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Using the Box-Jenkins Methodology to Build A Standard Model for Forecasting Agricultural Imports in Iraq

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ABSTRACT

The study aimed to predict Iraqi agricultural and food imports for the period (2021-2027) using the Box-Jenkins methodology. The autocorrelation and partial functions were used for the purpose of ensuring the stability of time series and testing the residual correlation, histogram and probabilistic distribution of residuals of the estimated model for the purpose of ensuring the suitability of the chosen model The study found an increase in both Iraqi agricultural and food imports during the studied period, and in light of the results reached, the study recommends maintaining the growth of this sector at 1.5%, 1.2% for agricultural and food imports, respectively..

INTRODUCTION

Box and Jenkins were interested in collecting some techniques used in time series to help determine the degree of the model and estimate its features, and then suggest some ways to ensure the validity of the model to take its final form. We have seen that the unstable and homogeneous time series can be combined in the form of ARIMA (p, d, q), then the application form lies in how to choose the three values (p, d, q) i.e. to determine the shape of this type of model, we test the two simple autocorrelation functions The partial of the series and the form in it is to determine the degree of integration d in order to obtain the stable series, and from it to determine the appropriate numerical value of d, we use the idea that the autocorrelation ρ(k) for the stable time series, must gradually approach zero as the number of lags (k) increases), and to find out that we consider the MA(p,q) model, as the correlation function of the part MA(q) returns to zero when (k>q) because this type has a memory equal to q period only, and from it if Y_t follows MA(q)), then (ρ(k)=0) for (k>q) and the autocorrelation function decreases for the AR(p) part of the geometrically stable ARIMA(p,q). The way to determine the value of d is straightforward, as we look at the correlation function The self of the original series or we test the unit root and determine whether it is stable or not. e, until we reach the value d, which makes the series stable, i.e (Al-Jaasi, 2006,17):

$$W_t = (1-L)^d \; Y_t$$

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This means that the autocorrelation function ρ(k) returns to zero when (k) is large, and in this case we say that Y_t is an integrable of degree d and that the difference (d-1) is unstable, after determining the value of d the series can be used Stable W_t=(1-L)^d Y_t To test both the simple and partial autocorrelation function to determine p and q, and if each of the AR and MA parts have higher degrees, the empirical method can be used for both p and q, then we make sure of that experiment after estimating the parameters The ARMA (p,q) model for the transformed string (Berri, 2002, 21).

The Study Problem

The problem of the study is:

-The agricultural sector's contribution to the Iraqi GDP and the agricultural foreign trade has diminished, and the Iraqi agricultural product has not been able to withstand the imported products, which has made it lose the competitive advantage due to the dumping policy that the Iraqi market has been exposed to.

-Iraq's dependence on financing its imports, most of which are consumer and food items from the value of oil exports only.

Importance of Studying

The foreign trade policy is a major tool in improving the living standards of individuals through its contribution to the Iraqi national product, thus increasing individuals' incomes, creating new job opportunities and meeting the various basic needs of society.

Goal of Studying

1-An economic analysis of the two functions of agricultural imports for the period (1992-2020).

2-Studying the reasons for the weakness of foreign trade in agricultural products, studying the structural imbalances that affect them, and developing possible proposals in order to reduce imports and support exports.

Hypothesis of Studying

The study assumes that macroeconomic changes affect (positively or negatively) the agricultural foreign trade of Iraq during the study period.

Study Methodology

This study is based on two methods

1-Descriptive method: to cover the academic theoretical basis for the subject of the study, by referring to the available scientific references, periodicals, reports, studies, research and scientific conferences related to the subject of the study.

2-Statistical and Standard Method: It depends on identifying the variables that affect the Iraqi agricultural foreign trade and building an economic and standard model that explains and explains this relationship.

Data Collection Method

Data sources were obtained from its official sources represented by the Ministry of Planning - the Central Statistical Organization, the Arab Organization for Agricultural Development / Yearbook of Arab Agricultural Statistics and the Central Bank of Iraq for the period 1992-2020.

Theoretical Framework

Box and Genkins see the estimated linear dynamic models and the accompanying theoretical analyzes that not only give us the shape of the model, but also get the estimated parameters.

It turns out that there are four steps that must be followed in order to use the Box-Jenkins methodology in forecasting, and they are as follows:

1-Recognition stage

The most difficult stage in building linear time series models is the stage of discrimination, as it is possible to obtain several alternatives for the possible models and the chosen prototype can be rejected in the examination and testing stage. The stability of the series is usually Wt, and to determine the degree of autoregression p, and the degree of the moving average, q, we use the autocorrelation and partial functions (Sheikhi, 2012, 240).

If the correlation pattern is within the 95% confidence interval from the start, then the autocorrelation coefficient (ACF) is not fundamentally different from zero, it means that the series is stable and integrated from degree 0, in this case we conduct our analyzes on the original values of the variable Y_t without making transformations on it, but if it turns out that the autocorrelation form falls outside the confidence field (95%) in the period Long and the autocorrelation coefficients are significantly different from zero for a relatively large k, the series Y_t is unstable, in this case the first-order differences must be made and then we perform the same analysis again until we reach a stable series. After obtaining stability, it is possible to study the autocorrelation and partial autocorrelation of the stable series to help us distinguish the behavior of autoregressive or moving average or both (Al-Ani, 2005).

2- The stage of estimating the parameters of the model

After completing the stage of identifying the model by determining the ranks (or degrees) (q, d p), and we can move to the next technical stage, which is the stage of estimating the parameters of the model:

A- Estimating the parameters of the autoregressive model AR

It becomes easy to estimate the equation of this model ($\phi p,............,\phi 2,\phi 1$) and after determining the degree of P, by using one of the special methods Yule-Walker equations, and this method is based on the coefficients of The autocorrelation of model parameters estimation, as the estimators in the case of AR(p) models are effective for us (Sheikhi, 2012, 244).

B- Estimating the parameters of moving and mixed averages

These ARMA(p,q), MA(q) models are much more complex in terms of estimation than the regression models, because they are non-linear in the parameters on the one hand, and the error variable is not seen on the other hand. The aim of the estimation here is to determine the parameters of the regression section and the section of ARMA(p,q) together, or the parameters of the moving average section alone in the MA(q) model.

3-Diagnostic Checking

After completing the two stages of determining and estimating the model, the third stage of the modeling process begins, which is to test the model's statistical and then predictive power at a later stage, and this stage requires the following steps (Vandel, 1992, 26):

-Testing the autocorrelation function of the original series with that of the estimated series. If a fundamental difference is observed between them, it is conclusive evidence of the failure of the determination process, and this calls for rebuilding the model and evaluating it again. But if the two functions are similar, we move on to studying and analyzing the residuals of the estimate with the autocorrelation function of the residuals.

B-Test the significance of the parameters and the overall significance of the model, to test the overall significance of the model ARMA(p,q) (not including a constant), we use the Fisher statistic. The model is not all equal to zero and that $R2$ is fundamentally different from zero, in this case it can be said that the model has statistical significance.

4-prediction stage

The objective of forecasting is to use the current model estimated in a given time period in order to estimate future values as a time series according to the smallest possible error, so we consider the prediction with the smallest mean square of the forecast error Minimum Mean Square Forecast Error (MMSFE) as an optimal forecast, and as long as the forecast error As a random variable, we reduce its expected value. This prediction is made after estimating the parameters of the ARIMA model (p, d, q), which has exceeded the various stages of the previous tests and is determined by the degree p, d and q, as the prediction value becomes fixed (i.e. it is equal to the series average) after the period q in the averages models Animation.

The estimated ARIMA model can be used to calculate the forecast $\hat{Y}_{(T+h)}$, as we first calculate the forecast for one period in the future, then we use the latter to calculate the forecast for two periods in the future, and we continue in the same way until we reach the forecast for the period h in the future.

MATERIALS AND WORKING METHODS

First: forecasting agricultural imports

First, the shape of the time series for the target data is drawn as in Table (1) to see the stability of the time series, and as it is clear from the graph (1), the time series is unstable, as the clear fluctuation in agricultural imports is observed along the time series, which is better illustrated by the low time trend as in Figure (2).

Table (1): Iraqi agricultural imports for the period (1992 – 2020)

Years	Agricultural Imports (Million dollars)
1992	196.65
1993	941.24
1994	585.29
1995	638.45
1996	445.57
1997	278.98
1998	97.18
1999	161.41
2000	187.93
2001	241.86
2002	1645.72
2003	1587.66
2004	2274.15
2005	3042.00
2006	3085.29
2007	2951.28
2008	5305.44
2009	4396.17
2010	1930.51
2011	1354.31
2012	1354.31
2013	1354.31
2014	1364.31
2015	1364.31
2016	9096.30
2017	11865.10
2018	7441.90
2019	9467.76
2020	9591.58
Average Value	2905.06
Highest Value	11865.10
Minimum value	97.18

Source :

-Food and Agriculture Organization of the United Nations (FAO) - Yearbook of statistics and the organization's website on the international information network www.fao.org.faostat - School years. Ministry of Planning/Central Statistical Organization/Directorate of Trade Statistics.-

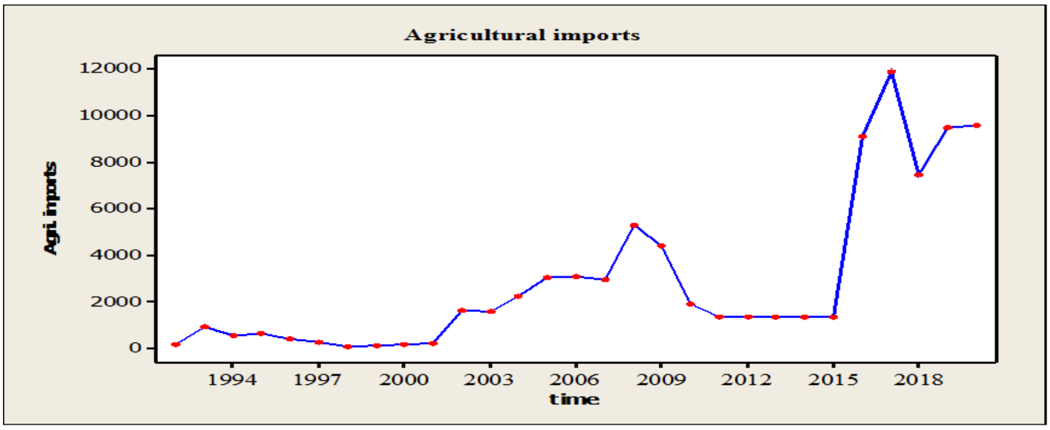

Figure (1): Time series of Iraqi agricultural imports for the period (1992-2020).
Source: Minitab

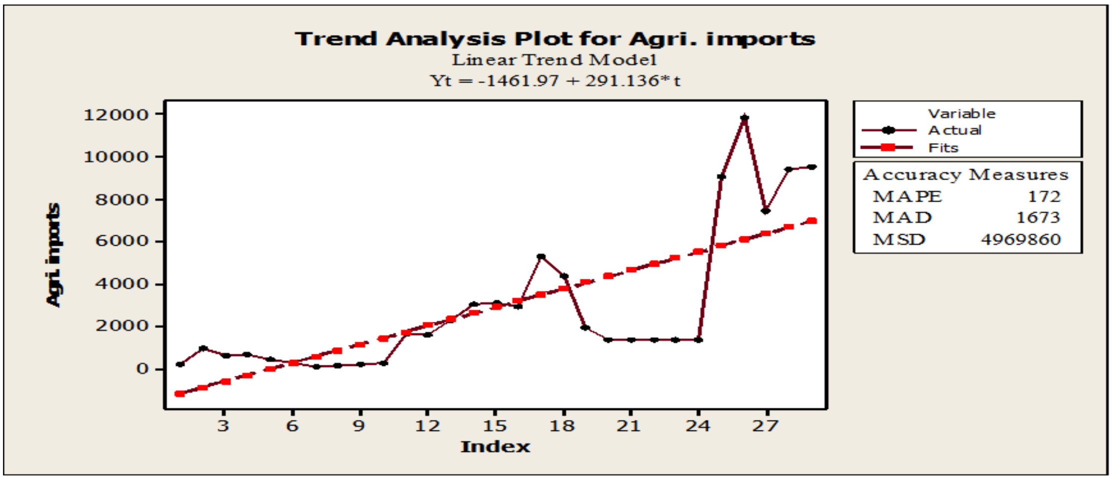

Figure (2): Time trend of the time series data for Iraqi agricultural imports.
Source: Minitab

As it can be seen from Figure (2) that the sign of the coefficient b is positive, which confirms the increase in agricultural imports during the study period. All these evidence confirm the instability of the time series, and for the purpose of revealing this stability or not, the autocorrelation functions and the partial autocorrelation function are resorted to, as follows:

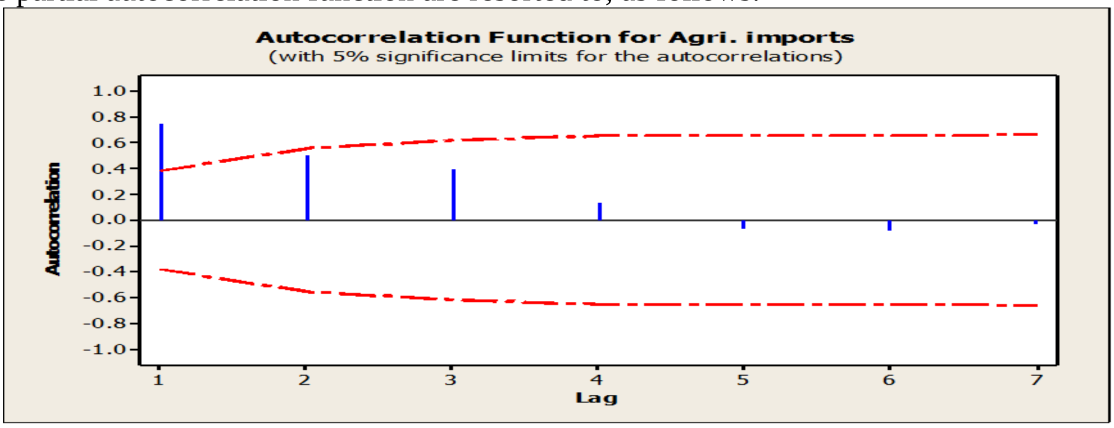

Figure (3): Autocorrelation function of Iraqi agricultural imports data
Source: Minitab

The graph (3) indicates the instability of the time series, and the table (49) indicates the estimated autocorrelation values between the values of Iraqi agricultural imports. It measures the correlation coefficient for the lag period K. Here, only two of the correlation coefficients are statistically significant within 95% confidence limits (very clear from the graph), which means that the time series is not completely random, that is, it does not follow the white noise series. which calls for modification of the time series.

Table (2): Autocorrelation values of the indicated deceleration periods

Lag	ACF	T	LBQ
1	0.747297	4.02	17.93
2	0.497497	1.84	26.17
3	0.392223	1.31	31.49
4	0.137699	0.43	32.17
5	-0.064910	-0.20	32.33
6	-0.081289	-0.25	32.59
7	-0.036876	-0.12	32.64

The partial autocorrelation function is used to judge the rank of the autoregressive model that is chosen for the data. From the graph (4) and Table (3), it is clear that there is one value of the partial autocorrelation coefficients that is significant at 95% confidence limits.

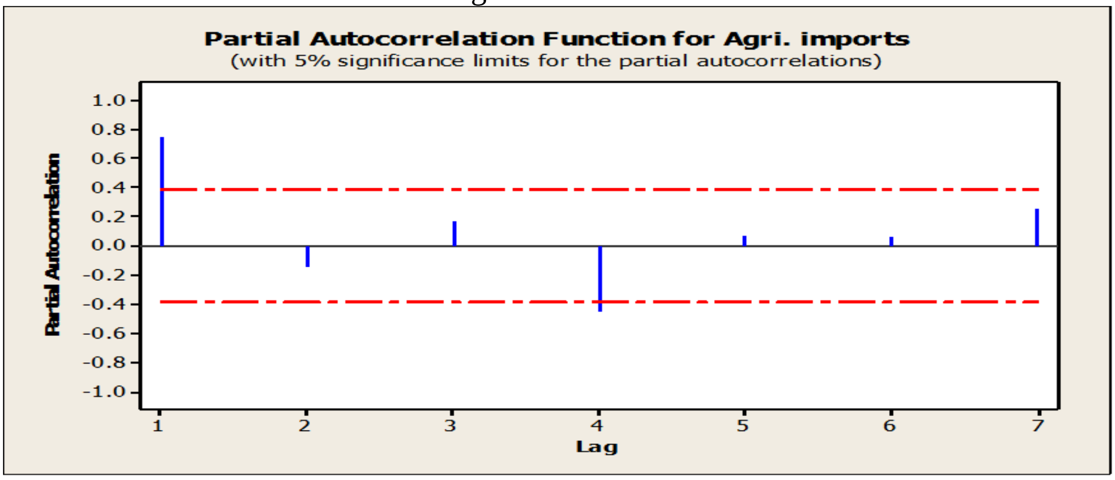

Figure (4): The partial autocorrelation function of Iraqi agricultural imports
Source: Minitab

Table (3): values of partial autocorrelation of indicator deceleration periods

Lag	PACF	T
1	0.747297	4.02
2	-0.138050	-0.74
3	0.166890	0.90
4	-0.452024	-2.43
5	0.066303	0.36
6	0.057255	0.31
7	0.250231	1.35

From the above, it is clear that the data need to perform the initial difference and then draw the modified time series, as is clear from the graph (5), where the stability of the time series is evident at the initial difference and the results of stability are confirmed by referring to the autocorrelation functions and the partial autocorrelation function, as shown in Figures (5), (6) and Tables (4 and 5), as all the values of the autocorrelation coefficients and partial autocorrelation are not statistically significant, which means that the modified time series follows the white noise series.

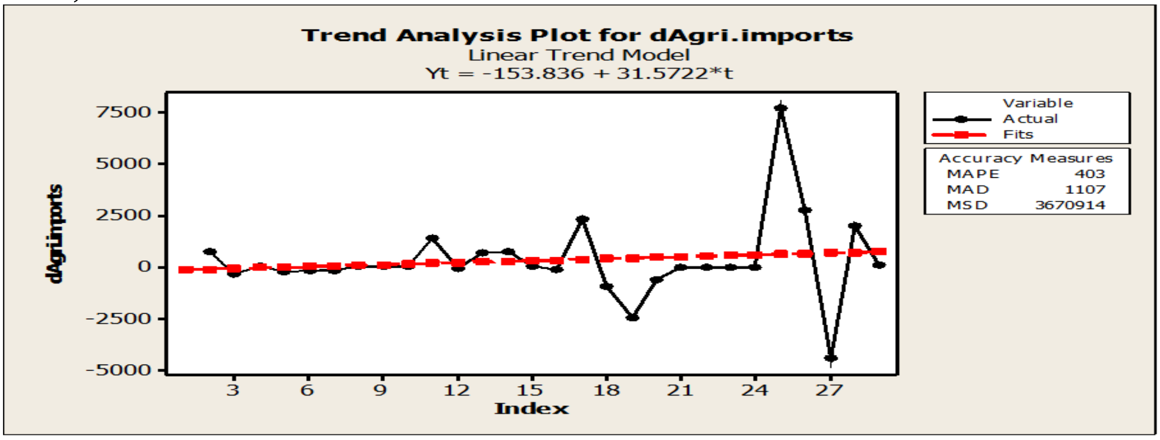

Figure (5): Time series of Iraqi agricultural imports adjusted after taking the first differences
Source: Minitab

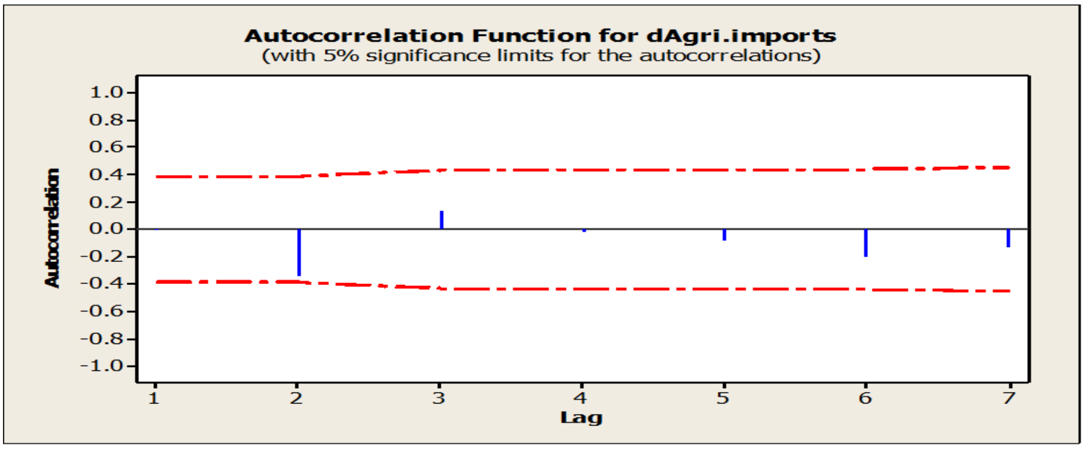

Figure (6): The modified time series autocorrelation function
Source: Minitab

Table (4): Autocorrelation values for the modified time series

Lag	ACF	T	LBQ
1	-0.010008	-0.05	0.00
2	-0.340719	-1.80	3.75
3	0.130534	0.62	4.33
4	-0.016986	-0.08	4.34
5	-0.081850	-0.38	4.58
6	-0.198979	-0.93	6.09
7	-0.134491	-0.61	8.26

After the stability of the time series, it is resorted to testing the appropriate model for prediction according to statistical criteria, as well as passing the statistical tests and achieving the lowest value of the predictive accuracy criteria, the most important of which is the mean square errors (MSE).

The advanced statistical programs help a lot in choosing the appropriate model, as well as carrying out the appropriate tests.

Therefore, the appropriate model here is (1,1,1), as shown in Table (4). It is noted from the table that the value of (MA), (AR) and the constant are significant at acceptable statistical levels.

Table (5): The final results of the estimated model
ARIMA Model: Agri. Imports

Type	Coef	SE Cofe	T	P
AR1	0.6613	0.2011	3.29	0.003
MA1	0.9613	0.1393	6.90	0.000
Constant	106.81	25.43	4.20	0.000

Differencing: 1 regular difference
Number of observations: Original series 29, after differencing 28
Residuals: SS = 91049773 (backforecasts excluded)
MS = 3641991 DF = 25
Modified Box-Pierce (Ljung-Box) Chi-Square statistic

Lag	12	24	36	48
Chi-Square	10.0	12.5	*	*
DF	9	21	*	*
P-Value	0.349	0.926	*	*

In order to ascertain the suitability of the chosen model for forecasting, some tests should be carried out, including:
1-Residual correlation test: This is done by estimating the autocorrelation functions and the partial autocorrelation function of the residuals, as follows:

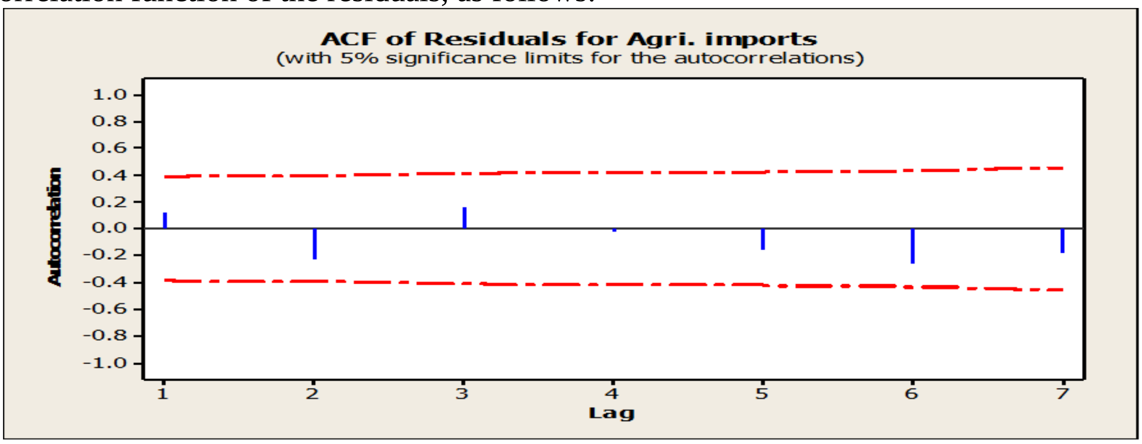

Figure (7): Autocorrelation function of residuals of the estimated model
Source: Minitab

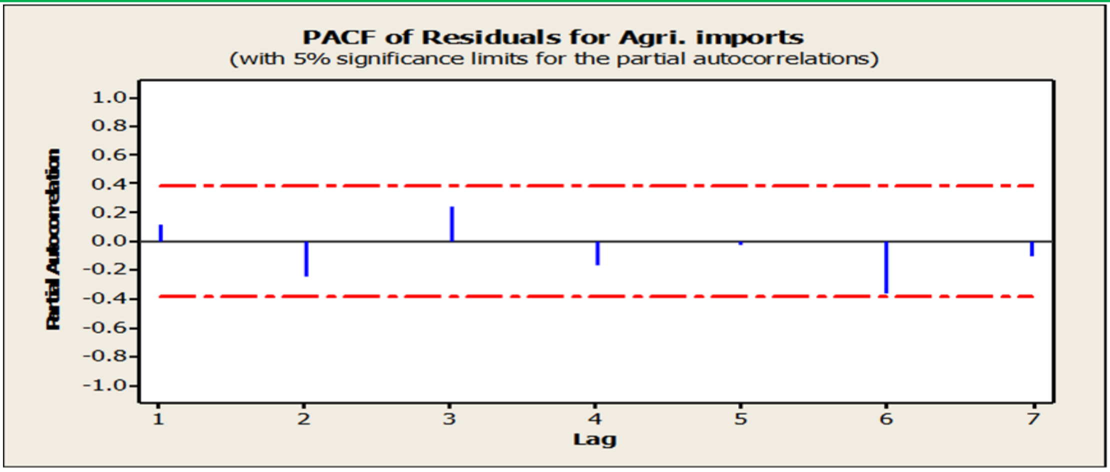

Figure (8): The partial autocorrelation function of the residuals of the estimated model
Source: Minitab

It is noticed from Figures (7) and (8) that the patterns of autocorrelation and partial autocorrelation of the residuals of the chosen model (1,1,1) follow the patterns of the white noise series.

2-Histogram of the residuals of the estimated model: It is noted from Figure (9) that the residuals of the estimated model take the form of a normal distribution to a large extent, which gives great confidence in the model.

Figure (9): The histogram of the values of the remainders of the chosen model (1,1,1)
Source: Minitab

3-Probabilistic distribution of the residuals of the estimated model

The graph (10) indicates the probability distribution of the residuals of the estimated model, most of which lie on one straight line.

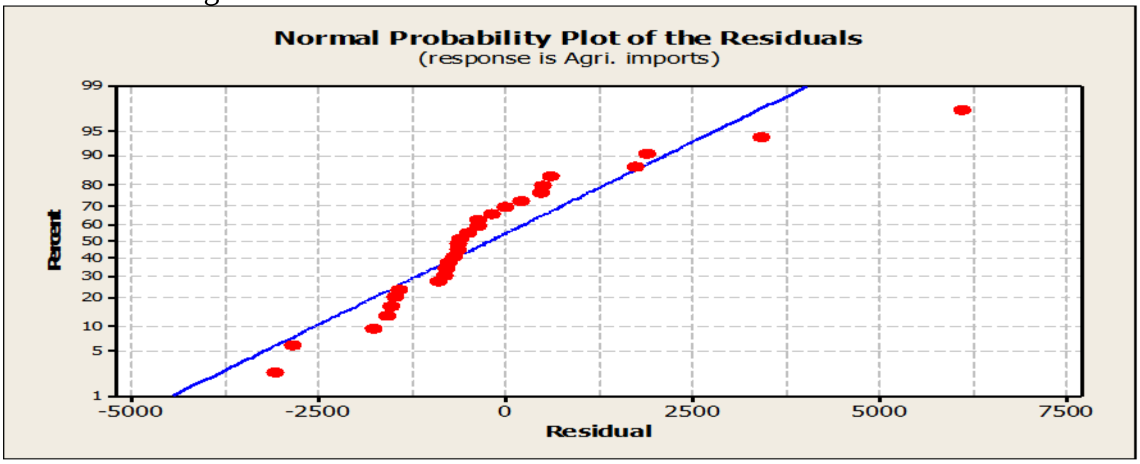

Figure (10): Probabilistic distribution of the residuals of the estimated model
Source: Minitab

From the above, it can be asserted that the selected model has passed the required statistical tests, which can then be generated after generating predictions, as shown in Table (6).

Table (6): Forecast values of Iraqi agricultural imports for the period (2021-2027)

Trust limits (95%)		Predicted Values /Million Dollars	YEARS
highest value	less value		
13046.6	5564.1	9305.4	2021
13789.8	4655.9	9222.9	2022
144212.8	4337.5	9275.1	2023
14545.1	4287.9	9416.5	2024
14854.2	4379.4	9616.8	2025
15161.5	4550.6	9856.1	2026
15473.3	4769.0	10121.1	2027

The data in Table (6) indicate an increase in Iraqi agricultural imports for the predicted period, and this is what distinguishes the Box Jenkins method in that it is affected by the temporal trend of the researched data. The current levels of Iraqi agricultural imports and to stop their decline, the growth of this sector must be increased by 1.5% to meet the positive growth rate for the forecast period of 1.5%. And the forecasted growth equation of Iraqi agricultural imports for the period (2021-2027).

$$LY = -21.274 + 0.0150Time$$

Table (7): Results of estimating the growth equation of agricultural imports

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-21.27359	5.454026	-3.900529	0.0114
TIME	0.015038	0.002695	5.580617	0.0025

R-squared	0.861662	Mean dependent var	9.163228
Adjusted R-squared	0.833994	S.D. dependent var	0.034996
S.E. of regression	0.014259	Akaike info criterion	-5.427917
Sum squared resid	0.001017	Schwarz criterion	-5.443371
Log likelihood	20.99771	Hannan-Quinn criter.	-5.618928
F-statistic	31.14328	Durbin-Watson stat	0.905784
Prob(F-statistic)	0.002547		

Source: $Eviews_{12}$ software

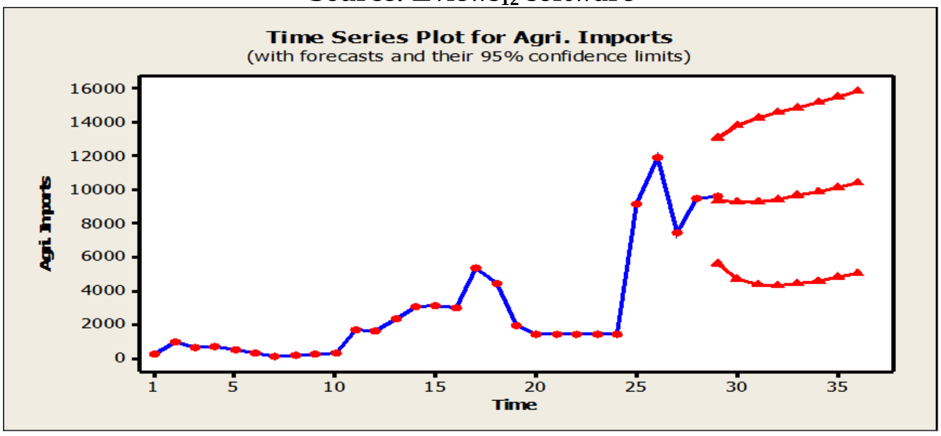

Figure (11): Time series of Iraqi agricultural imports and the forecast.

Second: Forecasting food imports

First, the shape of the time series of the target data is drawn to see the stability of the time series, and as it is clear from the graph (12) that the time series is unstable, as the clear fluctuation in food imports is observed along the time series, which is better illustrated by the low time trend as in the figure (13).

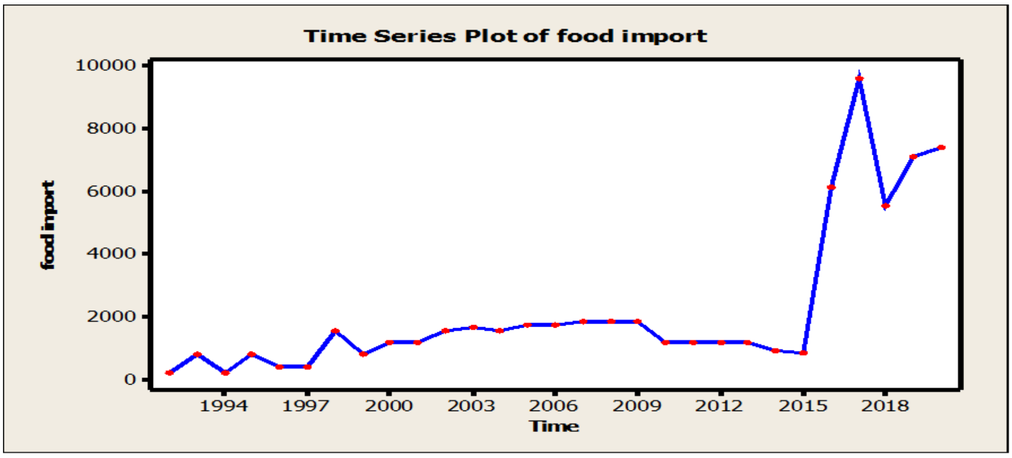

Figure (12): Time series of Iraqi food imports for the period (1992-2020)
Source: Minitab

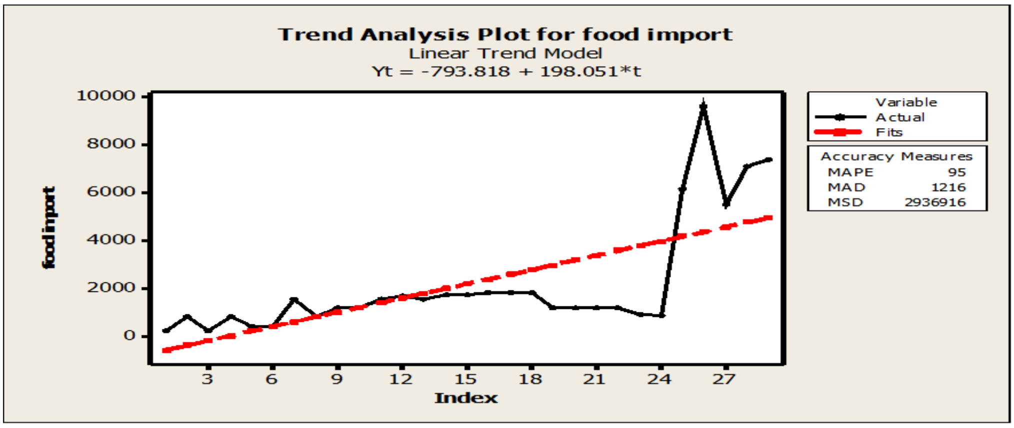

Figure (13): Time trend of the time series data for Iraqi agricultural imports
Source: Minitab

As it can be seen from Figure (13) that the sign of coefficient b is positive, which confirms the increase in food imports during the study period. All these evidence confirm the instability of the time series, and for the purpose of revealing this stability or not, the autocorrelation functions and the partial autocorrelation function are resorted to, as follows

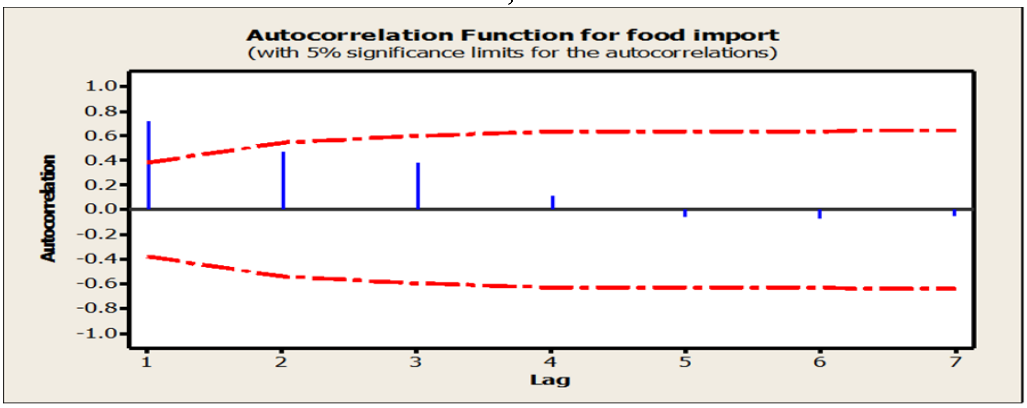

Figure (13): Autocorrelation function of Iraqi food imports data

Chart (13) indicates the instability of the time series, and Table (8) indicates the estimated autocorrelation values between the values of Iraqi food imports. Where it measures the correlation coefficient for the lag period K. Here, only two of the correlation coefficients are statistically significant within 95% confidence limits (very clear from the graph), which means that the time series is not completely random, that is, it does not follow the white noise series. which calls for modification of the time series.

Table (8): Autocorrelation values of the indicated deceleration periods

Lag	ACF	T	LBQ
1	0.714752	3.85	16.40
2	0.470574	1.78	23.78
3	0.379948	1.30	28.77
4	0.112754	0.37	29.22
5	-0.061556	-0.20	29.37
6	-0.075429	-0.24	29.59
7	-0.049834	-0.16	29.69

The partial autocorrelation function is used to judge the rank of the autoregressive model that is selected for the data. From the graph (14) and Table (9), it is clear that there is one value of the partial autocorrelation coefficients that is significant at 95% confidence limits.

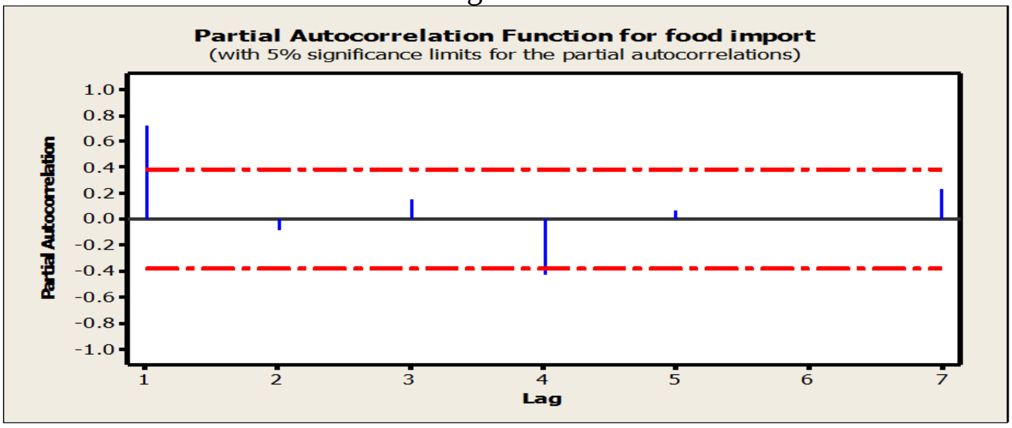

Figure (14): The partial autocorrelation function of Iraqi food imports
Source: Minitab

Table (9): values of partial autocorrelation of indicator deceleration periods

Lag	PACF	T
1	0.714752	3.85
2	-0.0882382	-0.44
3	0.153925	0.83
4	-0.424244	-2.28
5	0.064942	0.35
6	0.003995	0.02
7	0.232601	1.25

From the above, it is clear that the data need to conduct the initial difference and then draw the modified time series, as is clear from the graph (15), where the stability of the time series is evident at the initial difference and the results of stability are confirmed by referring to the autocorrelation functions and the partial autocorrelation function, as shown in Figures (15) and (16) and Tables (10 and 11), as all values of the autocorrelation coefficients and partial autocorrelation are not statistically significant, which means that the modified time series follows the white noise series.

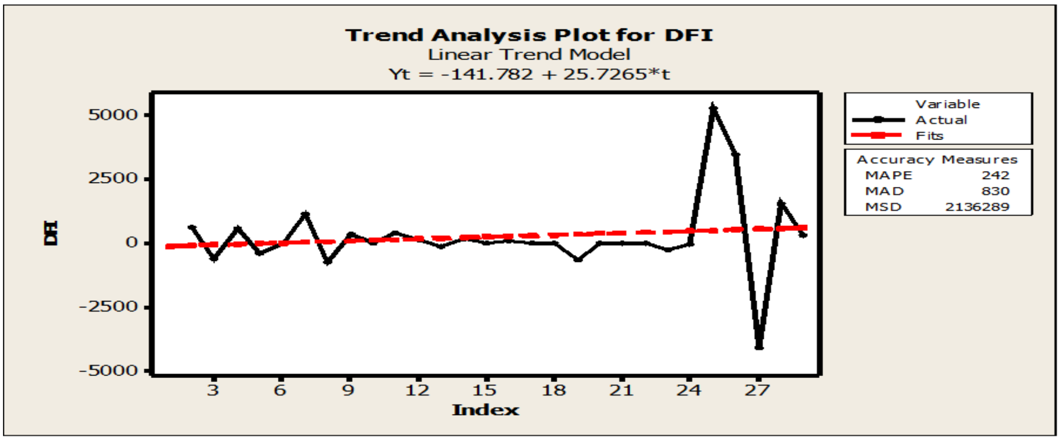

Figure (15): Time series of Iraqi food imports modified after taking the first differences
Source: Minitab

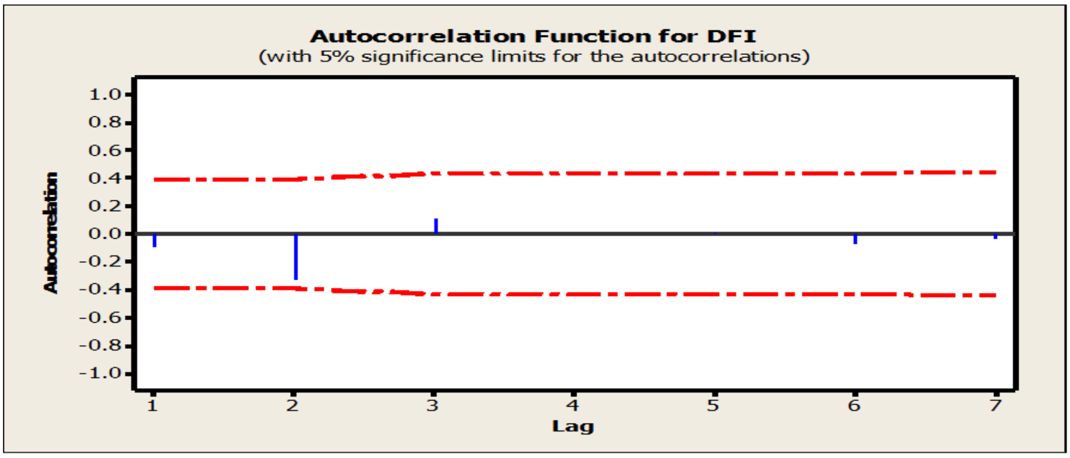

Figure (16): The modified time series autocorrelation function
Source: Minitab

Table (10): Autocorrelation values for the modified time series

Lag	ACF	T	LBQ
1	-0.091861	-0.49	0.26
2	-0.325395	-1.71	3.68
3	0.107558	0.51	4.07
4	0.004028	0.02	4.07
5	0.011100	0.05	4.08
6	-0.077580	-0.37	4.31
7	-0.037147	-0.17	4.36

After the stability of the time series, it is resorted to testing the appropriate model for prediction according to statistical criteria, as well as passing the statistical tests and achieving the lowest value of the predictive accuracy criteria, the most important of which is the mean square errors (MSE). The advanced statistical programs help a lot in choosing the appropriate model, as well as carrying out the appropriate tests.

Therefore, the appropriate model here is (1,1,1), as shown in Table (11). It is noted from the table that the value of (MA), (AR) is significant at the acceptable statistical levels.

Table (11): the final results of the estimated model Final Estimates of Parameters

Type	Coef	SE Cofe	T	P
AR1	0.6809	0.1967	3.46	0.002
MA1	0.9686	0.1222	7.93	0.000
Constant	72.26	15.70	4.60	0.000

Differencing: 1 regular difference
Number of observations: Original series 29, after differencing 28
Residuals: SS = 53235641 (backforecasts excluded)
MS = 2129426 DF = 25
Modified Box-Pierce (Ljung-Box) Chi-Square statistic

Lag	12	24	36	48
Chi-Square	3.9	8.1	*	*
DF	9	21	*	*
P-Value	0.920	0.995	*	*

In order to ascertain the suitability of the chosen model for forecasting, some tests should be carried out, including:

1-Residual correlation test: This is done by estimating the autocorrelation functions and the partial autocorrelation function of the residuals, as follows:

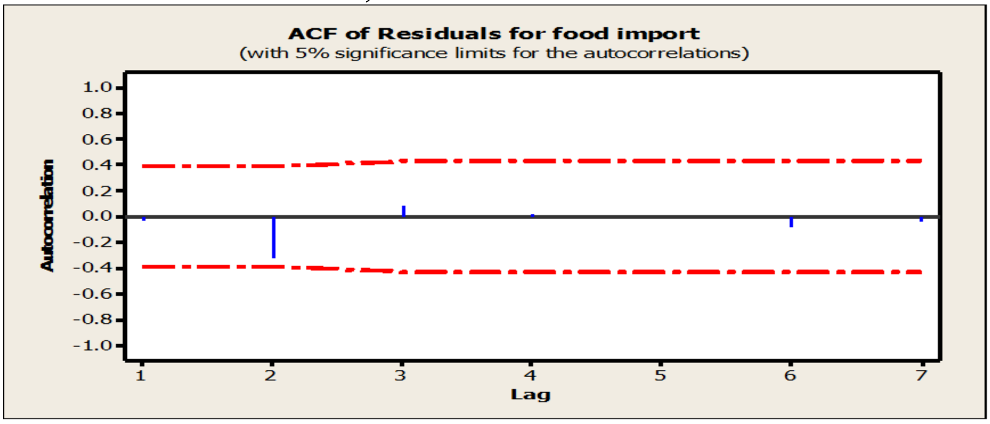

Figure (17): Autocorrelation function of the residuals of the estimated model
Source: Minitab

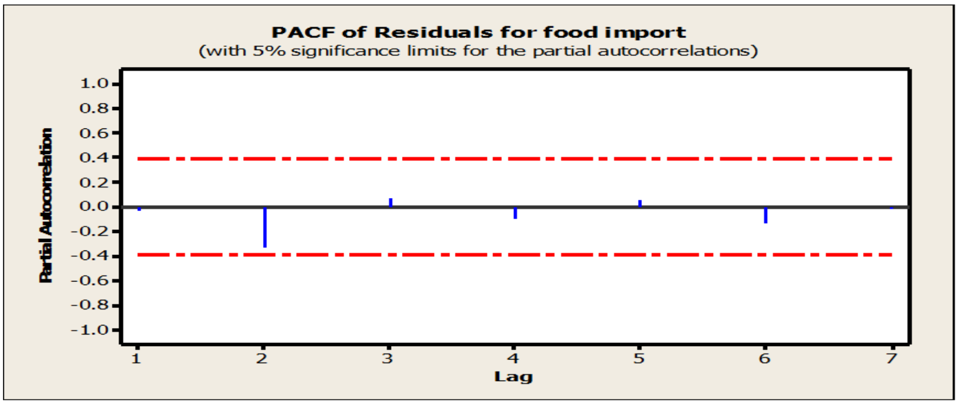

Figure (18): The partial autocorrelation function of the residuals of the estimated model

It is noticed from Figures (17) and (18) that the patterns of autocorrelation and partial autocorrelation of the residuals of the chosen model (1,1,1) follow the patterns of the white noise series.

2-Histogram of the residuals of the estimated model: It is noted from Figure (19) that the residuals of the estimated model take the form of a normal distribution to a large extent, which gives great confidence in the model.

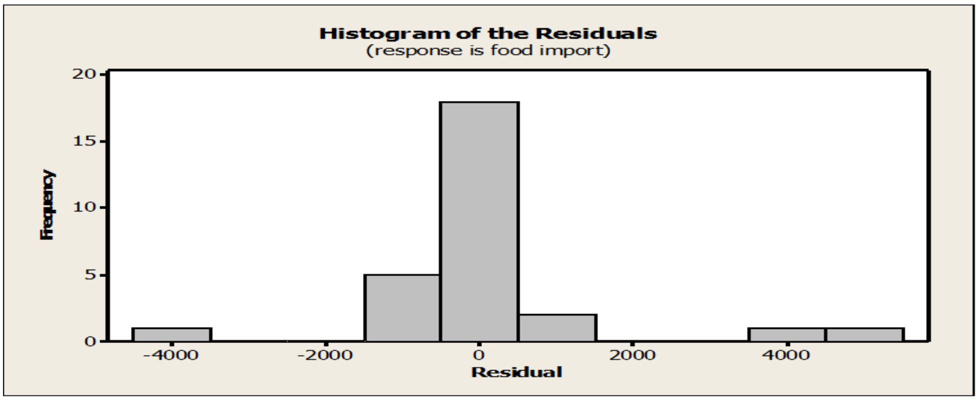

Figure (19): The histogram for the values of the remainders of the chosen model (1,1,1)
Source: Minitab

-Probabilistic distribution of the residuals of the estimated model3

The graph (20) indicates the probability distribution of the residuals of the estimated model, most of which lie on one straight line.

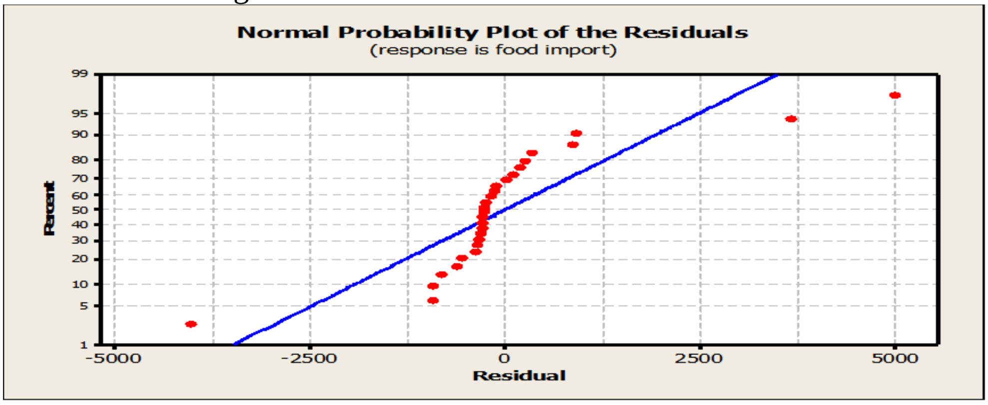

Figure (20): Probabilistic distribution of the residuals of the estimated model
Source: Minitab

From the foregoing, it can be asserted that the selected model has passed the required statistical tests, which can then be generated after generating predictions, as shown in Table (12).

Table (12): Predicted values of Iraqi food imports for the period (2021-2028)

Trust limits (95%)		Predicted Values/Million Dollars	years
highest value	less value		
9962.6	4241.2	7101.9	2021
10486.4	3462.1	6974.3	2022
10769.7	3149.6	6959.6	2023
10986.3	3057.6	7022.0	2024
11188.1	3085.2	7136.6	2025
11391.6	3182.3	7287.0	2026
11601.4	3321.8	7461.6	2027
11817.6	3487.9	7652.8	2028

Table (12) data indicates an increase in Iraqi food imports for the predicted period, and this is what distinguishes the Box Jenkins method in that it is affected by the temporal trend of the researched data. The current levels of Iraqi food imports and to stop their decline, the growth of this sector must be increased by 1.2% to meet the positive growth rate for the forecast period of 1.2%. And the forecasted growth equation of Iraqi food imports for the period (2021-2028).

$$LY = 8.826885 + 0.012080\,Time$$

Table (13): Results of estimating the growth equation of food imports

Dependent Variable: LFI
Method: Least Squares
Date: 05/31/21 Time: 10:23
Sample: 2021 2028
Included observations: 8

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.826885	0.014460	610.4251	0.0000
TIME	0.012080	0.002864	4.218672	0.0056

R-squared	0.747869	Mean dependent var	8.881247
Adjusted R-squared	0.705848	S.D. dependent var	0.034217
S.E. of regression	0.018558	Akaike info criterion	-4.923521
Sum squared resid	0.002066	Schwarz criterion	-4.903660
Log likelihood	21.69408	Hannan-Quinn criter.	-5.057471
F-statistic	17.79720	Durbin-Watson stat	0.739065
Prob(F-statistic)	0.005569		

Source: Eviews_{12} software

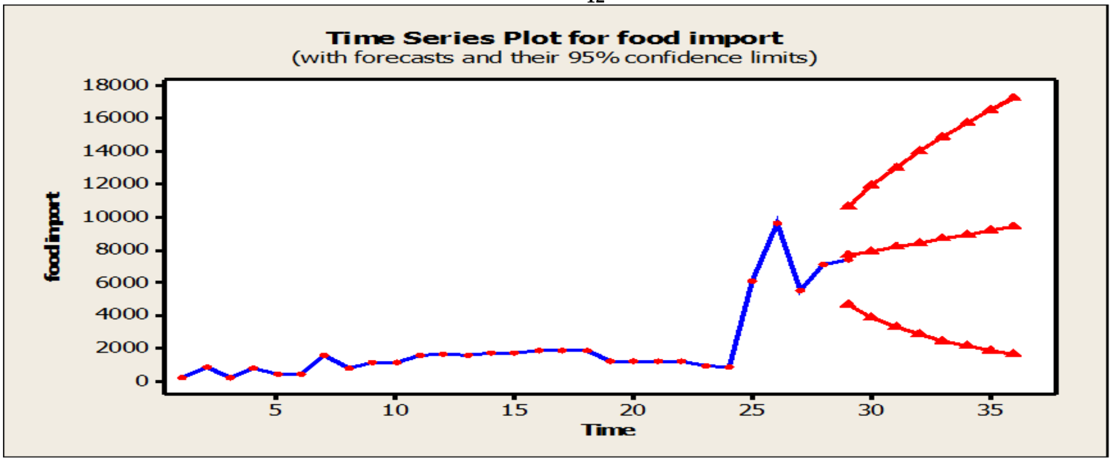

Figure (21): Time series of Iraqi food imports and the forecast
Source: Minitab

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

1-Increasing the growth rates of agricultural imports and homogeneous with the predicted values during the studied period.

2-Increasing the growth rates of food imports and homogeneous with the predicted values during the studied period.

RECOMMENDATIONS

1-Increasing the growth of this sector by 1.5% to maintain the current levels of Iraqi agricultural imports.

2-Increasing the growth of this sector by 1.2% to maintain the current levels of food imports.

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إستخدام منهجية بوكس – جنكنز لبناء نموذج قياسي للتنبؤ بالإستيرادات الزراعية في العراق

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الخلاصة

الكلمات المفتاحية: : الأستيرادات الزراعية ,التنبؤ

هدفت الدراسة إلى التنبؤ بالإستيرادات الزراعية والغذائية العراقية للمدة (2021-2027) بإستعمال منهجية بوكس – جنكنز. وتم اللجوء إلى دالتي الإرتباط الذاتي والجزئي لغرض التأكد من إستقرار السلاسل الزمنية وإجراء إختبار ترابط البواقي والمدرج التكراري والتوزيع الإحتمالي لبواقي الإنموذج المقدر لغرض التأكد من ملائمة الإنموذج المختار. وتوصلت الدراسة إلى زيادة كلاً من الإستيرادات الزراعية والغذائية العراقية خلال المدة المدروسة. وعلى ضوء النتائج التي تم التوصل إليها توصي الدراسة بالمحافظة على نمو هذا القطاع بنسبة 1.5%, 1.2% للإستيرادات الزراعية والإستيرادات الغذائية على التوالي..