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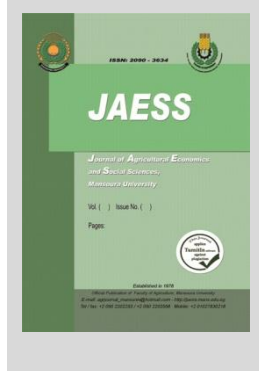
An Economic Study of Egyptian Oranges Exports Indicators in Russian Market

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ABSTRACT

This paper aimed to identify indicators of Egyptian oranges exports to the Russian Federation and estimate the most important factors affecting the Egyptian orange exports to the Russian Federation. The research conducted liner form with Stepwise regression analysis to estimate the function, and it was found that Market penetration Rate of Egypt in Russian Federation market, Orange quantities imported by Russian Federation and, Non- stability Coefficient of South Africa's orange exports quantities changing by 10% would result in statistically significant increasing in Egyptian oranges exports quantities by 19.93%, while negative affect of Percentage of South Africa's oranges exports to Egypt's oranges exports indicate that change in QSE by 10% would result in statistically significant decrease in the quantity of Egyptian orange exports by 0.638%.

Keywords: Revealed Comparative Advantage (RCA), Egyptian orange exports, Market penetration, relative price

INTRODUCTION

development of agricultural exports is consider one of the most important goals of agricultural economic policies planners in Egypt, which they strive to encourage it, where the export process is a positive importance for the economy due to its contribution to covering imports, being a primary source for obtaining foreign currencies and the possibility of achieving balance or reducing the gap in the country's trade balance. Therefore, Egypt interested in expands and diversify of the production and export of products in which Egypt has a competitive advantage in the global markets, especially vegetable and fruit crops, including oranges.

Egypt has been linked to international relations in the political and economic activities with the Russian Federation since 1943, and the relations also witnessed tangible cooperation in the agricultural field, where bilateral relations reached up to maximum in the 1950s and 1960s,

the first step for Egyptian-Russian cooperation took place in August 1948, when the first economic agreement was signed on the exchange of Egyptian cotton for grain and wood from the Soviet Union, then the trade exchange rates between the two countries decreased during the nineties, but after that period; the economic relations began to increase continuously, especially during recent years, as many of the obstacles that were obstructing the trade were overcome. As the Egyptian-Russian trade was reached 4.01% of total Egyptian trade during the period (2015-2019).

Egyptian oranges are considered one of the most important agricultural exports to the world, as the value of orange exports represents 14% of the total

agricultural exports(6) in 2019. The Russian Federation is one of the most important importing countries for Egyptian oranges in recent years, as the value of orange exports to the Russian Federation at about 19% of Total Egyptian oranges exports of during the period (2015-2019).

Research Problem

Although Egypt has a comparative advantage in its production, it sometimes loses its comparative advantage due to weak its competitiveness ability in the global market, and because of changes in global exports, in addition to changes in geographical distributions map of importing and exporting countries alike, as the value of Egyptian exports of oranges to the Russian Federation decreased from 34% in 2005 to 16% in 2019 of the value of the total Egyptian exports of oranges.

Research Objective

The study aims to study the indicators of Egyptian oranges exports to the Russian Federation, and estimate the competitiveness ability of Egyptian oranges in the Russian market. Estimate the most important factors affecting the Egyptian orange exports to the Russian Federation.

Country Selection and Justifications

The Russian Federation was chosen because it comes on top of importing Egyptian oranges countries list, in addition to that there is competition facing Egyptian oranges in the Russian market from the competing countries, as well as the decline in the value of Egyptian exports of oranges to the Russian market.

Data and measurement procedures

The research relied on secondary data published by Food and Agriculture Organization (FAO), Trade Statistics for International business development

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Database (UN Comtrade), Trade statistics for international business development (Trade map), in addition to a number of research papers, theses, studies and scientific books relevant to the research subject.

Annual data covering the period 2005–2018 was used to measure foreign trade and competitiveness indicators. The research also conducts stepwise regression analysis to determine most important factors affecting the demand on Egyptian oranges exports in Russian Federation market.

Methodology and model specification

In this section, the regression model was used to explain the most important factors affect demand on Egyptian oranges exports in Russian Federation market, as well as indicators of the Egyptian oranges exports indicators and competitiveness, the indicators was formulated as follows:

Egyptian oranges export indicators and competitiveness

- **Relative Comparative Advantage:** is measured by the following equation;

$$RCA_j = \frac{X_e^j}{X_e^a} \div \frac{X_w^j}{X_w^a}$$

Where:

X_e^j : The exports value of a commodity j for country e

X_e^a : Total value of agricultural exports of the country e.

X_w^j : The total world exports value of a commodity j.

X_w^a : The total value of world agricultural exports.

- **Relative Price:**

$$RP = P_{ci}/P_{ci}$$

Where:

P_{ci} : The exports price of a commodity i for a competing country c.

P_{ei} : The exports price of a commodity i for a country e.

- **Market Penetration Rate**

$$MPR_{ij} = \frac{EX_{ij}}{Q_{ij} + M_{ij} - X_{ij}}$$

Where:

EX_{ij} : The quantities of Country's export of a commodity j to importing country i.

Q_{ij} : The production of importing Country i of a commodity j.

M_{ij} : The imports of importing country i of a commodity j.

X_{ij} : The exports of importing country i of a commodity j.

- **Market Share**

$$\frac{X_{ij}}{M_{ik}} * 100$$

Where:

X_{ij} : Exports of the exporting country j of the commodity i.

M_{ik} : The total imports of the importing country k of a commodity i.

- **Relative importance of exports**

$$EXMP = \frac{EXMP_{ij}}{EX_j}$$

Where:

EXM_{ij} : The country's exports to the top five countries according to absorption rates.

EX_j : The country's total exports of commodity j.

- **Non-stability Coefficient**

$$= \frac{|(Y_i - \hat{Y}_i)|}{\hat{Y}_i} * 100$$

Where:

Y_i : is the actual value of Country's export of a commodity to importing country.

\hat{Y}_i : Is estimated value of of Country's export of a commodity to importing country.

- **Export Capacity**

$$\frac{X_{ij}}{P_{ij}} * 100$$

Where:

X_{ij} : Exports of the exporting country j of the commodity i.

P_{ij} : The production of exporting Country i of a commodity j.

Factors affecting Egyptian oranges exports in the Russian Federation market: is measured by the following equation;

$$\hat{Y} = a \pm b_1x_1 \pm b_2x_2 \pm b_nx_n$$

Where:

\hat{Y} : The quantities of Country's export of a commodity j to importing country i.

x_1 : Percentage of the competing country's exports of commodity j to Egypt's exports of commodity j.

x_2 : Percentage of the exporting price of competing country's to Egypt's export price of commodity j.

x_3 : Non- stability Coefficient of Egypt's exports quantities or competing countries for a commodity j.

x_4 : Market penetration rate of Egypt or competing countries for a commodity j.

RESULTS AND DISCUSSION

Results of Estimating

Egyptian – Russian Agricultural Trade Indicators:

Relative Importance of Egypt's Agricultural Trade Indicators with Russian Federation:

Results in Table (1) reveal that relative importance of the value of Egypt's agricultural trade with Russian Federation over the period 2005-2018 averages to 9.3% (figure 1) ranging between a minimum of 2.78% in 2013 and a maximum of 14.8% in 2018. Results of applying simple regression analysis presented in Table (2), to change in the relative importance of the value of Egypt's agricultural trade with Russian Federation, reveal that it was not statistically significance proven, non-stability Coefficient reached 17.9%, indicating stability in the relative importance of the variable under study.

Table 1. Relative importance of the Egyptian agricultural trade indicators with the Russian Federation to the Egyptian agricultural trade over the period (2005-2018).

Indicator	Average*	Minimum Limit	Maximum Limit
Egyptian agricultural trade with the Russian Federation to Egyptian agricultural trade	9.30	2.78	14.87
Egyptian agricultural exports to the Russian Federation to the Egyptian agricultural exports	5.66	3.79	8.23
Egyptian agricultural imports from the Russian Federation to Egyptian agricultural imports.	10.14	8.51	17.37
Egyptian agricultural balance with the Russian Federation to the Egyptian agricultural balance**	12.72	10.1	24.74
Coverage of Egyptian agricultural exports to Russia of Egyptian agricultural imports from Russia	20.71	8.68	192.95

* The geometric average.

** The deficit percentage in the agricultural balance with Russia to the deficit in Egyptian agricultural balance.

Source: United Nation, Department of Economic and Social Affairs, Statistics Division, Trade Statistics (UN Comtrade).

- Trade statistics for international business development (Trade map).

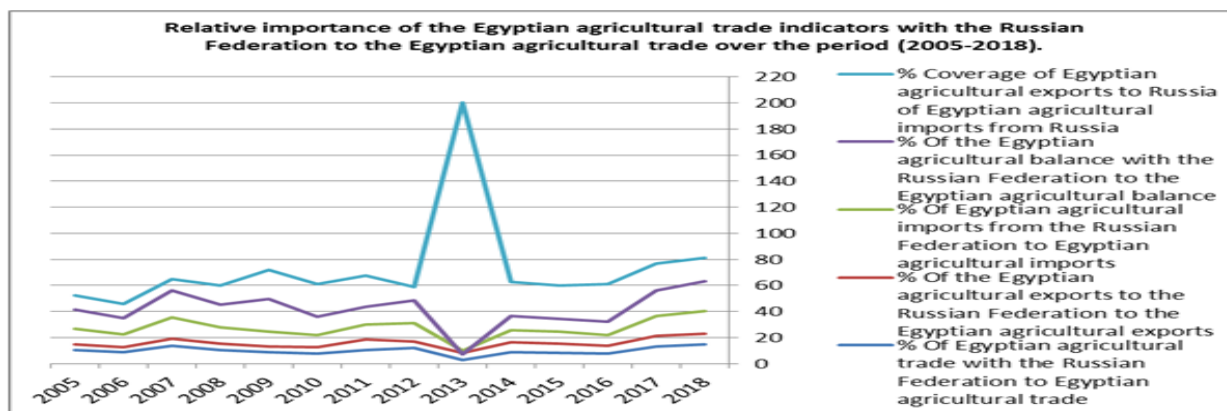


Figure 1. Egyptian – Russian Agricultural Trade Indicators over period 2005-2018.

Source: Table (1).

Table 2. Simple Regression Equations

Item	Equation	T _{test}	R ²	Sig.	Average	Growth Rate%	Non-stability Coefficient
Egyptian agricultural trade with the Russian Federation to Egyptian agricultural trade.	$\hat{Y} = 9.43 + 0.06x_i$	0.29	0.007	-	9.3	0.67	17.92
Egyptian agricultural exports to the Russian Federation to the Egyptian agricultural exports.	$\hat{Y} = 3.65 + 0.29x_i$	4.39	0.62	*	5.66	5.17	13.65
Egyptian agricultural imports from the Russian Federation to Egyptian agricultural imports.	$\hat{Y} = 11.34 - 0.0002x_i$	-0.006	0.000	-	10.14	-0.002	16.38
Egyptian agricultural balance with the Russian Federation to the Egyptian agricultural balance**.	$\hat{Y} = 16.07 - 0.17x_i$	-0.37	0.01	-	12.72	-1.35	22.62
Coverage of Egyptian agricultural exports to Russia of Egyptian agricultural imports from Russian Federation.	$\hat{Y} = 15.41 + 2.12x_i$	0.66	0.04	-	20.71	10.21	42.35

* at 0.05 level of significance

Source: table (1).

As for the relative importance of the value of Egypt's agricultural exports to Russian Federation over the period 2005-2018, results presented in Table (1) reveal that the relative importance reached an average of 5.66%, ranging between a minimum of 3.79% in 2006 and a maximum of 8.23% in 2018. Regression analysis results reveal that it followed a statistically significant increasing trend, at an annual rate of 0.29% representing 5.17% of the period's average, as shown in Table (2), non-stability Coefficient reached 13.65%, indicating stability in the relative importance of the variable under study.

Turning to imports, results presented in Table (1) reveal that the relative importance of the value of Egypt's agricultural imports from Russian Federation over the period 2005-2018 ranges between a minimum of 8.51% in 2016 and a maximum of 17.37% in 2018, recording an average of 10.14%. Regression analysis results reveal that the computed relative importance followed non a statistically significant decreasing trend. Non-stability

Coefficient reached 16.38%, indicating stability in the relative importance of the variable under study.

Studying Egypt's agricultural balance of trade with Russian Federation reveals that it realized deficits over the period 2005-2018, ranging between a minimum of 10.1% of Egypt's agricultural balance of trade in 2015 and a maximum of 24.74% in 2009. However, it realized surpluses in 2013⁽ⁱ⁾. Regression analysis results reveal that the computed relative importance followed non statistically significant decreasing trend, (Table 2). Non-stability Coefficient reached 22.62%, indicating stability in the relative importance of the variable under study. As for Coverage rate of Egyptian agricultural exports to Russia to Egyptian agricultural imports from Russian Federation over the period 2005-2018, results presented in Table (1) reveal that coverage rate reached an average of 20.71%, ranging between a minimum of 8.68% in 2007 and a maximum of 192.9% in 2013. Regression analysis results reveal that it followed non statistically significant

increasing trend, as shown in Table (2). Non-stability Coefficient reached 42.35%, indicating fluctuating in coverage rate of the variable under study.

Egyptian oranges export indicators and competitiveness:

Here, some indicators of foreign trade and the competitiveness of Egyptian oranges to the Russian Federation will be estimate to find out the strengths and weaknesses facing the Egyptian orange.

Results in table (3) reveal that, Egypt's orange exports has revealed comparative advantage in Russian markets compared to all competing countries over the period (2005 - 2018), where it was estimated at 28.4, while it reached in South Africa, Turkey and Morocco about 21.5, 2.99 and 6.44 respectively. The results of that index indicate the high competitiveness of Egypt in Russian market for orange compared to competing countries.

It is clear from Table (3) that Egypt has competitive price comparative advantage, where it is estimated 1.2 and

1.19 for Turkey/Egypt and Morocco/Egypt respectively, while it estimated 0.99 for South Africa/ Egypt. The results indicate Egypt has competitive price comparative advantage in Russian market for orange compared to competing countries except for South Africa.

Market penetration rate obtained in Table (3) indicate that an increasing the rate of Market Penetration for Egypt, where estimated at 0.37, compared to South Africa, Turkey and Morocco where estimated at 0.22, 0.17 and 0.13 respectively. The result conclude that Egypt has Market Penetration Rate exceeds compared to all competing countries over the period (2005 - 2018).

Finding of which focused on Market Share of Egypt's oranges exports and competing countries in Russian market as seen in table 3, showed Egypt comes on top of orange's exporting countries list to Russian market, which absorbs 40.2% of Russian imports, while the shares of competing countries at 21.1%, 16.9% and 11.78% for South Africa, Turkey and Morocco respectively.

Table 3. Egypt's and competing countries oranges exports indicators and competitiveness over the period 2005-2018.

	RCA	Relative Price	Market Penetration Rate	Market Share	Relative importance of exports	Non-stability Coefficient	Export Capacity
Egypt	28.4	1.00	0.37	40.22	20.5	20.2	6.3
South Africa	21.5	0.99	0.22	21.11	9.4	21.0	6.2
Turkey	2.99	1.205	0.17	16.94	28.2	16.54	5.3
Morocco	6.44	1.194	0.13	11.78	28.2	120.43	7.6

Source: United Nation, Department of Economic and Social Affairs, Statistics Division, Trade Statistics (UN Comtrade). - Food and Agriculture Organization, FAOSTAT, food and agriculture database.

Table (3) presents Relative importance of oranges exports in Egypt and competing countries. It can be noted that Egypt exported about 20.5% of total Egypt's oranges exports to Russian market, while Turkey and Morocco has been exported about 28.2% of their total oranges exports to Russian market. That mean Egypt has several market for orange exports, not focusing on a specific market, unlike Morocco and Turkey.

Table (3) shows the results obtained from Non-stability Coefficient estimation it was found an stability in Egypt's orange exports quantities to Russian market, where index reached 20.2%, and reached 21%, 16.5% for South Africa and Turkey respectively, while results show fluctuation (non-stability) in Morocco's orange exports in Russian market. The stability of Egyptian orange exports is one of the most important factors that lead to increasing the competitive position in Russian market.

As for Export Capacity, Table (3) presents the importance of oranges exports to the production for Egypt and competing countries. It can be noted that Egypt has made progress in terms of strength of exports to the Russian Federation market compared to competing countries, except for Morocco, where oranges exports represents 6.3%, 6.23% and 5.3% of oranges production for Egypt, South Africa and Turkey respectively.

Factors affecting Egyptian oranges exports in the Russian Federation market:

The liner form with Stepwise regression analysis has been conducted to estimate the function. Table 4 shows the results obtained from the demand function of the most important factor affecting Egyptian oranges exports in the Russian Federation market. It can be noted that the positive sign of the three independent variables (Market penetration

Rate of Egypt in Russian Federation market, Orange quantities imported by Russian Federation and, Non-stability Coefficient of South Africa orange exports quantities) changing by 10% would result in statistically significant increasing in Egyptian oranges exports quantities by 19.93%ⁱⁱ, while negative sign of (Percentage of South Africa's oranges exports to Egypt's oranges exports) indicate that a positive change in QSE by 10% would result in statistically significant decrease in the quantity of Egyptian orange exports by 0.638%.

Table 4. Stepwise regression analysis of Egyptian oranges exports demand in R over period Russian Federation market over period (2005-2018).

Statistic	MPE	QIR	QSE	NSS
β	435.02	0.38	-13.67	0.24
T	32.99	13.35	-3.39	2.54
Sig	*	*	*	*
	F= 1343.3*			R ² =0.99

Where:

MPE: Market penetration Rate of Egypt in Russian Federation market.

QIR: Orange quantities imported by Russian Federation.

QSE: Percentage of South Africa's oranges exports to Egypt's oranges exports.

NSS: Non- Stability Coefficient of South Africa orange exports quantities.

Source: www.comtrade.org

Research Recommendations:

From the previous findings, the study recommends the following:

- Devoting high attention to the implementation the production policy for export not export the surplus to maximize the return.
- Implementing motivation pricing policies in case the importer's demand exceeds certain quantities.

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ANNEX

Table 1. Relative importance of the Egyptian agricultural trade indicators with the Russian Federation to the Egyptian agricultural trade over the period (2005-2018).

Year	% Of Egyptian agricultural trade with the Russian Federation to Egyptian agricultural trade	% Of the Egyptian agricultural exports to the Russian Federation to the Egyptian agricultural exports	% Of Egyptian agricultural imports from the Russian Federation to Egyptian agricultural imports	% Of the Egyptian agricultural balance with the Russian Federation to the Egyptian agricultural balance**	% Coverage of Egyptian agricultural exports to Russia of Egyptian agricultural imports from Russia
2005	10.33	4.59	11.95	14.85	10.88
2006	8.69	3.79	10.07	12.55	10.64
2007	13.88	5.10	16.33	20.65	8.68
2008	10.39	4.77	12.55	17.42	14.63
2009	8.79	4.14	11.72	24.74	22.30
2010	7.77	4.65	9.36	14.23	25.25
2011	10.60	7.85	11.57	13.59	23.92
2012	12.00	4.86	14.08	17.87	10.06
2013	2.78	5.58	1.41	-2.56	192.95
2014	9.00	7.32	9.58	10.75	26.08
2015	8.53	6.96	9.06	10.10	25.53
2016	7.71	5.78	8.51	10.46	28.33
2017	13.26	8.22	15.19	19.52	20.70
2018	14.87	8.23	17.37	22.88	17.84
Average*	9.30	5.66	10.14	12.72	20.71

* The geometric mean.

** percentage the deficit in the agricultural balance with Russia to the deficit in the Egyptian agricultural balance.

Source: United Nation, Department of Economic and Social Affairs, Statistics Division, Trade Statistics (UN Comtrade).

- Trade statistics for international business development (Trade map).

Table 2. Geographical distribution of Egypt's Oranges exports over the Period 2005-2019.

Country	% of Quantity
Russian Federation	20.5
Saudi Arabia	17.33
Ukraine	6.86
United Kingdom	6.3
Netherlands	6.18
United Arab Emirates	5.7
Bangladesh	3.32
Kuwait	3.07
Sudan	2.7
Oman	2.1
Other	25.9
Total	100.0

Source: United Nation, Department of Economic and Social Affairs, Statistics Division, Trade Statistics (UN Comtrade).

دراسة اقتصادية لمؤشرات صادرات البرتقال المصري في السوق الروسي
ولاء على محمد أحمد
جامعة القاهرة - كلية الزراعة

تستهدف هذه الدراسة تقدير ودراسة مؤشرات صادرات البرتقال المصري إلى الاتحاد الروسي وكذا تقدير أهم العوامل المؤثرة على صادرات البرتقال المصري إلى نفس الدولة. وقد استخدمت الدراسة نموذج تحليل الانحدار المتعدد المرحلي لتقدير العوامل المؤثرة على صادرات البرتقال المصري إلى الاتحاد الروسي، ووجد أن تغير معدل اختراق صادرات البرتقال المصري في سوق الاتحاد الروسي، وواردات روسيا الاتحادية من البرتقال، ومعامل عدم الاستقرار لكميات صادرات جنوب أفريقيا إلى روسيا الاتحادية بمقدار 10% ستؤدي إلى زيادة ذات دلالة إحصائية في كميات صادرات البرتقال المصري بنسبة 19.93%، بينما يشير التأثير السلبي لنسبة صادرات جنوب إفريقيا من البرتقال إلى صادرات مصر من البرتقال بنسبة 10% يؤدي إلى انخفاض ذي دلالة إحصائية في كمية صادرات البرتقال المصري بنسبة 0.638%. وفي ضوء النتائج السابقة يوصى بالبحث بالاهتمام بتنفيذ سياسة الإنتاج للتصدير وليس تصدير الفائض لتعظيم العائد. وتنفيذ سياسات التسعير التحفيزي في حالة تجاوز طلب المستورد لكميات معينة.

الكلمات المفتاحية: الميزة النسبية الظاهرة، صادرات البرتقال المصري، معدل اختراق السوق، السعر النسبي.

(*Due to an increase in Egyptian exports compared to imports from Russian Federation (Because of Egypt's refusal to import Wheat from Russian Federation due to being infected with ergot fungus in excess of the permissible limit).

(ii) Elasticity was calculated as $\beta_j \frac{\bar{x}}{\bar{y}}$, where β_j is the coefficient of the specific variable j , and \bar{x} and \bar{y} are the means of the specific variable j and the mean of the dependent variable, respectively.