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نموذج اقتصادي قياسي لطلب وعرض محصول الفول البلدي المصري

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بيانات البحث

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الكلمات المفتاحية:

النموذج القياسي -
نماذج المعادلات الأنية
- التنبؤ.

المستخلص

استهدف البحث التعرف على الوضع الحالي والمستقبلي لاقتصاديات محصول الفول البلدي بهدف الحد من الفجوة بين الإنتاج والاستهلاك من خلال دراسة الأوضاع الإنتاجية والاستهلاكية والتصديرية والاستيرادية، واستخدمت الدراسة الأسلوب الكمي متمثلاً في تقدير الاتجاهات الزمنية العامة للمتغيرات واستخدامه في التنبؤ بسلوك Stata موضع الدراسة، واستخدمت النموذج الأني باستخدام برنامج متغيرات الدراسة.

وأوضحت نتائج الدراسة باستخدام الاتجاهات الزمنية العامة أن المساحة تأخذ اتجاهها متناقصاً قدر بحوالي 12.06 ألف فدان بما يمثل 7.2%، كما أن الإنتاج يأخذ اتجاهها متناقصاً قدر بحوالي 15.80 ألف طن بما يمثل نحو 6.9%، كما أوضح التحليل أن الفجوة الغذائية تأخذ اتجاهها متزايداً، والاكتفاء الذاتي أخذ اتجاهها متناقصاً.

حيث استخدمت الدراسة النموذج الاقتصادي القياسي لمحصول الفول البلدي في مصر، وقد تم تصميم نموذج يتكون من أربع معادلات، الأولى معادلة الإنتاج الكلي من الفول البلدي في مصر، والثانية معادلة الاستهلاك الكلي من محصول الفول في مصر، والثالثة معادلة الواردات من الفول، والأخيرة معادلة الصادرات من محصول الفول البلدي في مصر. وقد تم التنبؤ بقيم المتغيرات الداخلية لتحديد قيم الإنتاج المحلي والاستهلاك المحلي والواردات المصرية والصادرات المصرية لمحصول الفول البلدي خلال الفترة (2021-2030).

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Demand and Supply Econometric Model for the Egyptian Fava Bean Crop

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ABSTRACT

The research aimed to identify the current and future status of the economics of the local bean crop in order to reduce the gap between production and consumption by studying the production, consumption, export and import conditions. The study used the quantitative method represented in estimating the general time trends of the variables under study, and used the simulated model using the Stata program and used it to predict the behavior of the study variables.

The results of the study, using general time trends, showed that the area takes a decreasing trend estimated at about 12.06 thousand feddans, which represents 7.2%, and the production takes a decreasing trend estimated at about 15.80 thousand tons, which represents about 6.9%. The analysis also showed that the food gap takes an increasing trend, and sufficiency self-taking a decreasing trend.

Where the study used the econometric model for the local bean crop in Egypt, a model was designed consisting of four equations, the first is the equation for the total production of local beans in Egypt, the second is the equation for total consumption of the bean crop in Egypt, the third is the equation for imports of beans, and the last is the equation for exports from the local bean crop in Egypt.

The values of the internal variables were predicted to determine the values of domestic production, domestic consumption, Egyptian imports, and Egyptian exports of the local bean crop during the period (2021-2030).

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Introduction:

Fava bean crop considered to be as one of the most important legume crops, since it contains about 28% protein, 58% carbohydrates in addition to many other vitamins, in addition it is a basic meal for the Egyptians, especially among the poor and middle classes.

The importance of the fava beans is not limited to human being but also it is an important input to poultry industry and animal fodders, as well as the use of dry waste in other economic uses such as the manufacture of bricks Fava beans can also be used to increase the soil fertility as a pre-crop for some others crops like cotton and maize.

Research problem:

The main problem of the research paper is that fava beans cultivated area is decreasing with a fixed productivity thus production decline, with an increase in demand due to increase in the population, which led to increase the food gap of fava bean crop in Egypt, as an important source of protein on which the majority of the Egyptians depend on this crop as a main food, thus self-sufficiency declined to about 104.07% in 2000 to 17.23% for 2020. All this cause imports of this crop to increase from 172.4 thousand tons in 2000, to 250.1 thousand tons in 2020, this causes more burden on the balance of trade-

Research Objectives:

The main objective of this research paper is studying how to reduce the gap between production and consumption of fava beans in Egypt. So, to attain this the paper will study the following: -

- 1- Identify the production and consumption for fava bean crop in addition to foreign trade during the study period that stretch from (2000-2020).
- 2- Evaluate the gap between production and consumption of fava beans.
- 3- Formulating and estimating an econometric model for fava bean and using it to predict the study variables.
- 4- Develop recommendations and proposals necessary to promote the production of Egyptian municipal beans.

Research method and data sources:

In order to achieve its objectives, the study used some methods like descriptive statistical analysis represented in averages and percentages so as to explain and present the various variables and aspects related to the fava bean crop.; In Addition to the quantitative method represented in estimating the annual growth rates for various variables under study,

This is in addition to using the real-time model to count the most important determinants of production, consumption, exports, and imports of the Egyptian municipal bean crop using the STATA program.

Data Sources:

The study relied on secondary data published from various sources issued by concerned authorities such as the Ministry of Agriculture, the Central Agency for Public Mobilization and Statistics, the Food and Agriculture Organization of the United Nations (FAO), and the Information Network.

Discussion of research results:

The research presented the results and discussed them through several main axes, which were represented in the study of productivity and consumption indicators, the study of indicators of foreign trade, the inventory of the most important determinants of the food gap using the current model in addition to the study of the prediction of the behavior of study variables for the fava bean crop in Egypt, in addition to the inventory of the most important problems that help increase the gap between production and consumption, with the Developing the necessary recommendations and proposals for the advancement of the fava bean crop in Egypt.

▪ First, the productivity and consumption indicators of the fava bean crop in Egypt:

1- The development of the cultivated area of the fava-fava bean crop in Egypt:

The data of Table (1) indicates the development of the cultivated area of the fava- fava bean crop in Egypt during the study period (2000-2020), from which it turns out that the general average cultivated area of fava beans in Egypt amounted to about 166.5 thousand acres per year during that period, and the lowest reached about 69.8 thousand acres in 2019 , with a reduction rate of about 58.0% of the general average, and a maximum of about 333.7 thousand acres in 2001 with an increase rate of about 100.4% of the general average.

By studying the equation that reflect the annual growth rate of the area of fava beans in table (2), it was found that the area of fava beans took a decreasing general trend by a statistically significant annual amount of about 12.06 thousand acres, with a decreasing growth rate retched about 7.2, during the average period (2000-2022). while the coefficient of determination (R^2) reached about 0.86, which means that 86 % of the changes in the cultivated area of fava beans are due to time, and the significance of the model used for measurement has been proven in general using the calculated value of (F) that reached 120.9 with highly significant and 0.1 .

2- The development of acre productivity of fava beans in Egypt:

From a development study, it is clear that the acre productivity of the fava bean crop in Egypt during the study period was that the overall average was about 1.39 tons/acre per year during that period, the lowest of which was about 1.26 tons/acre in 2010, and a maximum of about 1.50 tons/acre in 2014.

By studying the equation of the general temporal direction of the evolution of fava bean productivity in table (2), it is clear that the productivity of fava beans has taken an increasing general trend, and the significance of the model used for measurement in general has not been proven, that there is no mathematical picture appropriate to the nature of the data and that the data revolves around its arithmetic average.

Table (1): Development of area, productivity, production, consumption, gap, self-sufficiency, average per capita share, costs and net return of the fava bean crop in Egypt during the period (2000-2020)

Years	Area	Productivity	Production	Consumption Quantity	Average Individual	Retail price at current prices	Retail Price in real terms	The gap	Self-sufficiency	Consumer Price Indices
	One thousand acres	Ton / acre	1.000 Tons	1.000 tons	kg per capita	In pounds per ton	In pounds per ton	1.000 tons	%	
2000	270.52	1.31	353.85	340.00	4.94	2300	2263.78	13.85	104.07	101.60
2001	333.69	1.32	439.14	528.00	7.53	2300	2220.08	88.86	83.17	103.60
2002	302.85	1.32	400.97	711.00	9.95	2300	2173.91	310.03	56.40	105.80
2003	252.56	1.33	336.91	644.00	8.84	3100	2738.52	307.09	52.32	113.20
2004	240.85	1.37	330.45	643.00	8.67	4100	3117.87	312.55	51.39	131.50
2005	198.17	1.42	281.60	653.00	8.65	3500	2581.12	371.40	43.12	135.60
2006	175.35	1.41	247.42	695.00	9.04	3400	3148.15	447.58	35.60	108.00
2007	211.97	1.42	301.85	591.00	7.55	3800	3700.10	289.15	51.07	102.70
2008	170.11	1.44	244.10	851.00	10.69	5800	4773.66	606.90	28.68	121.50
2009	206.00	1.45	298.00	776.00	9.56	4100	3019.15	478.00	38.40	135.80
2010	183.69	1.26	231.99	695.00	8.40	4200	4000.00	463.01	33.38	105.00
2011	131.43	1.33	175.00	483.00	5.71	7700	6655.14	308.00	36.23	115.70
2012	97.91	1.44	141.00	376.00	4.35	8300	6698.95	235.00	37.50	123.90
2013	104.92	1.28	134.00	418.00	4.73	8950	6466.76	284.00	32.06	138.40
2014	89.47	1.50	134.00	418.00	4.62	9220	5872.61	284.00	32.06	157.00
2015	81.93	1.46	120.00	339.00	3.67	10680	6082.00	219.00	35.40	175.60
2016	83.36	1.43	118.79	763.00	8.08	15250	8030.54	644.21	15.57	189.90
2017	121.04	1.41	170.15	846.00	8.77	17170	6912.24	675.85	20.11	248.40
2018	82.18	1.41	115.95	1104.00	11.22	20250	7604.21	988.05	10.50	266.30
2019	69.81	1.42	99.15	985.00	9.81	28950	9405.46	885.85	10.07	307.80
2020	89.14	1.40	124.59	723.00	7.07	29850	9331.04	598.41	17.23	319.90
Average	166.5	1.39	228.5	646.8	7.7	9296	5085.49	418.2	39.25	157.49
Minimum	69.8	1.26	99.1	339.0	3.7	2300	2173.91	13.8	10.07	101.60
Maximum	333.7	1.50	439.1	1104.0	11.2	29850	9405.46	988.1	104.07	319.90

Source: Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Agricultural Economics Bulletins, Miscellaneous Issues.

3- The development of the total production of fava beans in Egypt: -

Table (1) showed that the average total production of fava beans in Egypt amounted to about 228.5 thousand tons per year during the study period, and the lowest reached about 99.1 thousand tons in 2019, a decrease rate of about 56.6% of the general average, and a maximum of about 439.1 thousand Tons of fava bean crop in 2001 at an increase rate of about 92.1% of the overall average during the study period.

By examining the equation of the general time trend for the development of the bean production in Table (2), it is clear that the bean production took a general decreasing trend by a statistically significant annual amount of about 15.80 thousand tons, representing about 6.9% during the average period (2000-2022). , while the coefficient of determination (R^2) was about 0.87, which means that 87% of the changes in the production of local beans are due to factors whose effect reflects the time, and the significance of the model used for measurement has been proven in general using the calculated value of (F) that reached 124.9 with highly significant and 0.1

4- The evolution of the average per capita share of fava beans in Egypt:

Table (1) showed that the average per capita share of fava beans in Egypt amounted to about 7.7 kg per capita per year during the study period, and the lowest reached about 3.7 kg per capita in 2016, and the maximum was about 11.2 kg per capita in 2019 during the study period .

By studying the equation of the general temporal trend of the evolution of the average per capita crop of fava bean in table (2), it is found that the average per capita share of the fava bean crop has taken a decreasing general trend, and the significance of the model used for measurement in general has not been proven, that there is no mathematical picture appropriate to the nature of the data and that the data revolves around their arithmetic average.

5- Evolution of the retail price at the current prices of fava beans in Egypt: -

Table (1) showed the average retail price of the fava bean crop in Egypt amounted to about 9296 pounds per ton per year during the study period, and the lowest of which was about 2300 pounds per ton in 2002, at a decrease rate of about 75.2% of the general average, and reached a maximum of about 29850 pounds per ton in 2020 with an increase rate of about 221.1 % of the overall average during the study period.

By studying the equation of the general time trend for the development of the local bean retail price in Table (2), it was found that the retail price of the local bean crop took a general increasing trend by an annual statistically significant amount of about 1178.6 pounds per ton, which represents about 12.6% during the average period (2000-2022). while the coefficient of determination (R^2) was about 0.75, which means that 75% of the changes in the retail price of the local bean crop are due to time, and the significance of the model used for measurement has been proven in general using the calculated value of (F) that reached 60.1 with highly significant and 0.1.

6- The evolution of the retail price at the real prices of fava beans in Egypt: -

Table (1) showed the average retail price of the fava bean crop in Egypt amounted to about 5085.49 pounds per ton per year during the study period, and the lowest reached about 2173.91 pounds per ton in 2002, a decrease rate of about 57.2% of the general average, and a maximum of about 9405.46 pounds per ton per year 2019 with an increase rate of about 84.9% of the overall average during the study period.

By studying the equation of the general temporal trend of the evolution of the retail price of fava beans in table (2), it is found that the retail price of the fava bean crop has taken an increasing

general trend by a statistically significant annual amount of about 365.7 pounds per ton, representing about 7.19% during the average period (2000-2022). while the coefficient of determination (R^2) has reached about 0.89, which means that 89 % of the changes in the retail price of the fava bean crop are due to factors whose effect reflects the variable of time, due to time, and the significance of the model used for measurement has been proven in general using the calculated value of (F) that reached 161.5 with highly significant and 0.1 .

7- The evolution of the gap of fava beans in Egypt: -

Table (1) shows that the average gap of fava beans in Egypt amounted to about 418.2 thousand tons per year during the study period, and the lowest of which was about 13.8 thousand tons in 2000, a decrease rate of about 96.7% of the general average, and maximum of about 988.1 A thousand tons in 2018 with an increase rate of about 136.2% of the overall average during the study period.

By studying the equation of the general temporal direction of the evolution of the fava bean gap in table (2) , it is found that the gap from the fava bean crop has taken an increasing general trend by a statistically significant annual amount of about 26.30 thousand tons, representing about 6.2% during the average period (2000-2022). , while the coefficient of determination (R^2) was about 0.46, which means that 46% of the changes in the gap from the fava bean crop are due to factors that reflect their impact on the variable of time, and the significance of the model used for measurement has been proven in general using the calculated value of (F) that reached 16.4 with highly significant and 0.1 .

8- The development of self-sufficiency of fava beans in Egypt:

Table (1) also showed that the average current sufficiency of fava beans in Egypt was about 39.25% per annum during the study period, and the lowest was about 10.07% in 2019, with a decrease rate of about 74.3% of the overall average, and reached its maximum. About 104.07% in 2000, an increase rate of about 165.1% of the overall average during the study period.

By studying the equation of the general temporal direction of the development of fava bean sufficiency in table (2), it is clear that the sufficiency of the fava bean crop took a decreasing general trend by a statistically significant annual amount of about 3.15%, representing about 8.0 % during the average period (2000-2022). , while the coefficient of determination (R^2) was about 0.74, which means that 74 % of the changes in self-sufficiency of the fava bean crop are due to factors whose effect reflects the variable of time, and the significance of the model used for measurement has been proven in general using the calculated value of (F) that reached 55.5 with highly significant and 0.1

Table (2): Time trends of the development of area, productivity, production, consumption, gap, self-sufficiency, average per capita share, costs, and net return of the fava bean crop in Egypt during the period (2000-2020).

s	Variable	Time trend equation	R ²	F	Growth rate
1	Area	$\hat{Y}_i = 299.2 - 12.06X$ (21.7) (-10.99)**	0.86	120.9	7.2
2	Production	$\hat{Y}_i = 402.3 - 15.80 X$ (22.66) (11.18)**	0.87	124.9	6.9
3	Retail price at current prices	$\hat{Y}_i = -3699.1 + 1178.6X$ (-1.9) (7.7)**	0.75	60.1	12.6
4	Retail price in real terms	$\hat{Y}_i = 1061.7 + 365.7X$ (2.9) (12.71)**	0.89	161.5	7.1
5	The gap	$\hat{Y}_i = 132.3 + 26.30X$ (1.6) (4.05)**	0.46	16.4	6.2
6	Self-sufficiency	$\hat{Y}_i = 73.9 - 3.15 X$ (13.9) (7.45)**	0.74	55.5	8.0

Where:

\hat{Y} = Estimated value of the dependent variable under study

X i = the time variable where i (1, 2, 3, , 21)

The value between the parentheses indicates the calculated value of T()

(R²) Coefficient Determination (F) Significance of the regression model

(**) indicates morale The regression coefficient is at the level of 0.01.

▪ **Evolution of farm prices, costs and net yield of fava bean crop at current and real prices in Egypt:**

1- Evolution of the cultivated Price of Fava Bean Crop at Current Prices in Egypt: -

Table (3) showed that the average cultivated price of the fava bean crop in Egypt amounted to about 719.8 pounds per ton per year during the study period, where the lowest was about 194.8 pounds per ton in 2001, a decrease rate of about 72.9% of the general average, and the maximum of about 1878.0 pounds per ton in 2019, an increase rate of about 160.9% of the overall average during the study period.

By studying the equation of the general temporal direction of the evolution of the development of the cultivated price of the fava bean crop in table (4), it is found that the evolution of the cultivated price of the fava bean crop has taken an increasing general trend by a statistically significant annual amount of about 78.5 pounds per ton, representing about 10.9 during the average period (2000-2022). , while the coefficient of determination (R²) was about 0.81, which means that 81 % of the changes in the evolution of the cultivated price of the fava bean crop are due to factors that reflect the variable of time, and the significance of the model used for measurement has been proven in general using the calculated value of (F) that reached 79.3 with highly significant and 0.1 .

2-The evolution of the cultivated price in real prices of the fava bean crop in Egypt:

Table (3) showed that the average price of cultivated in real prices of the fava bean crop in Egypt amounted to about 324.5 pounds per ton per year during the study period, where the lowest was about 9. 159 pounds per ton in 2003, a decrease rate of about 50.7% of the general average, and a

maximum of about 0.493 pounds per ton in 2019, an increase rate of about 51.9% of the overall average during the study period.

By studying the equation of the general temporal direction of the evolution of the development of the cultivated price of the fava bean crop in table (4), it is found that the evolution of the cultivated price of the fava bean crop has taken an increasing general trend by a statistically significant annual amount of about 79.3 pounds per ton, representing about 24.4% during the average period (2000-2022). while the coefficient of determination (R^2) has reached about 80.0, which means that 80% of the changes in the development of the cultivated price of the fava bean crop are due to factors that reflect the effect of the variable of time, and the significance of the model used for measurement has been proven in general using the calculated value of (F) that reached 79.3 with highly significant and 0.1 .

3- The evolution of the total costs at current prices of the fava bean crop in Egypt:

Table (3) showed that the evolution of the total costs of the fava bean crop in Egypt amounted to about 4432.9 pounds per acre annually during the study period, where the lowest reached about 1288.0 pounds per acre tons in 2001, with a decrease rate of about 70.9% of the general average, and a maximum of about 10835.0 pounds per acre in 2020, with an increase rate of about 144.4% of the overall average during the study period.

By studying the equation of the general time trend of the development of the development of the total costs of the fava bean crop in Table (4), it is found that the development of the total costs of the fava bean crop took a general trend increasing by an annual statistically significant amount of about 465.4 pounds per acre, representing about 10.4% during the average period (2000-2022) . while the coefficient of determination (R^2) was about 0.88, which means that 88 % of the changes in the evolution of the total costs of the fava bean crop are due to factors whose impact reflects the variable of time, and the significance of the model used for measurement has been proven in general using the calculated value of (F) that reached 144.8 with highly significant and 0.1 .

4-The evolution of total costs in real prices of the fava bean crop in Egypt: -

Table (3) showed that the development of the total costs of the fava bean crop in Egypt amounted to about 2031.7 pounds per acre annually during the study period, where the lowest reached about 1079.7 pounds per acre in 2003, with a decrease rate of about 46.8% of the general average, and a maximum of about 3045.4 pounds per acre in 2016, with an increase rate of about 49.8% of the overall average during the study period.

By studying the equation of the general time trend of the development of the development of the total costs of the fava bean crop in Table (4), it is found that the development of the total costs of the fava bean crop took a general trend increasing by an annual statistically significant amount of about 100.3 pounds per acre, representing about 4.9% during the average period (2000-2022). while the coefficient of determination (R^2) was about 0.88 % which means that 88 % of the changes in the evolution of the total costs of the fava bean crop are due to factors whose impact reflects the variable of time, and the significance of the model used for measurement has been proven in general using the calculated value of (F) that reached 150.0 with highly significant and 0.1

Table (3): Evolution of total costs, net acre yield and farm prices of fava beans at current and real prices during the period (2000/2020)

Years	Current Farm Price in pounds per Ton	Real farm price in pounds per Ton	Total costs in pounds per acre	Total real costs in pounds per acre	Net yield in pounds per acre	Net real yield in pounds per acre	Producer Price Indices
2000	195	175.4	1332.6	1198.4	444.8	400.0	111.2
2001	194	172.8	1288.0	1146.9	510.2	454.3	112.3
2002	197	164.9	1366.9	1143.8	493.4	412.9	119.5
2003	218	159.5	1476.0	1079.7	573.0	419.2	136.7
2004	326	203.8	1763.0	1101.9	1306.0	816.3	160.0
2005	331	196.3	1938.0	1149.5	1310.0	777.0	168.6
2006	347	293.1	2017.0	1703.5	1381.0	1166.4	118.4
2007	353	273.6	2291.0	1776.0	1215.0	941.9	129.0
2008	581	372.0	3290.0	2106.3	2376.0	1521.1	156.2
2009	573	388.7	3522.0	2389.4	2179.0	1478.3	147.4
2010	575	346.2	3568.0	2148.1	1565.0	942.2	166.1
2011	596	312.9	4093.0	2148.6	1474.0	773.8	190.5
2012	717	367.3	4502.0	2306.4	2605.0	1334.5	195.2
2013	730	362.8	4743.0	2357.4	2543.0	1263.9	201.2
2014	740	367.2	4830.0	2397.0	2529.0	1255.1	201.5
2015	805	394.8	5183.0	2541.9	2524.0	1237.9	203.9
2016	817	366.9	6782.0	3045.4	853.0	383.0	222.7
2017	1286	427.5	8351.0	2776.3	3597.0	1195.8	300.8
2018	1787	492.7	9478.0	2613.2	6984.0	1925.6	362.7
2019	1878	493.0	10441.0	2741.1	7077.0	1858.0	380.9
2020	1870	482.2	10835.0	2794.0	7368.0	1899.9	387.8
Average	719.8	324.5	4432.9	2031.7	2424.2	1069.4	198.7
The bare minimum	194.0	159.5	1288.0	1079.7	444.8	383.0	111.2
The maximum	1878.0	493.0	10835.0	3045.4	7368.0	1925.6	387.8

1-Real farm price = (current farm price ÷ producer price indices) ×100

2-Total real costs = (Total ongoing costs ÷ PPIs) ×100

3- Net real return = (net current return ÷ producer price indices) ×100

Source: Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Agricultural Economics Bulletins, Miscellaneous Issues

5- Evolution of net return at current prices of the fava bean crop in Egypt: -

Table (3) showed that the development of the net yield of the fava bean crop in Egypt amounted to about 2424.2 pounds per acre annually during the study period, where the lowest reached about 444.8 pounds per acre in 2000, with a decrease rate of about 81.6% of the general average, and a maximum of about 7368.0 pounds per acre In 2020, with an increase rate of about 203.9% of the overall average during the study period.

By studying the equation of the general time trend of the development of the development of the net return of the fava bean crop in Table (4), it is found that the development of the net return of the fava bean crop took a general trend increasing by a statistically significant annual amount of about 276.8 pounds per acre, representing about 11.4% during the average period (2000-2022). while the coefficient of determination (R^2) was about 0.64, which means that 64 % of the changes in the evolution of the net yield of the fava bean crop are due to factors whose effect reflects the time, and the significance of the model used for measurement has been proven in general using the calculated value of (F) that reached 33.7 with highly significant and 0.1.

6- The evolution of the net return in real prices of the fava bean crop in Egypt: -

Table (3) showed that the development of the net yield of the fava bean crop in Egypt amounted to about 1069.4 pounds per acre annually during the study period, where the lowest reached about 3.83.0 pounds per acre tons in 2016, with a decrease rate of about 64.1% of the general average, and a maximum of about 1926.6 pounds per acre. in 2018 with an increase rate of about 80.1% of the overall average during the study period.

By studying the equation of the general time trend of the development of the net return of the fava bean crop in Egypt, it is found that the average net return from the fava bean crop in Egypt has taken an increasing general trend, and the significance of the model used for measurement in general has not been proven and that there is no mathematical picture suitable for the nature of the data and that the data revolves around its arithmetic average.

Table (4): Equations of the general time trend for the evolution of total costs, net return per acre and farm prices of beans at current prices and real prices during the period (2000-2020):

Equation Number	Statement	Equation	R ²	Growth rate
1	Farm price at current prices	$\hat{Y}_i = 143.3 + 78.5 X$ (1.3) (8.91)**	0.81	10.9
2	Farm price at real prices	$\hat{Y}_i = -143.2 + 78.4 X$ (-1.2) (8.9)**	0.80	24.1
2	Costs at current prices	$\hat{Y}_i = 686.5 + 465.4 X$ (1.4) (12.04)**	0.88	10.4
3	Costs in real prices	$\hat{Y}_i = 923.2 + 100.3 X$ (9.0) (12.2)**	0.88	4.9
4	Net return per acre at current prices	$\hat{Y}_i = 620.2 + 276.8 X$ (1.04) (5.80)**	0.64	11.4

Where:

\hat{Y} = Estimated value of the dependent variable under study

X i = time variable where i (1, 2, 3, , 21)

The value in parentheses indicates the calculated value of T

(R²) coefficient Determination (F) Significance of the Regression Model

(**) indicates moral the regression coefficient is at the level of 0.01.

(*) indicates the significance of the regression coefficient at the level of 0.05.

Source: Collected and calculated from table 4 data

Second: Foreign Trade Indicators of the Fava Bean Crop in Egypt

1- Evolution of the Egyptian Imports of Beans in Egypt:

Table (5) shows the evolution of the quantity of Egyptian imports of fava beans in thousand tons during the period (2000-2020), and format shows that the quantity of imports reached allow in 2009 by about 155. 6 thousand tons, while a maximum in 2006 was about 4 thousand tons, and the average for the period as a whole was about 312. 0 thousand tons.

In order to determine the directional relationship of the quantity of Egyptian imports of fava beans in thousand tons during the period (2000-2020), it was shown from Table (6) that the amount of Egyptian imports of fava beans is taking an increasing trend, but the significance of the model as a whole has not been proven , and that there is no appropriate picture of the nature of the data and that the data revolves around its arithmetic average.

2-The evolution of the value of Egyptian imports of fava beans in Egypt:

Table (5) shows the evolution of the value of Egyptian imports of fava beans in million dollars during the period (2000-2020), and from this it shows that the value of imports reached a low in 2000 by about 54.0 million dollars, while it reached a maximum in 2019, where it was

estimated at about 331.6 million dollars, and the average for the period as a whole was about 185.4 million.

By studying the directional relationship of the value of Egyptian imports of fava beans in million dollars during the period (2000-2020), Table (6) showed that the value of Egyptian imports of fava beans in million dollars increased by about 22.13 million dollars annually during the study period, representing about 7.1% during the average period (2000-2022). while the coefficient of determination (R^2) about 80.0, which means that about 80% of the changes in the value of Egyptian imports of fava beans in million dollars are due to a set of factors whose impact reflects the variable of time, and the significance of the model used for measurement has been proven in general using the calculated value of (F) that reached 72.7 with highly significant and 0.1.

3-Evolution of the price of imports of Egyptian fava beans in Egypt:

Table (5) shows the evolution of the import price of fava beans in dollars per ton during the period (2000-2020), and from it shows that the price of imports reached a low in 2003 by about 245.8 dollars per ton, while a maximum in 2012 reached about 1074.9 dollars per ton. The average for the period was about \$614.2 per ton.

By studying the directional relationship of the import price of Egyptian fava beans in dollars during the period (2000-2020), it was found from Table (6) that the export price of fava beans in dollars per ton increased by about 39.27 dollars per ton annually during the study period, representing about 6.3% during the average period (2000-2022)., while the coefficient of determination (R^2) was about 0.61%, that about 61% of the changes in the export price of fava beans are due to a set of factors whose impact reflects the variable of time, and the significance of the model used for measurement has been proven in general using the calculated value of (F) that reached 29.8 with highly significant and 0.1.

4-Evolution of the quantity of Egyptian exports of fava beans in Egypt:

Table (5) shows the evolution of the quantity of Egyptian exports of fava beans in thousand tons during the period (2000-2020), and from this it shows that the quantity of exports reached a minimum in 2011 by about 4.4 thousand tons, while a maximum in 2019 was about 71.0 thousand tons, and the average for the period as a whole was about 22.1 thousand tons.

In order to determine the directional relationship of the quantity of Egyptian exports of fava beans in thousand tons during the period (2000-2020), it was shown from Table (6) that the amount of Egyptian exports of fava beans is increasing by about 2.67 thousand tons annually during the study period, representing about 12.0% during the average period (2000-2022). while the coefficient of determination (R^2) About 0.62, which means that about 62% of the changes in the quantity of bean exports are due to a set of factors whose impact reflects the variable of time, and the significance of the model used for measurement has been proven in general using the calculated value of (F) that reached 31.2 with highly significant and 0.1.

Table (5): Evolution of Quantity, Value and Price of Egyptian Exports and Export Price of Beans during the Period (2000-2020)

Years	Quantity of imports	Value of imports	Import price	Export Quantity	Value of exports	Export Price
	Thousand Tons	Million Dollar	Dollar per ton	Thousand Tons	Million Dollar	Dollar Per ton
2000	172.4	54.0	313.0	9.0	4.4	489.4
2001	242.5	74.6	307.8	6.5	3.4	520.1
2002	287.9	79.5	276.2	5.0	2.3	458.1
2003	307.7	75.6	245.8	5.3	2.1	402.0
2004	314.0	93.3	297.0	6.6	3.1	471.8
2005	380.4	99.6	261.8	9.4	3.4	359.9
2006	459.3	113.4	246.9	18.5	4.2	225.8
2007	301.4	109.0	361.7	14.6	7.4	508.9
2008	277.9	154.3	555.2	7.4	5.8	777.1
2009	155.6	150.1	965.0	20.5	16.9	824.8
2010	455.8	155.1	340.2	11.2	7.5	668.5
2011	297.3	272.9	917.9	4.4	8.6	1934.6
2012	270.3	290.5	1074.9	15.5	13.3	858.6
2013	281.2	279.4	993.5	17.0	11.2	661.1
2014	402.0	305.3	759.4	19.9	14.3	716.8
2015	373.0	283.6	760.4	14.4	11.7	813.1
2016	294.0	247.2	840.7	36.1	23.9	661.9
2017	326.9	221.6	678.1	66.6	25.6	385.2
2018	392.9	259.6	660.6	42.9	15.9	369.2
2019	309.4	331.6	1072.0	71.0	18.6	262.0
2020	250.1	242.4	969.2	61.4	13.9	226.1
Average	312.0	185.4	614.2	22.1	10.4	599.7
Minimum	155.6	54.0	245.8	4.4	2.1	225.8
Maximum	459.3	331.6	1074.9	71.0	25.6	1934.6

Source: WWW.FAO.org**5-Evolution of the value of Egyptian exports of beans in Egypt:**

Table (5) shows the evolution of the value of Egyptian exports of fava beans in million dollars during the period (2000-2020), and from this it shows that the value of exports reached a low in 2003 by about 2.1 million dollars, while it reached a maximum in 2017, where it was estimated at about 25.6 million dollars, and the average for the period as a whole was about 10.4 \$ million.

By studying the directional relationship of the value of Egyptian exports of fava beans in million dollars during the period (2000-2020), and that the value of Egyptian exports of fava beans in million dollars is increasing by about 0.95 million dollars annually during the study period, representing about 9.1% during the average period (2000-2022). , while the coefficient of

determination (R^2) reached about 70.0, which means that about 70% of the changes in the value of bean exports are due to a set of factors whose impact reflects the variable of time and the significance of the model used for measurement has been proven in general using the calculated value of (F) that reached 43.6 with highly significant and 0.1 .

6-Evolution of the export price of Egyptian Fava Beans in Egypt:

Table (5) shows the evolution of the export price of fava beans in dollars per ton during the period (2000-2020), and from this it is found that the export price reached a low in 2006 by about 225.8 dollars per ton, while a maximum in 2011 was about 1934.6 dollars per ton, and the average for the period as a whole was about 599.7\$ per ton.

By studying the directional relationship of the export price of Egyptian fava beans in dollars during the period (2000-2020), it was found from Table (6) that the export price of fava beans in dollars per ton is increasing, but the significance of the model as a whole has not been proven, and that there is no appropriate picture of the nature of the data and that the data revolves around its arithmetic average.

Table (6): Equations of the general time trend for the evolution of the quantity, value and price of imports and exports of fava beans during the period (2000-2020)

Equation Number	Dependent variable	Estimated model	R ²	F	Growth rate
1	Value of imports	$\hat{Y}_i = 97.39 + 13.22 X$ (2.06) (8.53) **	0.80	72.79	7.1
2	Import price	$\hat{Y}_i = 182.2 + 39.27 X$ (2.02) (5.46) **	0.61	29.82	6.3
3	Export Quantity	$\hat{Y}_i = 7.3 + 2.67 X$ (1.2) (5.59) **	0.62	31.26	11.7
4	Value of exports	$\hat{Y}_i = 0.07 + 0.95 X$ (0.04) (6.61) **	0.70	43.62	9.1

where:

\hat{Y}_i = estimated value of the dependent variable under study.

X_i = time variable where (1, 2, 3,, 20).

The value in parentheses indicates the calculated value of (T), (R^2) the coefficient of determination, and (F) the significance of the model.

(*) indicates moral the regression coefficient is at a significant level of 0.05.

The standard model of the Egyptian municipal bean crop during the period (2000-2020)

Model characterization:

A model consisting of four behavioral equations was designed, the first is the equation of total production of Egyptian municipal beans, the second is the equation of total consumption of the Egyptian municipal bean crop, the third is the equation of imports of Egyptian municipal beans, A double logarithmic formula was used so as to identify variables that affect the four dependent variables under study (Production, consumption, exports and Imports quantities). The three-stage least squares method was used and both Excel and Stata were used for these estimates.

Where the:-

\hat{Y}_{1i} : the amount of production in Thousand Tons of Egyptian municipal beans during the period (2020-2000).-

\hat{Y}_{2i} : the amount of consumption in Thousand Tons of Egyptian municipal beans during the (2020-2000) period

\hat{Y}_{3i} : the amount of imports in Thousand Tons of Egyptian municipal beans during the period (2020-2000)

\hat{Y}_{4i} : the amount of exports in Thousand Tons of Egyptian municipal beans during the period (2020-2000)

X_{1i} : the area planted in Thousand Acres for the Egyptian municipal bean crop during the period (2020-2000)

X_{2i} : the import price is dollars per ton for the Egyptian municipal bean crop during the period (2020-2000)

X_{3i} : the farm price in pounds per ton for the Egyptian municipal bean crop during the period (2020-2000)

X_{4i} : retail price in pounds per ton for the Egyptian municipal bean crop during the period (2020-2000)

x_{5i} ; The export price is dollars per ton in Egypt during the period (2000-2020)

X_{7i} : population per million inhabitants in Egypt during the period (2000-2020)

X_{8i} : national income in Million Dollars for Egypt during the period (2000-2020)

X_{10i} : national income in Million Dollars for Austria during the period (2000-2020)

X_{11i} : population in million for Austria during the period (2000-2020).

• **Fourth: Results of the statistical estimation of the econometric model of the fava bean crop in Egypt:**

1-the equation of the Egyptian production of the municipal bean crop:

Table No. (7) shows the logarithmic values were used for both the quantity produced LnY1 (dependent variable) and the cultivated area of municipal beans lnX1, the agricultural price of municipal beans lnX3 and national income lnX8, and the amount of consumption of municipal beans lny2, (independent variables), where the results of the statistical estimation of equation No. (1) showed that increasing both the cultivated area, the agricultural price, the national income of Egypt and the quantity consumed of municipal beans by 1% leads to an increase in the quantity produced of beans municipal by %1.26 ، %0.32 ، %0.12 ، %0.86 for each of them in order. The statistical significance of the cultivated area, the agricultural price and the amount of consumption was proved, and the statistical significance of the national income was not proved at the level of 0.05, as well as the significance of the model as a whole. The results also showed that about 90% of the changes in the quantity produced of Egyptian municipal beans are due to the independent variables under study during the period (2000-2020).

Table (7): results of statistical estimation of the standard economic model of the Egyptian municipal bean crop during the period (2000-2020)

Equation Number	Variable	F	R ²	Estimated model
1	Production	278	0.90	$LnY_1 = 2.1 + 0.86 lnX_1 + 0.12 lnX_3 + 0.32 lnX_8 + 1.26 lny_2$ (2.31)* (13.3)** (2.3)* (1.88) (3.3)**
2	Consumption	19.7	0.47	$LnY_2 = 44.0 - 1.53 lnX_4 + 14.0 lnX_7 + 0.85 lnX_8 + 1.30 lny_1$ (6.81)** (-2.76)** (7.11)** (1.2) (5.61)**
3	Imports	23.0	0.52	$LnY_3 = 13.4 - 0.22 lnX_2 + 0.71 lnX_8 - 0.77 y_1 + 0.32 y_2$ (2.81)** (-5.82)** (0.96) (-2.92)** (1.84)
4	Exports	96.6	0.82	$LnY_4 = 70.7 - 0.59 lnX_5 + 4.9 lnX_9 + 1.4 lnX_{10} + 0.51 lny_1$ (4.0)** (-2.41)** (13.7)** (2.72)** (1.0)

2-The equation of Egyptian consumption of the fava bean crop:

Table No. (7) shows the Logarithmic values were used for both the quantity consumed LnY2 (dependent variable) and consumer price lnX4, the number of population lnX7, national income lnX8, and the quantity of production lny1 (independent variables), where the results of the statistical estimation of equation No. (2) showed that an increase in the number of population, national income, and the amount of production of municipal beans by 1% leads to an increase in the amount consumed of municipal beans by 14.0%, 0.85%, 1.30% each, respectively. While the results indicated that an increase in the consumer price by 1% leads to a decrease in the quantity consumed of municipal beans by 1.53%, where the statistical significance of both the consumer

price, the population, national income and the amount of production was proved, and the statistical significance of national income was not proved at the level of 0.05 as well as the morale of the model as a whole, the results also showed that about 47% of the changes in the quantity consumed of Egyptian municipal beans are due to the independent variables under study during the period (2000-2020).

3-Equivalence of Egyptian imports of the fava bean crop:

Table No. (7) shows the Logarithmic values were used for both the quantity of imports $\ln Y_3$ (dependent variable) and the import price $\ln x_2$, national income $\ln x_8$, the quantity of production y_1 , and the quantity of consumption y_2 (independent variables), where the results of the statistical estimation of equation No. (3) showed that an increase in both national income and the quantity of consumption by 1% leads to an increase in the imported quantity of municipal beans by 0.71%, 0.32% each, respectively, while the results indicated that an increase in both the import price and the quantity of production by 1% leads to a decrease in the imported quantity of municipal beans by 0.22% and 0.77%, respectively, as the statistical significance of both the import price and the quantity of The results also showed that about 52% of the changes in the imported quantity of municipal beans in Egypt are due to the independent variables under study during the period (2000-2020).

4-Export equation for the fava bean crop:

Table No. (7) shows the Logarithmic values have been used for both the quantity of exports $\ln Y_4$ (dependent variable) and the export price $\ln x_5$, the population of the state of Austria $\ln x_9$ and the national income of the state of Austria $\ln x_{10}$, and the quantity of production $\ln y_1$ (independent variables). The results of the statistical estimation of equation No. (4) the quantity of exports that increased increase in both the population of the Austrian state and the national income of Austria and the amount of production by 1% leads to an increase in the exported quantity of municipal beans by 4.9%, 1.4%, 0.51% each, respectively. While the results indicated that an increase in the export price by 1% leads to a decrease in the imported quantity of municipal beans by 0.59%. the statistical significance of both the export price, the population of Austria and the national income of Austria has been proven. the statistical significance of the production quantity has not been proven at the level of 0.05 as well as the morale of the model as a whole. the results also showed that about 82% of the changes in the exported quantity of Egyptian municipal beans are due to the independent variables under study during the period (2000-2020).

From the above, it can be seen that the most important determinants of the production, consumption, import and export of municipal beans in Egypt during the period 2000-2020 are the cultivated area, the agricultural price, the population of Egypt, the national income of Egypt, the population of the state of Austria, the national income of the state of Austria, consumer price, import price, export price .

Forecasting the behavior of model variables for the Egyptian municipal bean crop until 2030:

The study predicted the behavior of the model variables until 2030 scientific forecasting of the behavior of economic phenomena is one of the most important goals of econometrics, as scientific

forecasting is only a quantitative estimate of the expected values of dependent variables in the near future based on the information available to us about the past and the present. scientific forecasting assumes that the behavior of economic phenomena in the near future is only an extension of the behavior of these phenomena in the recent past and therefore the occurrence of sudden unexpected changes can lead to inaccuracy of scientific predictions of the future of economic phenomena.

Confirming the reliability of the estimated parameters of the model from an economic, statistical and econometric point of view remains the ability of the model to predict using the Theil (U) inequality coefficient test.

Where the value of U ranges from zero to the correct one, the closer it gets to zero, the more the model can predict, and vice versa, and if the test value is equal to the correct one, it means the stability of the variable over the period entrusted to the prediction ..

Table (8) shows the results of the Theil test for the variables of the Instant model, which indicates that the model has the ability to predict by approaching the Theil coefficient from zero and far from the correct one.

Table No. (8) the results of the Theil test for real-time model variables.

Equation Number	Internal variants of the municipal Bean	(U) Thiel
1	The total production volume of municipal beans in Thousand Tons Y^{1T}	0.01
2	the amount of municipal beans consumed in Thousand Tons Y^{2T}	0.03
3	ported quantity of municipal beans in Thousand Tons Y^{3T}	0.06
4	exported quantity of municipal beans in Thousand Tons Y^{4T}	0.04

Table No. (9) shows the expected values of the variables of the real-time model, namely the volume of production of municipal beans in Egypt, the volume of consumption of municipal beans in Egypt, the volume of imports of municipal beans in Egypt, the volume of exports of municipal beans in Egypt during the period (2021-2030), as it is expected that the total volume of production of municipal beans will decrease from about 196.7 thousand tons in 2021 to about 84.5 thousand tons in 2030 and represents about 57.0% of its value in 2021 using as for the volume of national consumption of municipal beans, it is expected to increase from about 888.3 thousand tons in 2021 to about 915.7 thousand tons in 2030 and represents about 3.0% of its value in 2021, it is also It is expected that the volume of imports of municipal beans in Egypt in Egypt will increase from about 352.1 thousand tons in 2021 to about 398.8 thousand tons in 2030, representing about 13.0% of its value in 2021, and as for the size of the gap of municipal beans in Egypt, it was found that it is expected to increase from about 691.6 thousand tons deficit in 2021 to reach about 831.2 thousand tons deficit in 2030, the percentage of self-sufficiency is expected to decrease from about 22.1% in 2021 to about 9.2% in 2030, as for the volume of exports of municipal beans, it is expected to increase from about 43.3 thousand tons in 2021 to about 48.8 thousand tons, representing about 17.0%.

Table No. (9): forecasting the actual values of variables using the equations of the real-time model and the equations of the general trend of the municipal bean crop in Egypt until 2030

The years	Prediction of simultaneous equations						Forecasting the overall trend					
	Production volume (thousand tons)	Consumption volume (thousand tons)	Volume of imports (thousand tons)	Export volume (thousand tons)	The size of the food gap (thousand tons)	The percentage of self-sufficiency (%)	Production volume (thousand tons)	Consumption volume (thousand tons)	Volume of imports (thousand tons)	Export volume (thousand tons)	The size of the food gap (thousand tons)	The percentage of self-sufficiency (%)
2021	196.7	888.3	352.1	43.4	691.6	22.1	120.0	772.2	341.0	41.3	652.2	15.5
2022	180.9	890.0	357.4	44.1	709.1	20.3	115.0	783.6	343.7	44.0	668.6	14.7
2023	165.1	894.8	361.7	44.9	729.7	18.5	111.0	795.0	346.3	46.7	684.0	14.0
2024	149.3	897.0	368.0	45.2	747.7	16.6	106.3	806.4	349.0	49.4	700.1	13.2
2025	133.5	900.3	372.8	45.7	766.8	14.8	101.8	817.8	351.6	52.1	716.0	12.4
2026	117.7	903.3	378.0	46.4	785.6	13.0	97.3	829.2	354.2	54.8	731.9	11.7
2027	101.9	906.4	383.2	47.0	804.5	11.2	92.8	840.6	356.9	57.5	747.8	11.0
2028	96.1	909.5	388.4	47.6	813.4	10.6	88.3	852.0	359.5	60.2	763.7	10.4
2029	90.3	912.6	393.6	48.2	822.3	9.9	83.8	863.4	362.2	62.9	779.6	9.7
2030	84.5	915.7	398.8	48.8	831.2	9.2	79.3	874.8	364.8	65.6	795.5	9.1

It is also shown from Table No. (9) the expected values of the actual values of the variables under study using the equations of the general trend, namely the volume of production of municipal beans in Egypt, the volume of consumption of municipal beans in Egypt, the volume of imports of municipal beans in Egypt, the volume of exports of municipal beans in Egypt during the period (2021-2030), as it is expected that the total volume of production of municipal beans from about 120.0 thousand tons in 2021 to about 79.3 thousand tons in 2030,

representing about 33.9% of its value in 2021 using the equations of the general trend, as for the volume of national consumption of municipal beans, it is expected to increase from about 772.2 thousand tons in 2021 to about 874.8 thousand tons. The volume of imports of municipal beans in Egypt is expected to increase from about 341.0 thousand tons in 2021 to about 364.8 thousand tons in 2030 and represents about 6.9% of its value in 2021, as for the size of the gap of municipal beans in Egypt, it was found that it is expected to increase from about 652.2 thousand tons in 2021 to reach about 795.5 thousand tons in 2030, the percentage of self-sufficiency is expected to decrease from about 15.5% in 2021 to about 9.1% in 2030, as for the volume of exports of municipal beans, it is expected to increase from about 41.3 thousand tons in 2021 to about 65.6 thousand tons, representing about 37.3%. Where municipal beans are exported and replaced in Egypt with imported beans as a result of its low price compared to the municipal beans that are exported.

Sixth: develop the necessary recommendations and proposals to improve the Egyptian municipal bean crop:

To promote the production of Egyptian municipal beans to reduce the lack of supply, which does not cover the required quantity, and to achieve this main proposal, it is necessary to achieve some of the following recommendations and sub-proposals:

- 1- activating the role of production policies to increase the production of municipal beans through the development of price policies that determine or achieve rewarding prices for the product and satisfactory to the consumer, which leads to raising the agricultural price of Egyptian municipal beans while reducing production costs, which brings a rewarding return to the farmer and this leads to encouraging the farmer to increase his production of municipal beans.
- 2- paying attention to agricultural extension of the municipal bean crop among farmers to promote it on the one hand, and increasing the acreage productivity on the other hand. And work to encourage farmers to adhere to the implementation of various recommendations packages that will increase production and thus increase their farm incomes and work to raise their standard of living.
- 3- the need to sensitize farmers to the methods of integrated control of Haluk that would increase production.
- 4- work on reviewing the policies of rationalizing consumption of the municipal bean crop by activating the role of the media in rationalizing individual consumption.

References

1. Mona Fathy Salama, Problems Facing the Cultivation of Fava Beans, Journal of Sustainable Agricultural Sciences, Mansoura University, Volume (43), Issue (4), 2017.
2. Central Agency for Mobilization and Statistics.
3. Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Agricultural Economics Bulletins.
4. Doaa Samir Mohamed, Economics of the Fava Bean Crop in Egypt, PhD Thesis, Department of Agricultural Economics, Faculty of Agriculture, Ain Shams University, 2013.
5. WORLD BANK, WWW.DATABANK.WORDBANK.ORG
6. FAO website www.fao.org