British and Dutch markets during May and Jun (Tables 5 and 6).

(b) Countries completely competing Egyptian grape exports: this means the complete competition between certain countries' exports of a certain crop and exports of the same crop by another country during a time period estimated herein as more than half of the export season. Accordingly, it was found that countries which grape exports completely compete with Egypt's grape exports in the British and Dutch markets are Spain, Germany, India, Israel, and the USA. Large quantities of Spanish and German grapes are available in both markets all year round, from Jun to December. Dutch grapes are available in the two markets from March until August and abundantly available during April and May, but less available during July and August, which does not largely affect Egyptian grape exports to both markets, especially that Dutch grapes are less good than Egyptian grapes. US and Israeli grapes are available during almost all the export season of Egyptian grapes. However, quantity available of Israeli grapes in both markets are lower compared with that of Egypt. Moreover, despite grapes from South Africa, Peru, and Argentina are available in the British and Dutch Markets, especially South African grapes that are abundantly available. However,

COMPETITIVENESS OF EGYPTIAN GRAPE EXPORTS IN MAIN FOREIGN MARKETS

the export timing of grapes from those countries contradicts that of Egyptian grapes, therefore, those countries are not considered competitors to Egypt in terms of grape exports. Italian grapes are also available in the two markets all year round. However, most of Italy's grape exports are concentrated in Red Crimson variety preferred by European consumers, and thus does not represent a competitor to Egyptian grapes (Montasir Mohamed Mahmoud Hamdon, 2010).

Table 5: Time Competitiveness for Egypt and Grape Exporting Countries in the British Market during 2013 (In Tons)

State	Jan.	Feb.	Mar.	April	May	Jun	Jul	Aug.	Sep.	Oct.	Nov.	Dec.	2013
Celiv	2349	6689	18412	15579	3607	2717	0	0	0	0	0	0	49362
South Africa	17947	13823	4123	767	0	0	0	0	0	0	2065	15727	54452
Spain	39	29	32	21	6	49	21	10002	13526	3848	3775	457	31805
Greece	97	11	23	0	0	0	0	2893	9454	7439	2992	34	22943
Egypt	0	0	0	0	754	9256	7696	1183	426	15	0	0	19330
India	0	0	1998	7561	4812	262	104	92	0	0	0	0	13839
Germany	479	448	131	137	54	388	1987	1878	1656	1617	824	417	16016
Italy	205	42	267	18	19	21	512	4730	3529	1438	557	282	11623
US	0	0	0	0	174	195	871	2184	2937	5062	7557	1397	19477
Netherlands	855	1037	794	1362	2154	916	3289	631	591	2872	2332	550	17383
Turkey	0	1336	0	0	367	35275	33022	0	0	0	0	0	70000
Peru	0	127	785	39	0	0	0	0	0	0	3679	5974	10604
Israel	0	0	0	0	13	69	160	132	17	4	4	0	399
Belgium	7	16	13	19	25	56	91	85	4	3	2	1	322
Argentina	150	102	19	0	0	0	0	0	0	0	0	0	271

Source: European Commission office in Cairo (2013).

Table 6: Time Competitiveness for Egypt and Grape Exporting Countries in the Dutch Market during 2013 (In Tons).

State	Jan.	Feb.	Mar.	Apr.	May	Jun	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	2013
Chilean	3465	9917	27248	23066	5331	4050	0	0	0	0	0	0	73077
South Africa	33379	25708	7501	1591	0	0	0	0	0	0	3839	29219	101270
Spain	9	8	7	5	2	11	5	2321	3139	893	876	106	7382
Greece	75	8	18	0	0	0	0	2229	7284	5732	2305	26	17677
Egypt	0	0	0	0	535	6572	5464	839	303	11	0	0	13724
India	0	0	2229	16722	10641	580	228	203	0	0	0	0	30603
Germany	425	398	116	122	48	344	1763	1666	1469	1433	731	571	8886
Italy	256	52	333	23	24	30	638	5899	4399	1792	695	352	14193
England	855	1037	794	1362	2154	916	3289	631	591	2872	2332	550	17383
Argentina	5464	3726	685	0	0	0	0	0	0	0	0	0	9875
America	0	0	0	0	23	25	111	279	259	646	964	178	2485
Turkey	0	493	0	0	135	13007	12176	0	0	0	0	0	2485
Peru	0	358	2108	123	0	0	0	0	0	0	9966	16175	28730
Israel	0	0	0	0	15	74	173	142	18	5	4	0	431
Belgium	55	131	107	159	212	476	766	713	33	25	9	11	2697

Source: European Commission office in Cairo (2013).

Competitiveness of Egyptian Grapes in Main Foreign Markets

The Dutch and British Markets are the main import markets for Egyptian grapes. This part focuses on studying the relationship between Egypt's share of imports by the two markets as the dependent variable, and Egypt's export price, price of competing countries, and total expenditure on grape imports by the two markets as the independent variables. Barten model (Barten, 1964) has been applied to data regarding the period 1995-2013. Results of the estimated models for Egyptian grapes' main importing markets indicated lack of measurement errors including autocorrelation, heteroscedasticity, and non-normal distribution, the availability of which negatively affects efficiency the estimated models. Adding Up, Homogeneity, and Symmetry constraints have been tested to ensure they are statistically insignificant. The model has been estimated in the double log form. Estimation results indicated that all the model equations are statistically significant.

1. Competitiveness of Egyptian Grape Exports In The British Market

Results of the estimated model, illustrated in Table (7), indicate that 78% of the changes in demand for

Egyptian grapes in the Dutch market are explained by the following variables: changes in the export prices of Egypt, Chili, Greece, and Turkey; in addition to total change in the volume of exports by main exporting countries weighted by their share of expenditure; change in the volume of Egyptian grape exports weighted by its share of expenditure; and change in the real price of Egyptian grape exports weighted by its share of expenditure. The rest of changes are due to other factors that have not been included in the model based on R2 value. It is clear from the table that 1% increase in the export price of Egyptian grapes to England leads to reducing the British import expenditure on Egyptian grapes by 4.05%. It was also found that 1% increase in the export price of Chili, Greece, and Turkey (countries competing Egypt in the British market) leads to changing the import expenditure on Egyptian grapes by -3.69%, 2.4%, and -1.14%, respectively. Results also indicate that 1% increase in Britain's total expenditure on grapes leads to increasing Britain's import expenditure on Egyptian grapes by 0.09%, holding other variables constant.

Table 7: Estimated Barten Model for Egyptian Grapes Exported To the British Market over the Period 1995-2013.

Item	Egypt	Chile	Greece	Turkey
a	0.06 0.17	-4.17 -1.38	-2.22 -1.43	1.28 0.63
DP _{1it} export price for Egypt	-4.050 -2.80*	-10.74 -3.55**	0.74 0.22	5.33 2.03*
DP _{2it} export price of Chile	-3.690 -2.50*	-6.4 -1.9*	17 3.19*	-7.65 -1.7*
DP _{3it} export price of Greece	2.4 1.8*	22.6 7.4**	-33.16 -10.54**	8.32 3.47**
DP _{4it} export price of Turkey	-1.140 -0.056	1.6 0.38	9.67 2.06*	11.120 -3.01**
DQ* Total imports of England on grapes	0.09 4.9**	0.82 2.15*	0.100 0.44	0.60 1.85*
W* DQ*	0.02 3.5**	-0.009 0.84	0.008 1.3	-0.013 -1.2
WD* (P _i /P*)	0.008 1.6	0.015 1.26	0.005 0.73	-0.001 -0.16
F	24.88	42.59	31.5	14.61
R ²	0.78	0.79	0.95	0.65
Autocorrelation	0.05 0.94	0.88 0.43	0.32 0.72	1.3 0.28
Heteroscedasticity	0.002 0.69	1.57 0.22	1.16 0.29	0.23 0.63
Non Normality	0.25 0.88	0.66 0.72	1.3 0.52	1.2 0.52

Source: compiled and calculated data from the United Nations, www.un.org (1995-2013).

Table 8: Matrix of Price, Cross, and Expenditure Elasticity of Demand for Egyptian Grapes by the British Market Over the Period 1995-2013.

Country	Flexibility and price Cross				spending flexibility
	Egypt	Chile	Greece	Turkey	
Egypt	-0.541	-0.490	0.32	0.15	1.001
Chile	-0.320	-0.192	0.678	0.048	1.02
Greece	0.026	0.601	-1.17	0.342	0.996
Turkey	0.173	-0.248	0.27	-0.36	1.03

Source: compiled and calculated from the results of the model Table (7)

The estimated price elasticity of Egyptian Grapes in the British market (Table 8) indicates that 1% increase in its export price leads to reducing British market's demand by 0.54%, i.e., British demand for Egyptian grapes is inelastic, which means that the Egypt's export price has low impact on the demand for Egyptian grapes in this market. In addition, the estimated cross elasticity of demand indicates that 1% increase in the export price of Chili, Greece, and Turkey leads to changing British market's demand by -0.49%, 0.32%, and 0.15%, respectively. The estimated cross elasticity for the previously mentioned competitors of Egyptian grapes in the British market indicates that increasing the export price of Egyptian grapes leads to changing the British demand for grapes from

competing countries by -0.32%, 0.026%, and 0.173%, respectively. Such results imply the following: a substitution relationship between Egyptian and Turkish grape exports in case the export price of any of them increases; a substitution relationship between Egyptian and Turkish grape exports in case the export price of Greek grapes increases; and a complementary relationship between Egyptian and Chilean grape exports to the British market. The estimated expenditure elasticity indicates that the highest change in quantity demanded of grapes due to change in the import expenditure has been recorded by Turkish grapes, where it reached 1.03%, which is higher than those estimated for Egypt (1.001%), Chili (0.02%), and Greece (0.996%).

2. Competitiveness of Egyptian Grape Exports In The Dutch Market

Results of the estimated model, illustrated in Table (9), indicate that 74% of the changes in demand for Egyptian grapes in the Dutch market are explained by the following variables: changes in the export prices of Egypt, Chili, Turkey, and South Africa; in addition to total change in the volume of exports by main exporting countries weighted by their share of expenditure; change in the volume of Egyptian grape exports weighted by its share of expenditure; and change in the real price of Egyptian grape exports weighted by its share of expenditure. The rest of changes are due to other factors that have not been included in the model based on R2 value. It is clear from the table that 1% increase in the export price of Egyptian grapes to the Netherlands leads to reducing the Dutch imports expenditure on Egyptian grapes by 0.13%. It was also found that 1% increase in the export price of Chili, Turkey, and South Africa, (countries competing Egypt in the Dutch market) leads to changing the import expenditure on Egyptian grapes by 0.11%, 0.83%, and -2.9%, respectively. Results also indicate that 1% increase in Holland's total expenditure on grapes leads to increasing Dutch's expenditure on Egyptian grape imports by 0.18%, holding other variables constant.

The estimated price elasticity of Egyptian Grapes in the Dutch market (Table 10) indicates that 1% increase in its export price leads to reducing Dutch market's demand by 0.042%, i.e., Dutch demand for Egyptian grapes is inelastic, which means that the Egypt's export price has low impact on the demand for Egyptian grapes in this market. In addition, the estimated cross elasticity of demand indicates that 1% increase in the export price of Chili, Turkey, and South Africa leads to changing the Dutch market's demand by -0.36%, 0.261%, and -0.902%, respectively. The estimated cross elasticity for the previously mentioned competitors of Egyptian grapes in the Dutch market indicates that increasing the export price of Egyptian grapes leads to changing the Dutch demand for grapes from competing countries by -0.011%, -0.106%, and 0.047%, respectively. Such results imply the following: a substitution relationship between Egyptian and Turkish grape exports in case the export price of any of them increases; and a complementary relationship between Egyptian grape exports and both Chilean and South African grape exports to the Dutch market due to differences in export timing.

Table 9: Estimated Barten Model for Egyptian Grapes Exported To the Dutch Market over the Period 1995-2013.

Item	Egypt	Chile	Turkey	South Africa
a	0.23 0.75	0.42 0.11	2.26 2.4*	8.6 4.05**
DP _{1it} Export price for Egypt	-0.13 -4.45**	-0.42 4.2**	1.97 1.08	1.79 0.43
DP _{2it} Export price of Chile	0.11 0.38**	3.6 -3.2**	8.1 5.7**	-5.23 -2.6**
DP _{3it} Export price of Turkey	0.83 6.5**	14.2 6.5**	-7.01 -2.3*	-6.5 3.1**
DP _{4it} Export price of South Africa	-2.9 -2.4**	8.2 5.2**	-5.07 -2.1*	1.2 0.11
DQ* Total spending Netherlands on imports of grapes	0.18 2.3*	1.00 3.66**	-0.11 -2.53*	0.53 5.00**
W*DQ*	0.016 3.7**	0.01 1.83*	0.005 3.5**	0.002 0.88
WD* (P _i /P*)	0.007 0.74	-0.01 -1.01	-0.017 -2.9**	-0.01 -2.7**
F Test	30.21**	29.9**	42.11**	35.5**
R ²	0.74	0.56	0.78	0.69
Autocorrelation	0.313 0.73	0.86 0.44	0.52 0.60	1.106 0.35
Heteroscedasticity	0.004 0.94	0.016 0.900	0.134 0.72	0.003 0.95
Non Normality	3.8 0.14	0.158 0.92	0.35 0.83	0.47 0.78

Source: compiled and calculated data from the United Nations, www.un.org (1995-2013).

The estimated expenditure elasticity indicates that the highest change in quantity demanded of grapes in the Dutch due to change in the import expenditure has been recorded by Chilean grapes, where it reached 1.025%, which is higher than those estimated for Egypt (0.994%), Chili (0.994%), and Greece (1.01%).

Table 10: Matrix of Price, Cross, and Expenditure Elasticity of Demand for Egyptian Grapes by the Dutch Market Over the Period 1995-2013.

Country	Egypt	Chile	Turkey	South Africa	The spending flexibility
Egypt	-0.042	-0.036	0.261	-0.902	0.994
Chilean	-0.011	-0.092	0.359	0.209	1.025
Turkey	-0.106	0.437	-0.377	-0.273	0.994
South Africa	0.047	0.136	0.169	-0.031	1.014

Source: compiled and calculated from the results of the model Table (9)

SUMMARY

Grape is one of the major fruit crops in Egypt, where it occupies the second rank after citrus fruits in terms of relative importance. Studying the geographic distribution and market share of Egyptian grape exports indicates that more than 75% of Egypt's total grape exports go to countries of the European market, namely England, the Netherlands, Italy, Germany, and Belgium. The British market absorbed 32.7% of Egypt's average grape exports for the period 2010-2013. However, the market share of Egyptian grape exports to the British market stood at 5.6% of its total import capacity. The Dutch market ranked second by absorbing 18% of Egyptian grape exports, whilst the market share of Egyptian grape exports to the Dutch market stood at 3.4% of its total import capacity. It is therefore highly important to identify the competitiveness of Egyptian grapes in the two markets, where the achieved research results indicated that Chili, Greece, and Turkey compete with Egypt in part of the export season (partial competition), whilst India, Spain, Germany, Israel, and the USA compete with Egypt during more than half of the export season (complete competition). The research depended mainly on Barten model to measure the competitiveness of Egyptian grape exports in both the British and Dutch markets. Results indicated that 1% increase in the export price of Egyptian grapes to England leads to reducing Britain's import expenditure on Egyptian Grapes by 0.09%. A substitution relationship was found between Egyptian grape exports and both Turkish and Greek grape exports to the British market; whilst a complementary relationship was found between Egyptian and Chilean grape exports to the same market. It was found that expansion in grape imports by England is in favor of the Turkish grapes, where the estimated expenditure elasticity amounted to 1.03%. As for the Dutch market, results indicated that 1% increase in the export price of Egyptian grapes to the Dutch market leads to reducing Dutch imports expenditure on Egyptian Grapes by 0.13%. Moreover, results indicated that 1% increase in Holland's total expenditure on grapes leads to increasing their import expenditure on Egyptian grapes by 0.18%. A substitution relationship was found between Egyptian and Turkish grape exports in case the export price of any of them increases; whilst a complementary relationship was found between Egyptian grape exports and both Chilean and South African grape exports due to differences in export timing.

RECOMMENDATIONS

Based on the achieved results, it is recommended to:

1. Adopt price and export policies that help realize the desired competitive advantage of Egyptian grapes in main foreign markets in order to face competing countries, especially Turkey, Chili, Greece, and India.
2. Negotiate with the European Union in order to either extend the custom exemption period, or to make it start from May, the beginning of grapes export season.
3. Open new grape export windows, especially in the Arab markets, in addition to stop depending on one main market, or a limited number of markets, as it causes severe shocks to grape exports in case one of those markets is lost.
4. Adopt early production of grapes in new regions in order to gain a better advantage in foreign markets, especially that the European Union allows 100% custom exemption during the period from the first of February until the 14th of July.

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