

## Measuring The Impact Of Some Foreign Agricultural Development Indicators In Iraq 1990-2022

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### **Abstract**

Agricultural foreign trade is considered one of the vital factors that affect economic growth and achieve food security in Iraq in light of the economic changes that Iraq has witnessed since 1990, which requires studying the impact of development indicators on agricultural foreign trade. In our contemporary era, it has become clear that all economic activities and relations, whether productive or consumer, regardless of their form and type, are closely linked to population growth and the development of the per capita share of national income. Whether industrial, agricultural or social, they have an economic impact that affects and is affected by each other. The increase in population or the increase in per capita income leads to an increase in demand for consumption of all goods, especially those related to living, and from them it directly affects the local production process if there is flexibility in the production structures or an increase in demand for foreign goods through imports. This is clear in the study sample. We note that this increase was reflected in the increase in agricultural imports. The results of the analysis of the long-term equation showed the insignificance of the independent variables, national income and population growth, on the dependent variable, agricultural imports, as well as the insignificance of national income and the insignificance of population growth on the dependent variable, agricultural exports. The study recommends supporting the agricultural sector to achieve the required productivity, and the necessity of keeping pace with the increase in Population growth by the competent authorities in a manner that is appropriate to the size of this increase, as well as following a policy of supporting the agricultural sector in a manner that is proportional to the national income to achieve balance in foreign trade.

**Keywords:** (Agricultural imports, Agricultural exports, Population size, average per capita income)

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### **I. Introduction:**

The population issue at the present time poses a challenge to countries on their various systems, whether developed countries or developing countries, that population growth and the size of per capita income in developed countries is reflected in the increase in production through increased demand for goods and services (14) while developing countries increase demand for goods and services and the lack of flexibility in the productive apparatus, reflected in the increase in imports of goods and services (16). Foreign trade is a vital activity in development, It's important to think of economics as an indicator Basically on the productive and competitive capacity of States in the international market, And that's because this indicator is linked to the productive potential that exists, and the ability to do so State for export, in addition to entry levels, And its ability to import and reflect all of that on the state's stock of Foreign exchange and its effects on the trade balance (15), The population issue at the present time poses a challenge to countries on their various systems, whether developed countries or developing countries, that population growth and the size of per capita income in developed countries is reflected in the increase in production through increased demand for goods and services, while developing countries increase demand for goods and services and the lack of flexibility in the productive apparatus, (12). The average population growth rate is about 2.6% per year, The ratio of the average per capita income in Iraq compared to the global average is about 43.7% reflected in the increase in imports of goods and services. Foreign trade is a vital activity in development, It's important to think of economics as an indicator Basically on the productive and competitive capacity of States in the international market, And that's because this indicator is linked to the productive potential that exists, and the ability to do so State for export, in addition to entry levels, And its ability to import and reflect all of that on the state's stock of Foreign exchange and its effects on the trade balance (19), The increase in the size of the population and the average income per capita of the indicators that have a direct impact on the structure of agricultural foreign trade in any country was negatively or positively, The research aims to study and analyze the relationship between population increase and agricultural production in Iraq. (13) and then on the structure of agricultural exports and imports through many variables that are (exports, imports, natural increase of population, national income, (1) The hypothesis the increase in

population and the development of per capita income have an impact on agricultural foreign trade. ( 20 ) here is no doubt that foreign trade is of vital importance to various countries as it is one of the dynamic variables that create objective conditions for obtaining technology, skill, capital and machinery that contribute positively to achieving economic development. This means that foreign trade is an essential means of stimulating economic growth, and it is also considered a necessary condition for attracting foreign investments.( 17 ) ,Developing countries need to make additional efforts to modify their economic and social structure in order to be able to achieve economic growth. Likewise, the term economic development became popular after World War II, referring to the problems of countries that embarked on political liberalization and that aimed to improve their conditions by bridging the gap between countries that had completed their development. And those that are still under development ( 18).

## **II. Materials And Methods**

### **Materials**

#### **Importance of the study:**

Indication of knowledge of population growth and increases obtained during the sample period The development of agricultural foreign trade, Study of per capita income and the extent to which it affects the development of agricultural foreign trade, The development of agricultural foreign trade represented by agricultural imports and exports.

#### **Objective of the study:**

The research aims to study and analyze the relationship between population increase and agricultural production in Iraq, and then on the structure of agricultural exports and imports through many variables that are (exports, imports, natural increase of population, national income) .

**The problem of the study:** - The increase in the size of the population and the average income per capita of the indicators that have a direct impact on the structure of agricultural foreign trade in any country was negatively or positively.

**The hypothesis of the study:** - The research proceeds from the hypothesis that (the increase in population and the development of per capita income have an impact on agricultural foreign trade).

#### **Study population and sample:**

The study included the structure of agricultural foreign trade, population growth rate and average per capita income in Iraq for the period 1990-2022

### **First: A theoretical and conceptual framework for some economic development indicators**

#### **1- Population growth**

It refers to the rate of annual increase of the population in a given country and measures the natural increase of births and net migration and is expressed in the form of a ratio. (22)

Population growth indicates a change in the rate of population growth, which in turn reflects an uneven increase in terms of changes in birth rates, and the process often occurs as a result of modern developments (6).

We can define population growth in a society as the difference in the size of the population in a society over time periods due to natural increase and net migration, and by natural increase of population we mean the surplus in the birth rate over the death rate in a certain period of time. (10) Many developing countries today suffer from the phenomenon of increasing population growth rates resulting from a set of reasons and conditions in light of the improvement of living conditions resulting from improved living standards and the availability of health care significant growth of the population as a result of the increase in the number of births and the decrease in the number of deaths and this increase exceeds the increase in economic growth rates, especially in developing countries, which makes them suffer from a permanent deficit in bridging the agricultural food gap, but this increase in population requires an increase In imports in general and agricultural in particular.

#### **2- Per capita income**

Individual income is a total obtained by the individual from his work is his family or any other additional source, and the individual depends on it in order to perform all his duties and responsibilities, as all human needs need money so that he can obtain and consume it, and from here we can say that the individual income is the one that achieves well-being for man and his family and they own things to be able to live.

The size of income is what determines the poverty rate of society, whenever the per capita income is high, this is one of the things that reduce the poverty rate and vice versa. As well as per capita income gives a perception of the state's economic potential and development and increase its economic well-being and this is

reflected in the increase in consumption of individuals and thus either increase production for countries that have flexibility in the productive system or increase imports from abroad as in developing countries in all aspects, including trade Agricultural Foreign Affairs This is what we see clearly in Iraq after 2003 after the increase in income among individuals, the demand for agricultural imports of the dam increased the increasing demand for it. (1),

### **3- Agricultural Foreign Trade**

Foreign trade is defined as "the process of trade exchange that takes place between the country and other countries of the world. The process includes the exchange of tangible and intangible goods (3)

Foreign trade is also defined in a narrow sense, which "includes visible and invisible exports and imports (5).

Foreign trade can be defined as a group of goods and services produced by a country that has a comparative advantage in its production, and exports part of it to other countries, and in return imports goods and services from different countries, which also have a comparative advantage in their production, and as a result, the country's trade balance appears, whether in surplus or deficit.

#### **Second: The concept of foreign trade and its importance**

Foreign trade is of great importance in the economies of the whole world, as through it goods, services and even ideas are exchanged between members of societies, no matter how far they are, as countries cannot in any way at the present time live in isolation from others, because if any country chooses isolation or non-contact with other countries, it will suffer from its primitive standard of living. Because the geographical division of countries made them differ in terms of resources and natural potential, this relative difference in production resources led to their specialization in the production of certain goods and the provision of their remaining needs through foreign trade. (11)

The subject of determining the reasons for the establishment of foreign trade has aroused the interest of a different group of economic thinkers has been the work of each of them as a complement to the work of others to reach in the result to the real reasons for the establishment of trade exchange and determine the methods of foreign trade, as the attention of these thinkers to try to develop appropriate answers to the following questions:

What are the factors that determine the specialization of a particular country in the production and export of one type of goods or services and the specialization of the other country in the production and export of another type of those goods and services?

Does this international specialization bring gains to countries that exchange goods and services with each other or does it bring them losses?

What are the exchange rates between countries (or between goods) that achieve these gains and are there international exchange rates that bring benefits to one country and losses to others?

Does foreign trade affect local economic variables such as income distribution, development of productive sectors, etc., and what are these effects?

Many theories and schools have emerged that tried to answer these questions within a theoretical framework that is compatible with the historical stage and the prevailing economic conditions during the emergence of these theories and the most prominent calls to adopt them with the support of political authorities in many cases because they are in the interest of the political systems at the time. (4)

#### **Third: Factors affecting foreign trade:**

There is a set of factors that can affect foreign trade at the level of developed or developing countries, such as these factors (9).

1-Manpower: It is one of the important factors as it depends on several things, including (wage disparity between countries, relative scarcity and absolute scarcity, standard of living, degree of economic progress)

2-Income effect: Foreign trade theories give an effective role and an important place to the demand side

3-Capital: Real interest rate, discount rate and exchange rate These indicators affect the capital.

Foreign trade has an important role in the process of economic and social development, and this role is evident in developing countries with large agricultural sectors, as it shows the important role of agricultural exports in the process of economic growth of the state by providing sufficient foreign exchange revenues to finance development and provide the required imports and strengthen the state politically and economically, and exports and their revenues have an important role in the process of external rebalancing so that the balance of payments can be reached to a stable situation, as well as reflect the developments of The external sector is the productive structure of the national economy, the level of employment, prices and income, hence the close link between the development of foreign trade in general and agricultural foreign trade in particular with economic growth and the process of economic development (2).

Imports represent the second component after exports in foreign trade, most developing countries suffer from an imbalance in the balance of payments due to the large dependence on imports, which constitute a burden

on it, and imports negatively affect the availability of foreign currencies as most countries try to secure the basic requirements and needs of the population, including the necessary foodstuffs from their domestic resources, and if they cannot achieve self-sufficiency of these resources, they are forced to import from abroad, which negatively affects the balance of payments, there is a positive role For imports, as it indirectly contributes to raising the growth rates of national income by importing investment goods and raw materials necessary for the development process, and due to the high marginal tendency to consume, Iraq relies heavily on the import of agricultural goods from abroad and this indicator largely reflects the weakness of the production base and the diversity of production.

**Fourth: The development of imports and exports for the period 1990-2022**

The value of agricultural exports appeared through Table (1) between the lowest value and the highest value during the study period, as the year 1991 came with the lowest value of (370.00) thousand dollars and came in 2019 with the highest value of (141425.00) thousand dollars, while the value of agricultural imports appeared between the lowest value and the highest value during the study period, as it came in 1991 with the lowest value of (169.20) thousand dollars and came in 2019 with the highest value of (7097842) thousand dollars, Where it is clear that the structure of agricultural foreign trade in an unstable period and depends on the import side to cover the requirements of food security more than exports, which means there is an unclear policy for the agricultural sector in supporting local production in Iraq.

**Table (1) Agricultural Exports and Imports of Iraq for the Period 1990 - 2022 (Thousand Dollars)**

year	Value of agricultural exports	Value of agricultural imports	Agricultural GDP
1990	30.98	509.1	163734
1991	16.01	42.1	71348
1992	4.77	55.4	8964
1993	3.47	285.15	133184
1994	0.68	174.89	127034
1995	4.27	192.15	103768
1996	16.78	135.42	155278
1997	17.84	12	189261
1998	39.66	24.49	186403
1999	58.56	40.79	215619
2000	35.36	46.23	231806
2001	57.26	39.26	255333
2002	42.52	41.56	410229
2003	41.04	157.34	295858
2004	27.26	227	53235
2005	10.08	161.69	434388
2006	26.92	3411.7	478514
2007	19663.64	487287.2	485106
2008	17025.64	85402.4	517166
2009	14188.03	572689.6	547212
2010	14706.1	327785	577516
2011	38459.38	1439130	636504
2012	51852.01	5299120	716808
2013	16.17	3068480	76922
2014	16.24	1914330	777897
2015	16.94	657809	798122
2016	12732.99	2883430	907465
2017	187837.93	11928101.85	874805
2018	146672.26	14186133.99	913112
2019	507376.73	12842470.48	888405
2020	14589.9	1016143	1954025
2021	6640579.2	47647.7	1984965
2022	296187.06	612524	2124083

Source: World Bank for different years

**Five: Some development indicators in Iraq**

Table 2 refers to some development indicators (population growth, average per capita income, national income), where we note a successive increase in the population in Iraq, where it reached (42,248,900) in 2022.

**Table (2) Average per capita income, national income and population in Iraq for the period 1990 - 2022**

year	Population (million)	Average per capita income /	National income / million dinars
1990	17,890,000	0.0027	47941.9
1991	18,419,000	0.002	36922.2
1992	18,949,000	0.0053	99643.4
1993	19,478,000	0.014	279804.7
1994	20,007,000	0.07	1440957.9
1995	20,536,000	0.28	5807374.9
1996	21,124,000	0.6	5641424.3
1997	22,044,600	0.66	13235490
1998	22,702,000	1.34	15013422
1999	23,382,000	1.94	31381049
2000	24,086,000	1.48	46634635
2001	24,813,000	1.36	36726501
2002	25,565,000	0.98	34677723
2003	26,340,000	1.73	25728749
2004	26313.838	2.35	46923316
2005	26922.284	2.92	65798567
2006	27448.124	3.37	85431539
2007	27911.248	4.8	100100817
2008	28385.746	3.8	147641254
2009	28973.162	4.5	120428411
2010	29741.976	5.8	146453469
2011	30725.3	6.6	192237070.30
2012	31890.011	6.9	227221851.20
2013	33157.05	6.4	243518658.5
2014	34411.951	5.1	237554034.2
2015	35572.261	5.02	178908402.30
2016	36610.632	5.09	186397.300
2017	37552.781	5.48	205918226.10
2018	38433.6	6.43	247501.048
2019	39127.88	5.72	224162205.10
2020	40150.17	4.54	1823844.72
2021	41,190,658	5.58	241238269.30
2022	42,248,900	5.70	241238269.30
Average	32165.1396	3.2292	88599507.29

Source: World Bank for different years

The average population during the period 1990-2022 was (32.165.1396)· the average per capita income was (3.2292) and the national income was (88.599.507.29) · This indicates clear fluctuations in the variables studied during the study period, despite their exposure to several different conditions.

**Six: Measuring the impact of some development indicators on Iraq's agricultural foreign trade**

This section includes the description of the economic relationship between the dependent variables and the independent variables, as well as conducting the standard analysis of the time series after conducting dormant tests on the time series of the studied variables and verifying the presence or absence of the unit root in the variables, so that we can determine the method of analysis based on the results, and then estimate the mathematical model, analyze and interpret it as a standard and economically and conduct the necessary tests to verify the quality of the model (7)

Standard model characterization

Variable name	code	Variable type
Population size	PS.	independent
National income	NI.	independent

Agricultural exports	AE.	dependent
Agricultural imports	AI.	dependent

Time Series Sleep Test

Results of testing for stability (static) variables at level I(0) and first difference I (1) using the ADF test

Variables	ADF		PP	
	Level	1" Difference	Level	1" Difference
PS.	4.915*		9.821*	
NI.		4.144*	14.262*	
AE.	3.704**		3.681**	
AI.		5.227*		5.216*

Source: Prepared by the researcher based on Eviews 10 program outputs  
 : moral at the level of 10%, \*\*: significant at the level of 5%, \*: significant at the level of 1%.

Determining the optimal slowdown duration of the study variables

Table 5 shows the determination of the optimal slowdown for economic variables with population size

	Log	LogL	LR.	FPE.	AIC	HQ.
PS	0	-324.2105	NA	21250062	19.70973	19.75508
	1	-249.8485	139.7104	249152.4	15.26355	15.35425
	2	-225.1073	44.98405	59119.27	13.82469	13.96073
	3	-197.9043	47.81138*	12087.71*	12.23662*	12.41802*
IN	0	-592.3875	NA	8.87E+15	39.5591	39.57411
	1	-589.5780	5.2445	7.86E+15	39.43853	39.46841
	2	-581.0873	15.2831*	4.77E+15*	38.93916*	38.98398*
AE	0	-408.2375	NA	3.46E+09	24.80227	24.84762
	1	-399.3431	16.71079	2.14e+09	24.32382	24.41452
	2	-395.9877	6.100635*	1.86E+09*	24.18107*	24.31712*
	3	-395.7709	0.381181	1.95E+09	24.22854	24.40993
AI	0	-479.9994	NA	1.76E+12	31.03222	31.07847
	1	-454.6594	47.41035*	3.65E+11*	29.46189*	29.55441*

Source: Prepared by the researcher based on EViews 10 outputs \*: Duration of optimum deceleration.

It is evident from the results of the analysis in the above table that the optimum slowdown period for the economic variables under study is the first period, as it was in line with the Schwarz standard (SC), the AIC/AIC standard (AIC) and the Hanan Cowen standard (HQ), which is the lowest value. (13)

After determining the optimal slowing down time for the variables and conducting a time series stability test, the self-regression equation for the slowing time gaps will be estimated according to the following:

Economic study of the impact of population growth and national income on agricultural foreign trade in Iraq:

The effect of independent variables (population growth, national income) on agricultural imports

Dependent Variable: AI		Method: ARDL		
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
AI(-1)	0.990668	0.256693	3.859345	0.0032
AI(-2)	-0.877780	0.404864	-2.168085	0.0553
AI(-3)	1.482945	0.507044	2.924687	0.0152
AI(-4)	-1.537560	0.523871	-2.935000	0.0149
AI(-5)	-180.1324	82.14749	-2.192792	0.0531
IN	-0.005359	0.002276	-2.354923	0.0403
IN(-1)	0.009782	0.001642	5.955884	0.0001
IN(-2)	-0.016694	0.004373	-3.817249	0.0034
IN(-3)	0.000150	0.006884	0.021838	0.9830
IN(-4)	-0.002346	0.007384	-0.317705	0.7572
IN(-5)	0.020627	0.006890	2.993922	0.0135
PS	0.003281	0.015404	0.212974	0.8356
PS(-1)	0.021134	0.019706	1.072475	0.3087
PS(-2)	-0.019383	0.019341	-1.002191	0.3399
PS(-3)	-0.018358	0.020241	-0.906983	0.3857
PS(-4)	-0.024784	0.020890	-1.186437	0.2629
PS(-5)	0.012702	0.017020	0.746264	0.4727

C	763378.4	575210.3	1.327129	0.2140
R-squared	0.993048	Mean dependent var		1194424.0
Adjusted R-squared	0.981231	S.D. dependent var		2610475.0
S.E. of regression	357635.9	Akaike info criterion		28.66851
Sum squared resid	1.28E+12	Schwarz criterion		29.52493
Log likelihood	-383.3592	Hannan-Quinn criter.		28.93033
F-statistic	84.03151	Durbin-Watson stat		2.748209
Prob(F-statistic)	0.000000			
*Note: p-values and any subsequent tests do not account for model selection.				

Table (6) shows the results of the estimation of the impact of the independent variables with their slowing periods on the dependent variable, as well as the impact of the slowing down periods of the dependent variable itself, and it was found that the value of the coefficient of determination amounted to (0.99), meaning that 99% of the fluctuations in the dependent variable (agricultural imports) are caused by the variables shown in the model, and that (0.01%) of the fluctuations were not included in the model or were absorbed by the random variable, and it was found that the value of the F statistic amounted to (84.031), which is significant at the level of (1%).

It is clear from the table that the national income estimate is valued at (-0.005), which is negative and significant at (5%), meaning that the national income is adversely affected in the same time period, either for a previous period positively affects by (0.009) at the level of significance 0.05 in agricultural imports, and this corresponds to economic theory.

As for the population growth, it came with a value of (0.003), which is not significant in the same year and the previous year because the increase in population growth increases agricultural imports due to the increase in demand for the consumption of agricultural products.

**Bound Test**

The value of F for the test of limits appears by (6.466) and it is not significant at the level of 1% and as shown in the table, as the test contains two upper and lower limits and if the calculated F value comes between the lower and upper limit, then we reject the null hypothesis that there is no long-term relationship between the set of interpreted variables and the dependent variable and accept the alternative hypothesis.

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	6.466607	10%	2.63	3.35
k	2	5%	3.1	3.87
		2.5%	3.55	4.38
		1%	4.13	5

Source: Eviews 10 Program Outputs.

**Error Correction Regression** :- The line correction limit (181.07) was negative and moral at 1%, indicating a common integration relationship on agricultural imports Development Index and independent variables (population growth, national income ), and the R<sup>2</sup> identification factor value was 0.97, the model has a high interpretive strength, The national income parameter appeared with a value of (-0.005) at a 1% significance level. It was in violation of the logic of economic theory as it was preceded by a negative sign meaning that a decrease in national income would reduce imports by one unit ,The population size parameter appeared with a non-significant value of (0.003). It was in accordance with the logic of economic theory, as it was preceded by a positive sign meaning that increasing population growth will increase imports by one unit.

ARDL Error Correction Regression				
Dependent Variable: D(AI)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(AI(-1))	181.0648	31.05532	5.830396	0.0002
D(AI(-2))	180.1870	31.21029	5.773320	0.0002
D(AI(-3))	181.6699	31.21256	5.820411	0.0002
D(AI(-4))	180.1324	31.18758	5.775773	0.0002
D(IN)	-0.005359	0.001368	-3.917529	0.0029
D(IN(-1))	-0.001738	0.002415	-0.719757	0.4882
D(IN(-2))	-0.018432	0.002043	-9.021039	0.0000
D(IN(-3))	-0.018282	0.004607	-3.968474	0.0026
D(IN(-4))	-0.020627	0.005897	-3.497763	0.0057
D(PS)	0.003281	0.012270	0.267374	0.7946

D(PS(-1))	0.049823	0.013780	3.615717	0.0047
D(PS(-2))	0.030440	0.014244	2.137080	0.0583
D(PS(-3))	0.012082	0.013141	0.919432	0.3795
D(PS(-4))	-0.012702	0.012674	-1.002204	0.3399
CointEq(-1)*	-181.0741	31.22601	-5.798824	0.0002
R-squared	0.973279	Mean dependent var		219020.1
Adjusted R-squared	0.944503	S.D. dependent var		1331485.0
S.E. of regression	313667.4	Akaike info criterion		28.45423
Sum squared resid	1.28E+12	Schwarz criterion		29.16791
Log likelihood	-383.3592	Hannan-Quinn criter.		28.67241
Durbin-Watson stat	2.748209			

The long-term equation of the joint integration between the dependent variable (agricultural imports) and the independent variables (national income, population growth).

Variable	Coefficient	Std. Error	t-Statistic	Prob.
IN	3.40E-05	2.05E-05	1.658282	0.1283
PS	-0.000140	0.000115	-1.215496	0.2521
C	4215.834	2677.709	1.574418	0.1465
EC = AI - (0.0000*IN -0.0001*PS + 4215.8340)				

The results of the analysis of the long-term equation showed the lack of significance of the independent variables of national income and population growth on the dependent variable agricultural imports and this is due to any population growth and national income negatively affect foreign trade because the increase in population or increase in income among individuals caused an increase in demand for agricultural commodities and the inflexibility of the productive system in Iraq, especially agricultural investments due to abnormal migration from the countryside to the city and leaving work in the agricultural sector, As well as the scarcity of river water, rain, desertification and drought, as well as the policy of open doors for imports due to the cancellation or reduction of customs tariffs on imports, which caused large losses in the national agricultural sector and dependence on cheap and low-cost foreign goods, which Iraqi goods cannot compete.

As for the standard problem tests and to ensure that the model is free, a test was conducted for the remaining model, including the Heteroskedasticity Test: ARCH, the Breusch-Godfrey Serial Correlation LM Test: and the Q-statistic probabilities test, and all tests indicated that there was no standard problem in the model as shown in the analysis results shown in the annex

**The impact of independent variables (population growth, national income) on agricultural exports: -**

Dependent Variable: AE				
Method: ARDL				
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
AE(-1)	0.191562	0.297817	0.643222	0.5346
AE(-2)	0.449415	0.358916	1.252147	0.2390
AE(-3)	0.266046	0.401520	0.662597	0.5226
AE(-4)	-0.470432	0.387692	-1.213418	0.2529
AE(-5)	-0.546635	0.595306	-0.918243	0.3801
IN	0.000154	5.62E-05	2.736112	0.0210
IN(-1)	0.000114	6.34E-05	1.803759	0.1014
IN(-2)	-0.000360	6.53E-05	-5.516032	0.0003
IN(-3)	-0.000303	0.000114	-2.660489	0.0239
IN(-4)	0.000368	0.000107	3.430507	0.0064
IN(-5)	0.000427	0.000215	1.980497	0.0758
PS	-0.000137	0.000458	-0.299690	0.7705
PS(-1)	0.000108	0.000600	0.179815	0.8609
PS(-2)	-3.34E-06	0.000588	-0.005682	0.9956
PS(-3)	-0.000659	0.000579	-1.137473	0.2819
PS(-4)	-0.000590	0.000596	-0.990036	0.3455
PS(-5)	0.000570	0.000504	1.131483	0.2843
C	20873.31	14454.95	1.444025	0.1793
R-squared	0.978823	Mean dependent var		52901.09
Adjusted R-squared	0.942821	S.D. dependent var		44530.41
S.E. of regression	10648.16	Akaike info criterion		21.64026
Sum squared resid	1.13E+09	Schwarz criterion		22.49667
Log likelihood	-284.9636	Hannan-Quinn criter.		21.90207
F-statistic	27.18836	Durbin-Watson stat		2.096766
Prob(F-statistic)	0.000004			



The results of the estimation of the impact of the independent variables with their slowing down periods appeared on the dependent variable, as well as the effect of the periods of slowing down the dependent variable itself, and it was found that the value of the coefficient of determination amounted to (0.97), meaning that (97%) of the fluctuations in the dependent variable (agricultural exports) are caused by the variables shown in the model, and that (0.01%) of the fluctuations were not included in the model or have absorbed the impact of the random variable, and it was found that the value of the F statistic amounted to (27.188), which is significant at the level of (1%).

It is clear from the above table that the estimate of national income at a value of (-0.0001), which is a moral positive at (5%), meaning that the national income is directly affected in the same period of time, either for a previous period positively affects by (0.0001) at the level of significance 0.05 in agricultural exports and this corresponds to economic theory .

As for the population growth, it came with a value of (-0.0001), which is not significant in the same year and the previous year, due to the increase in population numbers, as well as the increase in incomes obtained from government employment, and this caused a large migration and left to agriculture and the availability of cheap agricultural goods coming from outside the borders without customs controls or barriers.

**Bound Test**

The value of F for the test of limits appears by (3.932) and it is not significant at the level of 1% and as shown in the table, as the test contains two upper and lower limits and if the calculated F value comes between the lower and upper limit, then we reject the null hypothesis that there is no long-term relationship between the set of interpreted variables and the dependent variable and accept the alternative hypothesis.

Boundary test table between independent variables and dependent variable

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signi	I(0)	I(1)
F-statistic	3.932418	10%	2.63	3.35
k	2	5%	3.1	3.87
		2.5%	3.55	4.38
		1%	4.13	5

Source: EViews 10 Program Outputs.

**Error Correction Regression** :- The line correction limit (-1.110) was negative and moral at 1%, indicating a common integration relationship on agricultural imports Development Index and independent variables (population growth, national income ), and the R2 identification factor value was 0.88, the model has a high interpretive strength, The national income parameter appeared with a value of (0.0001) at a 1% significance level. It was in violation of the logic of economic theory as it was preceded by a negative sign meaning that a decrease in national income would reduce exports by one unit ,The population size parameter appeared with a non-significant value of (-0.0001) It was in accordance with the logic of economic theory, as it was preceded by a positive sign meaning that increasing population growth will increase imports by one unit.,

ARDL Error Correction Regression				
Dependent Variable: D(AI)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(AE(-1))	0.301607	0.193047	1.562348	0.1493
D(AE(-2))	0.751022	0.252731	2.971619	0.0140
D(AE(-3))	1.017068	0.301267	3.375964	0.0071
D(AE(-4))	0.546635	0.255446	2.139927	0.0580
D(IN)	0.000154	4.320005	3.554877	0.0052
D(IN(-1))	-0.000131	7.955505	-1.653978	0.1291
D(IN(-2))	-0.000492	8.422225	-5.837549	0.0002
D(IN(-3))	-0.000794	0.000132	-5.996539	0.0001
D(IN(-4))	-0.000427	0.000132	-3.220231	0.0092
D(PS)	-0.000137	0.000356	-0.385667	0.7078
D(PS(-1))	0.000683	0.000377	1.812143	0.1001
D(PS(-2))	0.000679	0.000410	1.657153	0.1285
D(PS(-3))	2.01E-05	0.000395	0.050911	0.9604
D(PS(-4))	-0.000570	0.000383	-1.489960	0.1671
CointEq (-1)*	-1.110044	0.245476	-4.522010	0.0011

R-squared	0.883762	Mean dependent var	4322.536
Adjusted R-squared	0.758583	S.D. dependent var	19007.25
S.E. of regression	9339.055	Akaike info criterion	21.42597
Sum squared resid	1.13E+09	Schwarz criterion	22.13965
Log likelihood	-284.9636	Hannan-Quinn criter.	21.64415
Durbin-Watson stat	2.096766		

\* p-value incompatible with t-Bounds distribution.

The long-term equation of the joint integration between the dependent variable (agricultural exports) and the independent variables (national income, population growth).

Variable	Coefficient	Std. Error	t-Statistic	Prob.
IN	0.000360	8.05E-05	4.471958	0.0012
PS	-0.000641	0.000659	-0.972792	0.3536
C	18804.03	15980.96	1.176652	0.2666

$EC = AE - (0.0004*IN - 0.0006*PS + 18804.0327)$

The results of the analysis of the long-term equation showed the significance of the independent variable (national income) and the lack of significance of the independent variable (population growth) on the dependent variable agricultural exports and this is due to the fact that the national income has positive effects on agricultural foreign trade because the nineties of the last century had a major role in agricultural investments and the orientation of individuals towards agriculture and migration has become reverse from the city to the countryside and this is caused by the severity of economic sanctions and the cessation of oil exports and the dependence of the Iraqi economy on Iraqi agricultural commodities only after the cessation of imports almost completely and the increase of individuals working in agriculture, but the case did not continue after 2003 and after the lifting of economic sanctions and a new system governing the Iraqi state, the Iraqi agricultural market became full of cheap foreign goods that Iraqi goods cannot compete with because of the backwardness of the agricultural production apparatus as a result of the interruption of development and technology and the destruction of infrastructure in the agricultural sector and these developments were accompanied by a significant increase in population growth, which increased the demand for commodities Agriculture and the backwardness of the agricultural sector and the lack of interest in it by the state, there has become a clear dependence on the Iraqi economy in the hands of neighboring regional countries and food security is threatened in any moment.

As for the standard problem tests and to ensure that the model is free, a test was conducted for the remaining models, including the Heteroskedasticity Test: ARCH, the Breusch-Godfrey Serial Correlation LM Test and the Q-statistic probabilities test, and all tests indicated that there was no standard problem in the model as shown in the analysis results shown in the annex.

### III. Conclusions:

- 1-The existence of a significant effect of the national income parameter in the same time period and previous on agricultural imports, the absence of a significant effect of the population growth parameter in the same year and the previous year because the increase in population growth increases agricultural imports due to the increase in demand for the consumption of agricultural products.
- 2-The results of the analysis of the long-term equation indicated the lack of significance of the independent variables of national income and population growth on the dependent variable agricultural imports and this is due to any population growth and national income negatively affect foreign trade because the increase in population or increase in income among individuals caused an increase in demand for agricultural commodities.
- 3-The existence of a moral impact of the ability of national income, any impact directly in the same period of time, either for a previous period positively affects agricultural exports and this coincides with the economic theory, either with regard to population growth came non-significant in the same year and the previous year and this is due to the increase in population numbers as well as the increase in incomes obtained from government employment and this is the reason for large migration and leave for agricultural and the availability of cheap agricultural goods coming from outside the borders without customs controls or barriers.
- 4-The results of the analysis of the long-term equation indicated the significance of the independent variable (national income) and the insignificance of the independent variable (population growth) on the dependent variable Agricultural exports and this is due to the fact that the national income has positive effects on agricultural foreign trade because the nineties of the last century had a major role in agricultural investments and the orientation of individuals towards agriculture and migration has become reverse from the city to the countryside and this is caused by the severity of economic sanctions and the cessation of oil exports and the adoption of the economy Iraqi on Iraqi agricultural commodities.

**Recommendations: -**

In light of the results of the study, some recommendations can be proposed as follows:-

- 1-Supporting the agricultural sector to achieve the required productivity.
- 2-Supporting agricultural inputs for products that achieve production to reduce imports .
- 3-The need to keep pace with the increase in population growth by the competent authorities in proportion to the size of that increase.
- 4-The need to follow the policy of supporting the agricultural sector in proportion to the national income to achieve balance in foreign trade.

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