

# An Economic Study of the Growth Determinants for the Egyptian Potatoes Exports to the Global Market

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## Abstract

Agricultural exports are drivers of economic growth as, apart from earning valuable foreign currency it creates sustainable jobs, increases the adoption of Advanced technologies and production practices as well as the enhancement of the overall competitiveness of the agricultural sector. Egypt's average exports of potatoes grew at a rate of 20% during the period (2001-2013) accounting for about 14% of the total value of agricultural exports. This remarkable raised an important research question on what are the most important growth determinants of Egyptian potatoes exports. The study attempts to investigate the situation of Egyptian exports of potatoes in the key importing markets, identify the most important competing countries to Egypt's potatoes exports and investigate the determinants of such exports in order to gain knowledge on the factors that influence the value of the Egyptian exports of potatoes. The results of the augmented gravity model revealed three factors that were found to be most significant namely, exchange rate, population, and the physical distance from Cairo to the capitals of the importers. GDP of Egypt GDP of the trading partner and the economic difference are of less importance. The total size of the specific export market for the Egyptian potatoes is also of lesser importance to the flows of the Egyptian potatoes exports.

**Keywords:** potatoes exports, gravity model, determinants of trade, Egypt

## 1. Introduction

Agricultural exports are drivers of economic growth as, apart from earning valuable foreign currency; they create sustainable jobs, increase the adoption of advanced technologies and production practices as well as the enhancement of the overall competitiveness of the agricultural sector. Thus it is natural to focus on promoting Egyptian agricultural exports since they constitute one of the most important pillars in the economy that might help overcome the deficit of the trade balance and enhance economic development. In this regard, the Agricultural Sustainable Development Strategy 2030 (ASDS) pays considerable attention to increasing the competitiveness of agricultural products in local and international markets (MALR, 2009).

In fact agricultural exports constitute a large proportion of Egypt's total exports, representing about 10% of Egypt's total exports during the period (2001-2013). Egypt's agricultural exports have shown a strong average growth over the last years rising from a total value of USD 0.5 billion in 2001 to USD 23 billion in 2013, with an average annual increase exceeding 14% in the same period. Egypt has shown some significant expansion in the exports of various agricultural commodities over the last years such as potatoes, oranges, onions, cotton lint, rice, grapes, beans, and strawberries (Faostat, 2013).

In particular, Egypt is well-known for its production of potatoes, The surplus, has found well-established and lucrative markets, earning large amounts of foreign currency and enhancing economic development. Because potatoes is one of the main crops among Egypt's agricultural exports, it is important to understand the relevant patterns and determinants of international trade in order to promote Egyptian agricultural exports. It should be noted that potatoes exports are coming under increasing international competition which calls for concern since only competitive countries are likely to stand the pressure of competition in the ever changing world economy.

Since these exports provide a good indication of the potential destinations of the Egyptian exports of potatoes, it is important to investigate the factors influencing the growth of potatoes exports. Notwithstanding the importance of supply side factors affecting Egyptian potatoes such as production costs and climatic conditions,

the marketing factors influencing Egyptian potatoes internationally may provide guidelines for future production strategies. Thus it was suggested that the growth of potatoes exports is affected by gross domestic product, the gross national income per capita, the difference between per capita gross national income of Egypt and of the importer, the physical distance from Cairo to the capital of the importer, total imports of the Egyptian potatoes by the importer, exchange rate, the total population of the importer etc.

These discussions raised an important research question on what are the most important growth determinants of Egypt's potatoes exports. This study therefore attempts to investigate the situation of the Egyptian exports of potatoes in the key importing markets identify the most important competing countries for Egyptian potatoes exports, and investigate the determinants of such exports in order to gain knowledge on the factors that influence the growth the Egyptian exports of potatoes.

In order to reach the objectives of this research, the rest of the study is divided into three more sections. The second section presents the methodological framework with special emphasis on the analytical method and data used whereas, the third section discusses the empirical results and finally, the last section concludes with some remarks and recommendations on policy implications.

## **2. Literature Review**

Studies on the Egyptian potatoes exports growth determinants were conducted by a number of researchers who investigated the issue. Shehata (2011) studied the economic impact of trade between Egypt and COMESA countries focusing on the most important Egyptian agricultural exports and using the gravity model. The study shows that the most important determinants that affect Egyptian exports are the exchange rate, the distance between Cairo and the most important capitals in the COMESA countries as well as imports of competing countries in the COMESA markets. The study by Hassanain (2010) looked at Gravity Trade Model Applications on some Egyptian agricultural exports. He concluded that the most important export markets for Egyptian agricultural exports are Saudi Arabia, Russia and Ukraine while the most competing countries with Egypt in these export markets are Spain, South Africa and Turkey. Further, Ewada (2013), used the Gravity Model to measure the impact of many factors affecting export growth such as preferential trade agreements, customs restrictions, or the imposition of the food standards and analyzed the record of Egypt's exports of potatoes to the EU. The study dealt with the development of Egypt's production of potatoes, and the evolution of Egypt's exports of potatoes to the world, and to the EU. It also discussed the development of regulations that the European Union has imposed on imports of potatoes, especially imports from Egypt. The study reached several conclusions major among which is that the imposition of the EU ban on the imports of potatoes in 1998 has had a significant negative impact on Egyptian exports of potatoes to the EU and may have resulted in the compliance of potatoes exporters in Egypt with the requirements and standards imposed by the European Union such as the establishment of pest free areas especially for agricultural exports since 2004. El-Awady (2009) points out that the EU countries ranked first among the recipients of the Egyptian exports of potatoes, with their potatoes imports absorbing about 78%, 70.4% during the periods (1990-1994), (2003-2007) respectively. The demand function for Egypt's potatoes exports by major importing countries shows the existence of stiff competition between Egypt, Morocco, Tunisia and Israel for the potato markets in the EU. The study found that the degree of price competitiveness of Egyptian potatoes exports was quite low in view of the relatively low import prices set by other potatoes exporters selling in the EU market. The EU could not be held responsible for the low relative prices fetched by the Egyptian potatoes exports to that market. The study recommended more research to find solutions to the problems of Egyptian potatoes exports and export quota, set seasons and quality, guide farmers to rationalize the use of chemical fertilizers, pesticides and to rely on integrated pest management programs to improve the quality of crops and increase their competitiveness in foreign markets in light of the global trend towards organic farming.

## **3. Methodological Framework**

### *3.1 Data Source*

The current study is based on annual data for the period (2001-2013) obtained from the Central agency for Public Mobilization and statistics (CAPMAS), the Egyptian Central Department of Agricultural Economics & statistics, the United Nations Commodity Trade statistics Database (UN COMTRADE) the United Nations food and Agriculture Organization statistical database (FAOSTAT), the World Bank, the World Economic Outlook Databases of the International Monetary Found (IMF), etc.

### *3.2 Analytical Method*

To reach the objectives of this study, the gravity model will be applied using data of potatoes exports. Earlier

studies have applied the gravity model to investigate the trade flows and trade potential of Egypt (Hassanain, 2010; Shehata, 2011). However, most of the studies are aggregate in nature and have not particularly looked at agricultural exports. Nevertheless, the trade gravity model is one of the most successful and widespread methodologies used for estimating the determinants of trade.

The gravity model is an analytical approach that uses historical data to conduct an econometric study of trade. Tinbergen (1962) and Poyhonen (1963) first applied the gravity model to analyse international trade flows. The traditional model explains the flows of trade between countries by the proportion of their economic mass and by the inverse proportion of the physical distance between them. Frankel (1997) gives recognition to Helpman & Krugman (1985) for the standard gravity model. They provide a rationale for the relationship between trade flows and country size but they do not include a role for distance.

The inclusion of the latter in the gravity model stems from different motivations. One such motivation is that distance is a proxy for transport cost. Another is that it is a proxy for transaction cost. Third, distance is also a proxy for shipping times (especially, important for the exports of perishable products). Fourth, distance is a proxy for synchronization cost (especially important for the exports of inputs or intermediates). Lastly distance is a proxy for cultural differences (cultural differences may impede trade due to differences in preferences, values, language, negotiating styles, etc). Bergstrand (1985) included a role for shipping cost in his version of the imperfect substitution model.

Apart from the traditional variables, income and distance, many models have included other variables to control for differences in geographical factors, trade policy and economic facts. It must be noted that the gravity model does not make provisions for third party effects between country A and B. Further, another important shortcoming of the model is the neglect of supply side constraints which are especially evident for agricultural production (e.g. weather patterns, pests).

This study applies an augmented gravity model which elucidates the factors determining Egypt's potatoes exports. The model used in this study can be specified as follows:

$$\begin{aligned} \log(VEXP_{tni}) = & a + \beta_1 \log(GDP_{tn}) + \beta_2 \log(GDP_{ti}) + \beta_3 \log(GNIC_{tn}) \\ & + \beta_4 \log(GNIC_{ti}) + \beta_5 \log(D_{tn}) \end{aligned} \quad (1)$$

**Where:**

t is a specific year, n is Egypt and i is Egyptian potatoes trading partners or importers (Italy, Greece and United kingdom).

VEXP<sub>tni</sub>: Value of exports of potatoes from Egypt to the importer i in year t (USD).

GDP<sub>tn</sub>: Gross Domestic Product of Egypt in year t (as a proxy of exporting capacity of Egypt).

GDP<sub>ti</sub>: Gross Domestic Product of the importer i in year t (as a proxy of economic market size of importer).

GNIC<sub>tn</sub>: per capita Gross National Income of Egypt in year t (as a proxy of the stage of development Egypt).

GNIC<sub>ti</sub>: per capita Gross national Income of the importer i in year t (as a proxy of stage of development of importer, income of consumers).

Dist<sub>ni</sub>: The physical distance in kilometers from Cairo to the capital of the importer i (as a proxy of transaction and transportation costs).

To account for other factors that are expected to influence agricultural trade levels, some variables have been added to Equation 1. The present study will therefore use the following augmented gravity model:

$$\begin{aligned} \log EXP_{tni} = & a + \beta_1 \log(GDP_{tn}) + \beta_2 \log(GDP_{ti}) + \beta_3 EconDif_{tni} \\ & + \beta_4 \log(IMP_{tin}) + \beta_5 \log(ER_{tni}) + \beta_6 \log(Pop_{ti}) + \beta_7 \log(Dist_{ni}) \end{aligned} \quad (2)$$

The added variables are:

EconDif<sub>tni</sub>: Economic difference: the difference between per capita Gross National Income (GNI) of Egypt and of the importer i (as a proxy of difference in economic development between the exporter and the importer).

IMP<sub>tin</sub>: Total imports of the Egyptian potatoes by the importer i in year t (as a proxy of size of Egypt's potatoes exports in the importer's market).

ER<sub>tni</sub>: The exchange rate of the national currency of the importer i and the Egyptian pound in year t (as a proxy

of the impact of financial risk and bilateral currency devaluation).

Pop<sub>it</sub>: The total population of the importer *i* in year *t* (as a proxy of physical total market size).

#### 4. Results and Discussion

##### 4.1 Development of the Egyptian Agricultural Exports

Results illustrated in Table 1 reveal that the value of agricultural exports constitutes a large proportion of Egypt's total exports, amounting to about 10.7% during the period (2000-2013). However, the value of agricultural exports rose considerably in 2013 reaching six times its value in 2001. Moreover, Egypt's agricultural exports have witnessed strong average growth over the last few years from a total value of USD 0.5 billion in 2000 to USD 2.9 billion in 2013, or an average of about USD 1.7 billion. Percentage-wise, the annual increase exceeded 12% in the same period. Besides, potatoes exports come at the top of the list of vegetables exports of Egypt and it is a major export product for the country (FAOSTAT, 2013).

##### 4.2 Development of Potatoes Cultivated Area, Production and Yield

Potatoes harvested Area: As can be seen in Table 2 potatoes' harvested area was about 178.7 thousand feddans in 2000, compared to about 424 thousand feddans in 2013, amounting to an average of about 287 thousand feddans with an annual increase of less than 6% during the period (2000-2013).

Potatoes Production: Table 2 shows that potatoes production was about 1769.9 thousand tons in 2000, but then rose to about 4800 thousand tons in 2013, which means an average of about 3089.4 thousand tons with an average annual increase of about 5.7% during the period (2000-2013). This can be attributed to the increased area cultivated with potatoes and the development of high-yielding new potatoes varieties as well.

Considering the quantity of potatoes exports as a percentage of potatoes production, Table 2 shows that about 8.8% of Egypt's potatoes production was exported to the global market in 2000 this figure rose to as high as 14.7% in the year 2013 which gives an average of well over 12.2% during the study period.

Potatoes Yield: As shown in Table 2 potatoes yield initially was about 9.9 ton/feddan in 2000, but then rose to about 11.3 ton/feddan in 2013, which means an average of about 10.6 ton / feddan, and an annual growth rate well over 2% during the period (2000-2013).

##### 4.3 Development of the Egyptian Exports of Potatoes

The data in tables 1 and 2 indicate that potatoes exports witnessed an upwards trend during the period under consideration, with 156.6 and 705.4 thousand tons recorded in 2000 and 2013, respectively. This can be attributed to the fact that potatoes exports are subject to bilateral agreements that are annually signed under varying conditions. In addition, Egypt's average value of potatoes exports reached about USD 119.8 million, with an annual average rate of 23.01% during the period (2000-2013). It should also be noted that on average potatoes exports accounted for about 7% of the total value of agricultural exports during the same period.

Table 1. Growth of Egypt's total agricultural and potatoes exports during the period (2000-2013)

Years	Value of Total Exports (Million USD)	Value of Agricultural Exports (Million USD)	% of Value of Agricultural Exports to Total Exports	Value of Potatoes Exports Million USD)	% of Value of Potatoes Exports to Agricultural Exports
2000	4097	519	12.7	27.4	5.28
2001	4141	530	12.8	29.8	5.62
2002	4678	671	14.3	42.6	6.35
2003	6161	776	12.6	43.9	5.66
2004	7680	1105	14.4	67.2	6.08
2005	10645	918	8.60	77.5	8.44
2006	13720	855	6.20	65.4	7.65
2007	16168	1202	7.40	108.1	8.99
2008	26244	2090	8.22	176.1	8.43
2009	24258	2968	12.2	145.4	4.90
2010	26677	3131	11.7	129.6	4.14
2011	30588	3026	9.90	250.8	8.29
2012	29264	2684	9.20	255.2	9.50

2013	29926	2947	9.85	258.8	8.78
Average	16732	1673	10.7	119.8	7.00
Annual Growth Rate (%)	16.96	12.03	---	23.01	-----

Source: Compiled and calculated from: 1. CAPMAS, (2013).2. COMTRADE, (2013).

Table 2. Growth of Egypt's potatoes harvested area, production, yield and quantity of exports during the period (2000-2013)

Years	Potatoes total Area (Thousand feddan)	Potatoes Production (Thousand Ton)	Potatoes Yield (Ton/feddan)	Quantity of Potatoes Exports (Thousand Ton)	% of Potatoes Exports to potatoes Production
2000	178.7	1769.9	9.9	156.6	8.8
2001	189.9	1903.1	10.0	185.5	9.7
2002	196.7	1985.3	10.1	229.4	11.6
2003	197.3	2039.4	10.3	296.3	14.5
2004	248.2	2546.6	10.3	381.5	15.0
2005	300.8	3167.4	10.5	392.2	12.4
2006	220.3	2312.8	10.5	367.1	15.9
2007	257.1	2760.5	10.7	389.7	14.1
2008	327.6	3567.1	10.9	397.9	11.2
2009	329.9	3659.3	11.1	215.1	5.9
2010	334.8	3643.2	10.9	298.6	8.2
2011	391.0	4338.4	11.1	637.4	14.7
2012	422.1	4758.0	11.3	699.2	14.7
2013	424.0	4800.0	11.3	705.4	14.7
Average	287.0	3089.4	10.6	382.3	12.2
Annual Growth Rate (%)	6.05	5.71	2.12	11.94	---

Source: Compiled and calculated from: 1.COMTRADE, (2013).2.MALR, (2012).3.FAOSTAT Date: Tue jan 20 22:30:34 CET 2015.

#### 4.4 The Main Egyptian potatoes Importing Markets

Table 3 shows that the main destinations of Egypt's potatoes exports are Italy, Greece and the United Kingdom, accounting between them for about 72% and 70% of Egypt's total potatoes exports in terms of quantity and value, respectively during the study period. However, Italy is the largest import market for Egypt's potatoes with a share of 34% of Egypt's total potatoes exports. The average imported quantity for this same country is about 61.1 thousand tons, while its average annual growth rate stood at 7.5%. The average value for these imports stood at USD 16.68 million, with an annual growth rate of about 15.3%. Greece ranks second among the Egyptian potatoes imports markets accounting for about 32% of Egypt's potatoes import market with an average quantity of about 58.36 thousand tons, and an annual growth rate of about 31.2%. The average value of these imports was about USD 16.76 million, and its annual growth rate stood at 39%.

Table 3. Egyptian exports of potatoes to the main markets during the period (2000-2012)

Years	Quantity (Ton)			Value (Thousand USD)		
	Italy	Greece	United kingdom	Italy	Greece	United kingdom
2000	16654	1942	1559	2478	334	344
2001	49511	12191	29899	7534	1891	6248
2002	47157	51402	17534	8541	10365	4299
2003	70453	54624	7367	11697	8581	1582
2004	61163	112893	16901	10669	21142	3906
2005	76295	83249	23006	15541	19830	5465
2006	97337	88423	19595	17362	15705	3609
2007	77980	59515	21317	23316	17133	5772
2008	83871	77062	21306	18740	17556	4949
2009	30277	45040	13876	20400	30280	9410
2010	64043	60539	18833	20819	21656	6710

2011	66081	57416	24185	34506	27081	13875
2012	53467	54332	18965	25242	26339	9998
Average	61099	58356	18026	16680	16761	5859
Annual Growth Rate (%)	7.5	31.2	29.16	15.31	39.08	32.18

Source: Compiled and calculated from: I.COMTRADE, (2013).

The United Kingdom comes third among the most important destinations for Egypt's exports of potatoes comprising about 8% of the total Egyptian exports of potatoes during that period and with an average imported quantity of about 18 thousand tons, growing at an annual rate of 29%. The average imports value is about USD 5.86 million, with an annual growth rate of 32.18%.

#### 4.5 The Countries Competing with Egypt's Potatoes Exports

The Egyptian exports of potatoes are coming under increasing international competition, which calls for concern since only competitive potatoes producing countries are likely to stand the competitive pressure in the ever-changing world economy. In this regard, Table 4 reveals that the Egyptian exports of potatoes to the main importing countries (namely Italy, Greece and the United Kingdom) are faced by three major competing countries which are, France, Netherlands and Germany.

Table 4. Potatoes total exports from countries competing with Egypt during the period (2000-2012)

Years	Quantity (Ton)			Value (Thousand USD)		
	France	Netherland	Germany	France	Netherland	Germany
2000	1109320	1347739	1354049	183975	251990	110514
2001	1113815	1551547	1485974	207998	595853	112985
2002	1023504	1741565	1290243	238591	399530	124168
2003	1438611	1814207	1337116	343719	418570	143921
2004	1434335	1696616	1320537	428990	497983	177613
2005	1488230	1504176	1281175	314319	358059	147311
2006	1848822	1634892	1466216	493211	575809	215434
2007	1962429	1552730	1542572	682552	718850	294970
2008	1889809	1488171	1396583	545724	676915	266273
2009	1964404	1698245	1675535	478477	670235	265869
2010	2318680	1883601	1592520	613074	789735	306905
2011	1987500	1942352	1596295	684868	1007472	402628
2012	2090195	1841399	1621450	592140	822481	325134
Average	1666896	1669018	1458482	446741	575652	222594
Annual Growth Rate (%)	1.3	5.13	6.89	5.02	14.17	12.0

Source: Compiled and calculated from: COMTRADE, (2013).

France comes at the top of the list of competing countries with an average quantity of about 1666 thousand tons, which grew at an annual rate of about 1.3% during the period (2000-2012). The average value of French exports was about USD 446.7 million, with an average annual growth rate of about 5% during the same period. Considering the Netherlands, the data reveal that it ranks second in terms of potatoes exports with an average quantity of about 1669 thousand tons, and an annual growth rate of about 5% during the period (2000-2012). The average value of the Dutch potatoes exports is about USD 575.65 million, and with an average growth rate of about 14% during the study period. Germany comes third in the list of competitors of the Egyptian exports of potatoes in Egypt's main potatoes importing markets with an average quantity of about 1458.5 thousand tons, and an average annual growth rate of about 6.89% during the period (2000-2012). The average value of the German exports of potatoes is about USD 222.6 million, with an average annual growth rate of about 12% during the study period.

#### 4.6 The Empirical Results of the Trade Gravity Model

The estimation results of the augmented gravity model for the Egyptian exports of potatoes to the three studied trading partners namely, Italy and the United Kingdom are portrayed in Table 5. All variables are transformed to their natural log in order to make the model linear. The adjusted coefficient of determination (adj.  $R^2$ ) indicates

that the studied factors of the augmented gravity model explain about 92% of the variation in the Egyptian exports of potatoes to the three studied trading partners. Only the significant estimators at a confidence level of 90% or more are shown in the Table. The t-statistic per estimator is given and the goodness of fit (reflected by the adjusted R-square), F- value, as well as the total number of observations are given in the final rows. Looking at the overall goodness of fit of potatoes estimations for the gravity model, it can be concluded that the specified model explains potatoes export flows reasonably satisfactorily.

Table 5. The empirical results of the trade gravity model

$\alpha$		Coefficients	T- statistic	P-value
	Constant	6.45	2.00***	0.055
GDP <sub>tn</sub>	Gross Domestic Product of Egypt in year t(million USD)	0.47	1.93***	0.071
GDP <sub>ti</sub>	Gross Domestic Product of the importer i(Italy,Greece and United kingdom) in year i(million USD)	1.51	2.50**	0.019
EconDif <sub>tni</sub>	Economic difference: the difference between per capita gross national income of Egypt and of 0.75the importer I (million USD)	0.23	1.73***	0.085
IMP <sub>ti-n</sub>	Total imports of the Egyptian potatoes by importer i in year t(thousand tons)	0.75	2.07**	0.031
ER <sub>tni</sub>	The exchange rate of the national currency of the importer i(Italy, Greece and United kingdom) and the Egyptian Pound in year t (USD)	-0.63	-1.97*	2E-04
Pop <sub>ti</sub>	The total population of the importer i in year t (million persons)	1.92	3.27*	2E-02
Dist <sub>tni</sub>	The physical distance from Cairo to the capital of the importer, i(Km)	-3.15	-7.13*	1E-05
F-value	60.64*			
Adj.R2	0.92			
Number of observations	36			

Note. 1(\*) statistically significant difference at the level, (\*\*) statistically significant difference at the 5% level, and (\*\*\*) statistically significant difference at the 10% level.

The results imply that the stage of development of the three studied trading partners and incomes of the consumers do not significantly affect the exports of the Egyptian potatoes to these markets. Similar results were found for the GNI per capita of Egypt. This indicates that the Egyptian exports of potatoes are not impacted by its stage of development.

The economic difference (or the difference between per capita gross national income of Egypt and of the importer) was found to be positively significant in the estimation, implying that the Egyptian potatoes tend to be exported to countries that differ substantially in the stage of their economic development from Egypt. These results reveal that an increase of the economic difference between Egypt and the three studied trading partners by 1% increases the exports of the Egyptian potatoes to these markets by about 0.23%.

The total size of the specific export market for the Egyptian potatoes, reflected by the total imports of potatoes by the trading partners, was positively significant. This entails that Egyptian potatoes are being exported to countries which rely heavily on Egyptian imports for their supply of potatoes. The physical total market size, reflected by the total population of the trading partner (importer) was found to be significant in the estimation. The sign of its coefficient in the model was positive as expected. This implies that the exports of the Egyptian potatoes to the studied markets are positively related to the physical market size of the trading partner. These results reveal that an increase of the total imports of the Egyptian potatoes by the studied trading partners by 1% increases the exports of the Egyptian potatoes to these markets by about 0.75% whereas, an increase of the total population of the studied trading partners by 1% increases the exports of the Egyptian potatoes to these markets by about 1.92%.

The exchange rate, reflecting financial risk and currency devaluation, was negatively significant. This indicates that the lower the relevant exchange rate, the more of the Egyptian potatoes is exported to the studied markets. However, an increase in the exchange rate by 1% decreases the exports of the Egyptian potatoes to the studied markets by about 0.63%. Regarded as an important estimator of the trade flow, the physical distance from the capital of the exporter to the capital of the importer; Cairo–Italy, Cairo–Greece, and Cairo–United Kingdom, reflecting transactions and transportation cost was found to be of significance. The sign of the coefficient for distance was negative, as expected. Thus for the exports of the Egyptian potatoes to the studied markets,

transactions costs are of significant importance. These results reveal that an increase of such distance by 1% decreases the exports of the Egyptian potatoes to these markets by about 3.15%.

### 5. Concluding Remarks, Recommendation and Policy Implications

The primary objectives of this study were to investigate the situation of the Egyptian exports of potatoes to the key importing markets, identify the most important competing countries to Egypt's potatoes exports, and investigate the determinants of such exports in order to gain knowledge on the factors that influence the growth of the Egyptian exports of potatoes by applying the gravity model. The results from the gravity model reveal that a number of the investigated factors were found significant. One of the main findings was that the specified model explains the export flows of the trading partners.

Thus exogenous factors will have limited effect on the exports of the Egyptian potatoes. The three factors that were found to be most significant in the gravity model are the exchange rate (reflecting financial risk and currency devaluation) population (reflecting physical market size), and the physical distance from the capital of the exporter to the capital of the importer; Cairo–Italy, Cairo–Greece, and Cairo–United Kingdom (reflecting transaction and transportation costs). The GDP of Egypt (reflecting supply capacity), the GDP of the trading partner (reflecting economic market size), and the economic difference (reflecting difference in economic development between the exporter and the importer) are of less importance. The total size of the specific export market for the Egyptian potatoes is also of lesser importance to the flows of the Egyptian potatoes.

The implications of these results are that the focus of Egypt's future potatoes exports should be strategized along the following guidelines from a marketing perspective:

\* Economic and physical market size play an important role in the growth of the Egyptian potatoes exports to the studied markets. So those markets should be targeted first.

\* Economic growth in Egypt motivates growth in potatoes exports, and growth in potatoes exports stimulates economic development. Thus, a synergetic relationship between the two exists.

\*The stage of development of the studied markets is not of high importance to the growth of the Egyptian potatoes exports. Thus, Potatoes exports should be focus on importing markets in all stages of economic development; developing, emerging and developed.

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