

Effects of Liberalizing the Exchange Rate on the Production Costs for Cotton and Sugar Beet (Case Study: The New Lands of Kafr El-Sheikh Governorate, Egypt)

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ABSTRACT

The policy of decreasing the local currency is considered one of the most important policies to achieve external balance by increasing exports and reducing imports. The exchange rate of the Egyptian pound has deteriorated compared to the US dollar in light of the liberalization of the economy from about 2.1 LE/\$ in 1990 to about 3.4 LE/\$ in 2000, then to about 5.95 LE/\$ in 2010, and exceeded LE 8 in 2015, reaching about 8.88 LE/\$ in October 2016. The problem of the study is the emergence of positive and negative effects on the national economy in general and the agricultural sector in particular, and the problem of high prices has led to Local demand for goods, especially agricultural and food, and the occurrence of fluctuations in the volume of agricultural trade and the agricultural trade balance affect the national economy, The research generally aims to measure the impact of changing the exchange rate on the production requirements for cotton and sugar beet crops in Kafr El-Sheikh Governorate by achieving the following sub-objectives: studying the productive indicators for cotton and sugar beet crops in Egypt and Kafr El-Sheikh Governorate, studying the impact of liberalizing the exchange rate on agricultural production requirements in Kafr El-Sheikh Governorate, a study Productive problems of cotton and sugar beet crops in Kafr El-Sheikh Governorate. The study relied on the descriptive and quantitative analytical method to estimate and explain economic phenomena related to the economic and social effects of

liberalizing the exchange rate on production requirements, using the descriptive analysis method to describe the problem, in addition to the quantitative analysis method using some different measurements such as the general trend. Regarding data sources, the study relied mainly on field data by selecting a random sample in the Al-Hamoul center in Kafr El-Sheikh Governorate during the agricultural season 2022/2023. The most important results were an increase in the cost of an feddan of cotton from about LE 30,500 during the 2021/2022 production season to about LE 36,380 during the 2022/2023 production season, an increase of LE 5,880, representing about 16.16%. The highest increase was in the items of human labor costs, followed by the cost of pesticides, with percentages amounting to about 35.16%, 10.99%, and it was also shown that the costs of an feddan of sugar beets increased from about LE 20,601 during the 2021/2022 production season to about 28,245 pounds during the 2022/2023 production season, an increase of LE 7,644, representing about 27.06%, and that the highest increase was in the labor cost items. Human work is followed by automated work, with percentages of about 29.39% and 12.79%.

Keywords: nominal exchange rate, real exchange rate, cotton and sugar beet, production costs, Kafr El-Sheikh Governorate, Egypt.

INTRODUCTION

The policy of decreasing the local currency is considered one of the most important policies to achieve external balance by increasing exports and reducing imports. The exchange rate of LE (Egyptian pound) has deteriorated compared to the US dollar in light of the liberalization of the economy from about 2.1 LE/\$ in 1990 and then to about 3.4 LE/\$. In 2000, then to about 5.95 LE/\$ in 2010, and exceeded 8 pounds in 2015, reaching about 8.88 LE/\$ in October 2016. Central Bank of Egypt adopted the devaluation of the Egyptian pound as an attempt to get out of the current economic crisis into a market economy and give a strong impetus to the national economy. Through the strategy of increasing exports and reducing imports to rebalance the Egyptian trade balance, it is noted that total imports increased from about \$ 58.903 billion in 2011 to about \$ 76.213 billion in 2016, with an increase of about 29.4%, while total exports declined from about \$ 30.528 billion in 2011 to about \$ 18.705 billion in 2016, with a decrease of about 38.7%. % Compared to 2011, and it was shown that the deficit in the total trade balance increased from about \$ 28.38 billion in 2011 to about \$ 57.51 billion in 2016, an increase of about 102.7% compared to 2011.

The economic report prepared by the World Bank (<http://www.syrianef.org/?p=491//ar.wikipedia.org/wiki>, 2015) for the most important countries ranked in terms of gross domestic product revealed that the United States of America still maintains its lead in the global economy, with a gross domestic product of about \$ 17.968 trillion, and a growth rate of the gross domestic product of 2.6%, and China came second. In second place, its domestic product reached about \$ 11.385 trillion, with a growth rate of 6.8%, followed by Japan with about \$ 4.116 trillion, with a growth rate of 2.9%, while Russia ranked thirteenth with about \$ 1.236 trillion, with a growth rate of negative -3.8%. Turkey ranked eighteenth with a GDP of about \$ 722 billion, with a growth rate of 3%, followed by Saudi Arabia with about \$ 632 billion, with a growth rate of 3.4%, and Egypt ranked 185th as the last country in the ranking.

RESEARCH PROBLEM

On November 28, 2016, the Governor of the Central Bank of Egypt took the decision to liberalize the exchange rate of the LE against the US dollar and thus other foreign currencies, or what is known as the decision to float the pound, with the aim of restoring the structural adjustment of the Egyptian economy and liberalizing it, relying on market forces and its indicators, especially with the rise in the budget deficit to reach about 319.46. LE one billion, representing about 9.39% of the total value of the domestic product, the increase in external debt to about \$ 79.03 billion, representing about 33.6% of the total value of the domestic product, and the increase in the trade deficit to about \$ 35.44 billion in 2017, which led to the emergence of positive and negative effects. on the national economy in general and the agricultural sector in particular, the problem of high local prices for commodities, especially agricultural and food, and the occurrence of fluctuations in the volume of agricultural trade and the agricultural trade balance have affected the national economy, which necessitated a study of the impact of exchange rate changes on the cost of production input prices for cotton and sugar beet crops in Egypt and Kafr El-Sheikh.

RESEARCH OBJECTIVES

The research generally aims to measure the impact of exchange rate change on the production costs for cotton and sugar beet crops in Kafr El-Sheikh Governorate by achieving the following sub-objectives:

1. Studying of production indicators for cotton and sugar beet crops in Egypt and Kafr El-Sheikh Governorate.
2. Studying the impact of liberalizing the exchange rate on agricultural production costs in Kafr El-Sheikh Governorate.
3. Studying of the production problems of cotton and sugar beet crops in Kafr El-Sheikh Governorate.

METHODOLOGY

The study relied on the descriptive and quantitative analytical method to estimate and explain economic phenomena related to the economic and social effects of liberalizing the exchange rate on production costs, using the descriptive analysis method to describe the problem, in addition to the quantitative analysis method using some different measurements such as the general trend. Regarding data sources, the study relied mainly on field data by selecting a random sample in the Al-Hamoul Center in Kafr El-Sheikh Governorate during the agricultural season 2022/2023, and data was collected from the sample members using a questionnaire form prepared to complete the data required for the study. This is in addition to published and unpublished data from the Central Agency for Public Mobilization and Statistics.

First: The Theoretical Framework

Definition of Exchange Rate:

It is the price or value of a currency expressed in another currency, that is, the price of a unit of the local currency expressed in units of foreign currency, as in the United States of America, where the dollar = 1.5 euros, or the price of a unit of foreign currency expressed in units of the local currency, as in Egypt, is 1 dollar = 16 pounds for example.

Types of Exchange Rate: Types of Exchange Rate Are Addressed as Follows:

- A. **Nominal Exchange Rate:** The nominal exchange rate is defined as the price of a foreign currency in terms of a local currency, and is determined according to demand and supply in the exchange market at a specific moment in time. The exchange rate can change according to supply and demand or according to the exchange system adopted in the country. This price represents the current currency price and does not take into account the purchasing power of the currency. The nominal exchange rate changes daily, either with improvement, which means an increase in the exchange rate of the local currency relative to the foreign currency, or deterioration, which means a decrease in the exchange rate of the local currency against the foreign currency. Therefore, the nominal exchange rate is seen as measuring the relative prices between two monetary currencies. The nominal exchange rate is divided into two parts:
 1. The official exchange rate is the one in effect for official commercial exchanges.
 2. The parallel exchange rate is the one used in parallel markets, and this means that there is more than one nominal exchange rate for the currency in the same country.
- B. **The Real Exchange Rate:** The real exchange rate is defined as the number of units of foreign currency needed to purchase one unit of local goods. This means that the real exchange rate is considered a real concept that measures the relative prices of the two commodities, and takes into account purchasing power, so it is called the expression (purchasing power parity).
- C. **The Equilibrium Exchange Rate:** It is the exchange rate that is consistent with the overall economic balance, meaning that it represents the balance of payments when the economy is growing at a normal rate.

Exchange Rate Theories:***Purchasing Power Parity Theory:***

The origin of this theory goes back to the Swedish economist Gustav Cassel, where Cassel believes that the external value of a country's currency exchange rate is determined according to its purchasing power in the local market relative to its purchasing power in the foreign market.

The Theory of Interest Rate Parity:

Keynes began to explore the relationship that exists between the exchange rate and the interest rate, as he sought to reveal the interconnection that exists between the national monetary market and the exchange market through the principle that a change in interest rates in two countries must affect the rate of change in the exchange rate, meaning The difference between interest rates between two countries results in either an improvement or deterioration of the domestic currency relative to the foreign currency.

The Theory of Determining the Exchange Rate Based on Trade or Flexibility:

This theory is based on the flow of goods and services. According to this theory, the equilibrium exchange rate is the one that achieves equality in the values of both the country's exports and imports.

Balances Theory:

It is based on the fact that the exchange rate is determined according to the balance of payments. If the balance of payments achieves a deficit, which means that the balance is

negative, this indicates an increase in the quantity supplied of the local currency, which leads to a decrease in its external value, and the opposite occurs when the balance of payments achieves a surplus.

Productivity Theory:

The proponents of this theory believe that the exchange rate should move in the same direction as the country's productive power. As the productivity of the various sectors of the national economy increases, foreign capital movements inward through investment increase, so the demand for the local currency increases, and thus this improves the currency exchange rate. Either in the case of a decrease in the level of productivity, it leads to the exit of foreign capital and the rise in production costs, and thus the demand for the local currency decreases. Which contributes to a decrease in the competitive strength of the state in the event of a decrease in the level of productivity and an increase in the exchange rate of the local currency, which results in an increase in the price of the local currency due to a decrease in production and exports. The demand for foreign goods increases, which leads to a deficit in the balance of payments, but when the level of production improves, it leads to an increase in the prices of goods and services. The theory's owners see the need to improve the local currency in a way that is commensurate with the level of productivity of the national economy in the various sectors.

RESEARCH RESULTS AND DISCUSSION

First: Productive Indicators for Cotton and Sugar Beet Crops in Egypt and Kafr El-Sheikh

This part includes a study and analysis of the temporal developments of productive indicators for beet and cotton crops during the period 2000-2022, and we will review them as follows:

Development of Productive Indicators for The Cotton Crop in Egypt and Kafr El-Sheikh Governorate:

The following is a review and analysis of the development of productive and economic indicators for the cotton crop as presented in tables (1, 2) as follows:

Cultivated Area:

- **The Cultivated Area in Egypt:** By reviewing the development of the cultivated area, it was found that it took a decreasing trend, as it decreased from about 731 thousand feddan (1 Feddan = 0.42 hectare) in 2001 to 132 thousand feddan in 2016, with an average of about 428.3 thousand feddan, and a standard deviation of about 190.9 thousand feddan, with a coefficient of variation of about 44.6%, and by estimating the general time trend equation, it was found that it took a general decreasing trend by an annual amount of - 0.061 thousand feddan, with an annual decreasing rate of about - 6.1% during the study period, and the value of the coefficient of determination indicates that about 69% of the changes occurring are due to factors Its effects reflect time.
- **The Cultivated Area in Kafr El-Sheikh Governorate:** By reviewing the development of the cultivated area, it was found that it took a decreasing trend, as it decreased from about 156.1 thousand feddan in 2020 to about 47.2 thousand feddan in 2016, with an average of about 103.1 thousand feddan, and a standard deviation of about 29.0 thousand feddan, with a coefficient of variation of About 28.1%, and estimating the general trend equation turned out to be insignificant, which indicates its relative stability around its average during the study period.

Feddan Productivity:

- **Feddan Productivity in Egypt:** By reviewing the development of acre productivity, it was found that it tooks a decreasing trend, as it decreased from about 11.1 tons/ feddan in 2016 to about 1.20 tons/ feddan in 2019, with an average of about 5.28 tons/ feddan, and a standard deviation of about 2.7 tons/ feddan. With a coefficient of variation of about 51.8%, and by estimating the general time trend equation, it was found that it tooks a general decreasing trend by an annual amount of - 0.086 thousand tons, with an annual decreasing rate of about - 8.6% during the study period, and the value of the coefficient of determination indicates that about 59% of the changes occurring It is due to factors whose effects reflect time.
- **Feddan Productivity in Kafr El-Sheikh Governorate:** By reviewing the development of feddan productivity, it was found that it tooks a decreasing trend, as it decreased from about 1.28 tons/ feddan in 2022 to about 0.76 tons/ feddan in 2016, with an average of about 1.10 tons/ feddan, and a standard deviation of about 0.11 tons/ feddan, with a factor a difference of about 9.9%, and by estimating the general trend equation, it was found to be insignificant, which indicates its relative stability around its mean during the study period.

Total Production:

- **Total Production in Egypt:** By reviewing the development of the total amount of production, it was found that it tooks a decreasing trend, as it decreased from about 5263.2 thousand tons in 2001 to about 237.9 thousand tons in 2020, with an average of about 2508.4 thousand tons, and a standard deviation of about 1780.8 thousand tons, with a coefficient of variation It amounted to about 71.1%, and by estimating the general time trend equation, it was found that it tooks a general decreasing trend by an annual amount of - 0.148 thousand tons, with an annual decreasing rate of about - 14.8% during the study period, and the value of the coefficient of determination indicates that about 82% of the changes occurring are due to Factors whose effect reflects time.
- **Total Production in Kafr El-Sheikh Governorate:** By reviewing the development of the total amount of production, it was found that it tooks a decreasing trend, as it decreased from about 180.6 thousand tons in 2004, representing about 3.53% of the total production, to about 35.9 thousand tons in 2016, representing about 2.49%, with an average of about 115.2 thousand tons. And a standard deviation of about 36.2 thousand tons, with a coefficient of variation of about 31.4%, and estimating the general trend equation showed that it was not significant, which indicates its relative stability around its average during the study period.

Table No. (1): Development of productive indicators for the cotton crop in Egypt and Kafr El-Sheikh during the period (2000-2022).

Years	Egypt			Kafr El-Sheikh Governorate			% From production
	Cultivated area 10 ³ fed.	Feddan productivity (ton)	Total production 10 ³ ton	Cultivated area 10 ³ fed.	Feddan productivity (ton)	Total production 10 ³ ton	
2000	518	6.80	3522.4	95.4	1.08	103.0	2.93
2001	731	7.20	5263.2	127.1	1.08	137.3	2.61
2002	706	6.90	4871.4	127.0	1.13	143.5	2.94
2003	531	7.00	3717	110.0	1.17	128.7	3.46

2004	731	7.00	5117	151.8	1.19	180.6	3.53
2005	644	6.20	3992.8	142.3	1.02	145.1	3.62
2006	592	7.10	4203.2	122.5	1.16	142.1	3.38
2007	582	6.90	4015.8	116.1	1.14	132.4	3.28
2008	571	6.80	3882.8	65.4	1.10	71.9	1.85
2009	561	6.30	3534.3	70.6	1.20	84.7	2.40
2010	369	6.50	2398.5	102.6	1.20	123.1	5.14
2011	520	7.70	4004	134.5	1.21	162.7	4.05
2012	334	5.60	1870.4	89.7	1.16	104.1	5.54
2013	277	5.60	1551.2	84.4	1.13	95.4	6.15
2014	264	5.00	1320	105.0	0.96	100.8	7.64
2015	241	4.20	1012.2	73.7	0.96	70.8	6.97
2016	132	11.00	1452	47.2	0.76	35.9	2.49
2017	217	1.20	260.4	79.3	1.03	81.7	31.53
2018	336	1.30	436.8	106.5	1.12	119.3	27.36
2019	239	1.20	286.8	70.6	1.03	72.7	25.45
2020	183	1.30	237.9	156.1	1.12	174.8	73.35
2021	238	1.30	309.4	85.5	1.19	101.7	32.81
2022	334	1.30	434.2	107.5	1.28	137.6	31.69
Average	428.3	5.28	2508.4	103.1	1.10	115.2	12.62
Low. Lim.	132.0	1.20	237.9	47.2	0.76	35.9	1.85
Upp. Lim.	731.0	11.00	5263.2	156.1	1.28	180.6	73.35

Source: Collected and calculated from: the Central Agency for Public Mobilization and Statistics - Annual Bulletin of Crop Area - various issues, Egypt.

Table No. (2): General time trend equations for productive indicators of the cotton crop in Egypt, Kafr El-Sheikh during the period 2000 - 2022

Item	a	b	Annual rate %	R ²	F _c	S	C. V
Egypt							
Cultivated area 10³ fed.	6.58	0.061 -	6.1 -	0.689	46.58	190.9	44.6
Feddan productivity (ton)	2.49	0.086 -	8.6 -	0.593	30.55	2.7	51.3
Total production 10³ ton	9.17	0.148 -	14.8 -	0.819	94.90	1780.8	71.1
Kafr El-Sheikh Governorate							
Cultivated area 10³ fed.	4.78	0.015 -	1.5 -	0.116	2.76	29.0	28.1
Feddan productivity (ton)	0.118	0.002 -	0.2 -	0.015	0.320	0.11	9.9
Total production 10³ ton	4.89	0.017 -	1.10 -	0.098	2.28	36.2	31.4

Source: Collected and calculated from tabke (1).

The Development of Productive Indicators for The Sugar Beet Crop in Egypt and Kafr El-Sheikh Governorate:

The following is a review and analysis of the development of the productive and economic indicators for the sugar beet crop as presented in tables (3, 4) as follows:

The Cultivated Area:

- **The Cultivated Area in Egypt:** By reviewing the development of the cultivated area, it was found that it tooks a decreasing trend, as it decreased from about 682.8 thousand feddan in 2021 to about 131.3 thousand feddan in 2003, with an average of about 372.5 thousand feddan, and a standard deviation of about 186.1 thousand feddan, with a coefficient of variation of about 50.0%, and by estimating the general time trend

equation, it was found that it took a general increasing trend by an annual amount of 0.083 thousand feddan, with an annual growth rate of about 8.3% during the study period, and the value of the coefficient of determination indicates that about 93% of the changes occurring are due to factors whose effects reflect Time.

- **The Cultivated Area in Kafr El-Sheikh Governorate:** By reviewing the development of the area cultivated for the cotton crop, it was found that it took a decreasing trend, as it decreased from about 155.5 thousand feddan in 2015 to about 74.4 thousand feddan in 2000, with an average of about 112.1 thousand feddan, and a standard deviation of about 28.7 thousand feddan, with a factor a difference of about 25.6%, and by estimating the general time trend equation, it was found that it took a general increasing trend by an annual amount of 0.035 thousand feddan, with an annual growth rate of about 3.5% during the study period, and the value of the coefficient of determination indicates that about 83% of the changes occurring are due to factors Its effects reflect time.

Feddan Productivity:

- **Feddan Productivity in Egypt:** By reviewing the development of feddan productivity, it was found that it took a decreasing trend, as it decreased from about 22.8 tons/ feddan in 2019 to about 19.9 tons/ feddan in 2008, with an average of about 20.9 tons/ feddan, and a standard deviation of about 0.75 tons/ feddan. The coefficient of variation was about 3.6%, and by estimating the general trend equation, it was found to be insignificant, which indicates its relative stability around its average during the study period.
- **Feddan Productivity in Kafr El-Sheikh Governorate:** By reviewing the development of feddan productivity, it was found that it took a decreasing trend, as it decreased from about 21.0 tons/ feddan in 2004 to about 18.0 tons/ feddan in 2016, with an average of about 19.9 quintals/ feddan, and a standard deviation of about 0.97 tons/acre. The coefficient of variation was about 3.9%, and by estimating the general trend equation, it was found to be insignificant, which indicates its relative stability around its average during the study period.

Total Production:

- **Total Production in Egypt:** By reviewing the development of the total amount of production, it was found that it took a decreasing trend, as it decreased from about 141.9 thousand tons in 2021 to about 2.69 thousand tons in 2003, with an average of about 7.82 thousand tons, and a standard deviation of about 3953.5 thousand tons, with a coefficient of variation It amounted to about 50.6%, and by estimating the general time trend equation, it was found that it took a general increasing trend by an annual amount of 0.084 thousand tons, with an annual growth rate of about 8.4% during the study period, and the value of the coefficient of determination indicates that about 92% of the changes occurring are due to factors that reflect Effects of time.
- **Total Production in Kafr El-Sheikh Governorate :** By reviewing the development of the total production quantity, it was found that it took a decreasing trend, as it decreased from about 3.03 thousand tons in 2015 to about 1.38 thousand tons in 2000, with an average of about 2.22 thousand tons, and a standard deviation of about 529.3 thousand tons, with a coefficient of variation It amounted to about 23.9%, and by

estimating the general time trend equation, it was found that it took a general increasing trend by an annual amount of 0.034 thousand tons, with an annual growth rate of about 3.4% during the study period, and the value of the coefficient of determination indicates that about 86% of the changes occurring are due to factors that reflect Effects of time.

Table No. (3): Development of productive indicators for sugar beet crop in Egypt and Kafr El-Sheikh during the period (2000-2022).

Years	Egypt			Kafr El-Sheikh Governorate			% From production
	Cultivated area 10 ³ fed.	Feddan productivity (ton)		Cultivated area 10 ³ fed.	Feddan productivity (ton)		
2000	135.6	21.32	2891.0	74.4	18.50	1376.4	47.61
2001	142.6	20.04	2857.7	87.1	19.00	1654.9	57.91
2002	153.8	20.6	3168.3	83.2	19.90	1655.7	52.26
2003	131.3	20.5	2691.7	75.4	20.60	1553.2	57.71
2004	140.9	20.3	2860.3	78.9	20.40	1609.6	56.27
2005	167.3	20.5	3429.7	86.7	20.50	1777.4	51.82
2006	186.4	20.95	3905.1	81.7	20.80	1699.4	43.52
2007	248.3	21.98	5457.6	81.0	21.00	1701.0	31.17
2008	257.7	19.92	5133.4	88.4	20.70	1829.9	35.65
2009	264.6	20.16	5334.3	93.1	20.50	1908.6	35.78
2010	385.7	20.33	7841.3	114.4	20.00	2288.0	29.18
2011	361.9	20.69	7487.7	108.8	20.00	2176.0	29.06
2012	422.8	21.58	9124.0	124.6	20.10	2504.5	27.45
2013	460.5	21.81	10043.5	124.8	20.10	2508.5	24.98
2014	504.3	21.9	11044.2	139.2	20.20	2811.8	25.46
2015	554.9	21.59	11980.3	155.5	19.50	3032.3	25.31
2016	559.7	20.03	11210.8	148.3	18.00	2669.4	23.81
2017	523.4	20.75	10860.6	130.1	18.80	2445.9	22.52
2018	548.3	20.73	11366.3	124.2	20.10	2496.4	21.96
2019	531.3	22.83	12129.6	147.4	19.25	2837.9	23.40
2020	605.3	20.24	12251.3	150.1	19.23	2885.8	23.56
2021	682.8	20.79	14195.4	152.7	19.21	2933.7	20.67
2022	597.9	20.96	12532.0	128.5	20.30	2608.6	20.82
Average	372.5	20.89	7817.2	112.1	19.86	2215.9	34.25
Low. Lim.	131.3	19.92	2691.7	74.4	18.00	1376.4	20.67
Upp. Lim.	682.8	22.83	14195.4	155.5	21.00	3032.3	57.91

Source: Collected and calculated from: the Central Agency for Public Mobilization and Statistics - Annual Bulletin of Crop Area - various issues, Egypt.

Table No. (4): General time trend equations for productive indicators of sugar beet crop in Egypt, Kafr El-Sheikh during the period 2000 – 2022

Item	a	b	Annual rate %	R ²	F _c	S	C. V
Egypt							
Cultivated area 10³ fed.	4.78	0.083	8.3	0.925	259.77	186.1	50.0
Feddan productivity (ton)	3.02	0.001	0.1	0.061	1.36	0.75	3.61
Total production 10³ ton	7.80	0.084	8.4	0.919	236.83	3953.54	50.6

Kafr El-Sheikh Governorate							
Cultivated area 10³ fed.	4.27	0.035	3.5	0.830	102.47	28.7	25.6
Feddan productivity (ton)	3.01	0.001 -	0.1 -	0.060	1.35	0.79	3.95
Total production 10³ ton	7.27	0.034	3.4	0.858	126.81	529.3	23.9

Source: Collected and calculated from tabke (3).

Third: The Impact of Liberalizing the Exchange Rate on Production Requirements for Cotton and Sugar Beet Crops in Kafr El-Sheikh Governorate

This part deals with estimating the impact of decreasing the Egyptian pound on production costs, i.e., the cost of producing agricultural crops, as well as the expected effects on farm prices for some of the main crops in Kafr El-Sheikh Governorate, then estimating the expected effects on the net income. Returns and farm incomes. These effects were evaluated and estimated during the 2021-2022 production season and compared to the 2022-2023 production season.

Production Costs and Wages for Cotton and Sugar Beet Crops:

The variable costs are the cost of production requirements such as seeds, fertilizers, and pesticides, the cost of operations represented in human labor wages, and the automated labor necessary for all operations such as land service, irrigation, watering and fertilization, harvesting, and transportation, Table No. (5, 6) others, which will be reviewed as follows:

Impact on the Production Requirements for The Cotton Crop:

1. **The Value of Human Labor:** The farm prices of human labor increased from LE 10,590 in the 2021/2022 production season to LE 12,790 in the 2022/2023 production season, with a change rate of 20.77%, while the farm prices of human labor increased after adjusting for the exchange rate from LE 428.74 in the 2021 production season. / 2022 to LE 413.92 in the 2022/2023 production season, with a change rate of - 3.46%.
2. **The Value of Mechanical Labor:** The farm prices, the value of mechanical labor, increased from LE 3,360 in the 2021/2022 production season to LE 3,490 in the 2022/2023 production season, with a rate of change of 3.87%, while the farm prices, the value of mechanical labor, increased after adjusting for the exchange rate from LE 136.03 per season production 2021/2022 reached LE 112.94 in the 2022/2023 production season, with a change rate of - 16.97%.
3. **Seed Value:** Farm prices equal the value of seeds with about LE 600 in the 2021/2022 and 2022/2023 production season, while farm prices increased for the value of seeds after adjusting the exchange rate from LE 24.29 in the 2021/2022 production season to LE 19.42. Yes, in production season 2022/2023 with a change rate of - 20.06%.
4. **The Value of Municipal Fertilizer:** Farm prices for the value of municipal fertilizer increased from LE 1,500 in the 2021/2022 production season to LE 2,000 in the 2022/2023 production season, with a change rate of 33.33%, while farm prices for the value of municipal fertilizer increased after adjusting the exchange rate from LE 60.73 per season. production 2021/2022 reached LE 64.72 in the 2022/2023 production season, with a change rate of 6.58%.
5. **Value of Nitrogen Fertilizer:** Farm prices for the value of nitrogen fertilizer increased from LE 1,750 in the 2021/2022 production season to LE 2,000 pounds in the 2022/2023 production season, with a rate of change of 14.29%, while farm prices for the value of nitrogen fertilizer increased after adjusting for the exchange rate from LE

70.85 in the productive season. 2021/2022 to LE 64.72 in the 2022/2023 production season, with a change rate of - 8.65%.

6. **The Value of Phosphate Fertilizer:** Farm prices for the value of phosphate fertilizer increased from LE 1,200 in the 2021/2022 production season to LE 1,500 in the 2022/2023 production season, with a change rate of 25.00%, while farm prices for the value of phosphate fertilizer increased after adjusting the exchange rate from LE 48.58 per season. production 2021/2022 reached LE 48.54 in the 2022/2023 production season, with a change rate of -0.08%.
7. **The Value of Pesticides:** Farm prices for the value of pesticides increased from LE 3,500 in the 2021/2022 production season to LE 4,000 pounds in the 2022/2023 production season, with a rate of change of 14.29%, while farm prices for the value of pesticides increased after adjusting for the exchange rate from LE 141.70 in the 2021/2022 productive season to LE 129.45 pounds in the 2022/2023 production season, with a change rate of - 8.65%.
8. **Rental Value:** Farm prices for rental value increased from LE 8,000 in the 2021/2022 production season to LE 10,000 in the 2022/2023 production season, with a change rate of 25.00%, while farm prices for rental value increased after adjusting to the exchange rate from LE 323.89 in the 2021/ 2022 production season to LE 323.62 in the 2022/2023 production season, with a change rate of - 0.08%.

From the above, it is clear that the cost of feddan of cotton increased from about LE 30,500 during the 2021/2022 production season to about LE 36,380 during the 2022/2023 production season, an increase of LE 5,880, representing about 16.16%, and that the highest increase was in the items of human labor costs, followed by the cost of pesticides. Rates amounting to about 35.16% and 10.99%.

Table No. (5): The effect of the exchange rate on the costs of producing the cotton crop during the 2022-2023 production season.

Item	2022		2023		% change 2022	% change 2023
	Farm prices	Farm prices after adjustment for the exchange rate	Farm prices	Farm prices after adjustment for the exchange rate		
Human labor (LE)	10590	428.74	12790	413.92	20.77	3.46-
Automated work (LE)	3360	136.03	3490	112.94	3.87	16.97-
value of municipal fertilizer (LE)	600	24.29	600	19.42	0.00	20.06-
Seeds (LE)	1500	60.73	2000	64.72	33.33	6.58
Nitrogen fertilizer (LE)	1750	70.85	2000	64.72	14.29	8.65-
Phosphate fertilizer (LE)	1200	48.58	1500	48.54	25.00	0.08-
Cost of pesticides (LE)	3500	141.70	4000	129.45	14.29	8.65-
Rental value (LE)	8000	323.89	10000	323.62	25.00	0.08-
Total (LE)	30500	1234.82	36380	1177.35	136.55	51.37-

Source: Collected and calculated from data from the questionnaire form for the research sample in the study area. * Exchange rate in 2022 = LE 24.7 * Exchange rate in 2023 = LE 30.9.

Impact on the Production Requirements for The Sugar Beet Crop:

1. **The Value of Human Labor:** The farm prices of human labor increased from LE 4,830 in the 2021/2022 production season to LE 8,300 in the 2022/2023 production season, with a change rate of 71.84%, while the farm prices of human labor increased after adjusting for the exchange rate from LE 195.55 in the production season. 2021/2022 to LE 268.61 in the 2022/2023 production season, with a change rate of 0.37%.
2. **The Value of Mechanical Labor:** The farm prices, the value of mechanical labor, increased from LE 33,431 in the 2021/2022 production season to LE 3,615 in the 2022/2023 production season, at a rate of change of 5.36%, while the farm prices, the value of mechanical labor, increased after adjusting for the exchange rate from LE 138.91 in the 2021/2022 production season reached LE 116.99 in the 2022/2023 production season, with a change rate of - 0.16%.
3. **The Value of The Seed:** The farm prices are equal with about LE 300 in the 2021/2022 and 2022/2023 production season, while the farm prices for the seed value increased after the amendment of the exchange rate of LE 12.15 in the production season 2021/2022 to LE 9.71 in the 2022/2023 production season, the rate of change is 0.20%.
4. **The Value of Municipal Fertilizer:** Farm prices equal with about LE 600 in the 2021/2022 and 2022/2023 production season, while farm prices increased for the value of municipal fertilizer after adjusting the exchange rate from 24.29 pounds in the productive season 2021/ 2022 to 19.42 pounds in the 2022/2023 production season, with a rate of change of - 0.20%.
5. **Value of Nitrogen Fertilizer:** Farm prices for the value of nitrogen fertilizer increased from LE 2,160 in the 2021/2022 production season to LE 3,760 in the 2022/2023 production season, with a change rate of 74.07%, while farm prices for the value of nitrogen fertilizer increased after adjusting for the exchange rate from LE 87.45 in the productive season. 2021/2022 to LE 121.68 in the 2022/2023 production season, with a change rate of 0.39%.
6. **The Value of Phosphate Fertilizer:** Farm prices for the value of phosphate fertilizer increased from LE 480 in the 2021/2022 production season to LE 520 in the 2022/2023 production season, with a change rate of 8.33%, while farm prices for the value of phosphate fertilizer increased after adjusting for the exchange rate from LE 19.43 in the 2021/2022 production season rose to LE 16.83 in the 2022/2023 production season, with a change rate of -0.13%.
7. **Value of Pesticides:** Farm prices for the value of pesticides increased from LE 800 in the 2021/2022 production season to LE 1,000 in the 2022/2023 production season at a rate of change of 25.00%, while farm prices for the value of pesticides increased after adjusting the exchange rate from LE 32.39 in the 2021/2022 production season to LE 32.36 in the 2022/2023 production season.
8. **Rental Value:** Farm prices for rental value increased from LE 8,000 in the 2021/2022 production season to LE 10,150 in the 2022/2023 production season, with a change rate of 26.88%, while farm prices for rental value increased after adjusting to the exchange rate from LE 323.89 in the 2021/ 2022 production season to LE 328.48 in the 2022/2023 production season, with a change rate of 0.01%.

From the above, it is clear that the costs of a reddan of sugar beets increased from about LE 20,601 during the 2021/2022 production season to about LE 28,245 during the 2022/2023 production season, an increase of LE 7,644, representing about 27.06%, and that the highest increase was in the items of human labor costs, followed by automated labor rates amounting to about 29.39% and 12.79%. 12.79%.

Table No. (6): The effect of the exchange rate on the production costs of the sugar beet crop during the 2022-2023 production season

Item	2022		2023		2022	2023
	Farm prices	Farm prices after adjustment for the exchange rate	Farm prices	Farm prices after adjustment for the exchange rate		
Human labor (LE)	4830	195.55	8300	268.61	71.84	0.37
Automated work (LE)	3431	138.91	3615	116.99	5.36	0.16-
value of municipal fertilizer (LE)	300	12.15	300	9.71	0.00	0.20-
Seeds (LE)	600	24.29	600	19.42	0.00	0.20-
Nitrogen fertilizer (LE)	2160	87.45	3760	121.68	74.07	0.39
Phosphate fertilizer (LE)	480	19.43	520	16.83	8.33	0.13-
Cost of pesticides (LE)	800	32.39	1000	32.36	25.00	0.00
Rental value (LE)	8000	323.89	10150	328.48	26.88	0.01
Total (LE)	20601	834.05	28245	914.08	211.49	0.09

Source: Collected and calculated from data from the questionnaire form for the research sample in the study area.

Second: Economic Indicators for Cotton and Sugar Beet Crops:

The net agricultural return is considered one of the main factors determining production decisions, as the farmer always seeks to maximize his net income, so he allocates his resources to producing crops with the highest net return. The net feddan return is calculated by subtracting the total feddan costs. (fixed + variable) of the total feddan revenue (feddan productivity x agricultural price), Table No. (7, 8) as follows:

The Effect of The Exchange Rate on The Economic Indicators of The Cotton Crop:

1. **Farm Price:** The farm price increased from LE 9,000 in the 2021/2022 production season to LE 11,000 in the 2022/2023 production season, with a rate of change of 22.22, while the farm price decreased after adjusting for the exchange rate from LE 364.37 in the 2021/2022 production season to LE 355.99 in the 2022/2023 production season, the rate of change is - 2.30%.
2. **Total Return:** The total return increased from LE 4000 in the 2021/2022 production season to LE 5200 in the 2022/2023 production season with a rate of change of 30%,

while the total costs decreased after adjusting for the exchange rate from LE 1619.43 in the 2021/2022 production season to LE 1682.85 in production season 2022/2023 with a change rate of 3.92%.

3. **Total Costs:** Total costs increased from LE 30,500 in the 2021/2022 production season to LE 36,380 in the 2022/2023 production season, with a change rate of 19.28%, while total costs decreased after adjusting for the exchange rate from LE 1,234.82 in the 2021/2022 production season to LE 1,177.35 in the 2022/2023 production season, with a change rate of -4.65%.
4. **Net Return:** The net return increased from LE 9,500 in the 2021/2022 production season to LE 15,620 in the 2022/2023 production season, with a change rate of 64.42%, while the net return after adjusting for the exchange rate increased from LE 384.62 in the 2021/2022 production season to LE 505.50 in production season 2022/2023 with a change rate of 31.43%.
5. **Net Return/Total Costs Ratio:** The net return/total costs ratio increased from LE 31.15 in the 2021/2022 production season to LE 42.94 in the 2022/2023 production season with a rate of change of 37.85%, while the net return after adjusting for the exchange rate increased from LE 1.26 in the 2021/2022 production season, it reached LE 1.39 in the 2022/2023 production season, with a change rate of 10.19%.

Table No. (7): Effect of the exchange rate on the economic indicators of the cotton crop for the 2022/2023 production season.

Indicator	2022		2023		% change2022	% Change 2023
	Indicator before modification	Indicator after modification	Indicator before modification	Indicator after modification		
Farm price (LE)	9000	364.37	11000	355.99	22.22	-2.30
The total return per feddan (LE)	40000	1619.43	52000	1682.85	30.00	3.92
The total costs per feddan (LE)	30500	1234.82	36380	1177.35	19.28	-4.65
The net return per feddan (LE)	9500	384.62	15620	505.50	64.42	31.43
Net return/total costs ratio	31.15	1.26	42.94	1.39	37.85	10.19

Source: Collected and calculated from data of the questionnaire for the research sample in the study area.

The Effect of The Exchange Rate on The Economic Indicators of The Sugar Beet Crop:

1. **Farm Price:** The farm price increased from LE 1,000 in the 2021/2022 production season to LE 1,200 in the 2022/2023 production season, with a rate of change of 20%, while the farm price decreased after adjusting for the exchange rate from LE 40.82 in the 2021/2022 production season to LE 38.83 in the 2022/2023 production season, the rate of change is 0.2%.

2. **Total Return:** The total return increased from LE 27,500 in the 2021/2022 production season to LE 37,300 in the 2022/2023 production season with a rate of change of 35.6%, while the total return decreased after adjusting for the exchange rate from LE 1,122.45 in the 2021/2022 production season to LE 1,207.12 in production season 2022/2023 with a change rate of 0.2%.
3. **Total Costs:** Total costs increased from LE 20,001 in the 2021/2022 production season to LE 27,645 in the 2022/2023 production season, with a rate of change of 38.2%, while total costs decreased after adjusting for the exchange rate from LE 816.37 in the 2021/2022 production season to LE 894.66 in the 2022/2023 production season, the rate of change is 0.3%.
4. **Net Return:** The net return increased from LE 7499 in the 2021/2022 production season to LE 9655 in the 2022/2023 production season with a rate of change of 28.8%, while the net return after adjusting for the exchange rate increased from LE 306.08 in the 2021/2022 production season to LE 312.46 in the 2022/2023 production season, a change rate of 0.1%.
5. **Net Return/Total Costs Ratio:** The net return/total costs ratio increased from LE 37.49 in the 2021/2022 production season to LE 34.92 in the 2022/2023 production season with a rate of change of -6.8, while the net return decreased after adjusting for the exchange rate from LE 1.53 in the 2021/2022 production season to LE 1.13 in the 2022/2023 production season, with a change rate of - 1.1%.

Table No. (8): Effect of the exchange rate on the economic indicators of the sugar beet crop for the 2022/2023 production season.

Indicator	2022		2023		% change 2022	% change 2023
	Indicator before modification	Indicator after modification	Indicator before modification	Indicator after modification		
Farm price (LE)	1000	40.82	1200	38.83	20.0	-0.2
The total return per feddan (LE)	27500	1122.45	37300	1207.12	35.6	0.2
The total costs per feddan (LE)	20001	816.37	27645	894.66	38.2	0.3
The net return per feddan (LE)	7499	306.08	9655	312.46	28.8	0.1
Net return/total costs ratio	37.49	1.53	34.92	1.13	6.8-	-1.1

Source: Collected and calculated from data of the questionnaire for the research sample in the study area.

Third: Agricultural Productivity Problems in The Study Sample:

In this part, agricultural productivity problems related to the study crops, which are wheat, beets, maize, and cotton crops in Kafr El-Sheikh Governorate, are discussed in Table (9). It turns out that these problems were limited to 15 Problems: The problem of the high cost of irrigation ranked first with a total of 29 farms, representing about 96.67% of the total sample size, which was about 30 farms, while the problem of high fertilizer prices ranked second, with a total of 28 farms, representing about 93.33%. As for the two problems of high pesticide and seed prices, they ranked second. Third, with a total of 26 farmers, representing about 86.67%, while the

problems of high worker wages and fuel prices ranked fourth, with a total of 24 farmers, representing about 80.00%.

While the problem of the low quality of seeds ranked fifth with a total of 8 farmers, representing about 26.67%, while the problem of the lack of availability of the required quantity of seeds ranked sixth with a total of 5 farmers, representing about 16.67%, and the problems of low quality of fertilizers and pesticides ranked seventh with a number It reached 4 farmers, representing about 13.33%, while the problems of not receiving seeds, fertilizers and pesticides on time ranked eighth, with a total of 3 farmers, representing about 10%.

Table No. (9): Production problems for cotton and sugar beet crops in Kafr El-Sheikh Governorate during the 2022-2023 production season.

The problems					X ²	X ² and significal. leve;	
	number	%	number	%			
High cost of irrigation	29	96.67	1	3.33	10.00	0,05	0,01
High worker wages	24	80.00	6	20.00		24.99	30.58
High cost of agricultural machinery	25	83.33	5	16.67			
High fuel prices	24	80.00	6	20.00			
High seed prices	26	86.67	4	13.33			
Lack of availability of the required quantity of seeds	5	16.67	25	83.33			
Low seed quality	8	26.67	22	73.33			
Failure to receive seeds on time	3	10.00	27	90.00			
Fertilizer prices rise	28	93.33	2	6.67			
Lack of availability of the required amount of fertilizer	5	16.67	25	83.33			
Poor quality of fertilizers	4	13.33	26	86.67			
Failure to receive fertilizers on time	3	10.00	27	90.00			
High pesticide prices	26	86.67	4	13.33			
Lack of availability of the required quantity of pesticides	5	16.67	25	83.33			
Poor quality of pesticides	4	13.33	26	86.67			
Failure to receive pesticides on time	3	10.00	27	90.00			
Total sample	30	100.00	30	100.00			

Source: collected and calculated from the sample questionnaire.

Using the X² test to determine the extent of the relationship between problems within problems and comparing the calculated X² value with its tabular theory at familiar levels of significance, it is revealed that the relationship between problems within problems is not significant at a significance level of 0.01.

Second: Comparative Analysis of Variance for Production Problems in Kafr El-Sheikh Governorate:

To determine the significance of the difference and production problems, we relied on a one-way analysis of variance for these problems, the results of which are shown in Table No. (10).

The results of the analysis of variance indicated that there were no significant differences between the problems within the problems, as the calculated P value was 1.93.

Table No. (10): Results of variance analysis of production problems in Kafr El-Sheikh Governorate during the 2022-2023 production season.

Source of variation	d.f	sum of the squares of the deviations	mean square of the deviations	F _c
Between problems	8	234.00	29.25	1.9
Inside the problems	7	106.00	15.14	3
total summation	15	340.00	-	

Source: collected and calculated the data in Table No. (9).

Recommendations

Related to the results obtain in the research. It recommends the following:

1. It is necessary to increase the cultivated areas of the cotton crop, while working on the marketing process and high costs.
2. Work to develop a strategy with factories for the beet crop in terms of prices, quality ratio, and sorting.
3. It is necessary to reduce the costs of production inputs so that the farmer can obtain the highest net return.
4. Working to solve the problems facing farmers and finding appropriate solutions to them.

CONCLUSION

The policy of decreasing the local currency is considered one of the most important policies to achieve external balance by increasing exports and reducing imports. The exchange rate of LE (Egyptian pound) has deteriorated compared to the US dollar in light of the liberalization of the economy from about 2.1 LE/\$ in 1990 and then to about 3.4 LE/\$. In 2000, then to about 5.95 LE/\$ in 2010, and exceeded 8 pounds in 2015, reaching about 8.88 LE/\$ in October 2016. Central Bank of Egypt adopted the devaluation of the Egyptian pound as an attempt to get out of the current economic crisis into a market economy and give a strong impetus to the national economy. Through the strategy of increasing exports and reducing imports to rebalance the Egyptian trade balance, it is noted that total imports increased from about \$ 58.903 billion in 2011 to about \$ 76.213 billion in 2016, with an increase of about 29.4%, while total exports declined from about \$ 30.528 billion in 2011 to about \$ 18.705 billion in 2016, with a decrease of about 38.7%. % Compared to 2011, and it was shown that the deficit in the total trade balance increased from about \$ 28.38 billion in 2011 to about \$ 57.51 billion in 2016, an increase of about 102.7% compared to 2011. The research generally aims to measure the impact of changing the exchange rate on the production requirements for cotton and sugar beet crops in Kafr El-Sheikh Governorate by achieving the following sub-objectives: studying the productive indicators for cotton and sugar beet crops in Egypt and Kafr El-Sheikh Governorate, studying the impact of liberalizing the exchange rate on agricultural production requirements in Kafr El-Sheikh Governorate, a study Productive problems of cotton and sugar beet crops in Kafr El-Sheikh Governorate. The study relied on the descriptive and quantitative analytical method to estimate and explain economic phenomena related to the economic and social effects of liberalizing the exchange rate on production requirements, using the descriptive analysis method to describe the problem, in addition to the quantitative analysis method using some different measurements such as the general trend. Regarding data sources, the study relied mainly on field data by selecting a random sample in the Al-Hamoul center in Kafr El-Sheikh

Governorate during the agricultural season 2022/2023. The most important results were an increase in the cost of an feddan of cotton from about LE 30,500 during the 2021/2022 production season to about LE 36,380 during the 2022/2023 production season, an increase of LE 5,880, representing about 16.16%. The highest increase was in the items of human labor costs, followed by the cost of pesticides, with percentages amounting to about 35.16%, 10.99%, and it was also shown that the costs of an feddan of sugar beets increased from about LE 20,601 during the 2021/2022 production season to about 28,245 pounds during the 2022/2023 production season, an increase of LE 7,644, representing about 27.06%, and that the highest increase was in the labor cost items. Human work is followed by automated work, with percentages of about 29.39% and 12.79%.

Based on The Results Reached, The Research Recommends the Following:

1. It is necessary to increase the cultivated areas of the cotton crop, while working on the marketing process and high costs.
2. Work to develop a strategy with factories for the beet crop in terms of prices, quality ratio, and sorting.
3. It is necessary to reduce the costs of production inputs so that the farmer can obtain the highest net return.
4. Working to solve the problems facing farmers and finding appropriate solutions to them.

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