Economic studies Journal
ISSN 2602-7925
https://www.asjp.cerist.dz/en/PresentationRevue/417

Volume: 18/ N°: 02 (2024), P 53-68

Forecasting the net barter trade rate index - Algeria (1980-2025) (Box-Jenkins methodology)

BELFODIL kamel*
Relizane University, (Algeria)
Kamel.belfodil@univ-relizane.dz

MELLAH.adda.
Relizane University, (Algeria)
adda.mellah@univ-relizane.dz

BOUGUETAIA soufyane
Relizane University, (Algeria)
soufyane.bouguetaia@univ-relizane.dz

Abstract

This study aims to predict the Index of the Net Barter Exchange Rate in Algeria during the period from 1980 to 2025, and to achieve this objective, light was shed on the dimension of concepts on barter trade in addition to mentioning some statistics recorded during the study period, but by Norm and relying on the box –Jenkins model, we found that the studied series is unstable at the origin, which determined the nature of the model(ARIMA), the best forecasting model after the weighting process is(4.1.4), because for the results, we have found that the Index of the net barter exchange rate in Algeria over the next five(05) years is known to be down compared to the original Prediction series(pre-forecast)

Article info

Received 09/01/2024
Accepted 24/04/2024

Keyword:
- ✓ barter trade
- ✓ Box-Jenkins:
- ✓ Forecasting

* author corresponding

1. *Introduction*

The barter trade is one of the commercial activities that man has known since primitive times before the advent of cash, and it is based on the exchange of one commodity for another, but with the development and diversification of economic activity and the entry of the policy of specialization into the culture of societies, interregional commercial exchanges between these countries have become a necessity dictated by the relationship of it is based on the exchange of goods and goods between groups and communities. Individuals without the intervention of money as a means of transaction, where a commodity is exchanged for a commodity, which is called barter in economics (Yacoub, 2022, p. 259). The southern border strip connecting Mauritania, Mali and Niger is known for its barter trade is very widespread, which means that the inhabitants of the region depend on it to provide their livelihoods and at the same time achieve a local development reflected on the national economy (khalef, 2020, p. 841) , and the question is: does the rate of net barter trade between Algeria and the neighboring countries of the south know a future development?

The Hypothesis:

As long as this type of trade is the source of livelihood for the people of the region, barter remains at a continuous rate, albeit in the medium term..

2. Previous studies:

- The study of Dr. Trobia nadir, 2022, the trans-Saharan road and its role in the activation of border commercial barter between Algeria and the African continent, an article published in the Journal of economic integration, the researcher tried through this article to highlight the essential role of the Trans-Saharan Road in increasing the volume of foreign trade, especially those subject to the border commercial barter system, because for the most striking conclusions of the researcher, the trans-Saharan road is one of the most important fateful projects that are relied on to promote trade and revive the economic development indicators of the region.

- Study by Dr. Bilal Boujemaa, Mr. Tarroubia Nadir, 2017, Trade barter as a mechanism to activate the exports of developing countries and as a sustainable development alternative to their economies. With reference to international experiences - an article published in the Journal of Studies in Economics, Trade and Finance, the researchers in this study tried to highlight the role played by barter trade in the revival of trade and local development, As a mechanism to activate the exports of developing countries and promote the exports of marginal goods, the most prominent results they reached: that barter trade contributes to the discharge of surplus production from the local market Barter trade also offers poor countries unable to settle their transactions in cash the opportunity to participate in international trade.

- Youssef Mohamed, Barter trade as a tool for the development of border areas in Algeria, an article published in the newspaper Shuaa for Economic Studies, the researcher in this study dealt with the trade of barter as a development tool for the Algerian border areas and its role in strengthening economic cooperation relations with neighboring countries, as one of the most prominent findings is the need to develop barter trade in border areas, as well as attention

to border trade activity, as the latter has strategic dimensions represented in the economic, social, political and security dimension of Algeria.

3. The concept of barter trade :

3.1 Definition of barter trade

Barter is known as border trade and is considered one of the types of foreign trade in which goods are exported in exchange for the import of goods of the same value, but it is not subject to banking procedures.border trade is processed only in national currencies. this is an import and export trade and is carried out only through customs posts. (Mecherfi, 2021, p. 333)

3.2 Advantages of barter

the advantages of barter are based on the exchange of goods and services between two regions of two neighboring countries separated by recognized borders and governed by independent administrative systems, this trade is characterized by characteristics summarized as follows: (Yousfi, 2018)

✓ The initial procedures for its extraction begin in the designated border city, then the procedures are completed by the registration service of the Ministry of Commerce.
✓ Dealers are limited to holders of the Register of merchants and small businesses of residents of the border city.
✓ The reason for the decrease in the prices of traded goods compared to their prices in other regions due to the lower cost of eviction.
✓ The commercial exchange must be of a size proportional to the needs of the residents of the border area and according to what is determined by its total demand, provided that it does not exceed the objective set by the border trade agreement signed between the border city and the Ministry of Commerce.

3.3 Formulas and forms of barter trade

there are many formulas and forms of barter trade that are called by a new name consistent with the development of services, as well as the inclusion of goods in relation to the traditional trade of past centuries in the modern era, which begins with the appearance of the book the wealth of nations by Adam Smith in 1776, the barter trade has therefore taken on new designations that do not deviate from its traditional meaning such as equal trade, or reciprocal trade. (Menaim, 2016, p. 20.21)

It means the exchange of goods and services that are paid for in whole or in part for other goods and services instead of money, but monetary rationing can be used in counter-trade for accounting purposes in inter-state dealings. Sovereign terms, the term bilateral trade is based on the exchange of goods and services for something of equal value.

Equal Trade

It is a form of trade that contains an element of exchange, and it represents uncoordinated trade practices or events linked by the presence of the element of countertrade, it does not refer to a trade free of cash currency, even if it is without money except in a few cases that the barter is classic, However, it uses cash currency in many cases, and cross-trade refers to a key point, which is the partial budget of the country's expenditures of hard currency.

Countertrade

Source: (Rubelli, 2019).

3.4 Products adopted in the border barter trade between Algeria and neighboring countries

Products related to barter formed within a specific and exclusive list, so that no other product can be exchanged outside it, are considered one of the local products and the most consumed in those border areas, can be displayed in the following scheme:

Table 01. Products exchanged in the framework of border barter

Products coming from Mali and Niger	Algerian Products
Henna, green tea, spices, turbans and tartars, white corn and mangoes, red wood, honey, sheep food, tarqi clothing, leather perfumes and ointments, bazan fabric, gum arabic, coarse and household salt, handicrafts, leather, local perfumes, peanuts, tent installation elements, cone sugar, carpets, fish, fish flour, nuts of all kinds, African fruits, corn flour, hibiscus, pineapple and coconut fruit, tea pots..... and others.	Dry dates and their derivatives except Deglet Nour, raw and household salt, household items made of plastic and aluminum, blankets, handicrafts, ready-made clothes, soap, olive oil, soap powder, honey, plastic industries, cleaning materials, cosmetics and physical hygiene.

Source: Dr. Troubia Nadir, The Trans-Saharan Road and its Role in Activating the Border Trade Barter between Algeria and the African Continent, Article, Journal of Economic Integration, Volume 10, N° 01, 2022.

The reason for Algeria's resort to barter is a shortage of hard currency to pay import bills, and therefore resorted to the commercial barter system by bartering petroleum products for imported goods or in exchange for the completion of some structural projects, but the government's fears lie in the possibility of bartering oil for less than its official price, which made it take some precautionary precautions, such as imposing on importing institutions to import goods whose value is 100% of the value of Algerian exports.

One of the most traded commodities in the barter on the southern borders of Algeria are livestock, tea, dry dates, salts and henna, and these goods benefit from customs exemptions, which encouraged their prosperity and continuation, as local statistics indicate the import of 20 tons of tea during the third quarter of 2007 from Niger to the state of Adrar with a total value of more than 3.38 million dinars, and be the state of Mali 115 heads of sedwan rams, 82 tons of green tea and 124 A head of camels and 42 of the bushna with a total value of more than 7.89 million dinars, to be bartered for some specific commodities that Africa lacks, as the most important of these commodities are dry dates produced in Badrar, of which 365 tons were exported to Niger at a value of 7 million dinars, in addition to 978,000 tons towards Mali with a value of more than 2.8 million dinars, as well as the export of salt, plastic utensils and traditional industries, although at very low rates.

According to the statistics of the barter trade between the wilaya of Adrar in Algeria with the State of Niger in 2013, we find that 70.86% of the imports of the state of Adrar within the framework of the barter trade represent green tea about 20%, while mango is only 9%, while salt was 0.14%, and it was recorded in 2016 that the value of imports increased to 275 725 287.00 dinars, while the exports of the state of Adrar within the framework of the barter trade represent 52 651 000.00 dinars in 2013, and increased to 176 818 000.00 dinars Year 2016. (Boujamaa & Traobia, 2017).

3.5 barter in numbers between Algeria and neighboring countries

Between Algeria and neighboring countries, there has been a significant activity in the field of trade exchanges, as well as reflecting profits achieved in addition to creating development and stimulating cross-border trade, which is reflected in creating a continuous dynamic for the region, and we have here some figures for this activity:

3.5.1 Barter trade for 2007

The proceeds of imports issued by the Regional Directorate of Customs in Bechar during the third quarter of 2007 indicate the import of 20 tons of green tea from Niger to the wilaya of Adrar through Bordj Badji Mokhtar, worth 3.388 000.00 DZD from Mali 115 heads of sedwan rams, 82 tons of green tea, 124 heads of camels and 42 tons of bashna were imported. The total value was estimated for imports of 7 896 500.00 DZD, 365 tons were exported to Niger, worth more than seven billion centimes, in addition to 978 000 tons to Mali more than 28 billion centimes, and in smaller quantities local salt, plastic utensils, aluminum and steel come to the handicrafts, except for woolen carpets (Yousfi, 2018) .

3.5.2 Barter trade for the year 2011

The export bill in this year amounted to more than 01 billion dinars contributed by the barter trade in the public treasury, this significant amount, which was supposed to be doubled to the most, was caused by the closure of the borders, where it knew a major recession that had side effects, date sellers who did not find a place to market their products were affected by this sudden closure, and the livestock market also knew a rise in prices, as well as spices, peanuts and others. (Yousfi, 2018)

3.5.3 Barter trade for 2016

The following table reflects the most important indicators in the field of barter those related to goods and products exchanged as well as the volume of exchanges recorded in 2016:

Table 02. Crosses of imported products

Product	*Quantity/ton*	*Value/DZD*	*The ratio %*
Manga fruit	4 614.62	323 023 400.00	65.87
Green tea	1 873.15	468 287500.00	26.74
Henna leaves	151.41	10 598 420.00	2.16
cayenne pepper	19.05	1 333 500.00	0.27
Spices ginger) stick(	281.02	19 671 400 .00	4.01
White corn	42.90	1 287 000.00	0.61
Tarri linen	16.35	61 312 500.00	0.23
Gauze Linen	6.68	18 036 000.00	0.1
Total	7 005.18	903 549 720 .00	100

Source:(Yousfi, 2018).

Table 03. Livestock

Livestock	*Number of heads*	*Value/DZD*	*The ratio %*
cattle	11 294	67 764 000.00	**85.66**
Cows	423	10 575 000.00	**3.21**
Camels	1 382	41 460 000.00	**10.48**
Goat	116	348 000.00	**1.58**
Total	13 215	120 147 000.00	**100**

Source:(Yousfi, 2018).

Table 04. Crosses algerian products exported

Product	*Quantity/ton*	*Value/DZD*
Dry dates	43 027.60	**645 414 000.00**

Source:(Yousfi, 2018).

4. Forecasting the net barter trade rate index - Algeria (1980-2025) using the Box-Jenkins methodology :

In this axis, we will address the prediction of the net swap trade rate index - Algeria for the period 1980-2025, and to achieve this purpose we relied on the Box-Genghis methodology, where the variable of the series under study is expressed as follows:

NBTR:The net barter trade rate

4.1 Identification phase (diagnosis) on the series of the The net barter trade rate - Algeria 1980-2020 in Algeria.

4.1.1Descriptive study of the data of The net barter trade rate - Algeria 1980-2020 (NBTR).

4.1.1.1 Legal formula for calculating The net barter trade rate

The net barter trade rate = index of average unit value of exports by barter/ index of average unit value of imports by barter.

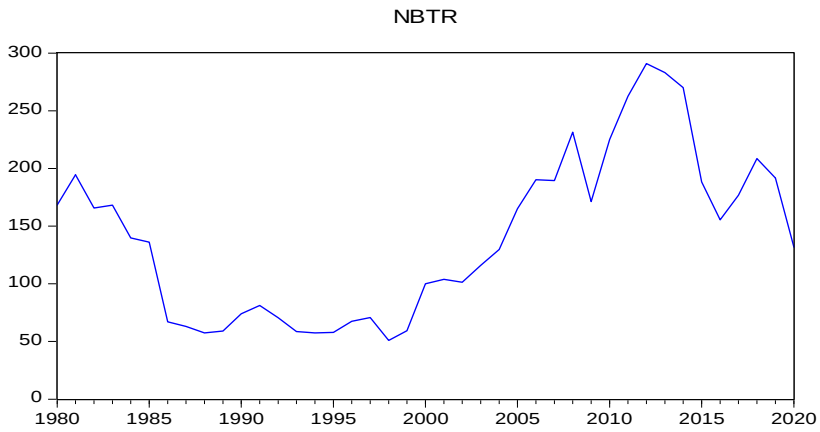
Table 05. Represents the indicators of the net exchange rate of trade by barter - Algeria 1980-2020.

Standard numbers (2000 = 100)

years	**1980**	**1981**	**1982**	**1983**	**1984**	**1985**	**1986**	**1987**	**1988**
The net barter trade rate	168,354	194,444	165,714	168,254	139,726	136,111	67,045	63,107	57,407
years	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**
The net barter trade rate	59,091	73,95	81,188	70,588	58,559	57,407	57,895	67,544	70,755
years	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
The net barter trade rate	50,926	59,434	100	103,884	101,362	116,045	129,72	165,076	190,207
years	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
The net barter trade rate	189,541	231,451	171,247	225,097	262,547	290,931	283,141	270,04	188,308
years	**2016**	**2017**	**2018**	**2019**	**2020**				
The net barter trade rate	155,425	176,786	208,607	91,652	131,751				

Source: World Bank

Fig.1. The graphic curve of the series of indicators of The net barter trade rate – Algeria 2020-1980.



Source: prepared by the two researchers using EViews

The data used is represented in the series of indicators of the net exchange rate of trade by barter - Algeria represented by 41 views extending from 1980 until the end of 2020, and through the figure above (01) we note that the indicators of the net exchange rate of trade by barter at their original rates during the study period are witnessing a remarkable development from year to year. It also recorded its largest rate in 2012 with a rate of 290.931, and the smallest rate estimated at 50.926 recorded in 1998, the arithmetic mean of the rates throughout the study period was equivalent to 140.252, and the standard deviation estimated at 70.883, which shows the degree of heterogeneity in the levels of the series.

4.1.2 Time Series Stability Test (NBTR)

Box and Jenkins have stipulated in their method that the time series should be stable if its mean and variability are constant over time, in other words, the stable time series is the one that does not contain the general trend. There are several tests to determine whether the time series is stable or not, we rely on the Deaky Fuller Extended Test (ADF) and Philips Perron PP. And the chain containing the walls of the unit is an unstable chain.

Hypothesis: $H_0 : \phi_1 = 1$, $H_1 : \phi_1 < 1$

If $t_{tab} < t_{\phi_i}$: We accept the null hypothesis that the string contains the root of the unit.

If $t_{tab} > t_{\phi_i}$: accept the alternative hypothesis that the string does not contain root of the unit.

Table 06. Stability test for Dickey - fuller Extended and phillips-perron

phillips-perron			Dickey - fuller				
without (constant and time(	constant and time	Constant	without (constant and time(	constant and time	Constant		
-0.8013	-1.8430	-1.4834	-0.7834	-1.7853	-1.3637	**Calculated**	**NBTR**
-1.9493	-3.5266	2.9369-	-1.9493	-3.5266	2.9369-	**The critical**	

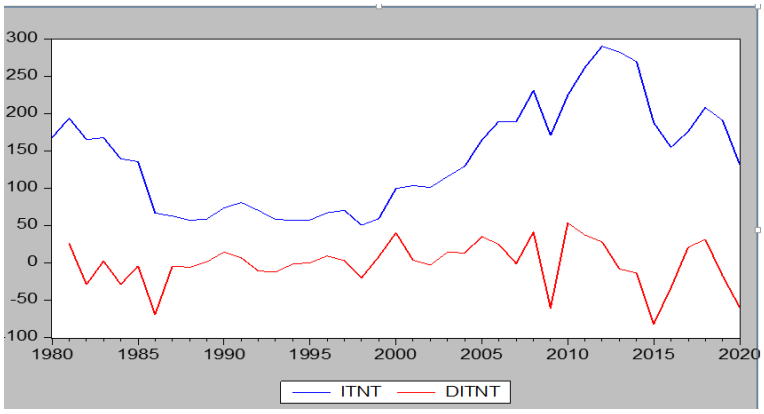
Source: prepared by the two researchers using EViews

Through Table No. (02) related to the stability test of a series by comparing the calculated values with the tabular values (critical) at the level of significance of 5%, and based on the two tests of Dickey - fuller extended and phillips-perron, we accept H0, which states that the series contains the root of the unit in the original, any unstable in the original. (I0).

4.1.3 Removing the instability of the original string

After making the first-order differences on the original series: $D(NBTR) = NBTRt - NBTRt-1$, we get a first-order difference series denoted by the symbol $D(NBTR)$ represented in the following graph:

Fig.2. The graphic curve of the series of indicators of the net barter trade rate - Algeria 1980-2020 after removing the instability



Source: prepared by the two researchers using EViews

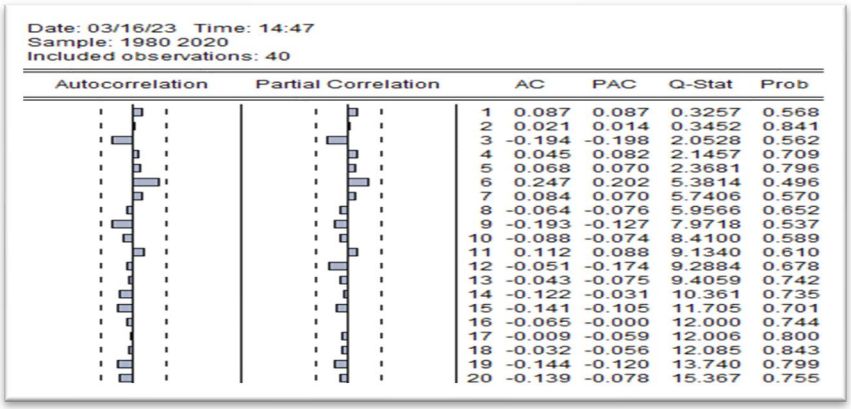
From the above figure, we notice that the curve of the series $D(NBTR)$ oscillates around the value of zero, and this indicates that the series is stable, and we conclude from the result obtained, the series under study in this way tends to a specific model, which is the model of $ARIMA$.

4.1.4 Self-correlation test (ACF) and partial autocorrelation (PACF) series $D(NBTR)$:

It is considered one of the most difficult and important stages in building a time series model, and after identifying the type of model through the stability of the series in the first difference, at this stage the type and rank of the model is recognized through the self-correlation and

partial functions, to see if the model is from $AR(p)$ or $MA(q)$ or $ARIMA(p,d,q)$ any determine each of p,q .

Fig.3: **Autologous and partial correlation functions of a string.**



	AC	PAC	Q-Stat	Prob
1	0.087	0.087	0.3257	0.568
2	0.021	0.014	0.3452	0.841
3	-0.194	-0.198	2.0528	0.562
4	0.045	0.082	2.1457	0.709
5	0.068	0.070	2.3681	0.796
6	0.247	0.202	5.3814	0.496
7	0.084	0.070	5.7406	0.570
8	-0.064	-0.076	5.9566	0.652
9	-0.193	-0.127	7.9718	0.537
10	-0.088	-0.074	8.4100	0.589
11	0.112	0.088	9.1340	0.610
12	-0.051	-0.174	9.2884	0.678
13	-0.043	-0.075	9.4059	0.742
14	-0.122	-0.031	10.361	0.735
15	-0.141	-0.105	11.705	0.701
16	-0.065	-0.000	12.000	0.744
17	-0.009	-0.059	12.006	0.800
18	-0.032	-0.056	12.085	0.843
19	-0.144	-0.120	13.740	0.799
20	-0.139	-0.078	15.367	0.755

Source: prepared by the two researchers using EViews

We can see from Figure (03) above, which represents the autocorrelation function and partial correlation of the series, that the correlation coefficients are significantly equal to zero.

But we have the following models:

$ARIMA(0,1,1), ARIMA(0,1,2), ARIMA(0,1,3), ARIMA(1,1,0), ARIMA(2,1,0), ARIMA(3,1,0)$
$ARIMA(1,1,1), ARIMA(2,1,2), ARIMA(2,1,3), ARIMA(3,1,2), ARIMA(4,1,4), ARIMA(1,1,4)$
$ARIMA(3,1,4), ARIMA(2,1,4), ARIMA(4,1,1), ARIMA(4,1,0), ARIMA(2,1,1), ARIMA(4,1,4)$ It turns out that the best model is ARIMA(4,1,4) because it contains the largest value of the coefficient of determination, while for the two criteria it (AIC, SC) is a close type, and it is the optimal model that expresses the indicators of the net exchange rate of trade by barter - in Algeria. On this basis, we can formulate the model as follows:

$$D(NBTR) = C + AR(1) + AR(2) + AR(3) + AR(4) + MA(1) + MA(2) + MA(3) + MA(4)$$

4.2. Self Estimation Phase

At this stage, we estimate the parameters of the model, after we have determined it by weighting, and the following table summarizes the results of the estimate:

Table 06: ARIMA weighted model estimation results(4,1,4)

Dependent Variable: D(NBTR)
Sample (adjusted): 1985 2020

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.288808	2.333305	2.266660	0.0316
AR(1)	-0.803204	1.065179	-0.754055	0.4573
AR(2)	0.469646	0.830533	0.565475	0.5764
AR(3)	0.420651	0.574414	0.732312	0.4703
AR(4)	-0.093565	0.575447	-0.162595	0.8720
MA(1)	0.885758	1.038162	0.853198	0.4011
MA(2)	-0.629791	0.733113	-0.859063	0.3979
MA(3)	-0.981604	0.818930	-1.198641	0.2411
MA(4)	-0.149923	0.940206	-0.159457	0.8745
R-squared	0.224851	Mean dependent var		-0.221541
Adjusted R-squared	-0.004822	S.D. dependent var		31.03535
S.E. of regression	31.11009	Akaike info criterion		9.925259
Sum squared resid	26131.62	Schwarz criterion		10.32114
Log likelihood	-169.6547	Hannan-Quinn criter.		10.06343
F-statistic	0.979004	Durbin-Watson stat		1.873352
Prob(F-statistic)	0.473125			

Source: prepared by the two researchers using EViews

Through the results described in the above table, we can formulate the estimated form as follows:

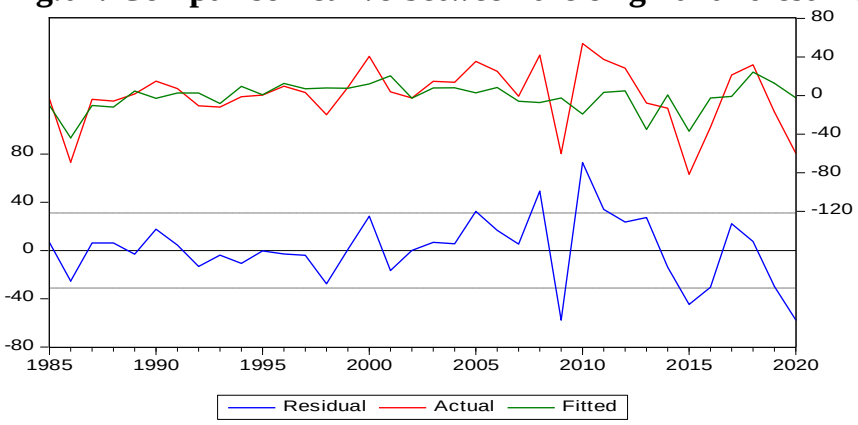
$$D(NBTR) = 5.28880768337 - 0.803203714256\,AR(1) + 0.469645725123\,AR(2) + 0.420650541153\,AR(3)$$
$$-0.0935647421801\,AR(4) + 0.885757895949\,MA(1) - 0.62979082965\,MA(2)$$
$$- 0.981603687067\,MA(3) - 0.149922648236\,MA(4)$$

4.3. Appropriate model diagnosis stage

During this stage, we try to test the degree of suitability of the weighted model, i.e. to ensure that the model is predictable, by testing the parameters of the model, testing the stability of the residual series, as well as tests of normal distribution.

4.3.1.Comparison between the original and estimated strings

Fig.04: Comparison curve between the original and estimated strings D(NBTR).

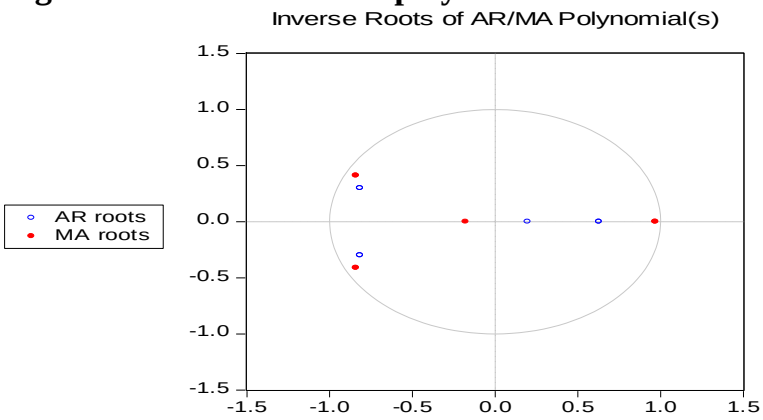


Source: prepared by the two researchers using EViews

Figure (04) reflects the comparison between the original and estimated series, and it is noticeable that there is a kind of correspondence in some years between the original series Actuel and Fitted, while the residual series curve randomly turns on the axis of separations This would give us an idea that there is no self-correlation between the remainders.

4.3.2. Distinctive polynomial root

Fig.05: The characteristic polynomial Root of the ARIMA(4,1,4) model.

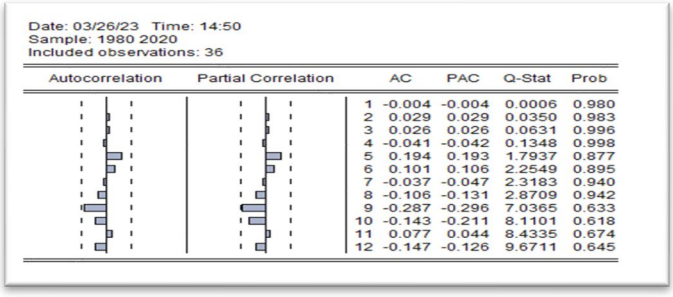


Source: prepared by the two researchers using EViews

What we can see from Figure (05) above is that the root of the model's characteristic polynomial are located within the single circuit, indicating the stability of the ARIMA process (4.1.4).

4.3.3 Residual boxes Series Stability Test

Fig.06: Autologous and partial correlation functions of string Residual boxes



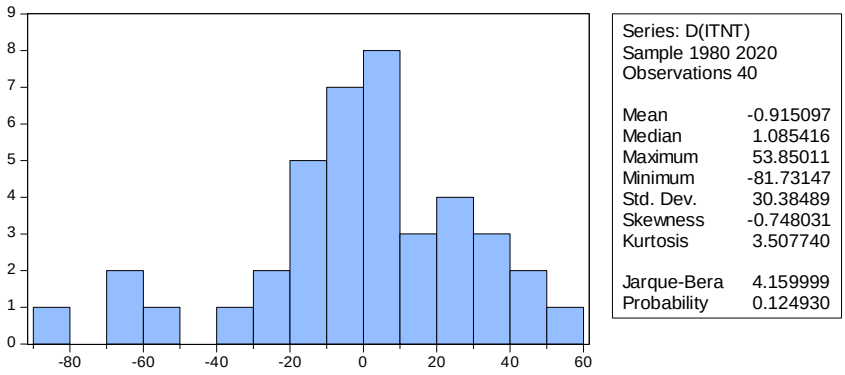
	AC	PAC	Q-Stat	Prob
1	-0.004	-0.004	0.0006	0.980
2	0.029	0.029	0.0350	0.983
3	0.026	0.026	0.0631	0.996
4	-0.041	-0.042	0.1348	0.998
5	0.194	0.193	1.7937	0.877
6	0.101	0.106	2.2549	0.895
7	-0.037	-0.047	2.3183	0.940
8	-0.106	-0.131	2.8709	0.942
9	-0.287	-0.296	7.0365	0.633
10	-0.143	-0.211	8.1101	0.618
11	0.077	0.044	8.4335	0.674
12	-0.147	-0.126	9.6711	0.645

Source: prepared by the two researchers using EViews

Figure 06represents the self-correlation and partial correlation of Residual boxes series for 12 late variables. The figure reflects us that the chain of oblique square is stable, as the self-correlation transactions are mostly within the area of trust $\left[\frac{-1.96}{\sqrt{T}},\frac{+1.96}{\sqrt{T}}\right]$. The probability ratio prob (0.645) is quite greater than, any the presumption of homogeneity of the police variability of errors is acceptable.

4.3.4.Natural Distribution Test For residu:

Fig.07: Natural distribution curve of the residu chain.



Source: prepared by the two researchers using EViews

We can see in the figure (09) above that the series of estimate remains has a normal distribution, which explains this value reflected by the probing statistics (0.124), which is completely higher than $\alpha = 0.05$, confirms exactly The statistical value of Jarque-Bera is completely lower than the value of Khi-Deux.

4.3.5 independence of views test (BDS test)

Table.07: results of the BDS viewer independence test

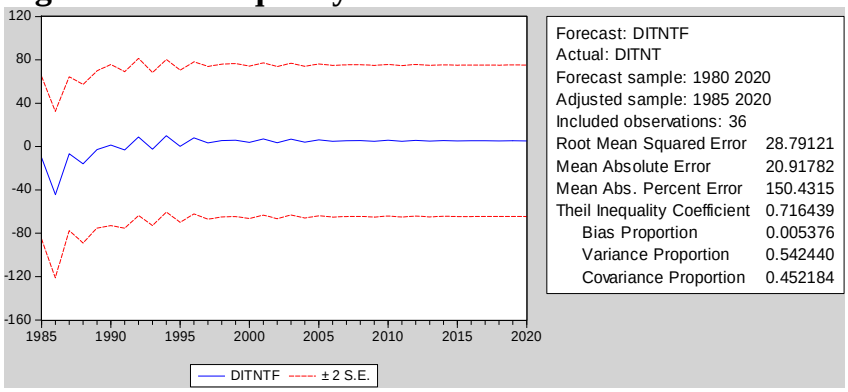
BDS Test for DITNT				
Sample: 1980 2020				
Included observations: 41				
Dimension	**BDS Statistic**	**Std. Error**	**z-Statistic**	**Prob.**
2	0.408802	0.014327	-0.614365	0.0390
3	0.508285	0.023206	0.357035	0.0211
4	0.507053	0.028177	0.250309	0.0023
5	0.313028	0.029956	0.434891	0.0036
6	0.521580	0.029479	0.732036	0.0000

Source: prepared by the two researchers using EViews

We note from Table (05) above that the BDS statistic is higher than the critical value of the normal distribution at a moral level of 5%, i.e. 1.96 for each dimension m=6, from which we reject the hypothesis of independence of the random Walk of the observations, that is to say that there is a linear or non-linear correlation structure between the observations and what is confirmed by the probability values, which are all less than 0.05, from which we can say that the indicators of the net barter-Algeria exchange rate are predictable in the short term.

4.3.6Theil Test (Theil test)

Fig.08: Theil inequality coefficient.



Source: prepared by the two researchers using EViews

From the figure above (10) we can see that the value of Theil is less than the correct one and is closer to zero and therefore it can be said that the model has a good predictability.

4.4 Forecasting Phase :

Having identified the appropriate forecasting model, we now forecast the short-term Algeria net barter rate index for a five-year period, any until the end of 2024.

Table.08.Represents indicators of net exchange rate of barter trade – Algeria 1980-2025 / forecast.

year	Net barter rate indices - Algeria NBTR
2021	56.078
2022	55.136
2023	54.244
2024	53.360
2025	52.530

Source: prepared by the two researchers using EViews

5. Analysis of the results:

The forecast of : Barter trade Net Index-Algeria for the period from 2021 to 2025 reflected the results with the highest rate of 56.0.48 for the year 2021, and the lowest rate of 52.530 in 2025, i.e. with a gap of 3.548, and what was observed through the results of the forecast, there is a decrease in indicators compared to the results of the original series, which has known a development over time, and this is due to several reasons, not limited:

- The political problem of some neighboring countries concerned by this type of trade, such as Libya and Mali;
- Due to the loss of the process of regulating this trade in the required form, which led to the creation of many problems with the entry and exit of goods ;
- The problem of the absence of border control due to its length and the multiplicity of neighboring countries of Algeria, in addition to the spread of the phenomenon of transnational organized crime;

✓ When the activity of this type of traders occurred in an area known as the Sahel region, which is one of the largest areas where many extremist groups are present that hinder the course of trade;

✓ The repeated closure of the borders between Algeria and neighboring countries, in particular with Mali, without prior warning, which causes significant material damage to barter merchants;

✓ This is due to the lack of infrastructure to incubate goods from neighboring countries, in particular formed fruits such as mango, pineapple and others, such as plants for converting and storing these products;

✓ One of the measures taken by the authorities to reduce the list of exported goods is that these goods are produced locally and can help traders develop their activities.

6. Hypothesis testing:

As for the hypothesis that as long as this type of trade is the source of subsistence for the people of the region, barter remains at a constant rate, even in the medium term, this hypothesis was rejected because of what the planned results reflected over the next five years, and this for several reasons mentioned above.

7. CONCLUSION:

Forecasting is an important means for the forecasting process and the development of future programs, and it is also considered among the points of interest of decision-makers, and through this predictive study on the indicators of the net exchange rate of barter trade - Algeria during the period 1980-2025, and relying on the EViews program, where we identified the appropriate models after eliminating the instability of some of them and made them suitable for prediction, because the results reflected to us a decrease in the index in the future compared to previous years, and this indicator takes in the next five years with a semi-constant behavior From 2021 to 2025, this study remains a reference for those who want to continue studying this subject or a similar subject.

8.Bibliography List :

- Yousfi Mohamed, 2018, barter as a tool for the development of border areas in Algeria, Shuaa Journal of Economic Studies, issue 04, September 2018
- Dr. Trobia nadir, 2022, the trans-Saharan route and its role in the activation of border trade barter between Algeria and the African continent, Journal of Economic Integration, Vol.10, issue 02, 2022.
- Dr Bilal boujama, p. Traobia nadir, 2017, commercial barter as a mechanism for activating developing countries' exports and as a sustainable development alternative for their economies-with reference to international experiences -, Journal of Studies in Economics, Commerce and Finance, Vol.06, number 03, 2017.
- Fethi khalef, the creator in the border barter trade in the light of the provisions of the Joint Ministerial Decision dated July 02, 2020, academic journal of legal and Political Research, Vol.6, No. 1, pp. 840-869.
- Ahamad Menaim Ghanem al-Asadi, 2016, commercial barter as a commercial method to cope with financial budget deficits in Iraq, the message of the magistar, EL quadisia, Iraq.

- Espinosa elegeria Rubelli, 2019, old-fashioned barter or modern alternative, master's thesis, Wageningen University, Wageningen, The Netherlands.
- Bourbonnais (2015), Econometrics, Paris: Dunod
- Gérald Baillarbeon, Statistical Probabilities and Regression Technique, SMG editions, Quebec Canada, 1989, pp31-32.
- Time Series Analysis: Forecasting and Control, George E. P. Box, Gwilym M. Jenkins
- Mecherfi Abdulkader, Journal of research in law and political science, border restriction controls, Vol. 7, No. 1, pp. 329-347
- Ben Hadda Yacoub, Organization of barter trade in Algerian law, Academy of social and Humanitarian Studies, Vol.14, No. 5, pp. 258-265.
- Fatih dispute, developed in the border barter trade in the light of the provisions of the Joint Ministerial Decision dated July 02, 2020, academic journal of legal and Political Research, Vol.6, No. 1, pp. 840-869.
- https://data.albankaldawli.org/country/algeria?view=chart.
- https://www.ons.dz/spip.php?rubrique327