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Economics of wheat production and consumption in Egypt

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ABSTRACT
The study aimed to identify the current production and consumption situation of the wheat crop, study the most important factors affecting the consumption of wheat in Egypt, as well as study the possibility of reducing the wheat gap in Egypt.Using some descriptive and quantitative statistical methods. The results showed that changes in the quantity of wheat consumed are due to the change in the quantity produced, the quantity of imports, the value of the subsidy, and the price of the real product, while the most important factors which affecting the wheat produced quantity are the cultivated area, the quantity of imports, the quantity consumed, and the price of the real product. It was also found that the changes occurring in the wheat imports quantity are due to the change in the quantity consumed, the quantity of stock, the import price, and the population. Moreover, studying the possibility of reducing the gap in wheat through 3 scenarios, the first scenario is to increase wheat production by 10%, the second is to reduce consumption by 10%, and the third is to achieve both an increase in production and a decrease in consumption by 10%.

Keywords:
Consumption functions, the wheat gap, prediction usig ARIMA, 3SLS (Three- Stage least Squares).

I. INTRODUCTION:

Due to the large and continuous increase in the population of Egypt, the quantities produced from strategic crops, the most important of which is wheat, are not sufficient to meet the local needs. This led to a continuous decrease in the degree of self-sufficiency. It is known that wheat production in Egypt has increased significantly in recent years due to the great efforts made by the Egyptian government in this field. While the increase in production is matched by a large increase in the population, and therefore the increase in production does not meet consumer needs. So Egypt relies on imports from abroad to provide its wheat needs. Egypt relies heavily on importing wheat from the Black Sea countries, as it has bought about 82% of its wheat over the past five years from Russia and Ukraine, which offer lower prices and faster shipping times compared to other countries. Therefore, the Egyptian government seeks to increase production through horizontal development, which is carried out by increasing the cultivated area, and vertical development by using modern technological methods such as developing new varieties that are compatible with environmental conditions, and developing irrigation and drainage methods, and other means of vertical development.

Research problem

The problem of the study is the continued decline in the supply of wheat in Egypt, which leads to an increase in the gap between domestic production and the total consumption of wheat, which led to the import of large quantities from abroad to reduce this gap, which requires the provision of foreign currency, which represents a burden on the balance. The Egyptian commercial sector, especially in light of the current economic conditions at the global and local levels, which requires finding possible and quick alternatives to provide the population's needs for wheat and reduce the wheat gap.

The aim of the research:

the research aims to study the current situation of wheat production and consumption in Egypt through:

1- Studying the current production and consumption situation of wheat crop in Egypt.
2- Identifying the most important factors affecting wheat consumption in Egypt.
3- Studying the possibility of reducing the wheat gap in Egypt.

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Research method and data sources:

the study relied on the descriptive and quantitative method by using some different statistical measures such as general trend equations, and the Stata program was used to estimate the production, consumption, and imports efficiency functions of the wheat crop using the three-stage least squares method (3SLS), and the ARIMA program was used to predict With the quantities produced and consumed from the wheat crop, it was also used to predict the possibility of reducing the size of the wheat gap. The researcher relied on published and unpublished secondary data from the Ministry of Agriculture and Land Reclamation, the Central Agency for Public Mobilization and Statistics. And the General Authority for Export and Import Control.

II. THE RESULTS DISCUSION:

1- The current production and consumption situation of the wheat crop in Egypt

1-1 Area of wheat in Egypt

The general time trend equation No. (1) in Table No. (1) shows that the area cultivated with wheat in Egypt took an increasing statistically significant trend, amounting about 0.03 million feddans during the period (2005-2020), with an annual increase rate of about 0.79% from the average of The wheat cultivated area wheat in Egypt, which is about 3.14 million feddans, during the period under study.

1-2 Wheat production in Egypt

It is clear from the general time trend equation No. (2) in Table No. (1) that the wheat production in Egypt took an increasing statistically significant trend, amounting about 0.08 million tons during the period (2005-2020), with an annual increase rate of about 0.93% of the average wheat production in Egypt, which is About 8.55 million tons during the period under study.

1-3 Imports of wheat in Egypt

It is clear from the general time trend equation No. (3) in Table No. (1) that the amount of wheat imports in Egypt took a general increasing and statistically significant trend, amounting to about 0.36 million tons, with an annual increase rate of about 3.79% of the average wheat imports in Egypt, which amounted to about 9.41 million tons during the period (2005-2020).

Table No. (1) Equations for the general time trend of the area, total production, consumption, and imports of the wheat crop to Egypt during the period (2005-2020).

Description	Eq.	constant amount (a)	regression coefficient B	F	Annual average	Annual change rate (%)
Area (million feddan)	1	2.93 **(30.72)	0.03 *(2.53)	**6.4	3.14	3.98
Total production (million ton)	2	7.87 **(24.49)	0.08 *(2.38)	**5.68	8.55	0.93
Imports (million ton)	3	6.34 **(9.05)	0.36 **(4.92)	**24.22	9.41	3.79
Consumption (million ton)	4	13.87 **(47.75)	0.52 **(17.35)	**300.98	18.31	2.85

Where: the numbers below the regression coefficients refer to the calculated (t) value.
(**):statistical significance at 0.01.

(-) : indicates statistical insignificance

Source: It was estimated and calculated from the data in Table No. (1).

1-4 Available for consumption of wheat in Egypt

The results of the general time trend equation No. (4) in Table No. (1) indicats that the availability of wheat for consumption in Egypt took a general increasing statistically significant trend, amounting to about 0.52 million tons during the period (2005-2020), with an annual increase rate of about 2.85% of the average wheat available for consumption in Egypt, which is about 18.31 million tons, during the period under study. It was also found that the increase in the availability for consumption represents about three times the increase in production, which explains the increase in the size of the wheat gap and the need to resort to imports to bridge it in order to secure the provision of bread for citizens.

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2- Standard estimation of wheat consumption in Egypt using the three-stage least squares (3SLS).

The study of Intrilligator (1996), and the study of Yahya and Abdullah (2009) showed regression models are among the most simplified mathematical relationships for scientific reality, because these models assume the existence of a single direction of causation, in the sense that the explanatory variable (Explanatory or Indepented Variables) or the explanatory variables Or the independent affects the response variable and is not affected by it, but in reality most of the immediate relationships depend on the exchange of influence between the variables that make up the model. That is, there are at least a number of factors that depend automatically, that is, they affect and are affected by each other. In this case, it is not possible to use the model consisting of one equation to describe the relationship between the explanatory variable or explanatory variables and the response variable, so it is necessary to use a multi-equations model (simultaneous models), And that one of these models that involves the mutual influence between variables. The three-stage multiple regression method 3SLS can be considered an extension of the SLS2 method, because the first two stages of this method are in the estimation of SLS2 2 In the first stage, the estimations of the reduced figure parameters are found using the ordinary least squares method, while in the second stage, the estimations of the parameters of each An equation of the structural shape equations separately using 2SLS, while the third stage uses the general least squares method (GLS) to find the parameters of the structural shape equations in one go.

At the beginning of choosing the model, the extent to which the independent factors correlate with each other, as well as with the dependent factor, was estimated using the correlation matrix to eliminate the problems of estimation. Then, the three-stage simultaneous model was studied using more than one attempt to reach the estimate of any influencing and affected factors, which is known as the effect. Mutual means the relationship between the dependent factor and the independent factors and vice versa and access to the best mathematical images. The Durban Watson test was performed. The existing equations are the results of estimation using a statistical program STATA.

Model description;

The model consists of three structural equations in addition to the definition:

1- **The domestic wheat consumption equation:** we suppose that the most important factors affecting the amount of wheat consumed are represented in the quantity produced from the crop, the quantity of wheat imports, the real domestic consumer price of wheat, and the real monetary support in billion pounds provided by the state for wheat.

2- Equation of domestic production of wheat: we suppose that the most important factors affecting the quantity produced of wheat are the wheat area, the consumed quantity of wheat, the imported quantity of wheat, and the real product price.

3- The wheat import equation: I assume that the most important factors affecting the amount of wheat imports are the consumed quantity of wheat, the amount of stock, the import price of wheat, and the population.

4- Definitional equation: in which the consumed quantity of wheat = the quantity produced locally + the quantity of imports + the quantity of stock.

The model consists of Structural-Form Equations, which measure the direct effect of the explanatory variable on the dependent variable, while the reductive equations measure the overall direct and indirect effect of the specified variables on the internal variables, which cannot be explained in the structural formula of the model. The following is the mathematical description of the behavioral equations and Introducing the model.

Consumption Equation

$$QCOt = \alpha + \beta 1 QPOt + \beta 2\ QIOt + \beta 3\ Supt + \beta 4\ Rpot$$

Production Equation

$$ARE t = \alpha + \beta 1 QPOt - \beta 2\ QCOt + \beta 3\ QIOt + \beta 4\ Rpot$$

Import Equation

$$\beta 1\ QCOt + \beta 2\ QVOt + \beta 3 IPOt + \beta 4 Pt + QIOt = \alpha$$

Definitional Equation

$$QCO_t = QPO_t + QIO_t + QVO_t$$

Where:

P_t: population in million people per year t.

IPO_t: wheat import price in pounds/ton per year t.

SUP_t: The value of the subsidy in billion pounds provided to wheat in year t

ARE_t: Area of wheat in thousand acres per year t

QCOt: wheat consumed quantity in thousand tons per year t.

QPOt: wheat produced quantity in thousand tons per year t

QVOt: quantity of wheat stocks in thousand tons per year

QIOt: quantity of wheat imports in thousand tons per year t

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RPOt: The real produced price of wheat in pounds per ton per year

Consumption function estimation results

2-1 **function of the consumed quantity of wheat in Egypt**

The Equation No. (1) in Table No. (2) shows an estimate of the consumption function for the wheat crop, as R2 was about 0.94, which indicates that about 94% of the changes in the consumed quantity of wheat are due to the change in the quantity, the produced quantity of imports, the value of subsidies, and the real price of product, while it returns 0.06% of changes in the dependent variable for factors not measured by the function.

The results also showed that when increasing the quantity produced by about 1,000 tons, it leads to an increase in the quantity consumed by about 0.153, by about 1,000 tons. It also turns out that when increasing the amount of imports by about 1,000 tons, it leads to an increase in the quantity consumed by about 0.357 thousand tons. For wheat by one billion, this leads to an increase in the consumed quantity by about 185.2 thousand tons, and since wheat is a necessary commodity, it was found that despite the increase in the price of wheat, the consumed quantity increases by about 0.247 thousand tons.

2-2 **Estimating the domestic production function of wheat in Egypt**

The Equation No. (2) in Table (2) shows an estimate of the production function for the wheat crop, where it is clear that R2 was about 0.95, which indicates that about 95% of the changes occurring in the produced quantity of wheat are due to the change in the cultivated area, the quantity of imports, the consumed quantity, and the real price of product, while the rest of the unexplained changes are due to factors not measured by the function. It is also clear from the function that there is a direct relationship between the produced quantity of wheat and the cultivated area, the imported quantity, and the real product price, which mean that with an increase of each of them by one unit, the produced quantity of wheat increases by about 2.2, 0.11, and 0.625 thousand tons, respectively. While it was found that there is an inverse relationship between each of the consumed quantity of wheat and the quantity produced, that is, by decreasing the quantity consumed by one unit, the quantity produced of wheat increases by 0.115 thousand tons. Which is inconsistent with economic logic.

2-3 Estimating the wheat imports function of Egypt

It is clear from Equation (3) in Table (2) the estimate of the import function for the wheat crop, which shows that R2 is about 0.95, which indicates that about 95% of the changes occurring in the imported quantity of wheat are due to the change in the quantity consumed, the quantity of stock, import price, population, while the rest of the changes are due to factors not measured by the function.

It was also shown from the function that there is an inverse relationship between the imported quantity and the quantity of stock, that is, with an increase in the stock quantity, the imported quantity of wheat decreases by 1.33 thousand tons. Nesma increases the imported quantity of wheat by about 334.3 thousand tons.

Table 2: Estimating the consumption, production and wheat imports functions in Egypt during the period (2000-2020)

statement	Equation	R^2	F
Consumption	QCO_t =9073.5 +0.153QPO_t.+0.357QIO_t +185.2Sup_t+0.247$RPoc_t$ (0.51)$^-$ (2.69)** (2.92)** (3.25)**	0.94	359**
Production	QPO_t =-183.9 + 2.22ARE_t – 0.115 QCO_t + 0.11QIO_t + 0.625 RPO_t (6.8)** (-2.47)** (1.98)* (1.69)$^-$	0.95	415**
Import	QIO_t =-12001+ 0.009QCO_t -1.33 QVO_t - 6.33IPO + 334.32P_t (0.03)$^-$ (-6.06)** (-5.6)** (3.25)**	0.95	388**

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Where: the numbers below the coefficients refer to the calculated (t) value.
(**):statistical significance at 0.01. (*)statistical significance at 0.05
(-) : indicates statistical insignificance. ϵ: refers to the Elasticity of the variables
Source: It was estimated and calculated from the data in Table No. (1).

Results of forecasting for each of the produced quantity, consumed quantity, and the wheat gap for the year 2030.

Predictions were made using the ARIMA program

1- The results of the forecasting for the produced quantity

The quantity produced has been forecast for the period (2021-2030), as it is clear from Table No. (3) and Figure No. (1) that the predicted produced quantity in 2025 is expected to reach about 10.48 million tons, and it will increase to reach about 11.249 million tons in 2030 Under current conditions (rate of change) in population, production, area and consumption.

2-Results of forecasting for the consumed quantity:

It appears from Table No. (4) and Figure No. (2) that the consumed quantity of the wheat crop is expected to reach 25 million tons in 2025, and in 2030 it will reach about 27.55 million tons. It should be noted that the increase in the consumed quantity is more than double of the produced quantity, which affects the The gap and self-sufficiency despite the same current conditions of the rate of increase in population, production and area.

3- Results of forecasting for the wheat gap:

It is clear from table No. (5) and Figure No. (3) the forecast of the wheat gap for the period (2020-2030) which shows that the predicted size of the wheat gap in 2025 is expected to reach 14.48 million tons, and it will increase to reach about 16.1 million tons in 2030. It is assumed There is a decrease in the wheat gap, but the increase in consumption is estimated at twice the increase in the quantity produced, which makes the gap continue to increase.

Table (3). Results of forecasting the amount of wheat produced in 2030

Period	Production Forecast	Lower 95.0% Limit	Upper 95.0% Limit
2021	9869.6	8555.97	11183.2
2022	10022.9	8693.06	11352.7
2023	10176.2	8828.97	11523.3
2024	10329.4	8963.74	11695.1
2025	10482.7	9097.41	11868.0
2026	10636.0	9230.03	12042.0
2027	10789.3	9361.64	12216.9
2028	10942.5	9492.3	12392.8
2029	11095.8	9622.04	12569.6
2030	11249.1	9750.91	12747.3

Source: Collected and calculated from the data of Table

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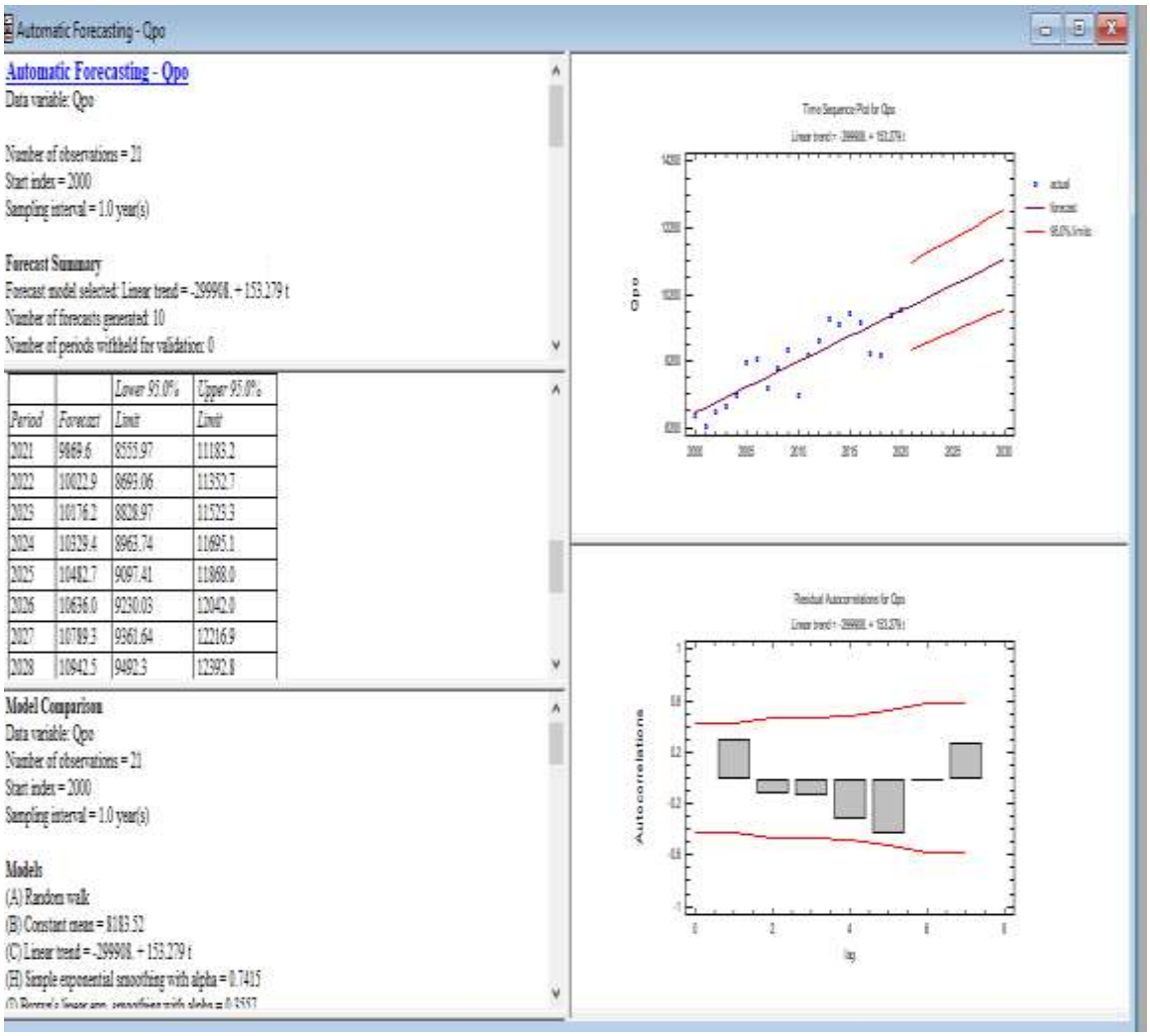

Figure No. (1) shows the forecast for the amount of No. (1) in the appendix wheat produced in 2030

Table (4). Future forecasts for the consumed amount of wheat in 2030

Period	Consumption Forecast	Lower 95.0% Limit	Upper 95.0% Limit
2021	22872.7	21614.1	24131.3
2022	23508.0	21916.5	25099.5
2023	24061.8	22470.3	25653.4
2024	24544.8	22784.6	26305.0
2025	25005.2	23006.8	27003.6
2026	25483.1	23361.8	27604.5
2027	25990.2	23834.9	28145.5
2028	26515.3	24351.1	28679.5
2029	27041.7	24868.1	29215.2
2030	27559.1	25363.9	29754.4

Source: Collected and calculated from the data of Table

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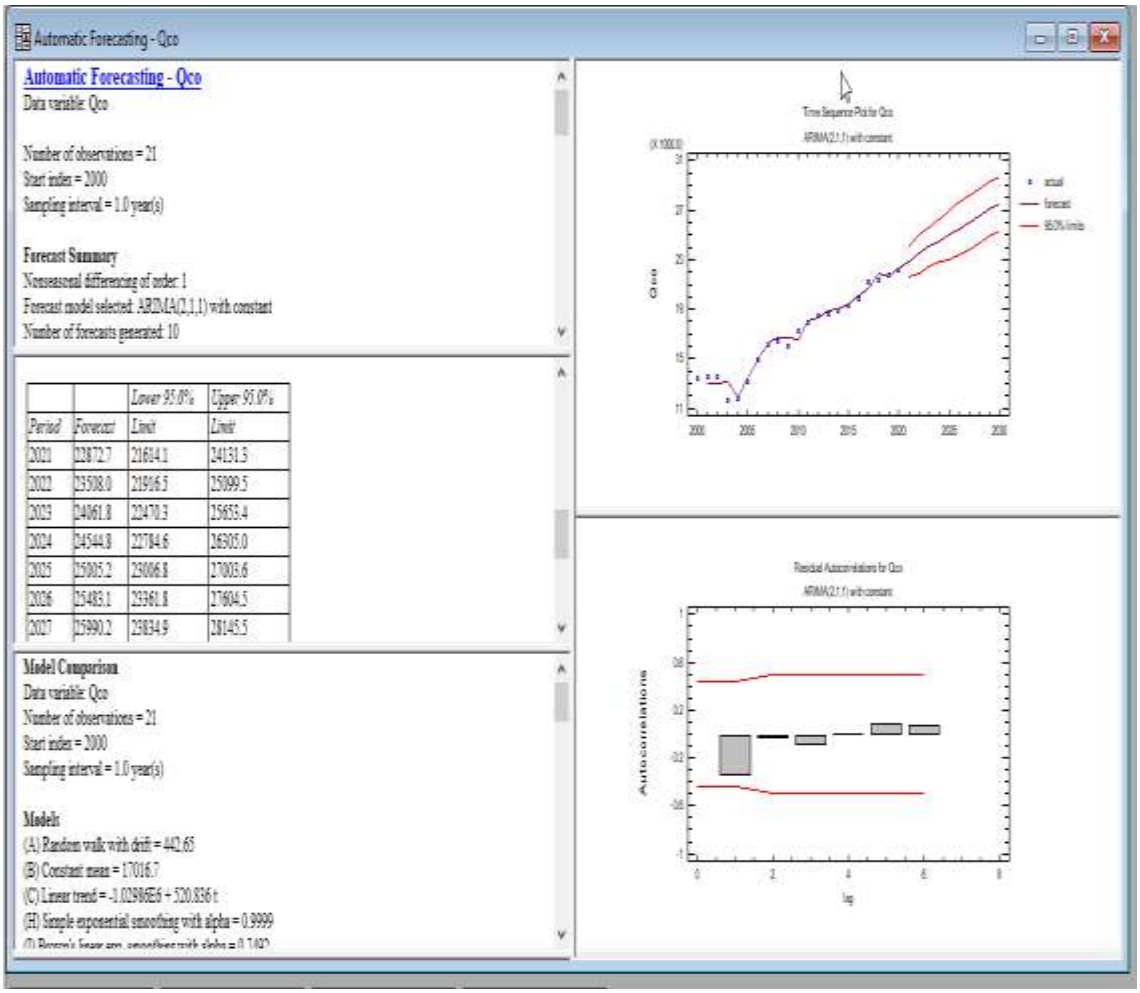

Figure No. (1) shows the forecast for the consumed amount of wheat No. (1) in the appendix in 2030

Table (5). Results of forecasting of the wheat gab 2030

Period	Gap Forecast	Lower 95.0% Limit	Upper 95.0% Limit
2021	13041.1	11003.8	15078.4
2022	13382.1	11157.1	15607.1
2023	13732.2	11444.0	16020.4
2024	14082.4	11732.7	16432.0
2025	14432.5	12023.0	16842.0
2026	14782.6	12314.7	17250.5
2027	15132.7	12607.7	17657.8
2028	15482.9	12902.0	18063.7
2029	15833.0	13197.5	18468.5
2030	16183.1	13494.1	18872.1

Source: Collected and calculated from the data of Table

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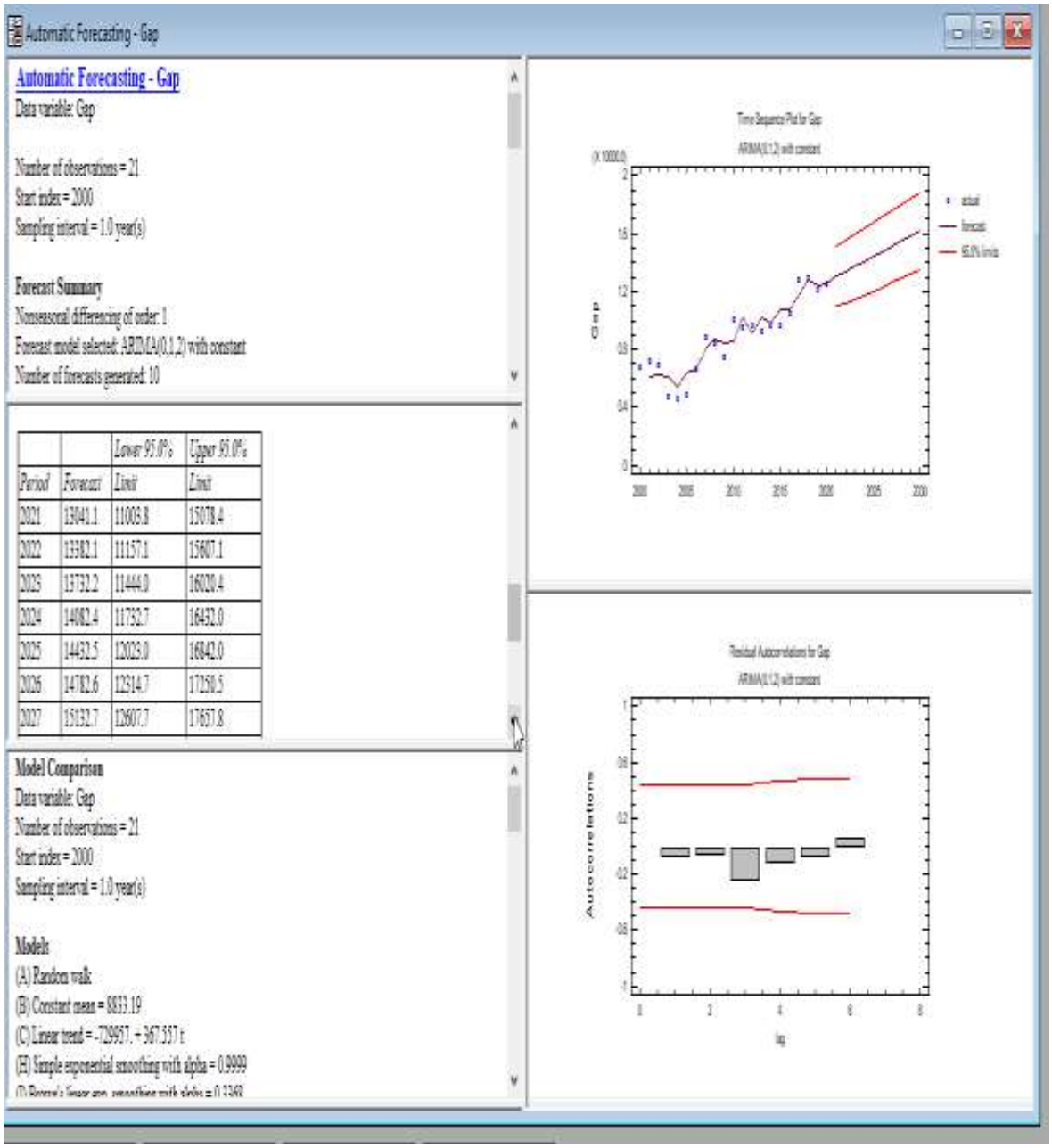

Figure No. (1) shows the forecast for the wheat gap amount of wheat No. (1) in the appendix in 2030

Fourth: Possibilities of reducing the wheat gap in Egypt

There areThree scenarios were developed to reduce the wheat gap:

4-1 The first scenario

In the case of increasing wheat production by 10%, this can be achieved by increasing the cultivated area of wheat by horizontal expansion in the Egyptian desert .As it appears from Table No. (6) and Figure No. (4) that the predicted size of the wheat gap in 2025 is expected to reach about 13.38 million tons, and it will continue to increase to reach about 15 million tons in 2030. The increase in the gap is due to the increase in the amount consumed at a rate greater than produced quantity.

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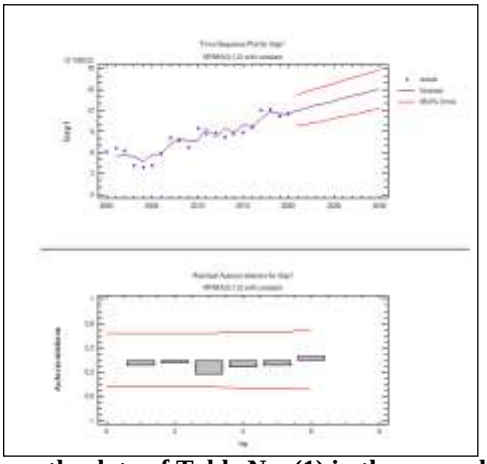
Table (6). The results of forecasting the size of the wheat gap for the year 2030 in the case of an increase in production by 10%.

Period	Gap 1 Forecast	Lower 95.0% Limit	Upper 95.0% Limit
2021	12069.5	9946.47	14192.5
2022	12381.4	10059.8	14703.1
2023	12715.5	10329.1	15102.0
2024	13049.6	10600.1	15499.2
2025	13383.7	10872.6	15894.8
2026	13717.8	11146.7	16288.9
2027	14051.9	11422.1	16681.6
2028	14386.0	11698.8	17073.1
2029	14720.1	11976.7	17463.4
2030	15054.1	12255.8	17852.5



Source: Collected and calculated from the data of Table No. (1) in the appendix

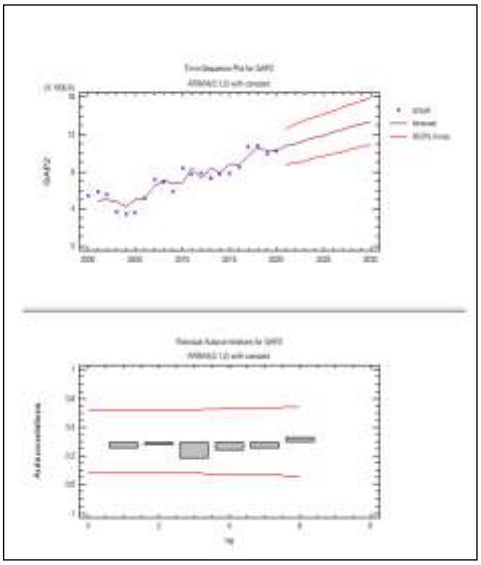
Figure No. (4) shows the prediction of the wheat gap for the year 2030 in the case of increasing the production by 10%.

4-2-The second scenario

It is clear from table No. (7) and Figure No. (5) that the prediction of the gap after a decrease in the consumed amount of wheat by 10% for the period (2020-2030), which expected to be about 11.9 million tons in 2025, and will increase to about 13.4 million tons in 2030.

Table No. (7) Results of forecasting the size of the wheat gap for the year 2030 in the case of decreasing the consumption by 10%.

Period	GAP2 Forecast	Lower 95.0% Limit	Upper 95.0% Limit
2021	10764.7	8845.53	12683.8
2022	11042.7	8945.05	13140.3
2023	11341.7	9185.76	13497.7
2024	11640.8	9428.01	13853.6
2025	11939.9	9671.69	14208.1
2026	12239.0	9916.68	14561.3
2027	12538.1	10162.9	14913.2
2028	12837.2	10410.3	15264.0
2029	13136.2	10658.7	15613.7
2030	13435.3	10908.2	15962.4



Source: Collected and calculated from the data of Table No. (1) in the appendix

Figure No. (5) shows the prediction of the wheat gap for the year 2030 in the case of decreasing the consumption by 10%.

4-3- The third scenario

It represents an increase in production and a decrease in consumption together by about 10% .As it is clear from Table No.(8) and Figure No. (9) that if wheat production will increase by about 10%, and consumption also will reduce by about 10%, the predicted gap in wheat in 2025 will

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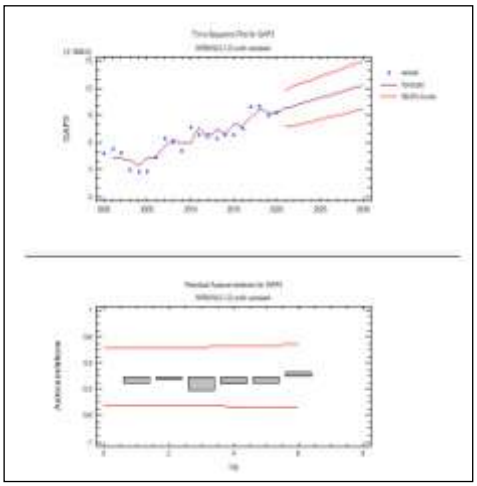
reach about 10.9 million tons, and in 2030 it will reach about 12.3 million tons.

Table No. (8) Results of forecasting the size of the wheat gap for the year 2030 in the case of an increase in production and a decrease in consumption by 10%

Period	GAP3	Lower 95.0%	Upper 95.0%
	Forecast	Limit	Limit
2021	9800.83	7792.39	11809.3
2022	10057.1	7864.16	12250.1
2023	10340.4	8088.49	12592.3
2024	10623.7	8314.33	12933.0
2025	10907.0	8541.57	13272.3
2026	11190.2	8770.1	13610.4
2027	11473.5	8999.84	13947.2
2028	11756.8	9230.71	14282.8
2029	12040.1	9462.66	14617.4
2030	12323.3	9695.6	14951.0



Source: Collected and calculated from the data of Table No. (1) in the appendix

Figure No. (6) shows the prediction of the wheat gap for the year 2030 in the case of increase in production decreasing the consumption by 10%.

appendix

Table 1: Area, production, consumption, imports, farm price, consumer price, import price, stocks, Wheat subsidy and population in Egypt during the period (2000-2020).

Years	Area (1000 feddan)	Production (1000 Ton)	Consumed quantity(1000 ton)	Imported (1000 ton)	Stock (1000 ton)	Farm price (pound/ton)	Consumer price (pound/ton)	Import price (pound/ton)	Wheat subsidy(million pound)	Population (million Nasama)
Year	**Area**	**Qpo**	**Qco**	**Qio**	**Qvo**	**Rpo**	**RPOC**	**Ipo**	**Sup**	**Pt**
2000	2463	6564	13372	5900	1009	795	2261	403	0.9	64.65
2001	2342	6255	13483	4410	1082	850	2256	668	1.5	65.99
2002	2452	6645	13516	5570	1226	798	2094	526	3.7	67.31
2003	2506	6845	11639	4060	1219	809	2538	758	1.6	68.65
2004	2605	7178	11812	6370	1071	766	3181	611	1.3	70
2005	2985	8141	13061	5690	1482	1086	3005	705	2.9	71.35
2006	3064	8274	14913	8000	1738	1229	3525	541	6.8	72.94
2007	2715	7379	16198	7240	2161	720	3166	531	7.5	74.44
2008	2920	7977	16436	8330	1959	836	5820	478	7.2	76.1
2009	3147	8523	16047	9120	1849	824	4960	481	8.8	77.84
2010	3001	7169	17282	9800	1078	821	4980	557	9.5	79.62
2011	3049	8370	17867	10800	1062	1077	7650	423	6.3	81.57
2012	3161	8795	18485	6540	3980	1129	8280	531	9.7	83.67
2013	3378	9460	18654	7870	1454	1423	8950	1001	17.6	85.78
2014	3393	9280	18911	8110	2021	1165	10170	1044	11.1	87.96
2015	3469	9608	19323	9980	1779	1535	10680	863	16.3	90.09
2016	3353	9342	19853	9790	1685	1405	15250	981	13.8	92.12
2017	2921	8421	21268	12020	1883	1079	12039	937	18.5	96.2
2018	3157	8349	21302	11370	2051	960	12732	1101	20.4	98.1
2019	3469	9563	21704	12895	2211	1291	13424	1126	19	97.5
2020	3521	9716	22225	13020	2265	1318	14116	1186	20.2	99.3

Source :
* Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Agricultural Economy Bulletins, separate issues.
* Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, Food Balance, various issues.

III. SUMMARY

The significant and continuous increase in the population of Egypt is a concern as the local production of strategic crops, especially wheat, is not sufficient to meet the necessary needs of the people which led to a continuous decrease in the self-sufficiency of wheat, thus Egypt relies on imports from different countries to fulfill its wheat needs, resulting in a low supply of wheat available for consumption. The study aims to identify the current production and consumption situation of wheat and determine the most important factors affecting its consumption, in addition to the possibility of reducing the wheat gap in Egypt. The study relied on descriptive and quantitative statistical methods.

The results of the study showed that the wheat consumption function indicated that when the produced and the imported quantities of wheat are increased by a thousand tons the consumed quantity would increase by 0.153 and 0.357 thousand tons, respectively. likewise, the increase in the financial support directed to wheat by one billion Egyptian pounds leads to an increase in the quantity consumed by about 185.2 thousand tons. Since wheat is a necessary commodity, it has been found that despite the increase in the price of wheat the quantity consumed increases by about 0.247 thousand tons. As for the primary factors affecting the produced quantity of wheat are the cultivated area, the quantity imported, the consumed quantity, and the commodity's real price, It was found that by increasing the wheat area, the quantity of imports, and the price of wheat by one unit, the produced quantity of it increases by about 2.2, 0.115, and 0.625 thousand tons, respectively. whereas by decreasing the imported quantity by one unit the quantity produced of wheat would increase by 0.111 thousand tons. Also, the importation function indicated that increasing the national stock of wheat and the importing price by one unit would decrease the imported quantity of wheat by 1.33 and 6.32 thousand tons, respectively. And with the increase in the population by a million the imported quantity of wheat would increase by 334.3 thousand tons. Regarding the forecasting of the produced and consumed quantity of wheat and the size of the wheat gap under the current conditions of the population, production, consumption, and cultivated area showed that the produced quantity, the consumed quantity, and the gap of wheat are expected to reach 10.48, 25, 14.48 million tons by 2025 respectively. Moreover, studying the possibility of reducing the gap in wheat through 3 scenarios, the first scenario is to increase wheat production by 10%, the second is to reduce consumption by 10%, and the third is to achieve both an increase in production and a decrease in consumption by 10%. Finally, it is expected that by 2025 the wheat gap will reach 13.38, 11.9, and 10.9 million tons for the three scenarios respectively, and the gap will continue increasing by 2030 to reach 15, 13.4, and 12.3 million tons respectively.

IV. RECOMMENDATIONS:

1- The research's results showed the importance of increasing the cultivated area, so the area cultivated with wheat must be expanded, Working on devising varieties suitable for the cultivation conditions in the Egyptian desert to increase the quantity produced.
2- The results shows an increase in the financial support provided to wheat, so the research recommends rationalizing the consumption of wheat by mixing wheat with potatoes, barley, and oats in proportions consistent with the general taste.
3- The research confirmed the importance of the real product price, so the government should encourage farmers to expand the cultivation of the wheat by put an appropriate price that would achieve a higher profit for them than competing crops.
4- The research showed the importance of the wheat stock quantity in the decrease of its imports quantity, so attention must be paid to the provision and spread of modern silos to reduce waste while addressing the effects of seasonal changes in the import price.

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