An analytical Study of Non-traditional Egyptian Agricultural Exports

Alaa Aly Abd Esalam Neama[1], Tahany Saleh Mohamed Bayoumi[1], Eman Ragab Hassan Soliman[1], Ahmed Ahmed Towfeek Mohamed[2]

[1] Agricultural Economics Research Institute - Agricultural Research Center, Cairo, Egypt
[2] Central Fisheries Research Laboratory - Agricultural Research Center, Cairo, Egypt
Email: dr_tahany_saleh@yahoo.com

Abstract: The study aimed to identify the production and export situation of some non-traditional Egyptian exports during the period (2000-2020). These items were (fish, honey bees, frozen vegetables, beet bagasse and dried onions). studying the impact of change exchange rate on the quantity and value of exports of each commodity individually, and identify the most important countries that import these goods, and the most important factors affecting the value of exports of each commodity during the study period. The study reached several results, the most important of which are: the rise in the exchange rate in recent years led to a rise in the value of exports of all studied goods, the most important countries that import Egyptian fish were (United Arab Emirates, Italy, Kuwait) and the percentage of exports to it was about 50.7%, the most important importing countries of honey bees were (Saudi Arabia, Morocco, Indonesia) and the percentage of exports to it was about 70.2%, the most important importing countries for frozen vegetables were (Saudi Arabia, USA, United Arab Emirates), the percentage of exports to them was about 35%, the most important importing countries to beet bagasse were (Morocco, Korea, Spain), the percentage of exports to them was about 60.8%, finally the most important importing countries of dried onions were (Netherlands, Germany, Japan) and exports to them was about 61.9%. Examining the factors affecting the value of Egyptian exports of studied goods during the study period showed that with respect to fish, they were the export price, the amount of production and the average export prices of fish to the competing markets. As for honey, the exchange rate, the amount of production, and the average export prices of honey for competing markets. For frozen vegetables and beet bagasse and dried onions, the most important factors affecting the value of exports from each of them are the amount of production, and the average export prices to the competing markets.

Introduction:

The development of agricultural exports is one of the key elements for the development of continuous and stable sources of foreign exchange needed to finance economic development plans, and compensate for any possible decline in other Egyptian exports. Egypt's agricultural exports reached EGP 5.44 billion in 2019; it forms 17.8% of Egypt's total exports, which was about EGP 30.5 billion. More attention must be paid to develop traditional Egyptian agricultural exports such as cotton, citrus, onions, garlic, medicinal and aromatic plants, some vegetables and some fruits. Some other Egyptian agricultural products - which are accepted by many international markets - are also exported and are non-traditional exports, those which the study focused on, they were (fish, honey bees, frozen waist, beet bagasse which is the resulting solid part of beet roots after extracting sugar, dry onions (powder)).

The Egyptian government has adopted a policy of changing the exchange rate of the pound against the dollar several times in recent years. The aim was to reform and strengthen the ability of the Egyptian economy facing crises and radical change that have taken place in the world economy, and this has affected the quantity and value of exports during those years. In addition, there are many factors affecting the value of exports such as the amount of production, the prices of competing markets, and others.

The problem of the study:

There are many obstacles face the development of Egyptian agricultural exports, especially in recent years, and this study came in an attempt to develop Egyptian agricultural exports, especially non-traditional exports, by knowing the factors affecting their development and increasing their value and thus increasing agricultural exports in general.

Objectives and importance of the study:

The study aimed to identify the production and export position of some non-traditional agricultural exports: (fish, honey bees, frozen vegetables, beet bagasse, dry onions), the impact of change of exchange rate on the quantity and value of exports of each commodity individually, and to identify the most important importing countries for these Egyptian goods., and also identify the most important factors affecting the value of exports from each commodity.

The importance of the study is identifying the factors affecting Egyptian exports of goods under study, working to activate positive factors, developing solutions and treatment of negative factors, and therefore improving the efficiency of the export performance of these goods and advancement the export position in general. The results of the study can also guide economic decision makers when formulating future export policies.

Research method and data sources:

The study used descriptive and quantitative methods of analysing available data, some measures of dispersion and central tendency criteria were used such as arithmetic average, the coefficient of determination and others. The five-year moving average was calculated to the commodities. The annual growth rate was estimated. Double logarithmic functions were estimated using the natural logarithm (ln) for the most important factors affecting the export value of each individual commodity.

The study depended on published secondary data from government agencies such as the Ministry of Agriculture and Land Reclamation of Egypt, and some specialized websites such as: (The official website of the Central Bank of Egypt, the official website of the International Trade Map of the United Nations.

The moving average:

It is a line drawn on points whose coordinates are as a simple average of the previous values, and it is the most popular of all categories (MA) and using it a lot of strategies have been established, preferably

calculated for fairly long periods, and in this study the Moving Average was used every five years to show how high or low the average is from the real average of the period to show the impact of the change in the moving average during the time series.

Exchange rate:

It is the relative price of a monetary currency compared to another currency, which is the number of units of a foreign currency that can be obtained against a unit of the national currency, and in this study the number of units of the US dollar against a unit of the Egyptian pound is meant. Or the number of units that can be obtained from the Egyptian pound for a unit of the US dollar.

Non-traditional exports subject to study:

The study focused on five commodities, namely: (fish, honey, frozen vegetables, powdered onions) for the following reasons:

1- **Fish:** Egypt has a lot of ingredients that make it one of the first countries to produce fish, as it is located on two seas, namely the Red Sea and the Mediterranean Sea, and it has the largest waterway, which is the Nile River, and it has a feast of natural lakes, and an artificial lake, Lake Nasser. This is in addition to many fish farming farms. Despite this, Egyptian fish exports are declining, as the exported quantity of Egyptian fish represents about 1.03% of the quantity produced.

2- **Honey Bees:** There are many ingredients for the production of honey bees in Egypt, the most important of which is the availability of crops that bees feed on, as there are different flowers, in addition to the flowers of fruit trees, in addition to the availability of alfalfa flowers and others, and therefore honey is available throughout the year in several different baits with high nutritional benefits that vary from one variety to another, and the availability of trained technical personnel to manage apiaries, but there are many obstacles that reduce honey production, including that the queen bees are imported from abroad, and others. Therefore, the production of honey bees in Egypt decreases, and therefore the exports of Egyptian honey bees decrease, as the exported amount of Egyptian honey bees represents about 16.67% of the amount produced from it.

3- **Frozen Vegetables:** Egypt has many factors that have helped to grow many types of vegetables, including vegetables that are suitable for cooling and freezing, including: potatoes, potatoes, green peas, carrots, green beans, artichokes, okra,

Mallow, spinach, cauliflower, broccoli, Taro, and strawberries. Despite this, Egypt's exports of frozen vegetables are decreasing, as the exported amount of them represents about 1.76% of the amount produced from vegetable refining.

4- **Beet Bagasse:** It is the remaining part of beet roots after sugar extraction, and beet bagasse represents about 5% of the weight of beet roots, and beet bagasse is added to animal feed, especially livestock feed, as it increases the nutritional value of feed, and beet bagasse has not been used in the feed industry in Egypt on a large scale, and therefore there are huge quantities of it that the state is heading to export, even at low prices. The exported amount of beet bagasse represents about 88% of the amount produced. Many international markets accept to buy it from Egypt.

5- **Onion powder:** it is a dried onion powder that is ground and is usually used as a seasoning for many foods Cooked, Egypt's exports of powdered onions decrease, as the exported amount of it accounts for about 8.32% of the quantity produced from onions.

The discussion of most important results
The relative importance of agricultural exports in Egypt:
Table (1) indicated that the relative importance of Egyptian agricultural exports increased during the period (2000-2020). It was a maximum in 2015 and reached about 22.4% of total Egyptian exports, and it was the minimum in 2006 and reached about 6.08%. The average of agricultural exports during the period (2000-2020) formed about 15.04% of the average of total Egyptian exports. The growth rate during was about 21%.

Change of the exchange rate and its impact on the value of agricultural exports:
Studying change of the exchange rate (LE/dollars) during the study period, table (1) showed that it increased to a maximum in 2018 and reached about 17.77 LE/dollar and decreased to the minimum in 2000 and reached about 3.47 LE/dollars. The average of the period was about 8.06 LE/dollar. The annual rate of increase was about 6%. By studying the five-year moving average, it increased to a maximum during the period (2016-2020), It was about 15.62 LE/USD, and decreased to the minimum during the period (2000-2004), it was about 4.80 LE/USD .

Studying the development of the value of agricultural exports showed that it increased to a maximum in 2019 and reached about 91.3 billion pound, and decreased to the a minimum in 2000 and reached about 1.18 billion pounds, The average of the period was about LE 24.36 billion, and the annual increase in the value of Egyptian agricultural exports during the study period was about 23%. This increase is due to several factors, the most important of which is the high price of Exchange rate during that period especially in recent years.

The study took up the production and export position for some important Egyptian exports, which were fish, honey, frozen vegetables, beet bagasse and dried onions, especially after unprecedented rise of the exchange rate.

Table (1): Evolution of relative importance of Egyptian exports and exchange rate during (2000-2020).

Year	Value of Egyptian exports (million dollars)	Moving average for 5 years	Value of Egyptian agricultural exports (million dollars)	Moving average for 5 years	Relative importance (%)	Exchange rate (LE/dollar)	Moving average for 5 years	Egyptian agriculture exports (LE million)	average for 5 years
2000	4699	-	341	-	7.26	3.47	-	1183.27	-
2001	4143	-	390	-	9.41	3.97	-	1548.30	-
2002	4678	5472.8	364	454.2	7.78	4.50	4.8	1638.00	2298.3
2003	6166	6661.6	484	557.4	7.85	5.85	5.26	2831.40	3052.3
2004	7678	8576	692	646.2	9.01	6.20	5.61	4290.40	3698.4
2005	10643	10876.4	857	814.6	8.05	5.78	5.84	4953.46	4728.8
2006	13715	14894.8	834	1245.8	6.08	5.73	5.75	4778.82	7029.5
2007	16180	18200.4	1206	1867.2	7.45	5.63	5.62	6789.78	10380.7
2008	26258	21534.6	2640	2545.6	10.10	5.43	5.59	14335.20	14080.9
2009	24206	25110.6	3799	3213.8	15.70	5.54	5.63	21046.46	18076.7
2010	27359	27727.4	4249	3756.4	15.50	5.52	5.72	23454.48	21468.6
2011	31550	28223.4	4175	4132.8	13.20	5.93	6.00	24757.75	24814.8
2012	29264	28734.4	3919	4301.2	13.40	6.06	6.31	23749.14	27177.2
2013	28738	27660	4522	4312.6	15.70	6.87	6.73	31066.14	29108.9
2014	26761	25850.4	4641	4485.6	17.30	7.08	7.54	32858.28	34257.5
2015	21987	25254.8	4306	4703	19.60	7.69	9.89	33113.14	47309.0
2016	22502	27149.2	5040	4800.6	22.40	10.02	12.07	50500.80	58901.3
2017	26286	26116.8	5006	4961.4	19.00	17.78	14.01	89006.68	70592.2
2018	29304	27149.2	5010	5125.25	17.10	17.77	15.26	89027.70	81434.8
2019	30505	-	5445	-	17.80	16.77	-	91312.65	-
2020	29323	-	5541	-	15.00	15.76	-	87326.65	-
average	20092.6	-	3021.9	-	15.04	8.06	-	24356.51	-
Growth rate*	9%	-	11%	-	-	7%	-	23%	-

(*)growth rate(p)=$[(F/S)^{1/y}\_1]\times100$

Source: collected and computed of data from:
  1- Central agency for public mobilization and statistic.
  2- The official website of the central bank of Egypt www.cb.org.eg/ar/Economic.

The production and export position of fish in Egypt:

It is clear from table (2) that the produced quantity of fish in Egypt during the period 2000-2020 reached a maximum in 2011 where it was about 2.7 million. And reached a minimum in 2000 and was 724.4 thousand tons. The average for the period was about 2.01 million tons. Studying the moving average of fish production in Egypt during every five years, it turned out that it increased to reach the maximum during the period 2016-2020 where it was about 1.94 million tons, while decreased to the lowest during the period 2000-2004 was about 807.7 thousand tons.

The data of table (2) indicated that the exported quantity of fish in Egypt increased during the period 2000-2020, it reached a maximum in 2019 and was about 26.54 thousand tons and decreased to a minimum in 2000 and was about 418 tons. The average for the period was about 10.67 thousand tons.

Studying the moving average during every five years showed that it rose to the maximum during the period 2016 -2020 and amounted to about 24.08 thousand tons, and it decreased to 1.14 thousand tons during the period 2000-2004.

Studying the evolution of the export price average of fish in dollars, it was found that it rose to the maximum in 2009 and amounted to about 2993 dollars per ton, and fell to the lowest in 2002 and amounted to about 675 dollars per ton. The price average for the period was about 1230 dollars per ton. Studying the moving average over every five years, it rose to a maximum during the period 2009-2012 and was about 1895 dollars per ton, and fell to a minimum during the period 2002-2006, which was about 903 dollars per ton.

By studying the development of the export price average of fish in pounds during the study period, it was found that it rose to a maximum in

2017and reached about 18.83 thousand pounds per ton, and fell to a minimum in 2003 and reached about 3.44 thousand for the pounds per ton. The average period was about 12.30 thousand pounds per ton. The annual rate increase was about 6%. Studying the moving average every five years, it rose to a maximum during the period 2015-2019; it was 15.84 thousand pounds per ton, it decreased during the period 2000-2004 and was about 4.95 thousand pounds per ton.

By studying the value of exported fish in million dollars during the same period, it was found that it rose to a maximum in 2016 and was about 26.82 million dollars, and fell to a minimum in 2001

to reach about 514 thousand dollars, the average period was about 1.11 million dollars, and the growth rate was about 19%. The moving average every five years rose to a maximum during the period 2016-2020 and amounted to 24.53 million dollars, and fell to its lowest during the period 2000-2004 and reached about 1.11 million dollars.

From previous, it is clear that despite the annual decrease during the period 2000-2020 in the average price of a ton of fish in pounds, it is clear that the annual increase in the average price in pounds, this is due to the high exchange rate during recent years, specifically from 2016, and therefore the high value of fish exports during the same years.

Table (2): The moving average of exported Egyptian fish and its international price during (2000-2020).

year	Produced quantity of fish		Exported quantity of fish		Value of exported fish		Price average (dollars)		Price average (dollars)	
	Quantity (thousand tons)	Moving average for 5 years	Quantity (thousand tons)	Moving average for 5 years	Value (million dollars)	Moving average for 5 years	Price (dollars/ton)	Moving average for 5 years	Price (LE/ton)	Moving average for 5 years
2000	724.4	-	0.481	-	0.626	-	1486	-	5.16	-
2001	771.5	-	0.468	-	0.514	-	1097	-	4.36	-
2002	801.5	807.68	1.350	1.14	1.040	1.11	765	1060	3.44	4.95
2003	876.0	840.66	1.370	1.56	1.320	1.45	969	948	5.67	4.98
2004	865.0	880.54	2.090	1.98	2.070	1.80	985	903	6.10	5.11
2005	889.3	921.84	2.520	2.28	2.320	2.27	921	986	5.32	5.75
2006	970.9	960.16	2.560	2.95	2.250	3.68	876	1148	5.02	6.55
2007	1008.0	1005.74	2.860	3.27	3.380	5.48	1181	1549	6.65	8.65
2008	1067.6	1088.84	4.730	4.66	8.390	7.33	1776	1610	9.65	8.96
2009	1092.9	1428.04	3.690	6.00	11.060	10.42	2993	1797	16.59	10.10
2010	1304.8	1500.28	9.430	7.13	11.570	12.41	1227	1895	6.90	10.80
2011	2666.9	1578.18	9.290	9.69	16.790	14.44	1808	1752	10.73	10.32
2012	1371.9	1655.98	8.520	12.80	14.250	16.11	1672	1355	10.13	8.43
2013	1454.4	1736.10	17.250	14.42	18.550	17.11	1058	1298	7.27	8.51
2014	1481.9	1544.00	19.230	17.64	19.380	19.12	1008	1148	7.13	8.48
2015	1705.4	1632.18	17.560	20.66	16.610	21.28	946	1026	7.27	10.22
2016	1706.4	1728.26	25.340	21.43	26.820	21.72	1058	1008	10.60	12.22
2017	1812.8	1839.68	23.650	22.89	25.030	23.12	1059	1006	18.83	14.13
2018	1934.8	1938.60	21.350	24.08	20.760	24.53	973	1018	17.28	15.84
2019	2039.0	-	26.540	-	26.380	-	994	-	16.67	-
2020	2200	-	23.520	-	23.640	-	1005	-	15.84	-
Growth rate*	5%	-	21%	-	19%	-	-2%		5%	

Source: collected and computed of data from:
1- Ministry of agriculture and land reclamation, Economic Affairs Sector, Agricultural Statistics Bulletin, miscellaneous issues.
2- Website of international trade map (www.trademap.com).

The most important importing countries for Egyptian fish:

data of table (3) showed that the most important countries imported the Egyptian fish during the period 2018-2020 was the United Arab Emirates,

with average value 5.94 million dollars that represented approximately 25% of the total value of Egyptian exported fish, Followed by Italy with value 3.17 million dollars and percentage 13.42%, followed by Kuwait with value 2.85 million dollars representing 12.09%, followed by Spain with value 1.87 million dollars representing 7.92%, then France with value 1.5 million dollars representing 6.35%, and then followed by Jordan with value 1.32 million dollars representing 5.85%, and finally Lebanon with value 813 thousand dollars representing 3.44% of the average value of Egyptian exported fish.

Table(3): The most important imported countries of Egyptian fish and the value of exported fish in thousand dollars during (2000-2020).

country	Value (thousand dollars)	%
Arab United Emirates	5938	25.16
Italy	3166	13.42
Kuwait	2853	12.09
Spain	1869	7.92
France	1498	6.35
Jordan	1317	5.58
Lebanon	813	3.44
total	23596	100

Source: collected and computed from: Website of international trade map (www.trademap.com).

The production and export position of honey bees in Egypt:

It is clear from table (4) that the produced quantity of honey bees in Egypt during the period 2000-2020 reached a maximum in 2001 and amounted to about 8.7 thousand tons. And decreased to the lowest in 2020 and amounted to 3.84 thousand tons. The average period was about 6.43 thousand tons. The annual decreasing rate was 4%. By studying the moving average of honey production in Egypt during every five years, it increased to reach the maximum during the period 2016-2020 and amounted to about 1.94 million tons, while decreased to the lowest during the period 2000-2004 and amounted to about 8.49 thousand tons.

The data of table (4) indicated that the exported quantity of honey bees in Egypt increased during the period 2000-2020 to reach a maximum in 2018 and amounted to about 2562.8 tons, while decreased to a minimum in 2000 and was about 90.2 tons. The average for the period was about 1071.4 tons. The growth rate was 19%. By studying the moving average during every five years, it rose to a maximum during the period 2015 -2019 which amounted to about 2145.2 tons, and reached the minimum during the period 2000-2004 which amounted to about 294.5 tons.

Studying the evolution of the export price of fish in dollars during the mentioned period, it was found that it rose to the maximum in 2009 and amounted to about 2993 dollars per ton, and fell to the minimum in 2002 and amounted to about 675 dollars per ton. The average for the period was about 1230 dollars per ton. Studying the moving average over every five years, it rose to a maximum during the period 2009-2012 and amounted to about 1895 dollars per ton, and fell to a minimum during the period 2002-2006, which amounted to about 903 dollars per ton.

By studying the development of the average export price of honey bees in pounds during the study period, it was found that it rose to a maximum in 2020 and reached about 82.93 thousand pounds per ton, and fell to a minimum in 2000 and reached about 6.5 thousand pounds per ton. The average period was about 19.45 thousand pounds per ton. The annual rate of increase during the period was about 13%. Studying the moving average during every five years, it rose to a maximum during the period 2016-2020, it amounted 40.34 thousand pounds per ton and decreased during the period 2000-2004 amounted about 8.74 thousand pounds per ton.

By studying the value of exported honey in million dollars during the same period, it was found that it rose to a maximum in 2020 and amounted to about 7.03 million dollars, and fell to a minimum in 2001 to reach about 150.9 thousand dollars. The average for the period was about 2.54 million dollars. The growth rate was about 19%. The moving average every five years rose to a maximum during the period 2016-2020 and amounted to 4.97 million dollars, and fell to its lowest during the period 2000-2004 and amounted to 507.7 thousand dollars.

From the previous, it is clear that despite the annual increase during the period 2000-2020 in the average price of a ton of honey in pounds with 5%, it is clear that the annual increase in the average price in dollars with 13%, this is due to the high exchange rate during recent years, specifically from 2016, and therefore the high value of fish exports during the same years.

Table(4): The moving average of exported Egyptian honey bees and its international price during (2000-2020).

Price average (dollars)	Produced quantity of fish		Exported quantity of fish		Value of exported fish		Price average (dollars)		Price average (dollars)	
	Quantity (tons)	Moving average for 5 years	Quantity (tons)	Moving average for 5 years	Value (million dollars)	Moving average for 5 years	Price (dollars/ton)	Moving average for 5 years	Price (LE /ton)	Moving average for 5 years
2000	8208.3	-	90.2	-	168.9	-	1872.0	-	6.50	-
2001	8698.7	-	105.1	-	150.9	-	1817.0	-	7.22	-
2002	8604.6	8473.8	129.6	294.5	259.4	507.7	2001.0	516	9.01	8.74
2003	8370.8	8489.3	705.3	334.0	1127.0	547.0	1598.0	555	9.35	8.91
2004	8486.7	8327.1	442.5	380.3	832.1	643.3	1880.0	643	11.65	9.62
2005	8285.6	8121.4	287.3	419.4	365.5	673.9	1272.0	674	7.35	9.25
2006	7887.8	7837.9	336.9	378.2	632.5	700.7	1877.0	701	10.76	10.13
2007	7576.1	7547.0	325.0	424.8	412.3	993.1	1269.0	993	7.15	11.56
2008	6953.4	7093.0	499.2	631.3	1261.0	1398.0	2527.0	1398	13.73	12.13
2009	7031.9	6650.0	675.4	800.3	2294.0	2025.0	3396.0	2025	18.83	3.76
2010	6015.8	6148.0	1320.1	927.0	2389.0	2666.0	1810.0	2666	10.18	16.90
2011	5672.6	5838.4	1181.6	1067.5	3770.0	3077.0	3191.0	3078	18.93	17.95
2012	5066.1	5520.6	958.6	1368.2	3615.0	3495.0	3771.0	3495	22.84	17.03
2013	5405.4	5307.2	1202.0	1381.3	3316.0	3739.0	2759.0	3739	18.95	19.00
2014	5443.3	5047.8	2178.9	1589.8	4383.0	3779.0	2012.0	3779	14.24	18.79
2015	4948.6	4864.1	1385.3	1814.5	3612.0	3769.0	2607.0	3769	20.05	20.32
2016	4375.7	4881.3	2224.0	2086.7	3967.0	4042.0	1784.0	4042	17.88	23.02
2017	4147.7	4691.6	2082.3	2145.2	3566.0	4285.0	1712.0	4285	30.45	27.77
2018	5491.2	4469.7	2562.8	2135.3	4682.0	4968.0	1827.0	4968	32.46	40.34
2019	4495.0	-	2471.3	-	5596.0	-	2265.0	-	37.98	-
2020	3839.1	-	1336.1	-	7031.0	-	5262.0	-	82.93	-
average	6428.8		1071.4	-	2544.3	-	2544.3	-	19.45	-
Growth rate	-9%	-	19%	-	19%	-	5%	-	13%	-

Source: collected and computed of data from:

1- Ministry of agriculture and land reclamation, Economic Affairs Sector, Agricultural Statistics Bulletin, miscellaneous issues.

2- Website of international trade map (www.trademap.com).

The most important importing countries for Egyptian honey bees:

data of table (5) showed that the most important countries imported the Egyptian honey bees during the period 2018-2020 was the Saudi Arabia, with average value 2.42 million dollars that represented approximately 25.16% of the total value of Egyptian exported honey which was 5.77 million dollars, Followed by morocco with value 1013 thousand dollars and percentage 19.59%, followed by Indonesia with value 500 thousand dollars representing 8.67%, followed by Kuwait with value 351.3 thousand dollars representing 6.09%, then United Arab Emirates with value 213 thousand dollars representing 3.69%, and then followed by United States of America with value 195.7 thousand dollars representing 3.39%, and finally Tunisia with value 162.7 thousand dollars representing 2.82% of the average value of Egyptian exported honeybees.

Table(5): The most important imported countries of Egyptian honey bees and the value of exported fish in thousand dollars during (2000-2020).

country	Value (thousand dollars)	%
Saudi Arabian	2419.7	41.94
Morocco	1130.3	19.59
Indonesia	500.3	8.67
Kuwait	351.3	6.09
Arab United Emirates	213.0	3.69
United States of America	195.7	3.39
Tunisia	162.7	2.82
total	5769.7	100

Source: collected and computed from: Website of international trade map (www.trademap.com).

The production and export position of frozen vegetables in Egypt:

The next part of the study deals with vegetables that can be processed or not cooked, steamed or boiled with water, then packaged and frozen and are traded in the markets in their frozen form. They are potatoes, sweet potatoes, green peas, green beans, okra, mallow, artichokes, broccoli, cauliflower, carrot, spinach and strawberry.

It is clear from table (6) that the produced quantity of frozen vegetables in Egypt during the period 2000-2020 reached a maximum in 2020 and was about 7.85 million tons. And decreased to a minimum in 2001 and was about 3.29 million tons. The average period was about 5.65 million tons. Studying the moving average of production of frozen vegetables that can be marketing in Egypt during every five years, it increased to reach the maximum during the period 2016-2020 and was about 7.06 million tons. And decreased to reach the minimum during the period 2000-2004 and was about 3.76 million tons.

Table(6): The moving average of exported Egyptian frozen vegetables and its international price during (2000-2020).

year	Produced quantity of fish		Exported quantity of fish		Value of exported fish		Price average (dollars)		Price average (dollars)	
	Quantity (thousand tons)	Moving average for 5 years	Quantity (thousand tons)	Moving average for 5 years	Value (million dollars)	Moving average for 5 years	Price (dollars/ton)	Moving average for 5 years	Price (LE/ ton)	Moving average for 5 years
2000	4235.4	-	9.27	-	7.58	-	817.7	-	2837.4	-
2001	3290.5	-	20.98	-	11.94	-	569.1	-	2259.4	-
2002	3454.1	3762.8	38.53	23.74	20.01	15.25	519.3	674.7	2337.0	3256.1
2003	3647.0	3912.1	22.14	30.20	15.90	19.20	718.2	642.5	4201.2	3447.9
2004	4186.9	4067.0	27.76	32.79	20.80	21.30	749.3	661.3	4645.2	3755.5
2005	4981.9	4330.9	41.61	36.45	27.33	25.20	656.8	696.4	3796.4	4070.9
2006	4065.2	4690.9	33.89	58.43	22.46	45.82	662.7	733.0	3797.5	4209.1
2007	4771.9	4995.9	56.85	78.28	39.52	68.65	695.2	795.7	3913.8	4457.5
2008	5448.6	5104.5	132.05	92.23	118.98	89.36	901.0	899.4	4892.6	4995.8
2009	5711.9	5541.5	126.98	113.36	134.94	119.60	1063.0	1016.0	5887.3	5712.0
2010	5525.1	5952.1	111.38	125.17	130.91	142.20	1175.0	1140.0	6487.9	6524.1
2011	6249.6	6125.4	139.53	147.17	173.61	155.40	1244.0	1113.0	7378.4	6597.1
2012	6825.4	6509.7	115.91	145.87	152.53	157.40	1316.0	1140.0	7974.6	7119.9
2013	6314.8	6813.7	242.04	151.02	185.22	161.40	765.2	1125.0	5257.2	7514.7
2014	7633.6	6773.1	120.48	158.42	144.67	157.60	1201.0	1052.0	8501.5	7793.8
2015	7044.8	6781.2	137.13	161.72	150.89	157.80	1100.0	1021.0	8461.6	10328.0
2016	6047.0	6948.0	176.55	139.54	154.60	151.70	875.7	1103.0	8774.2	13464.0
2017	6865.6	6903.3	132.40	143.77	153.75	155.40	1161.0	1094.0	20647	15633.0
2018	7148.7	7063.7	131.12	147.73	154.47	161.80	1178.0	1106.0	20935	17609.0
2019	7410.4	-	141.65	140.52	163.43	-	1154.0	-	19349	-
2020	7846.8	-	156.91	143.23	182.58	-	1164.0	-	18338	-
average	5652.6	-	100.72	-	103.15	-	937.4	-	8127.2	-
Growth rate*	3%	-	14%	-	16%	-	2%	-	9%	-

Source: collected and computed of data from:
1- Ministry of agriculture and land reclamation, Economic Affairs Sector, Agricultural Statistics Bulletin, miscellaneous issues.
2- Website of international trade map (www.trademap.com).

The data of table (6) indicated that the exported quantity of frozen vegetables in Egypt increased during the period 2000-2020 to reach a maximum in 2020 and was about 156.9 thousand tons, and decreased to a minimum in 2000 about 9.27 thousand tons. The average period was about 100.7 thousand tons. The growth rate was 14%. By studying the moving average during every five years, it rose to the maximum during the period 2016 -2020 and was about 147.7 thousand tons; it reached the minimum during the period 2000-2004 and was about 23.7 thousand tons.

Studying the evolution of the export price average of frozen vegetables in dollars during the study period, it was found that it rose to the maximum in 2012 and was about 1316 dollars per ton, and fell to the lowest in 2002 and amounted to about 519.3 dollars per ton. The average for the period was about 937.4 dollars per ton. The annual increasing was 2%. Studying the moving average over every five years, it was found that it rose to a maximum during the period 2009-2013 and was about 1140 dollars per ton; it fell to a minimum during the period 2001-2005 and was about 642.5 dollars per ton.

Studying the development of the export price average of frozen vegetables in pounds during the study period, it was found that it rose to a maximum in 2018 and reached about 20.93 thousand pounds per ton, and fell to a minimum in 2002 and reached about 2.34 thousand pounds per ton. The average period was about 8.13 thousand pounds per ton. The annual rate of increase during the period was about 9%. Studying the moving average during every five years, it rose to a maximum during the period 2016-2020, it amounted 17.61 thousand pounds per ton, and decreased during the period 2000-2004, it amounted about 3.26 thousand pounds per ton.

Studying the value of exported frozen vegetables in million dollars during the same period, it was found that it rose to a maximum in 2013 and amounted to about 185.22 million dollars; it fell to a minimum in 2000 to reach about 7.58 million dollars. The average for the period was about 103.15 million dollars. The growth rate was about 16%. The moving average every five years rose to a maximum during the period 2016-2020 and amounted to 161.8 million dollars, and fell to its minimum during the period 2000-2004 and reached about 15.25 million dollars.

From previous, it is clear that despite the annual increase during the period 2000-2020 in the average price of a ton of frozen vegetables in pounds with 9%, it is clear that the annual increase in the average price in dollars with 12%, this is due to the high exchange rate during recent years, specifically from 2016, and therefore the high value of fish exports during the same years.

The most important importing countries for Egyptian frozen vegetables:

data of table (7) showed that the most important countries imported the Egyptian frozen vegetables was the Saudi Arabia, with average value 25.9 million dollars during the period 2018-2020 that represented approximately 15.52% of the total value of Egyptian exported frozen vegetables which was 166.8 million dollars, Followed United States of America with value 21.2 thousand dollars representing 12.74%, followed by Italy with value

11.5 thousand dollars representing 6.91%, then United Arab Emirates with value 11.2 thousand dollars representing 6.72%, then France with value 8.8 thousand dollars and percentage 5.29%, followed by Kuwait with value 8.11 thousand dollars representing 4.86%, and finally Russian Federation with value 4.64 thousand dollars representing 2.96% of the average value of Egyptian exported frozen vegetables.

Table(7): The most important imported countries of Egyptian frozen vegetables and the value of exported fish in thousand dollars during (2000-2020).

country	Value (thousand dollars)	%
Saudi Arabian	25899.3	15.52
United states of America	21253.0	12.74
Arab United Emirates	11207.0	6.72
Italy	11532.3	6.91
France	8830.0	5.29
Kuwait	8108.7	4.86
Russian Federation	4645.7	2.96
total	166826.3	100

Source: collected and computed from: Website of international trade map (www.trademap.com).

The production and export situation of beet bagasse in Egypt:

Beet bagasse is the remaining solid part of beet fruit after extracting sugar; it forms 5% of the fruit size. It is clear from table (8) that the produced quantity of beet bagasse in Egypt during the period 2000-2020 reached a maximum in 2019 and amounted to about 612.4 thousand tons, it decreased to the minimum in 2008 and amounted 256.6 thousand tons. The average period was about 458.67 thousand tons. Studying the moving average of production of beet bagasse during every five years, it increased to reach the maximum during the period 2015-2019 and was about 562.8 thousand tons. And decreased to the minimum during the period 2007-2011 and amounted to about 312.5 thousand tons.

The data of table (8) indicated that the exported quantity of beet bagasse in Egypt increased during the period 2000-2020 to reach a maximum in 2020 and was about 582.5 thousand tons, it decreased to a minimum in 2008 and was about 193.7 thousand tons. The average period was about 384.71 thousand tons. By studying the moving average during every five years, it rose to the maximum during the period 2016 -2020 and was about 480.4 thousand tons, and it decreased to the minimum during the period 2007-2011 which was about 211 thousand tons.

Studying the evolution of the export price average of beet bagasse in dollars during the study period, it was found that it rose to the maximum in 2013 and was about 268 dollars per ton, and fell to the lowest in 2010 and was about 142 dollars per ton. The average for the period was about 209.4 dollars per ton. The annual increasing was 1%. Studying the moving average over every five years, it was found that it rose to a maximum during the period 2011-2015 and was about 227 dollars per ton, and fell to a minimum during the period 2016-2020, which was about 197 dollars per ton.

Studying the development of the export price average of beet bagasse in pounds during the study period, it rose to a maximum in 2017 and reached about 3776 pounds per ton, and fell to a minimum in 2010 and reached about 800 pounds per ton. The average period was about 1976.3 pounds per ton. The annual rate of increase during the period was about 8%. Studying the moving average during every five years, it rose to a maximum during the period 2016-2020, and it was 3120 pounds per ton, it

decreased during the period 2007-2011 where it was about 1185 pounds per ton.

By studying the value of exported beet bagasse in dollars during the same period, it was found that it rose to a maximum in 2020 and was about 124.54 thousand dollars, and fell to a minimum in 2009 to reach about 30.04 thousand dollars. The average for the period was about 80.85 thousand dollars. The growth rate was about 5%. The moving average every five years rose to a maximum during the period 2016-2020 and was 94.78 thousand dollars, and fell to its lowest during the period 2008-2012 and was about 52.24 thousand dollars.

From the previous, it is clear that despite the annual increase during the period 2000-2020 in the average price of a ton of beet bagasse in pounds with 1%, it is clear that the annual increase in the average price in dollars with 8%, this is due to the high exchange rate during recent years, specifically from 2016, and therefore the high value of fish exports during the same years.

Table(8): the moving average of exported Egyptian beet bagasse and its international price during (2000-2020).

Year	Produced quantity of beet bagasse		Exported quantity of beet bagasse		Value of exported beet bagasse		Price average (dollars)		Price average (dollars)	
	Quantity (thousand tons)	Moving average for 5 years	Quantity (thousand tons)	Moving average for 5 years	Value (million dollars)	Moving average for 5 years	Price (dollars/ton)	Moving average for 5 years	Price (LE/ ton)	Moving average for 5 years
2007	272.9	-	208.2	-	61.15	-	198	-	1118	-
2008	256.6	-	193.7	-	61.36	-	317	-	1720	-
2009	266.7	312.5	223.6	211.0	30.04	55.41	152	211	844	1185
2010	392.0	349.2	409.1	291.6	58.20	52.24	142	214	800	1221
2011	371.3	398.3	225.8	338.1	62.30	69.84	244	204	1445	1245
2012	456.3	455.4	375.6	307.4	80.29	87.81	214	226	1295	1449
2013	502.2	496.8	426.3	395.5	114.39	89.46	268	227	1843	1517
2014	552.3	534.1	470.3	439.1	123.87	92.74	263	212	1864	1561
2015	599.1	551.4	449.4	444.1	66.44	93.70	148	212	1137	2057
2016	560.5	554.8	473.8	435.7	78.72	86.16	166	198	1666	2398
2017	543.0	566.8	400.4	454.2	85.01	84.16	212	184	3776	2674
2018	518.9	549.8	384.5	480.8	76.73	94.78	200	197	3545	3120
2019	612.4	-	562.8	-	108.90	-	193		3245	-
2020	514.2	-	582.5	-	124.54	-	214		3370	-
average	458.67	-	384.71	-	80.85	-	209.4		1976.3	-
Growth rate*	5%	-	8%	-	5%	-	1%		8%	-

Source: collected and computed of data from:
1- Ministry of agriculture and land reclamation, Economic Affairs Sector, Agricultural Statistics Bulletin, miscellaneous issues.
2- Website of international trade map (www.trademap.com).

The most important importing countries for Egyptian beet bagasse:

data of table (9) showed that the most important countries imported the Egyptian beet

bagasse during the period 2018-2020 was morocco with average value 21.99 thousand dollars that represented approximately 28.03% of the total value of Egyptian exported beet bagasse which was 78.46 thousand dollars, Followed by Korea with value 17.85 thousand dollars representing 22.76%, Followed by Spain with value 7.86 thousand dollars representing 10.01%, followed by Italy with value 7.76 thousand dollars representing 9.89%, then China with value 6.52 thousand dollars representing 8.31%,, then Saudi Arabia with value 4.32 thousand dollars representing 5.51%, and finally japan with value 2.27 thousand dollars representing 2.89% of the average value of Egyptian exported beet bagasse.

The production and export position of dried onions in Egypt:

Table (10) showed that the produced quantity of dried onions in Egypt during the period 2000-2020 reached a maximum in 2015 and was about 3.04 million tons, it decreased to the lowest in 2008 and was 913.46 thousand tons. The average period was about 458.67 thousand tons. The average for studying period was 2.02 million tons. Studying the moving average of production of dried onions during every five years, it increased to the maximum during the period 2015-2019 and was about 2.85 million tons, and it decreased to the lowest during the period 2000-2004 and was about 1.25 million tons.

Table(9): The most important imported countries of Egyptian frozen vegetables and the value of exported fish in thousand dollars during (2000-2020).

country	Value (million dollars)	%
Saudi Arabian	21.99	28.03
United states of America	17.85	22.76
Arab United Emirates	7.86	10.01
Italy	7.76	9.89
France	6.52	8.31
Kuwait	4.32	5.51
Russian Federation	2.27	2.89
total	78.46	100

Source: collected and computed from: Website of international trade map (www.trademap.com).

The data of table (10) indicated that the exported quantity of dried onions in Egypt increased during the period 2000-2020 to reach a maximum in 2017 and was about 283.3 thousand tons, it decreased to a minimum in 2000 and was about 67.1 thousand tons. The average period was about 179.5 thousand tons. Growth rate was 6%. By studying the moving average during every five years, it rose to the maximum during the period 2014-2018 and was about 275.04 thousand tons, and reached the minimum during the period 2000-2004 which was about 88.5 thousand tons.

Table(10): The moving average of exported Egyptian dried onions and its international price during (2000-2020).

Year	Produced quantity of dried onions		Exported quantity of dried onions		Value of exported dried onions		Price average (dollars)		Price average (dollars)	
	Quantity (thousand tons)	Moving average for 5 years	Quantity (thousand tons)	Moving average for 5 years	Value (thousand dollars)	Moving average for 5 years	Price (dollars/ton)	Moving average for 5 years	Price (LE/ ton)	Moving average for 5 years
2000	913.4	-	67.1	-	123.9	-	1846	-	6407.3	-
2001	1118.1	-	81.6	-	148.1	-	1815	-	7205.4	-
2002	1366.7	1248.00	96.1	88.5	172.2	162.3	1792	1835.7	8063.5	8830.8
2003	1371.7	1434.98	104.0	99.64	183.4	178.1	1763	1797.0	10316.0	9460.4
2004	1470.1	1458.40	93.7	107.28	183.8	191.9	1962	1796.6	12162.0	10097
2005	1848.3	1499.02	122.8	119.66	203.0	218.9	1653	1827.0	9554.9	10673
2006	1235.2	1589.96	119.8	128.16	217.2	285.8	1813	1908.5	10389.0	10968
2007	1569.8	1689.88	158.0	143.34	307.1	273.4	1944	1895.5	10943.0	10636
2008	1826.4	1746.10	146.5	147.38	318.1	301.5	2171	2045.5	11790.0	11379
2009	1969.7	1919.26	169.6	167.4	321.6	232.3	1896	2020.4	10505.0	11302
2010	2129.4	2021.98	143.0	173.64	343.7	339.5	2403	1994.1	13267.0	11310
2011	2101.0	2050.44	219.9	185.1	371.0	354.7	1687	1946.8	10005.0	11610
2012	2083.4	2166.18	189.2	207.46	342.9	376.6	1812	1873.8	10983.0	11678
2013	1968.7	2348.42	203.8	230.84	394.3	408.7	1935	1781.2	13292.0	12008
2014	2548.4	2398.20	281.4	242.24	430.9	413.9	1531	1730.5	10841.0	12881
2015	3040.6	2551.22	259.9	261.06	504.3	419.5	1940	1629.9	14921.0	15341
2016	2349.9	2744.08	176.9	275.04	397.0	411.7	1434	1502.7	14366.0	17297

2017	2848.5	2829.44	283.3	267.74	371.0	400.5	1310	1502.6	23284.0	20264
2018	2933.0	2782.9	273.7	262.48	355.4	387.6	1299	1490.8	23074.0	23210
2019	2975.2	-	244.9	-	374.9	-	1531	-	25672.0	-
2020	2807.9	-	233.6	-	439.5	-	1881	-	29651.0	-
average	2022.6	-	179.47	-	309.68	-	1782	-	13652	-
Growth rate*	5%	-	6%	-	6%	-	0%	-	8%	-

Source: collected and computed of data from:

1- Ministry of agriculture and land reclamation, Economic Affairs Sector, Agricultural Statistics Bulletin, miscellaneous issues.

Website of international trade map (www.trademap.com).

Studying the evolution of the export price average of dried onions in dollars during the study period, it was found that it rose to the maximum in 2008 and was about 2403 dollars per ton, and fell to the lowest in 2019 and was about 1531 dollars per ton. The average for the period was about 1782 dollars per ton. The annual increasing was 0%. Studying the moving average over every five years, it was found that it rose to a maximum during the period 2006-2010 and was about 2045.5 dollars per ton, and fell to a minimum during the period 2016-2020, which was about 1490.8 dollars per ton.

By studying the development of the export price average of dried onions in pounds during the study period, it was found that it rose to a maximum in 2020 and reached about 2965 pounds per ton, and fell to a minimum in 2000 and reached about 6407.4 pounds per ton. The average for the period was about 13652 pounds per ton. The annual rate of increase during the period was about 8%. Studying the moving average during every five years, it rose to a maximum during the period 2016-2020; it was 23210 pounds per ton, it decreased during the period 2002-2008, it was about 8830.8 pounds per ton.

By studying the value of exported beet bagasse in dollars during the same period, it was found that it rose to a maximum in 2015 and was about 504.3 thousand dollars, and fell to a minimum in 2000 to reach about 123.9 thousand dollars. The average period was about 309.7 thousand dollars. The growth rate was about 6%. The moving average every five years rose to a maximum during the period 2013-2017 and was 419.5 thousand dollars, and fell to its lowest during the period 2000-2004, it reached about 162.3 thousand dollars.

From the previous, although there is no annual increase during the period 2000-2020 in the average price of a ton of dried onions, it is clear that the annual increase in the average price in dollars with 8%, this is due to the high exchange rate during recent years, specifically from 2016, and therefore the high value of fish exports during the same years.

The most important importing countries for Egyptian beet bagasse:

Data of table (11) showed that the most important countries imported the Egyptian dried onions during the period 2018-2020 was Netherlands with average value 10.96 million dollars that represented approximately 32.80% of the total value of Egyptian exported dried onions which was 33.4 million dollars, Followed by Germany with value 5.90 million dollars representing 17.65%, Followed by japan with value 3.64 million dollars representing 11.48%, followed by Belgium with value 1.25 million dollars representing 3.76%, then the united kingdom with value 965 thousand dollars representing 2.89%,, then Hungary with value 880.7 thousand dollars representing 2.64%, and finally Ivory coast with value 812 thousand dollars representing 2.43% of the average value of Egyptian exported dried onions.

Table(11): tThe most important imported countries of Egyptian dried onions and the value of exported fish in thousand dollars during (2000-2020).

country	Value (thousand dollars)	%
Netherlands	10957.7	32.80
Germany	5898.0	17.65
Japan	3636.7	11.48
Italy	1255.0	3.76
Belgium	965.0	2.89
United Kingdom	880.7	2.64
Hungary	812.0	2.43
total	33405.3	100

Source: collected and computed from: Website of international trade map (www.trademap.com).

Factors affecting the value of exports under study:

There are many factors that affected the value of non-traditional Egyptian exports (fish, honey bees, frozen vegetables, beet bagasse and dried onions) during the period 2000-2020. The most

important were export price in dollars (x_1), exchange rate in pounds/dollar (x_2), the produced quantity (x_3), average prices of goods in competing countries in dollars to pounds (x_4). Three competing countries were selected for each commodity separately. The statistical estimate was made using the equations of multi regression in several ways, it turned out the best according to economic logic estimation using the natural logarithm (ln), and by applying a property of (backward) to choose the most influential of these factors on the value of exports, the following results were found:

Factors affecting the value of exports of fish: three competitive markets for Egyptian fish were selected; these markets were (Norway, Spain and United Arab Emirates). The average export prices of fish in the three countries were computed, the result was as follow:

$\ln Y = -26.252 - 0.668 \ln X_1 + 1.270 \ln X_3 + 2.621 \ln X_4$ .. (1)

(-7.415)** (-2.566)* (3.277)** (5.654)**

　　　$R^2 = 0.80$　　adjusted $R^2 = 0.79$　　F = 78

Equation (1) indicates that there is a statistically significant negative inverse relationship at the level of 5% between the value of Egyptian fish exports in dollar and the price of fish exports (ton/dollar). This means that an increase in the price of fish exports by 1% is offset by a decrease in the total value of fish exports by 0.66%. And the price increase is offset by the presence of competing markets for Egyptian fish with prices that compete with Egyptian prices. It also turned out that there is a statistically significant positive direct relationship at the level of 1% between the value of fish exports and both the quantity of fish produced (tons) and the average commodity prices in competing countries, which means that any increase in each of them by 1% corresponds to an increase in the value of Egyptian fish exports by 1.27%, 2.62%, respectively.

Factors affecting the value of exports of honey bees:

　　　Three competitive markets for Egyptian fish were selected; these markets were (New Zealand, Argentina and United Kingdom). The average export prices of honey bees in the three countries were computed, the result was as follow:

$\ln Y = -3.391 + 0.926 \ln X_1 + 1.150 \ln X4$ ….. (2)

　　　(-1.865)** (3.745)* (11.687)**

　　$R^2 = 0.92$　　adjusted $R^2 = 0.91$　　F = 100.2

Equation (2) indicates that there is a statistically significant positive direct relationship at the level of 1% between the value of Egyptian exports of honey (dollar) and the export price of Egyptian honey (dollar/ton), which means that an increase in the export price of honey by 1% is offset by an increase in the total value of honey exports by 0.93%. It also turned out that there is a statistically significant positive direct relationship at the level of 5% between the value of honey exports and the average commodity prices in competing countries .This means that an increase in the price of honey in competing countries by 1% corresponds to an increase in the value of Egyptian honey exports by 1.15%, because when competitive countries increase prices, importing countries look for the lowest price and therefore resort to other lower-priced markets, including the Egyptian market, where honey prices fall compared to the three competitive markets referred to.

Factors affecting the value of exports of frozen vegetables: three competitive markets for Egyptian frozen vegetables were selected; these markets were (the United States of America, Saudi Arabia and Italy). The average export prices of frozen vegetables in the three countries were computed, the result was as follow:

$\ln Y = 27.219 + 2.598 \ln X_3 + 0.901 \ln X_4$ ….. (3)

　　　(6.230)** (5.114)** (1.816)*

　　$R^2 = 0.93$　　adjusted $R^2 = 0.92$　　F = 114.4

Equation (3) indicates that there is a statistically significant positive direct relationship at the level of 1% between the value of Egyptian exports of frozen vegetables (USD) and the average quantity produced of vegetables that are suitable for freezing, as when the quantity produced increases by 1%, the value of exports of frozen vegetables increases by 2.6% and there is a statistically significant positive direct relationship at the level of 5% between the value of Egyptian exports of frozen vegetables (dollar) and the average commodity prices in competing countries, this means that an increase in the average export prices of those goods in competitive markets by 1% this is offset by an increase in the value of Egyptian exports of frozen vegetables by 0.9%.

Factors affecting the value of exports of beet bagasse:

　　　T0hree competitive markets for Egyptian beet bagasse were selected; these markets were (Morocco, Spain and Korea). The average export prices of beet bagasse in the three countries were computed, the result was as follow:

$\ln Y = -1.484 + 0.202 \ln X_3 + 0.866 \ln X_4$ ….. (4)

　　　(-4.385)** (3.277)** (5.654)**

　　$R^2 = 0.80$　　adjusted $R^2 = 0.79$　　F = 78

Equation (5) indicated a statically direct relationship at the level of 1% between the value of Egyptian exports of beet bagasse in dollars and both of quantity of beet bagasse produced and the average

commodity prices in competing countries, which means that any increase in each or in either of them separately corresponds to an increase in the value of Egyptian beet bagasse exports.

Factors affecting the value of exports of dried onions: three competitive markets for Egyptian beet bagasse were selected; these markets were (Germany, New Zealand and Japan). The average export prices of dried onions in the three countries were computed, the result was as follow:

$$\ln Y = -8.174 + 0.568 \ln X_3 + 1.141 \ln X_4 \dots (5)$$

$$(-2.802)^* \quad (2.243)^* \quad (10.292)^{**}$$

$$R^2 = 0.86 \qquad \text{adjusted } R^2 = 0.84 \qquad F = 54.8$$

Equation (5) indicates that there is a statistically significant positive direct relationship at the level of 1% between the value of Egyptian exports of powdered onions (dollars) and the quantity produced of beet bagasse (tons), as an increase in the quantity produced of beet bagasse is offset by an increase in the value of exports by 0.57%, and there is a positive direct relationship at a significant level of 5% between the value of exports of Egyptian beet bagasse and the average commodity prices in competing countries, this means that an increase in the average prices of its prices in competing markets is offset by an increase in the value of Egyptian exports by 1.14%.

References:

[1]. Hussien, M. S, the possibility of developing Egyptian exports, national planning institute, December 1985.

[2]. Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Agricultural Statistics Bulletin, miscellaneous issues.

[3]. Official website of central Egyptian bank (www.cb.org.eg/ar/Economic).

[4]. Ramy, A. A, the development of exports of some vegetable and fruit crops and their competitive position in world markets, Assiut journal for agriculture science, volume(45), December 2014, p.p 76-103.

[5]. Tahani, S. M. B (Doctor): The Competitiveness of Egyptian Rice in the Most Important International Markets, The Egyptian Journal of Agricultural Economists, Volume (27), Issue (4), December (B) 2017, pages (2333 - 2350).

[6]. The Website of Egyptian exports portal (www.expoegypt.gov.eg).

[7]. The Website of global trade map (www.trademap.com).

8/22/2022