Investment in the Agricultural Sector and Comparing it with Investments in Other Productive Sectors

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Abstract: Agriculture in Egypt is the main pillar of the economic and social structure, as it contributes a large share in the events of comprehensive development and in the advancement of society and its importance increases as a profession associated with it and its various activities more than half of the population, whether in the productive, marketing and manufacturing activity of agriculture , and the problem of the study is the low volume of investments directed to the agricultural sector compared to investments in other non-agricultural sectors, despite the importance of that sector in increasing the rate of economic growth by increasing agricultural output and advancing Agricultural development, as many studies indicate the low efficiency of investments in the agricultural sector compared to other sectors and the study aims to identify the efficiency of agricultural investments through some economic indicators, and to identify the size of agricultural investments and compare investment in the agricultural sector with investment in other productive sectors, and the most important factors affecting agricultural investment The study relied on descriptive and quantitative statistical methods, including the general time trend and multiple and gradual regression and also relied on published and unpublished data from the National Bank of Egypt, the Central Agency for Public Mobilization and Statistics, and the Ministry of Agriculture.

The Egyptian national income amounted to about 2798.52 billion pounds during the period under study, the Egyptian agricultural income amounted to about 235.15 billion, the value of plant production amounted to about 159.75 billion, the value of animal production amounted to about 126.35 billion pounds, and the value of fish production amounted to about 30.79 billion pounds during the period under study. The average monetary value of plant production in Egypt during the period (2005-2022) amounted to about 159.75 billion pounds, representing about 55.80% of the average cash value of agricultural income during the same period.

Keywords: Investment, Agricultur Incom, National Incom value, Consumption Cost, Puplic sector, Private sector

I. INTRODUCTION

Agriculture in Egypt is the main pillar of the economic and social structure, as it contributes a large share in the events of comprehensive development and in the advancement of society and its importance increases as a profession associated with its various activities more than half of the population, whether in the productive, marketing and manufacturing activity of agriculture.

The importance of agriculture is growing at the present time due to the existence of a food gap that is still large and influential in the national economy in the main cereal crops, especially wheat and yellow corn, which makes the issue of securing food one of the most important priorities that must be paid attention to and always work to narrow that gap and reduce it, but the aspirations of society have become not convincing the father to achieve self-sufficiency of the wheat crop as the prevailing popular dietary pattern, and this can only be achieved by achieving maximum productive efficiency and the largest rate of resource development. Agricultural currently available or those that must be made available in the future, whether from the land area and irrigation water necessary to achieve food security from the group of grains in general and from wheat in particular

Investment in the agricultural sector is the main axis of economic growth at the national level, and investment in the agricultural sector is one of the basic means for the success of the agricultural development process, as it is the main pillar for increasing production and income and creating new job opportunities, increasing investment means adding productive projects that contribute to increasing production and then increasing exports and reducing imports, which means improving the trade balance,

and increasing national and individual income, which is reflected in the increase in savings, which in turn leads to the creation of new investments, Accordingly, investment is a flowing variable that has an effective role in finding solutions to the problems of the Egyptian economy as well as absorbing some of the non-working manpower, and agricultural investment has the elements that make it at the forefront, as the agricultural sector contributes up to 11.3% of GDP.

Sources of Egyptian income:

1- Agricultural land, which is Egypt's first and most important food security, and it is part of Egyptian security.
2- Suez Canal revenues
3- Remittances of Egyptians abroad
4- Tourism revenues
5- Industry
6- Petroleum products exports
7- Other sources.

Study problem: The problem of the study is the low volume of investments directed to the agricultural sector compared to investments in other non-agricultural sectors, despite the importance of that sector in increasing the rate of economic growth by increasing agricultural output and advancing agricultural development, as many studies indicate a low efficiency of investments in the agricultural sector compared to other sectors.

Objective of the study: The study aims to identify the efficiency of agricultural investments through some economic indicators, identify the volume of agricultural investments and compare investment in the agricultural sector with investment in other productive sectors, and the most important factors affecting agricultural investment.

II. Methodology

The study relied on descriptive and quantitative statistical methods, including the general temporal trend and multiple and graded regression staged.

It has also relied on published and unpublished data from the National Bank of Egypt, the Central Agency for Public Mobilization and Statistics, and the Ministry of Agriculture.

III. Results and Discussion

First: The value of national income, agricultural income and net Egyptian agricultural income:

1- Egyptian gross national income:

From the data of Table (1) related to the value of gross national income during the period (2005-2022), it was found that the national income ranged between two limits, the lowest of which amounted to about 640.1 billion pounds in 2005/2006, and the highest reached about 6014.6 billion pounds in 2020/2021, with an annual average of about 2798.52 billion pounds during the period under study. From the value of the coefficient of determination (R2), it was found that about 91% of these changes are due to factors whose effect is measured by the time element, while about 9% are due to other factors not measured in the estimated model.

2 - Total Egyptian agricultural income:

From the data of Table (1) related to the value of total agricultural income during the period (2005-2022), it was found that agricultural income ranged between two limits, the lowest of which amounted to about 93.1 billion pounds in 2005/2006, and the highest of which amounted to about 444.7 billion pounds in 2020/2021, with an annual average of about 235.15 billion pounds during the period under study.

From the results of the analysis of the general time trend shown in Table (2) with regard to the value of total agricultural income, it was found that there was an increase (statistically significant) in the total Egyptian agricultural income estimated at about 21.34 billion pounds, equivalent to about 9.07% of the general average of this Egyptian agricultural income during the aforementioned period.

From the value of the coefficient of determination (R2), it was found that about 93% of these changes are due to factors whose effect is measured by the time element, while about 7% are due to other factors not measured in the estimated model.

Second: The value of the components of the Egyptian agricultural income and their relative importance:

1 – The value of plant production:

From the data of Table (3) related to the value of plant production during the period (2005-2022), it was found that the value of plant production ranged between two limits, the lowest of which amounted

to about 71.91 billion pounds in 2005/2006, and the highest of which amounted to about 408.5 billion pounds in 2020/2021, with an annual average of about 159.75 billion pounds during the period under study.

From the results of the analysis of the general time trend shown in Table (4) regarding the value of plant production, it was found that there was an increase (statistically significant) in the value of Egyptian plant production estimated at about 19.82 billion pounds, equivalent to about 10.12% of the general average of this value during the aforementioned period.

From the value of the coefficient of determination (R2), it was found that about 92% of these changes are due to factors whose effect is measured by the time element, while about 8% are due to other factors not measured in the estimated model.

2 – The value of animal production:

From the data of Table (3) related to the value of animal production during the period (2005-2022), it was found that the value of animal production ranged between two limits, the lowest amounting to about 47.12 billion pounds in 2005/2006, and the highest amounting to about 266.5 billion pounds in 2020/2021, with an annual average of about 126.35 billion pounds during the period under study.

From the results of the analysis of the general time trend shown in Table (4) with regard to the value of animal production, it was found that there was an increase (statistically significant) in the value of Egyptian animal production estimated at about 13.43 billion pounds, equivalent to about 10.6% of the general average of this value during the aforementioned period.

From the value of the coefficient of determination (R2), it was found that about 92% of these changes are due to factors whose effect is measured by the time element, while about 8% are due to other factors not measured in the estimated model.

Table (1) The value of both the national income and the Egyptian agricultural income during the period (2005-2022).

Year	Egyptian National Income (billion pounds)	Egyptian Agricultural Income (Billion pounds)	% of agricultural income to national income
2006	640.1	93.1	14.5
2007	758.8	102.3	13.4
2008	911.1	136.8	12.7
2009	1054.3	138.1	13.1
2010	1200.1	138.1	11.5
2011	1350.1	150.7	11.1
2012	1640.8	179.7	10.9
2013	1814.1	190.8	10.5
2014	2110.2	203.8	9.6
2015	2425.3	223.7	9.2
2016	2693.1	224.9	8.3
2017	3441.8	329.2	7.4
2018	4407.4	325.3	7.4
2019	5135.2	346.8	6.3
2020	5980.4	364.8	6.5
2021	6014.6	444.7	7.3
2022	5997.5	404.8	6.7
Average	2798.52	235.15	9.78

Source:

- Central Agency for Public Mobilization and Statistics, Bulletin of Income Estimates from the Agricultural Sector, miscellaneous.
- Central Agency for Public Mobilization and Statistics. Statistical Yearbook, Miscellaneous Issues.

Table (2): Equations of the general time trend of the value of both the national income and the Egyptian agricultural income during the period (2005-2022).

Statement	Equation	R2	Value "F"	Average phenomenon	Annual rate of change (%)
National income Egyptian (billion pounds)	Y=560.81-373.26x (-12.64)	0.91	159.76**	2798.52	13.33
Egyptian Agricultural Income (Billion pounds)	Y=43.03+21.34x (14.79)	0.93	218.74**	235.15	9.07
% of agricultural income to national income	Y=14.42-0.515x (-17.35)	0.95	301.08**	9.78	5.26

where y refers to the estimated values of the phenomenon under study in year x, and y refers to the order of the time element, where x = 1, 2, 3, 4, ... ،17.

*: Significant at 0.05. **: Significant at 0.01.

Source: Calculated from statistical analysis of Table 1 data.

3 – The value of fish production:

From the data of Table (3) related to the value of fish during the period (2005-2022), it was found that the value of fish production ranged between two limits, the lowest amounting to about 7.81 billion pounds in 2005/2006, and the highest amounting to about 67.5 billion pounds in 2020/2021, with an annual average of about 30.79 billion pounds during the period under study.

Among the results of the analysis of the general time trend shown in Table (4) regarding the value of fish production, it was found that there is a (statistically significant decrease) in the value of Egyptian fish production estimated at about 4.17 billion pounds, equivalent to about 13.5% of the general average of this value during the aforementioned period.

From the value of the coefficient of determination (R2), it was found that about 89% of these changes are due to factors whose effect is measured by the time element, while about 11% are due to other factors not measured in the estimated model.

4- The relative importance of the components of agricultural income:

By studying the relative importance of the components of agricultural income during the period (2005-2022) and from Table (3) and according to the main production groups, namely plant production, animal production, and fish production, it was found that the value of plant production comes in the first place in terms of contribution to the formation of agricultural income. The average monetary value of plant production in Egypt during the period (2005-2022) amounted to about 159.75 billion pounds, representing about 55.80% of the average cash value of agricultural income during the same period, which is about one billion pounds. It is followed in second place by the value of livestock production in terms of contribution to the formation of agricultural income. The average monetary value of livestock production in Egypt during the same period amounted to about 126.35 billion pounds, representing about 35.47% of the average cash value of agricultural income during the same period. In third place comes the value of fish production in terms of contribution to the formation of agricultural income. The average monetary value of fish production amounted to about 30.79 billion pounds, representing about 7.86% of the average The monetary value of agricultural income during the same period.

Table (3) Components of agricultural income and their relative importance during the period (2005-2022)

(Value in billion pounds)

Year	Total agricultural income	Net agricultural income	The value of plant production	The relative importance of the value of plant production	The value of animal production	The relative importance of the value of livestock production	The value of fish production	The relative importance of the value of fish production
2006	126.85	93.1	71.91	56.69	47.12	37.15	7.81	6.16
2007	137.31	102.3	78.43	57.12	49.57	36.10	9.31	6.78
2008	155.85	136.8	89.86	57.67	55.14	35.38	10.83	6.95
2009	185.54	138.1	109.79	59.17	64.94	35.00	10.81	5.83
2010	189.31	138.1	108.66	57.40	68.99	36.44	11.66	6.16
2011	209.22	150.7	117.48	56.15	77.25	36.92	14.49	6.93
2012	249.86	179.7	148.50	59.43	84.54	33.83	16.82	6.73
2013	267.29	190.8	160.40	60.16	88.84	33.24	17.65	6.60
2014	282.30	203.8	165.03	58.46	97.64	34.59	63.19	6.95
2015	319.55	223.7	176.73	55.3	119.28	37.3	23.28	7.33
2016	363.9	224.9	197.6	54.3	133.9	36.8	32.3	8.9
2017	471.7	329.2	257.8	54.7	169.9	36.00	43.8	9.3
2018	500.7	325.3	264.7	52.8	187.5	37.4	48.5	9.7
2019	546.8	346.8	286.1	53.5	187.1	35.00	61.1	11.4
2020	595.7	364.8	321.8	54.00	211.1	35.4	62.9	10.6
2021	742.5	444.7	408.5	55.00	266.5	35.9	67.5	9.1
2022	780.5	404.8	365.2	46.80	238.8	30.60	65.2	8.3
Average	360.28	235.15	159.75	55.80	126.35	35.47	30.79	7.86

Source:

- Central Agency for Public Mobilization and Statistics, Bulletin of Income Estimates from the Agricultural Sector, miscellaneous.
- Central Agency for Public Mobilization and Statistics. Statistical Yearbook, Miscellaneous Issues.

Table (4): Equations of the general time trend of the components of agricultural income and their relative importance during the period (2005-2022). (Value in billion pounds)

Statement	Equation	R2	Value "F"	Average phenomenon	Annual rate of change (%)
Total agricultural income	Y=2.39+39.76x (13.02)**	091	169.68**	360.28	11.03
Net agricultural income	Y=43.03+21.34x (14.79) **	0.93	218.74**	235.15	9.07
The value of plant production	Y=17.34+19.82x (13.90) **	0.92	193.44**	195.79	10.12
The relative importance of the value of plant production	Y = 59.82 – 0.447 x (3.88-) **	0.50	15.09**	55.80	0.80
The value of animal production	Y = 5.48 – 13.43 x (13.56) **	0.92	183.88**	126.35	10.6

The relative importance of the value of livestock production	Y = 36.41 – 0.104 x (1.23-)	0.09	1.52**	35.47	0.29
The value of fish production	Y = 6.74 – 4.17 x (11.31-) **	0.89	127.97**	30.79	13.5
The relative importance of the value of fish production	Y = 5.45 – 0.26 x (5.29-) **	0.65	28.08**	7.86	3.30

where Y refers to the estimated values of the phenomenon under study in year n, and x refers to the order of the time element where n = 1, 2, 3, 4, ... ،17.

*: Significant at 0.05. **: Significant at 0.01.

Source: Calculated from statistical analysis of Table 3 data.

Third - per capita agricultural income and net agricultural income:

1- Rural population:

From the data of Table (5) related to the number of rural population during the period (2005-2022), it was found that the rural population ranged between two limits, the lowest of which amounted to about 41.63 million individuals in 2005, and the highest of which reached about 56.2 million individuals in 2019, with an annual average of about 48.51 million individuals during the period under study.

Among the results of the analysis of the general time trend shown in Table (6) with regard to the number of population, it was found that there was an increase (statistically significant) in the population estimated at about 1.03 billion pounds, equivalent to about 0.30% of the general average of these numbers during the aforementioned period.

From the value of the coefficient of determination (R2), it was found that about 95% of these changes are due to factors whose effect is measured by the time element, while about 5% are due to other factors not measured in the estimated model.

2- Agricultural income per capita:

From the data of Table (5) related to the per capita agricultural income during the period (2005-2022), it was found that the per capita agricultural income ranged between two limits, the lowest of which amounted to about 3.05 pounds in 2005, and the highest of about 12 pounds in 2020, with an annual average of about 6.16 pounds during the period under study.

From the results of the analysis of the general time trend shown in Table (6) with regard to the per capita agricultural income, it was found that there was an increase (statistically significant) in the per capita agricultural income estimated at about 0.446 billion pounds, equivalent to about 7.24% of the general average per capita share of agricultural vinegar during the aforementioned period.

From the value of the coefficient of determination (R2), it was found that about 81% of these changes are due to factors whose effect is measured by the time element, while about 19% are due to other factors not measured in the estimated model.

3- Per capita net agricultural income:

From the data of Table (5) related to the per capita net agricultural income during the period (2005-2022), it was found that the per capita share of net agricultural income ranged between two limits, the lowest of which amounted to about 2.23 pounds in 2005, and the highest of which amounted to about 8.08 pounds in 2012, with an annual average of about 4.42 pounds during the period under study.

From the results of the analysis of the general time trend shown in Table (6) with regard to the per capita net agricultural income, it was found that there was an increase (statistically significant) in the per capita share of net agricultural income estimated at about 0.307 billion pounds, equivalent to about 5.9% of the general average per capita of net agricultural income during the aforementioned period.

From the value of the coefficient of determination (R2), it was found that about 91% of these changes are due to factors whose effect is measured by the time element, while about 9% are due to other factors not measured in the estimated model.

Table (5): Agricultural income per capita and net agricultural income during (2005-2022).

(Value in pounds)

Years	Rural population	the citizen gets from agricultural income	the citizen gets from agricultural Net income
2005	41.63	3.05	2.23
2006	41.92	3.28	2.44
2007	42.59	3.66	2.73
2008	42.88	4.33	3.19
2009	43.84	4.32	3.15
2010	44.90	4.66	3.36
2011	45.89	5.44	3.92
2012	46.04	5.81	4.14
2013	47.18	5.98	4.32
2014	49.00	5.68	4.16
2015	50.3	5.53	4.44
2016	51.6	6.18	4.36
2017	54.6	7.3	6.03
2018	55.3	9.00	5.88
2019	56.2	10.46	6.17
2020	55.8	12.00	6.54
2021	55.00	8.08	8.08
2022	54.4	7.44	7.44
Average	48.51	6.16	4.42

Source: Compiled from: Central Agency for Public Mobilization and Statistics (CAPMAS), International Information Network (Internet)

Table (6): Equations of the general time trend of per capita agricultural income and net agricultural income during (2005-2022).

(Value in pounds)

Statement	Equation	R2	Value "F"	Average phenomenon	Annual rate of change (%)
Rural population	Y = 39.18 + 1.03 X (18.34)	0.95	336.52**	48.51	0.30
the citizen gets from agricultural income	Y = 2.14 + 0.446 X (8.00)	0.81	64.07**	6.16	7.24
the citizen gets from agricultural net income	Y = 1.65 + 0.307 X (12.81)	0.91	164.22**	4.42	5.9

where y refers to the estimated values of the phenomenon under study in year n, and x refers to the order of the time element where e = 1, 2, 3, 4, ... ،17.

*: Significant at 0.05. **: Significant at 0.01.

Source: Calculated from statistical analysis of Table 5 data.

Fourth: The value of GDP and the value of agricultural GDP:

1- The value of GDP:

From the data of Table (7) related to the value of GDP for all sectors and for the public sector and the private sector during the period (2005-2022), where its lowest value reached about 71.3 billion pounds in 2006/2007, while its maximum value reached about 5526.9 billion pounds, respectively, in 2019/2020, with an annual average of about 2694.62 billion pounds each, respectively, during the period under study.

From the results of the analysis of the general time trend recorded in Table (8), it was found that each of the value of GDP (wholesale - public - private)

An increase (statistically confirmed) of about 250.47 billion pounds, 66.27 billion pounds, and 184.40 billion pounds, respectively, equivalent to about 9.29%, 7.79%, and 9.99% of the average of each of them respectively during the period under study, and from the coefficient of determination ("R2"), it was found that about 52%, 51%, and 52% of the changes in each of them respectively are due to factors whose impact reflects the element of time, while about 48%, 49%, and 48% of those changes respectively It may be due to other factors not measured in this estimated model.

2 - The value of agricultural GDP:

Table (7) shows the value of the gross agricultural GDP and the public sector and the private sector during the period (2005-2022), where it was found that the agricultural GDP ranged between two limits, the lowest of which amounted to about 81.6 billion pounds in 2005/2006, and the highest of which amounted to about 780.6 billion pounds in 2021/2022, with an annual average of about 307.2 billion pounds during the period under study. While the value of agricultural GDP (for the public sector) ranged between two limits, the lowest of which amounted to about 0.1 billion pounds in 2005/2006 and the highest of about 0.8 billion pounds in 2016/2017, with an annual average of about 0.223 billion pounds during the period under study. With regard to the value of agricultural GDP (for the private sector), it ranged between two limits, the lowest amounting to about 81.6 billion pounds in 2001/20, and the highest amounting to about 648.82 billion pounds in 2021/2022, with an annual average of about 320.41 billion pounds during 0.19 million pounds during the period under study.

The results of the general time trend analysis recorded in Table (8) indicate that the value of the agricultural GDP, the private sector and the public sector has increased annually by about EGP 174.53 billion, EGP 28.97 billion and EGP 0.19 billion respectively, representing about 56.81%, 9.04% and 19.4% of the average value of each of them respectively during the period under study.

From the coefficient of determination (R2), it was found that about 25%, 53%, and 50% of the changes in the value of agricultural GDP, agricultural GDP (private) and agricultural GDP (public) are due to factors whose impact reflects the element of time, while about 75%, 47%, and 50% of these changes respectively may be due to other factors not measured in this estimated model.

Table (7) Agricultural GDP and GDP in Egypt at the cost of factors and currentprices during the period (2005-2022)

(billion pounds)

Year	Value of GDP					Value of agricultural GDP				
	Public Sector	%	Private Sector	%	Total	Public Sector	%	Private Sector	Total	الإجمالي
2006/05	230.8	39.72	350.3	60.28	581.1	0.0	0.00	81.6	100	81.6
2007/06	274.8	38.69	435.5	61.31	710.3	0.1	0.10	99.8	99.90	99.9
2008/07	334.6	39.12	520.7	60.88	855.3	0.1	0.09	113.1	99.91	113.2
2009/08	379.3	38.16	614.8	61.84	994.1	0.1	0.07	135.4	99.93	135.5
2010/09	429.1	37.30	721.4	62.70	1150.5	0.1	0.06	160.8	99.94	160.9
2011/10	494.5	37.75	815.4	62.25	1309.9	0.2	0.11	190.1	99.89	190.3
2012/11	609.1	35.56	1104.1	64.45	1713.1	0.1	0.05	188.6	99.95	188.7
2013/12	686.7	35.68	1238.1	64.32	1924.8	0.2	0.10	209.5	99.90	209.7
2014/13	798.7	36.21	1407.5	63.82	2205.5	0.2	0.08	241.3	99.92	241.5
2015/14	840.4	33.98	1632.7	66.02	2473.1	0.2	0.07	278.2	99.93	278.4
2016/15	826.9	30.92	1847.5	69.08	2674.4	0.2	0.06	318.6	99.94	318.8
2017/16	1056.6	30.99	2352.9	69.01	3409.5	0.3	0.08	398.2	99.92	398.5
2018/17	1328.3	30.65	3005.5	69.35	4333.8	0.3	0.06	497.6	99.94	497.9
2019/18	1562.9	30.23	3607.2	69.77	5170.1	0.4	0.07	587.7	99.93	588.1
2020/19	1523.9	27.57	4003.0	72.43	5526.9	0.5	0.07	669.2	99.93	669.7
2021/20	1543.2	28.86	3805.0	71.14	5348.5	0.4	0.05	628.45	99.95	742.5
2022/21	1533.65	28.25	3904.0	71.93	5427.7	0.4	0.05	648.82	99.95	780,6
Average	850.20	34.10	1845.0	65.91	2694.6	0.223	0.06	320.41	99.931	307.2

Source: Ministry of Planning, Economic and Social Development Plan, miscellaneous.

Table (8): General time trend equations of GDP and agricultural GDP in Egypt at the cost of factors and prices are ongoing during the period (2005-2022)

Statement		Equation	R2	Value "F"	Average phenomenon
GDP	Public Sector	Y=304.47+66.27X (3.94)	0.51	15.517**	7.79
	Private Sector	Y=326.43+184.40X (4.06)	0.52	16.45**	9.99
	Total	Y=631.90+250.47X (4.003)	0.52	16.28**	9.29
Agricultural GDP	Public Sector	Y=0.69+0.19X (3.84)	0.50	14.76**	19.04
	Private Sector	Y=81.83+28.97X (4.09)	0.53	16.67**	9.04
	Total	Y=-688.99+174.53X (3.84)	0.25	4.99*	56.81

where: Y refers to the estimated values of the phenomenon under study in year n, and x refers to the order of the time element where e = 1, 2, 3, 4,…….17.

**: Significant at 0.01., *Significant at 0.05

Source: Calculated from: Statistical analysis of Table 7 data.

Fifth: **The value of national consumption and agricultural consumption and its relative importance:**

1. National consumption value:

From the data of Table (9) related to the value of national consumption during the period (2005-2022), it was found that the value of national consumption ranged between two limits, the lowest of which amounted to about 640.1 billion pounds in 2006, and the highest amounted to about 5980.4 billion pounds in 2020, with an annual average of about 2748.24 billion pounds during the aforementioned period.

From the results of the analysis of the general time trend shown in Table (10) with regard to the value of national consumption, it was found that there is a (statistically significant decrease) estimated at about
(-357.62) billion pounds, equivalent to about 13.01% of the general average value of national consumption during the aforementioned period.

From the coefficient of determination (R2), it was found that about 91% of the changes in the value of national consumption are due to factors whose effect reflects the element of time, while about 9% of these changes respectively may be due to other factors not measured in this estimated model. The statistical significance of the estimated model is not proven.

2. Agricultural consumption value:

From the data of Table (9) related to the value of agricultural consumption during the period (2005-2022), it was found that the value of agricultural consumption ranged between two limits, the lowest of which amounted to about 93.1 billion pounds in 2006/05, and the highest amounted to about 410.2 billion pounds in 2022, with an annual average of about 226.10 billion pounds during the aforementioned period.

From the results of the analysis of the general time trend shown in Table (10) with regard to the value of agricultural consumption, it was found that there is an annual increase (statistically significant) estimated at about 20.11 billion pounds, equivalent to about 8.8% of the general average value of agricultural consumption during the aforementioned period.

From the coefficient of determination (R2), it was found that about 94% of the changes in the value of agricultural consumption are due to factors whose effect reflects the element of

time, while about 6% of these changes respectively may be due to other factors not measured in this estimated model. Lack of proof of statistical significance of the estimated model

Table (9) Value of National Consumption and Agricultural Consumption during the Period (2005-2022)
(Value in billion pounds)

Year	Value of national consumption	Value of agricultural consumption	% for agricultural consumption
2006/05	640.1	93.1	14.5
2007/06	758.8	102.3	13.4
2008/07	911.1	116.3	12.7
2009/08	1054.3	136.8	13.1
2010/09	1200.1	138.1	11.5
2011/10	1350.1	150.8	11.1
2012/11	1640.8	179.8	10.9
2013/12	1814.1	190.9	10.5
2014/13	2110.2	203.6	9.6
2015/14	2425.3	223.7	9.2
2016/15	2693.1	224.9	8.3
2017/16	3441.8	256.1	7.4
2018/17	4407.4	329.3	7.4
2019/18	5135.2	325.1	6.3
2020/19	5980.4	400.1	6.5
2021/20	5557.3	362.6	6.5
2022/21	5600.1	410.2	7.3
المتوسط	2748.24	226.10	9.77

Source: Compiled from: Central Agency for Public Mobilization and Statistics (CAPMAS), International Information Network (Internet)

Table (10): Equations of the general time trend of the value of both national consumption and agricultural consumption during the period (2005-2022).

Statement	Equation	R2	Value "F"	Average phenomenon	Annual rate of change (%)
National consumption (billion pounds)	Y_n= 470.35 – 357.62 x (12.72-)	0.91	161.94**	2748.24	13.01
Agricultural consumption (Billion pounds)	Y_n= 45.06 – 20.11x (16.20)	0.94	262.66**	226.10	8.8
% National to agricultural consumption	Y_n = 14.43 – 0.517 x (16.73-)	0.94	280.20**	9.77	5.29

where y refers to the estimated values of the phenomenon under study in year n, and x refers to the order of the time element where n= 1, 2, 3, 4, ... ،17.

*: Significant at 0.05. **: Significant at 0.01.

Source: Calculated from statistical analysis of Table 9 data.

Sixth: The value of national and agricultural exports and imports and their relative importance:

1- Value of national exports:

From the data of Table (11) related to the value of national exports during the period (2005-2022), it was found that it ranged between two limits, the lowest of which amounted to about 61.6 billion pounds in the year 05/2006, and the highest of which amounted to about 630.7 billion pounds in 2022, with an annual average of about 267.12 billion pounds during the aforementioned period.

From the results of the analysis of the general time trend shown in Table (12), it was found that there is a (statistically significant decrease) in the value of national exports estimated at about - 34.236 billion pounds, equivalent to about 12.8% of the general average of total national exports during the average period mentioned above. From the coefficient of determination (R2), it was found that about 82% of the changes in total national exports are due to factors whose impact reflects the element of time and that about 18% of these changes may be due to other factors not measured in the estimated model.

2 - Value of agricultural exports:

As for the value of agricultural exports, it ranged between two limits, the lowest amounting to about 5.6 billion pounds in 2007/06, with a contribution rate of about 5.13 % of the average total national exports in the period between 2005-2022,and the highest reached about 100.6 billion pounds in 2022, with an annual average of about 42.01 billion pounds during the aforementioned period.

From the results of the analysis of the general time trend shown in Table (12), it was found that there is a (statistically significant decline) in the value of agricultural exports estimated at about5.71 billion pounds, equivalent to about 13.5% of the general average of total agricultural exports during the average period mentioned above. From the coefficient of determination (R2), it was found that about 92% of the changes in total agricultural exports are due to time-reflecting factors and about 8% of these changes may be due to other factors not measured in the estimated model.

2. Value and relative importance of national imports:

It is clear from Table (11)that the value of national imports ranged between two limits, the lowest of which amounted to about 114.6 billion pounds in 2005, and the highest reached about 2923.1 billion pounds in 2022, with an annual average of about 820.17 billion pounds during the aforementioned period, with a contribution of about 17.7% of the total national imports during the average period between 2005-2022.

From the results of the analysis of the general time trend shown in Table (12), it was found that there is a (statistically significant decrease) in the value of national imports estimated at about -145.26 billion pounds, equivalent to about 17.7% of the general average value of national imports during the average period mentioned above.

From the coefficient of determination (R2), it was found that about 72% of the changes in the total value of national imports are due to factors whose impact reflects the element of time and that about 28% of these changes may be due to other factors not measured in the estimated model.

3- Value and relative importance of agricultural imports:

As for the value of agricultural imports, it ranged between two limits, the lowest amounting to about 22.7 billion pounds in 2006, with a contribution of about % of the total average national imports in the period between 2005/2022, and the highest reached about 257.4 billion pounds in 2021, with an annual average of about 116.31 billion pounds during the aforementioned period.

From the results of the analysis of the general time trend shown in Table (12), it was found that there is a (statistically significant decrease) in the value of agricultural imports estimated at about (-14.85) billion pounds, equivalent to about 12.76% of the general average value of total agricultural imports during the average period mentioned above.

From the coefficient of determination (R2), it was found that about 94% of the changes in the total value of agricultural imports are due to time-reflecting factors and about 6% of these changes may be due to other factors not measured in the estimated model.

Table (11) Values of National and Agricultural Exports and Imports and their Relative Importance during the Period .(2005-2022)

Years	The value of national exports is one billion pounds	The value of agricultural exports is one billion pounds	% Relative importance of the value of agricultural exports	The value of national imports is one billion pounds	The value of agricultural imports is one billion pounds	% Relative importance of the value of agricultural imports
2006/05	61.6	5.7	9.25	114.6	23.3	20.33
2007/06	78.8	5.6	7.11	118.3	22.7	19.19
2008/07	91.2	7.6	8.33	152.5	31.4	20.59
2009/08	143.1	16.6	11.60	287.7	49.2	17.10
2010/09	134.5	24.4	18.14	249.5	43.7	17.52
2011/10	154.9	28.1	18.14	300.3	58.1	19.35
2012/11	188.3	29.6	15.72	371.4	89.2	24.02
2013/12	186.7	27.1	14.52	441.9	99.6	22.54
2014/13	199.8	33.8	16.92	455.9	98.8	21.67
2015/14	195.2	36.4	18.65	523.3	114.5	21.88
2016/15	168.0	37.4	22.26	568.9	111.9	19.67
2017/16	230.3	49.9	21.67	708.2	145.9	20.60
2018/17	469.9	67.5	14.36	1187.1	197.9	16.67
2019/18	523.8	78.4	14.97	1464.8	199.4	13.61
2020/19	513.7	75.3	14.66	1319.1	186.2	14.12
2021/20	570.6	90.3	15.83	2756.3	257.4	9.3
2022/21	630.7	100.6	15.97	2923.1	248.1	8.5
Average	267.12	42.01	15.18	820.17	116.31	18.03

Source:

1. Central Agency for Public Mobilization and Statistics, "Foreign Trade Bulletin", miscellaneous.
2. Central Agency for Public Mobilization and Statistics " Agricultural Sector Income Estimates Bulletin" Miscellaneous issues.
3. Central Agency for Public Mobilization and Statistics "Statistical Yearbook" Miscellaneous issues.

Table (12): Equations of the general time trend of the value of national and agricultural exports and imports and their relative importance during the period (2005-2022).

Statement	Equation	R2	Value "F"	Average phenomenon	Annual rate of change (%)
The value of national exports is one billion pounds	$Y= 41.02 - 34.236_x$ (8.40-)	0.82	70.64**	267.12	12.8
The value of agricultural exports is one billion pounds	$Y = 9.37 - 5.71\ x$ (13.16-)	0.92	185.43**	42.01	13.5
% Relative importance of the value of agricultural exports	$Y = 11.16 + 0.447\ x$ (2.43)	0.28	5.92**	15.18	2.94
The value of national imports is one billion pounds	$Y = 487.24 - 145.26\ x$ (6.24-)	0.72	38.94**	820.17	17.7
The value of agricultural imports is one billion pounds	$Y = 17.40 - 14.85\ x$ (15.43-)	0.94	238.20**	116.31	12.76
% Relative importance of	$Y = 23.09 - 0.562\ x$	0.41	10.45*	18.03	3.11

the value of agricultural imports	(3.23-)				

Where Y refers to the estimated values of the phenomenon under study in yearn , and N refers to the order of the time element where e = 1, 2, 3, 4,... ،17.

*: Significant at 0.05. **: Significant at 0.01.

Source: Calculated from statistical analysis of Table 10 data.

4- Instability coefficients for exports and imports:

The criterion of stabilizing the quantity of exports or imports of a particular crop shows the degree of meeting export requirements, and is also considered evidence of maintaining and continuing foreign markets for Egyptian exports and imports and not turning importers in the exporting countries to the markets of other countries competing with Egypt, which are more able to meet export requirements, and the ability of countries to comply with export requirements is measured by the stability of the quantity of imports, and price stability is an incentive for local producers to increase production.

The Average Percentage Deviation Method was used 1 to calculate the instability coefficient, which is applied according to the following equation:

$$St = \frac{| y_\tau - \hat{y}_\tau |}{\hat{y}_\tau}.100$$

Whereas:

St = quantitative and price instability coefficient of products.

yt = denotes the actual value of the variable under study.

$\hat{y}_t$ = Symbolizes the estimated value of the variable under study. It is obtained using the least squares method.

The geometric mean of this ratio expresses the instability coefficient, if the value of this coefficient is equal to zero, this means the stability or stability of the calculated phenomenon, and whenever the value of this coefficient increases, this means an increase in the degree of instability as shown below:

A- Value instability coefficients for national exports:

From Table (13), it was found that during the period (2005-2022), the instability coefficient of the value of national exports began to fluctuate between a minimum of about 61.6% in 05/2006, and an upper limit of about 630.7% in 21/2022, while this coefficient reached about 267.12% as an average for this period, which means that the relative stability of the value of national imports during that period improves.

B- Value instability coefficients of national imports:

From Table (13), it was found that during the period (2005-2022), the instability coefficient of the value of national exports began to fluctuate between a minimum of about 5.6% in 06/2007, and an upper limit of about 100.6% in 21/2022, while this coefficient reached about 42.01% as an average for this period, which means that the relative stability of the value of national exports during that period improved.

C- Value instability coefficients for agricultural imports:

From Table (13), it was found that during the period (2005-2022), the instability coefficient of the value of agricultural imports began to fluctuate between a minimum of about 114.6% in the year, and an upper limit of about 2923.1% in 21/2022, while this coefficient reached about 820.17% as an average for this period, which means that the relative stability of the value of agricultural imports improved during that period.

1 Galal Abdel Fattah El-Mallah (Ph.D.): "**Instability and commodity concentration of Egyptian agricultural imports**", Seventh International Conference on Statistics, Scientific Calculations and Social and Population Research, Ain Shams University, 1982.

D- Value instability coefficients for agricultural imports:

From Table (13), it was found that during the period (2005-2022), the instability coefficient of the value of agricultural exports began to fluctuate between a minimum of about 22.7% in 2007/06 and an upper limit of about 257. % in 20/2021, while this coefficient reached about 116.31% as an average for this period, which means improving the relative stability of the value of agricultural exports during that period.

Table (13) Instability Coefficients of National and Agricultural Exports and Imports during the Period (2022-2005)

	Instability coefficients			
Year	Value of national exports	Value of agricultural exports	Value of national imports	Value of agricultural imports
2006/05	61.6	5.7	114.6	23.3
2007/06	78.8	5.6	118.3	22.7
2008/07	91.2	7.6	152.5	31.4
2009/08	143.1	16.6	287.7	49.2
2010/09	134.5	24.4	249.5	43.7
2011/10	154.9	28.1	300.3	58.1
2012/11	188.3	29.6	371.4	89.2
2013/12	186.7	27.1	441.9	99.6
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2018/17	469.9	67.5	1187.1	197.9
2019/18	523.8	78.4	1464.8	199.4
2020/19	513.7	75.3	1319.1	186.2
2021/20	570.6	90.3	2756.3	257.4
2022/21	630.7	100.6	2923.1	248.1
Average	267.12	42.01	820.17	116.31

***:Geometric average.**

Source: Calculated from: Tables (11,12).

Table (14): Equations of the general time trend of instability coefficients for the values of national and agricultural exports and imports during the period (2005-2022).

Statement	Equation	R2	Value "F"	Average phenomenon	Annual rate of change (%)
Value of national exports	Y = 41.02 – 34.23 X **(8.40-)	0.82	70.64**	267.12	12.8
Value of agricultural exports	Y = 9.37 – 5.71 x **(13.61-)	0.92	185.34**	42.01	13.5
Value of national imports	Y = 487.24 -145.26 X **(6.24-)	0.72	38.94**	820.17	17.7
Value of agricultural imports	Y = 17.40 – 14.85 x **(15.43-)	0.94	238.20**	226.31	6.5

where Y refers to the estimated values of the phenomenon under study in year n, and x refers to the order of the time element where x = 1, 2, 3, 4, ... ،17.

*: Significant at 0.05. **: Significant at 0.01.
Source: Calculated from statistical analysis of Table 13 data.

Recommendations: In light of the above, the study recommends a set of recommendations, perhaps the most important of which are the following:
The study recommended increasing the volume of investments, taking into account the balance in the distribution of investments between the economic sectors, and working on the continuous development of the investment climate to attract foreign and Arab investments due to the need to participate in gross foreign investment and agriculture in Egypt, and working on a balance in the geographical distribution in the governorates of the Republic for the total number of companies and their total capital.

- The need to raise economic growth rates above the population growth rate in Egypt, while working to encourage foreign investments, especially in the productive fields and fighting inflation.
- The need to determine whether the entity financing the investment is the banking system and the inflationary pressures that lead to it, or through external lending and the increase in the burden of external debt. External debt has contributed to the widening of the domestic capacity gap and thus the increase in the trade deficit.
- Working to increase the volume of savings and try to attract and mobilize family savings by raising the interest rate on savings in order to provide the appropriate climate for investment in Egypt for capital owners who seek to ensure the existence of this climate.
- Work to increase national investments allocated to the commodity sector with the provision of information on them.
- The need to take into account the change of administrative atmosphere and the improvement of communication systems, as supporting political stability is a vital requirement to establish a safe environment for investments.

Tax incentives for emerging investments were not of much importance in attracting investments, but international experiences confirm the need to provide tax and financial incentives for investments that are compatible with economic development priorities.

- It was found that it is necessary to reduce the role of the government in economic activity and limit its role to the supervisory role and not the productive one, in addition to the importance of satisfying the market system and creating an open economy, in addition to the importance of governments in providing soft loans to various projects in less urban areas at an interest rate that depends on the size of the capital, secondary sales of the project and the degree of risk associated with the project.
- The compatibility of the skilled workforce necessary to carry out high-tech investments, which is one of the necessary conditions to attract investments.
- The diversity and multiplicity of future markets for Egyptian exports, as well as the diversity of sources of imports from countries of the world, which reflects the orientation of the Egyptian economy to follow the policy of openness and that it was not limited to a specific economic bloc.
- Work to improve the Egyptian national agricultural income by increasing the value of agricultural production by paying attention to plant, animal and fish activities, in addition to reducing the total value of agricultural production requirements by reducing the value of the requirements of previous activities.
- The General Investment Authority should play a positive role in identifying the investment opportunities available to the agricultural sector.
- Work should be done to encourage investors to turn to agricultural projects in general, and to livestock and poultry projects to livestock and poultry projects in particular.
- Work must be done to enact laws that support agricultural investment.
- The increasing gap between agricultural savings and agricultural investments, the inability of those savings to finance agricultural investments, and the need to expand the granting of medium and long-term loans due to their importance in development programs.

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9- Ministry of Investment, performance report of the Ministry of Investment and its affiliates, miscellaneous numbers.
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Fourth: Web sites

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2- General Authority for Investment and Free Zones website www.gafi.gov.eg
3- Location of the Information and Decision Support Center at the www.Idsc.gov.eg Council of MinisterS.