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An economic and econometric analysis of the most important factors affecting the import of wheat in Iraq for the period (1990-2020)

ABSTRACT

This study aims to conduct an economic and standard analysis of the import function of the wheat crop through a number of factors affecting it in Iraq for the period (1990-2020), as the imported quantities were used as a dependent factor, while the independent factors were (produced quantities, national income, world price, Population, exchange rate), time series stability was tested by Dickey Fuller test (ADF) and ARDL model application, and co-integration between study variables was tested using Bound Test, and the results showed that there is a long-term equilibrium relationship (integration joint) between the imported quantities and the independent variables, and the study recommended the necessity of controlling On imports of the crop and increase the support provided to the local product, by setting the minimum product price of various agricultural commodities, as well as stopping imports at the time of peak production.

INTRODUCTION

Iraq's imports of wheat are characterized by their large size and their increase over its exports in quantity and value, which made the balance of trade exchange for Iraq for this aspect in a state of permanent deficit as a result of the deterioration of the agricultural sector and the absence of rational policies in subsidizing production inputs and supporting the final product despite the fact that Iraq is one of the rich countries that are available It has all the requirements and requirements of fertile land and geographical diversity, as well as human and material capabilities (Al-Ahbabi, 2015: 95). And that many Western countries use food as a weapon to dominate the economies of countries, which leads to political dependency on them through food aid, as the distribution of this aid is done according to political and commercial considerations, It facilitates the achievement of this goal and that the resources directed to importing foodstuffs to cover the demand and the deficit in them are at the expense of those resources allocated to obtain the production requirements necessary for economic growth and agricultural development in the country, which weakens the country's economy.

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The methodology of the study

Study Problem:

The problem of the study lies in the presence of a deficiency in the production of the wheat crop, offset by an increase in the volume of consumption as a result of the increasing size of the population as well as the different patterns and habits of consumption by consumers, which leads to a shortfall in the supply of production, so the supply of production does not meet the need Domestic demand, so a food gap occurs between the quantities produced and the quantities consumed, and this gap is filled by imports, which leads to additional burdens on the state budget and the exit of foreign exchange and the activation of foreign markets instead of the local market.

Study importance

The importance of the study lies in the importance of the wheat crop as it is the main pillar of Iraqi food security and has a role in achieving social welfare and because of its importance in providing food security and fulfilling the population's requirements of those foodstuffs as well as providing foreign exchange in the state budget, and given that food is an essential element of human livelihood It is the state's responsibility to provide it, whether through production, import, or strategic storage through openness to the outside world.

Study aims

The study aims to achieve the following objectives:

1. Conducting an economic and econometric analysis of the import function of the wheat crop through a number of factors affecting it in Iraq for the period (1990-2020).
2. Verifying the existence of a short-term equilibrium relationship between the variables under study towards a long-term equilibrium relationship, then estimating the error correction model for wheat crop production according to the ARDL model for the period (1990-2020).

Study Hypothesis:

The study relied on the hypothesis that there are a number of economic factors that collectively affect the import of the wheat crop in Iraq for the period (1990-2020), and that Iraq will continue to suffer from shortcomings in local production to meet the increasing demand for the wheat crop, which will result in a food gap that is exacerbated Year after year, imports increased quantitatively and qualitatively, and the researcher seeks to prove this hypothesis or not.

Analysis method:

The descriptive and quantitative method was adopted in the research methodology to extract a number of important results by studying the effect of independent factors on wheat production and for a time series of 31 years and for the period (1990-2020) using the Autoregressive Distributed Deceleration (ARDL) model based on the Eviews12 program to analyze time series data.

previous studies

1. Al-Dulaimi study, (2008), a study in which it dealt with the factors affecting Iraq's foreign trade in agricultural commodities for the period (2002-1975), and the study aimed to estimate and analyze the factors that affect the development of foreign trade in agricultural commodities, and the study explained that imported agricultural crops, including the main crops contribute an important and effective role in achieving economic development by providing the food products necessary to carry out many industries as well as securing an increasing and diversified livelihood and providing the requirements of economic development. They also contribute to achieving a measure of balance in the market. The study relied on the hypothesis that there are several factors that affect the most important of which are grain imports (national income, agricultural output value, average per capita income, manufacturing output value, population number, and the rate of Trade exchange and foreign exchange rate), and the study showed that there is a deficit in the Iraqi trade balance for agricultural commodities over the duration of the study, and the study ended with a set of recommendations, the most important of which are encouraging and increasing the production of goods that substitute for imported goods, especially those with high prices, such as grains, dairy, honey preparations, sugar and eggs for food commodities, as for non-food commodities, they also need an increase in their production, such as fodder, textile yarn, and others. It also reduces the deficit in the agricultural trade balance.

2. Al-Obaidi, (2013), a study in which he dealt with the economic analysis of importing strategic grain crops in Iraq and ways to achieve food security for the period (1990-2009), as import is one of the two foreign trade activities in Iraq, and the study dealt with three main crops, namely (wheat, rice , barley) being crops closely related to the country's food security, and the study aimed at an economic analysis of the import of strategic grain crops (wheat, rice, barley) in Iraq and to identify the factors that affect the imported quantities of these crops for the period (1990-2009), as the Use of (domestic production, population, national income, local price index, price index global, dummy variable) as independent variables, as well as estimating the size of the food gap and calculating the self-sufficiency ratio for these crops. imported from them.

3. Al-Jubouri study (2021), a study in which the study dealt with the analysis of the quantitative and qualitative development of agricultural imports in Iraq for the period (1990-2018), and the study aimed to study the quantitative and qualitative change of agricultural imports in Iraq During the period (1990 - 2018), the study reached a set of conclusions, the most important of which is the failure of agricultural production policies in Iraq, especially in the field of organizing productive resources in a way that achieves the state of economic efficiency in agricultural production, especially strategic crops, as well as the weakness of the production base for these crops due to low investment rates. This requires Iraq to rely on external sources to feed its population. The study also recommended taking advantage of the time periods in which agricultural imports are made and working to increase the production of crops that the country needs in order to reduce the severity of the food deficit and reach a state of self-sufficiency in imported crops practical side.

Description of the mathematical model used in analyzing the import function of the wheat crop in Iraq for the period (1990-2020):

The mathematical model of the wheat crop import function has been described for the variables used and several attempts were made to reach the best results in terms of their conformity with the economic criteria. The double logarithmic function was used because it gave the best results:

Ln Y = F (LnX1, LnX2, LnX3, LnX4, LnX5)

Since:

Ln = logarithmic form.

Y = Imported quantities (tons).

X1 = Quantities produced (tons).

X2 = national income (million dinars).

X3 = world price (dollars).

X4 = Population (one million people).

X5 = the exchange rate (a dinar against the dollar).

The previous equation is placed in the error correction and autoregressive model for distributed lag (ARDL). We get the following equation:

$$\begin{aligned}\Delta(LnY_t) = {} & c + \lambda \mathrm{LnY}_{t-1} + \beta 1 LnX1_{t-1} + \beta 2 \mathrm{LnX2}_{t-1} + \beta 3 LnX3_{t-1} \\ & + \beta 4 LnX4_{t-1} + \beta 5 \mathrm{LnX5}_{t-1} \\ & + \sum_{i=1}^{n} a_1 \Delta(\mathrm{LnY}_{t-i}) + \sum_{i=0}^{m} a_2 \Delta(LnX1_{t-i}) + \sum_{i=0}^{m} a_3 \Delta(\mathrm{LnX2}_{t-i}) \\ & + \sum_{i=0}^{m} a_4 \Delta(\mathrm{LnX3}_{t-i}) + \sum_{i=0}^{m} a_5 \Delta(\mathrm{LnX4}_{t-i}) + \sum_{i=0}^{m} a_6 \Delta(LnX5_{t-i}) + \mu_t\end{aligned}$$

whereas:

Δ: represents the first difference.

c: constant limit.

n,m: represents the upper bounds of the time lags for the independent and dependent variables.

λ: Error correction parameter (adjustment speed) (CointEq (-1) which is the percentage of short-term errors that can be corrected per unit time in order to return to the equilibrium position, and there are two conditions for this parameter in order to be able to correct short-term errors, which are Negative and significant value (necessary and sufficient condition).

β: the parameters of the long-run model.
a: short term parameters.
i: time.
μ_t: random error boundary.
Then the model is estimated according to the following steps:

Unit Root Test for Time Series Stability:

The unit root test aims to examine the properties of the time series for each of the variables of the wheat crop import function, to ensure the stability of the economic time series, and to determine the integration rank of each variable. The null hypothesis (H_0:b= 0) on the instability of the time series, compared to the alternative hypothesis (H_1:b≠ 0), which states the stability of the time series.), LNX2 at the level of significance (5% and 1%), respectively, while the variables (LNY, LNX2, LNX5,) at the level. As for the variables (LNX1 LNX3, LNX4,) they were stable at the first difference, as this indicates the possibility of rejecting the null hypothesis (H0: b=0) and accepting the alternative hypothesis (H1:b≠0), i.e. The function variables chains are stable and do not contain a unit root, so it is clear that we can use the ARDL model.

Table (1): Unit root test using the Extended Dickey Fuller (ADF) method for importing wheat in Iraq for the period (1990-2020)

UNIT ROOT TEST RESULTS TABLE (ADF)
Null Hypothesis: the variable has a unit root

		At Level					
		LNY	LNX1	LNX2	LNX3	LNX4	LNX5
With Constant	t-Statistic	-2.6997	-1.1598	-3.6030	-1.7747	-1.5040	-6.2703
	Prob.	*0.0858*	*0.6783*	*0.0118*	*0.3852*	*0.5174*	*0.0000*
		*	n0	**	n0	n0	***
With Constant & Trend	t-Statistic	-2.9958	-3.3744	-1.7595	-2.2163	-2.7669	-4.4786
	Prob.	*0.1498*	*0.0740*	*0.6988*	*0.4640*	*0.2194*	*0.0065*
		n0	*	n0	n0	n0	***
Without Constant & Trend	t-Statistic	-0.1033	0.8788	2.4261	0.3823	8.2326	1.0208
	Prob.	*0.6399*	*0.8937*	*0.9951*	*0.7882*	*1.0000*	*0.9151*
		n0	n0	n0	n0	n0	n0
		At First Difference					
		d(LNY)	d(LNX1)	d(LNX2)	d(LNX3)	d(LNX4)	d(LNX5)
With Constant	t-Statistic	-4.7081	-5.4917	-3.7269	-5.2315	-8.2005	-2.3015
	Prob.	*0.0008*	*0.0001*	*0.0089*	*0.0002*	*0.0000*	*0.1782*
		***	***	***	***	***	n0
With Constant & Trend	t-Statistic	-4.6125	-5.4535	-5.2968	-5.1499	-8.4352	-2.5926
	Prob.	*0.0051*	*0.0007*	*0.0009*	*0.0014*	*0.0000*	*0.2860*
		***	***	***	***	***	n0
Without Constant & Trend	t-Statistic	-4.7925	-5.3353	-2.9155	-5.2757	-0.9394	-2.3153
	Prob.	*0.0000*	*0.0000*	*0.0051*	*0.0000*	*0.3006*	*0.0223*
		***	***	***	***	n0	**

Notes:
a: (*)Significant at the 10%; (**)Significant at the 5%; (***) Significant at the 1% and (no) Not Significant

Source: The researcher was prepared by relying on the data of the study according to the program (Eviews10)

Preliminary estimate of the ARDL model for importing wheat in Iraq for the period (1990-2020).

After ensuring the stability of the time series of variables at the level and at the first difference, we perform the initial estimation of the Autoregressive Distributed Deceleration (ARDL) model using the statistical program Eviews12), which automatically determines the optimal deceleration period according to the (AIC) standard, and we note from Table (2) that The value of the corrected determination coefficient (R^2) equals (0.942747), meaning that the independent variables included in the estimated model explain about (94%) of the changes in the dependent variable, and this is an indication that the explanatory factors have the greatest influence on the function. As for (6%) they are unexplained, that is, the variables that are not included in the model and represented by the random variable are responsible for them. As for the calculated value of the (F) test, it is equal to (36.46593) and with a significant degree equal to (0.000) which is less than (0.05) and even less than (0.01), and this means that the estimated model is significant as a whole and can be relied upon in the process of planning and future prediction.

Table (2): The results of the initial assessment of the ARDL model

Dependent Variable: LNY
Method: ARDL
Date: 08/01/21 Time: 09:20
Sample (adjusted): 1992 2020
Included observations: 29 after adjustments
Maximum dependent lags: 2 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (2 lags, automatic): LNX1 LNX2 LNX3 LNX4 LNX5
Fixed regressors: C
Number of models evalulated: 486
Selected Model: ARDL(1, 2, 0, 2, 1, 2)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LNY(-1)	0.005715	0.125632	0.045490	0.9643
LNX1	-2.879848	0.626482	-4.596856	0.0003
LNX1(-1)	0.090710	0.458960	0.197643	0.8460
LNX1(-2)	1.140109	0.353540	3.224841	0.0057
LNX2	0.901655	0.299391	3.011627	0.0088
LNX3	-0.959865	0.249924	-3.840632	0.0016
LNX3(-1)	0.865461	0.215167	4.022282	0.0011
LNX3(-2)	-0.439452	0.156707	-2.804287	0.0133
LNX4	0.177588	0.051129	3.473369	0.0034
LNX4(-1)	-0.095420	0.057217	-1.667675	0.1161
LNX5	0.271280	0.115462	2.349519	0.0329
LNX5(-1)	-0.066545	0.131885	-0.504570	0.6212
LNX5(-2)	0.195761	0.115944	1.688410	0.1120
C	5.931387	1.518610	3.905800	0.0014

R-squared	0.969329	Mean dependent var	4.248781
Adjusted R-squared	0.942747	S.D. dependent var	0.828095
S.E. of regression	0.198143	Akaike info criterion	-0.093380
Sum squared resid	0.588912	Schwarz criterion	0.566694
Log likelihood	15.35401	Hannan-Quinn criter.	0.113347
F-statistic	36.46593	Durbin-Watson stat	2.245404
Prob(F-statistic)	0.000000		

*Note: p-values and any subsequent tests do not account for model selection.

Source: Prepared by the researcher based on the data of the study according to the (Eviews12) program.

Co-integration test using the Bound Test for importing wheat in Iraq for the period (1990-2020).

To ensure the existence of co-integration, which indicates the long-term equilibrium relationship between the study variables, the bounds testing approach was used. There is no co-integration between the variables of the model versus the alternative hypothesis (H_1:b≠0) with the existence of co-integration between the variables, as it is clear from Table (3) that the statistic (F) (15.09369) was higher than the upper limit of the critical values in the model, which were obtained from the tables suggested by (Pesaran at al, 2001) at significant levels (1%, 2.5%, 5%, 10%), and this means that we reject the null hypothesis (H_0 :b=0) and accept the alternative hypothesis (H_1:b≠0) at the three levels of significance, that is, the existence of a long-term equilibrium relationship (co-integration) between the variables under study.

Table (3): The results of the co-integration test using the boundary test

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	15.09369	10%	2.08	3
k	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15

Source: Prepared by the researcher based on the data of the study according to the program (Eviews12).

Estimation and interpretation of the error correction model and the short and long-term relationship according to the ARDL model:

After it was confirmed that there is a co-integration (a long-term equilibrium relationship), we find the short and long-term relationship between the variables, as we notice from Table (4) that the short-term parameter of the independent variable production (X1) amounted to (-2.879848), and this means that there is a relationship Inversely between production and the volume of imports in the short term, that is, an increase in Production by (1%) will lead to a decrease in the volume of imports by (2.879848%), and this is consistent with the logic of economic theory, and that this variable has a significant effect at the level (1%), but in the long run, we note that production was also opposite to the direction of the volume of imports. and moral at the level of (1%), meaning that an increase in production in the long run by (1%) leads to a decrease in the volume of imports by (1.658506%), This study agreed with the study of Al-Obaidi in terms of the significance and indication of the variable.

As for the short-term parameter of the independent variable, national income (X2), it was (0.901655), which means that there is a direct relationship between national income and the volume of imports in the short term, meaning that an increase in national income by (1%) will lead to increase in the volume of imports by (0.901655%), and this is consistent with the logic of economic theory, and that this variable has a significant effect at the level of (1%), but in the long run, we find that the national income variable was also direct towards the direction of the volume of imports,

meaning that the increase in national income in the long run by (1%) leads to an increase in the volume of imports by (0.906837%), and this variable proved to be significant as it was significant at the level of (1%) in the long run, This study agreed with the study of Al-Obaidi and differed with the study of Al-Jubouri and Al-Dulaimi in the significance and indication of the variable.

As for the short-term parameter of the independent variable, the world price (X3), it reached (-0.959865), and this means that there is an inverse relationship between the world price and the volume of imports in the short term, meaning that an increase in the world price by (1%) will lead to a decrease in the volume of imports by (0.959865%), and this is consistent with the logic of economic theory, and that this variable has a significant effect at the level (1%), but in the long run, we note the existence of an inverse relationship between the world price and the volume of imports, as the increase in the world price by (1%) will lead to a decrease in the volume of imports by (0.536924%), and that this variable has a significant effect at the level of (5%), This study agreed with the study of Al-Obaidi in the significance and indication of the variable

As for the short-term parameter of the independent variable, population (X4), it reached (0.177588), which means that there is a direct relationship between the number of population and the volume of imports in the short term, meaning that an increase in the population by (1%) will lead to an increase in the volume of imports by (0.177588%). , and this is consistent with the logic of economic theory, and that this variable has Significant effect at the level (1%), but in the long run, we note that the relationship remains positive between the number of population and the volume of imports, meaning that the increase in the population by (1%) leads to an increase in the volume of imports by (0.082641%), and this variable has a significant effect at the level (5%), This study agreed with the study of Al-Obaidi, Al-Jubouri and Al-Dulaimi in terms of the significance and significance of the variable.

As for the short-term parameter of the independent variable, the exchange rate (X5), it amounted to (0.271280), which means that there is a direct relationship between the short-term exchange rate and the volume of imports, meaning that an increase in the exchange rate by (1%) will lead to an increase in the volume of imports by (0.271280%), and this is consistent with the logic of economic theory, and that this variable has Significant effect at the level of (5%), but in the long term, the relationship remained positive between the exchange rate and the volume of imports, that is, an increase in the exchange rate by (1%) leads to an increase in the volume of imports by (0.402797%), and this variable has a significant effect at level (1%), This agreed with Al-Obaidi's study in terms of the significance and significance of the variable.

Table (4): The results of testing the short-term relationship model for importing wheat in Iraq for the period (1990-2020)

ARDL Long Run Form and Bounds Test
Dependent Variable: D(LNY)
Selected Model: ARDL(1, 2, 0, 2, 1, 2)
Case 2: Restricted Constant and No Trend
Date: 08/01/21 Time: 09:20
Sample: 1990 2020
Included observations: 29

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.931387	1.518610	3.905800	0.0014
LNY(-1)*	-0.994285	0.125632	-7.914282	0.0000
LNX1(-1)	-1.649028	0.368516	-4.474785	0.0004
LNX2**	0.901655	0.299391	3.011627	0.0088
LNX3(-1)	-0.533855	0.240833	-2.216700	0.0425
LNX4(-1)	0.082169	0.040847	2.011642	0.0626
LNX5(-1)	0.400495	0.112901	3.547302	0.0029
D(LNX1)	-2.879848	0.626482	-4.596856	0.0003
D(LNX1(-1))	-1.140109	0.353540	-3.224841	0.0057
D(LNX3)	-0.959865	0.249924	-3.840632	0.0016
D(LNX3(-1))	0.439452	0.156707	2.804287	0.0133
D(LNX4)	0.177588	0.051129	3.473369	0.0034
D(LNX5)	0.271280	0.115462	2.349519	0.0329
D(LNX5(-1))	-0.195761	0.115944	-1.688410	0.1120

* p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Source: Prepared by the researcher based on the data of the study according to the (Eviews12) program.

Table (5): The results of the long-term relationship model test for importing wheat in Iraq for the period (1990-2020)

Levels Equation
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNX1	-1.658506	0.442087	-3.751539	0.0019
LNX2	0.906837	0.272104	3.332685	0.0045
LNX3	-0.536924	0.233481	-2.299645	0.0362
LNX4	0.082641	0.038181	2.164431	0.0470
LNX5	0.402797	0.093864	4.291292	0.0006
C	5.965480	1.786896	3.338460	0.0045

EC = LNY - (-1.6585*LNX1 + 0.9068*LNX2 -0.5369*LNX3 + 0.0826*LNX4 + 0.4028*LNX5 + 5.9655)

Source: Prepared by the researcher based on the data of the study according to the (Eviews12) program.

It is clear from Table (6) that the error correction parameter (ECM) symbolized in the equation (λ) came with a value of (-0.994285) and significant at the level (1%), and thus it has fulfilled the necessary and sufficient condition and this means that the equilibrium imbalance (imbalance In the short run), the wheat crop import function can be corrected towards the long-run equilibrium relationship, which is a relatively high and acceptable correction rate towards a return to the equilibrium situation.

Table (6): Results of error correction model test for importing wheat crop in Iraq for the period (1990-2020)

ARDL Error Correction Regression
Dependent Variable: D(LNY)
Selected Model: ARDL(1, 2, 0, 2, 1, 2)
Case 2: Restricted Constant and No Trend
Date: 08/01/21 Time: 09:21
Sample: 1990 2020
Included observations: 29

ECM Regression
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNX1)	-2.879848	0.209630	-13.73778	0.0000
D(LNX1(-1))	-1.140109	0.264570	-4.309288	0.0006
D(LNX3)	-0.959865	0.137949	-6.958129	0.0000
D(LNX3(-1))	0.439452	0.096175	4.569289	0.0004
D(LNX4)	0.177588	0.037743	4.705160	0.0003
D(LNX5)	0.271280	0.087714	3.092781	0.0074
D(LNX5(-1))	-0.195761	0.085658	-2.285373	0.0373
CointEq(-1)*	-0.994285	0.081752	-12.16216	0.0000

R-squared	0.941231	Mean dependent var	0.050768
Adjusted R-squared	0.921642	S.D. dependent var	0.598236
S.E. of regression	0.167462	Akaike info criterion	-0.507173
Sum squared resid	0.588912	Schwarz criterion	-0.129988
Log likelihood	15.35401	Hannan-Quinn criter.	-0.389043
Durbin-Watson stat	2.245404		

* p-value incompatible with t-Bounds distribution.

Source: Prepared by the researcher based on the data of the study according to the (Eviews12) program.

Diagnostic tests for ARDL form:

Autocorrelation Test:

Through this test, it is ensured that the model is free from the problem of autocorrelation (serial correlation between values) using the Breusch-Godfrey Serial Correlation LM test, as Table (7) shows that the model does not suffer from the problem of autocorrelation, as the value of the F statistic It reached (0.322319) at a probability level (0.5792), which is a probability level greater than (5%), and the corresponding value of (Obs*R-Squared) reached (0.652636) at a probability level (0.4192) which is also greater than (5%). From it we accept the null hypothesis that there is no autocorrelation problem.

Table (7): Breusch-Godfrey Serial correlation LM Test results

Breusch-Godfrey Serial Correlation LM Test: Null hypothesis: No serial correlation at up to 1 lag			
F-statistic	0.322319	Prob. F(1,14)	0.5792
Obs*R-squared	0.652636	Prob. Chi-Square(1)	0.4192

Source: Prepared by the researcher based on the data of the study according to the (Eviews12) program.

Heteroskedasticity Test

Through this test, it is ensured that the estimated model is free from the problem of instability of homogeneity of variance using the Breusch-Pagan-Godfrey test: (Heteroskedasticity Test :), as Table (8) shows that the model does not suffer from the problem of instability of homogeneity of variance because the value of the F reached (1.167983) at a probability level of 0.2897), which is a level of probability greater than (5%), and the corresponding value of ((Obs*R-Squared) reached (1.203752) at a probability level of (0.2726), which is also greater than (5%). , from which we can accept the null hypothesis that there is no variance heterogeneity problem.

Table (8): Breusch-Pagan-Godfrey Heteroskedasticity Test :) for the hypothesis of heterogeneity of variance

Heteroskedasticity Test: ARCH			
F-statistic	1.167983	Prob. F(1,26)	0.2897
Obs*R-squared	1.203752	Prob. Chi-Square(1)	0.2726

Source: Prepared by the researcher based on the data of the study according to the program (Eviews12).

Functional fit model Test Ramsey Reset Test

The suitability of the model is known through the Ramsey reset test, and the nature of the functional figure is evident from Table (9), as the value of the (F) statistic reached (4.057861) at a probability level of 0.0636, which is a probability level greater than (5%). Thus, this model is acceptable, and from it we can accept the null hypothesis that the model does not suffer from the problem of inappropriateness of the functional form.

Table (9): Ramsey reset test to fit the model in terms of the functional form

Ramsey RESET Test
Equation: UNTITLED
Omitted Variables: Squares of fitted values
Specification: LNY LNY(-1) LNX1 LNX1(-1) LNX1(-2) LNX2 LNX3 LNX3(-1) LNX3(-2) LNX4 LNX4(-1) LNX5 LNX5(-1) LNX5(-2) C

	Value	df	Probability
t-statistic	2.014413	14	0.0636
F-statistic	4.057861	(1, 14)	0.0636
Likelihood ratio	7.381189	1	0.0066

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	0.132337	1	0.132337
Restricted SSR	0.588912	15	0.039261
Unrestricted SSR	0.456575	14	0.032613

LR test summary:

	Value
Restricted LogL	15.35401
Unrestricted LogL	19.04460

Source: Prepared by the researcher based on the data of the study according to the (Eviews12) program.

Jarque - Bera normal residual distribution (JB) Test:

The (JB) test is used for the purpose of ascertaining the normal distribution of the residuals of the regression equation, as Figure (1) shows that the regression equation is normally distributed, and that the value of JB amounted to (0.415786) at a probability level of (0.812294), which is a probability level greater than (5 %) and therefore we accept the null hypothesis that the residuals of the model are normally distributed.

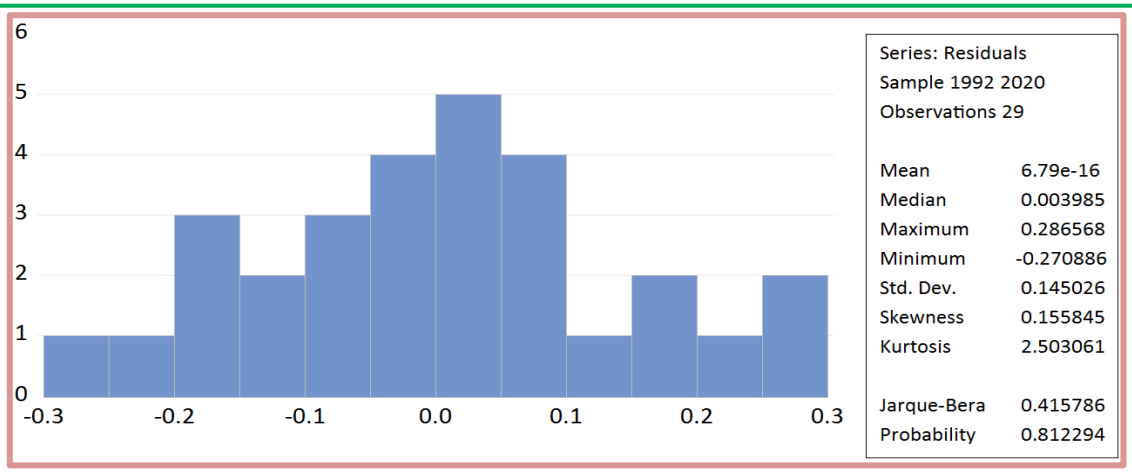

Figure (1): (Jarque - Bera) test for the normal distribution of residuals for imported wheat

Source: Prepared by the researcher based on the data of the study according to the (Eviews12) program

Test the stability of the estimated model using the CUSUM Test and CUSUM Squares Test

The structural stability test of the ARDL model estimated for the short and long-term relationship, using the CUSUM test as well as the cumulative sum of squares, is one of the most important tests that are used to ensure that the data used in the study are free of any Structural changes in them, and the consistency and stability of short-term parameters with long-term parameters, that such the tests are always inherent in the Autoregressive Distributed Deceleration (ARDL) model. If the graph of each of the two tests is within the framework of the critical limits at the level of (5%), it means that all the estimated parameters are static and there is no structural change in them, and Figure (2) shows the cumulative sum for the residuals, as the graph fell within the critical limits at a significant level (5%), which means that there are no structural changes and the consistency of long-term parameters with short-term parameters.

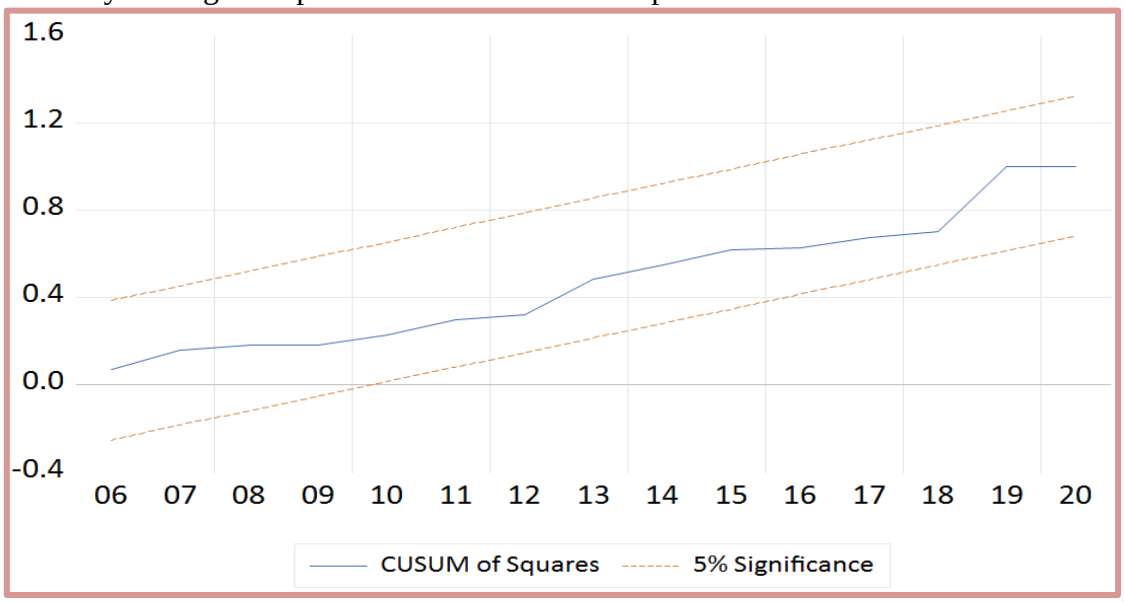

Figure (2): CUSUM Sq test for the stability of the wheat crop import model

Source: Prepared by the researcher based on the data of the study according to the (Eviews12) program.

It is clear from Figure (3) the cumulative sum of the residual square (CUSUM Sq) that the parameters were stable over the period under study, because the curve fell within the critical limits and at the level (5%), which indicates the integrity of the model from structural problems and long-term parameters consistency with the parameters short term.

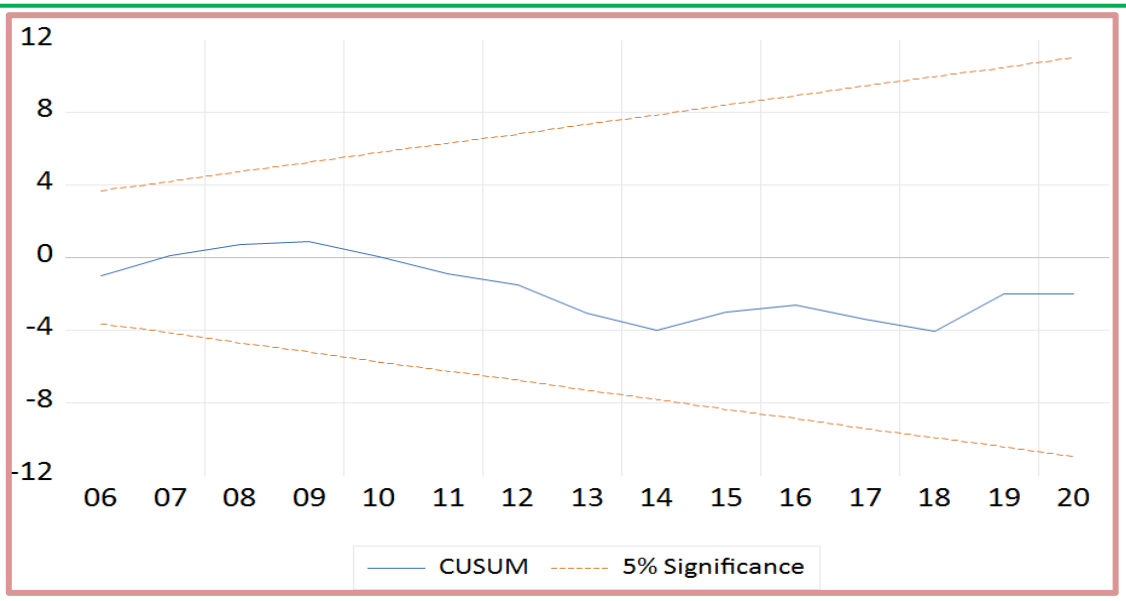

Figure (3): CUSUM test for the stability of the wheat crop import model

Source: Prepared by the researcher based on the data of the study according to the (Eviews12) program.

CONCLUSIONS AND RECOMMENDATIONS

First: The Conclusions:

1. The study proved the validity of its hypothesis imposed and that the independent variables that were adopted in the model had a different effect on the import of the wheat crop under study.
2. The wheat crop is one of the essential commodities that cannot be dispensed with in the human diet, meaning that the increase or decrease in the prices of this crop does not lead to a decrease in the quantities consumed of it due to the important nutritional elements it contains.
3. The results showed that the world price had a negative effect on the imported quantities, reaching (-0.959865), which shows the inverse relationship between them, as all results were significant and consistent with the logic in terms of size and reference to the logic of the economic theory.
4. The results showed that the production variable had a negative effect on the imported quantities, as it amounted to (- 2.879848), which shows the inverse relationship between them, as all results were significant and consistent with the logic in terms of size and reference to the logic of the economic theory.
5. The value of the error correction parameter (ECM) amounted to (-0.99), which means that (99%) of the short-term imbalance in wheat imports in the previous period can be corrected in the future period, meaning that the imbalance in the wheat imports function takes About one year in order to return to the equilibrium position.

Second: Recommendations

1. Establishing a short and long-term policy for the production of the crop and regulating import with the aim of covering the increasing demand, which leads to increased production and reduced import of the crop under study.
2. 4. Continuing to receive the crop at the prevailing prices, which are considered high, in order to encourage farmers to expand their production capacity and the entry of new producers into the production process.
3. Facilitating the process of receiving the crop directly from the farmers and ending the role of the intermediary (traders) who receive a high profit margin and at the expense of the farmer.
4. The necessity of conducting more studies and research related to the import of agricultural products in order to be a guide for farmers in order to advance the reality of agricultural production and fill the local food deficit.

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تحليل اقتصادي وقياسي لأهم العوامل المؤثرة في استيراد محصول القمح في العراق للمدة (1990-2020)

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الكلمات المفتاحية:
التحليل الاقتصادي والقياسي، الكميات المستوردة، القمح.

الخلاصة

تهدف هذه الدراسة إلى اجراء تحليل اقتصادي وقياسي لدالة استيراد محصول القمح من خلال عدد من العوامل المؤثرة فيها في العراق للمدة (1990-2020)، إذ تم استخدام الكميات المستوردة عاملاً تابعاً أما العوامل المستقلة فتمثلت بـ (الكميات المنتجة، الدخل القومي، السعر العالمي، عدد السكان، سعر الصرف)، وتم اختبار استقرارية السلاسل الزمنية بواسطة اختبار ديكي فولر (ADF) وتطبيق أنموذج (ARDL)، وتم اختبار التكامل المشترك بين متغيرات الدراسة باستخدام اختبار الحدود (Bound Test)، وبينت النتائج ان هناك علاقة توازنيه طويلة الاجل (تكامل مشترك) بين الكميات المستوردة والمتغيرات المستقلة، واوصت الدراسة على ضرورة السيطرة على الاستيرادات من المحصول وزيادة الدعم المقدم للمنتج المحلي وذلك من خلال تحديد الحد الأدنى لسعر المنتج من السلع الزراعية المختلفة فضلاً عن ايقاف الاستيرادات في وقت ذروة الإنتاج.