Determine the equilibrium Level of The Algerian Dinar Exchange Rate Using The" BEER" For The Period (1980-2018)

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Abstract:

It is necessary to determine the equilibrium level of the exchange rate, several approach have been used to determine it, we based here on the behavior equilibrium exchange rate approach (BEER,) Suggested by Clark et Mac Donald(1997) which is based on main variables modeling that effect the real exchange rate in the long run, to do so we will try to implicate this approach on the Algerian case through the model of Edwards(1989-94) developed and elaborated by Elbadawi (1994) to test and estimate the error correction regression and the cointegration of the equilibrium value of the real exchange rate in Algeria, also we will formulate an estimated series of the real exchange rates in the long run and through the estimated parameters by the co-integration regression we build non equilibrium index.

Keywords: real equilibrium exchange rate, BEER's Approach, Balassa's effect, Stationarity, cointegration, ECM.

Jel Classification Codes: F31

1. Introduction:

Exchange rate policy is one of the most important instruments of macroeconomic policy, as it constitutes, together with other policies, an effective mechanism for the protection of the economy local internal and external shocks, the degree of influence of the exchange rate policy in the economy varies over the stability of the optimal price, which depends on the system of existing exchange, including the latter as a particularly sensitive economic variable, particularly in view of the expanding role of international trade in economic development and the development of markets international money, so this price shows a radically different content and its meaning from other economic variables, as a link loop Between international economies and an important measure of the volume of their transactions, in addition, the exchange rate has a broad impact on the macroeconomic equilibrium, through a relationship direct and indirect economic indicators, consisting mainly of the rate of inflation, the rate of growth and the balance of payments.

The exchange rate adjustment as well as convertibility are found in each adjustment programme, and an optimal exchange-rate level is an important point in the success of the corrective policies taken, as the latter affects all the macroeconomic balances of the economy. In order to consolidate this study and to highlight its scientific position, we have chosen the case of Algeria as a model for study, after a failed experiment under the socialist curriculum that began to experience other with the beginning of the Eighties confirms and bets on the capitalist (Liberal) approach in the treatment of the crises of the Algerian economy, the recession of the oil market, the fall The exchange rate of the dollar in 1986, and the severe political crisis experienced by Algeria in October 1988, has strongly influenced the economic trajectory, resulting in a number of economic problems. It is in this spirit that Algeria has embarked on an attempt to emerge from these problems by adopting a new economic system of a market economy. The adjustment and structural reform of the economy, including a number of measures, include: devaluation of national currency, exchange The objective of this study is to determine the extent to which the exchange rate contributes to internal and external balances. An accurate appreciation of the exchange rate is essential for any state that adopts an external-oriented macroeconomic policy management and, given the imperialist studies in this area, it is clear that Excessive fluctuations in real exchange rates and the mismatch of the nominal value of the official exchange rate and its level of interest will result in an inordinate exchange rate it has any higher than its true value, which results in macroeconomic imbalance with weak economic performance and is the higher rates of Inflation and increased rates of unemployment combined with higher relative prices of exports, thereby reducing the country's competitiveness and thereby worsening the external position and foreign exchange acquisitions, all of which adversely affect the balance-of-payments situation. It is therefore necessary to determine the level of exchange rate, from which several methods have been used to determine the price of the exchange rate and among these approaches approach the real exchange rate BEER and proposed by both Clark et Mac Donald (1997) that are based on economic modeling (variables That affect the real exchange rate in the long term, from which we will try to apply this approach in the case of Algeria. First, we offer the most important concepts and literature for the definition and measurement of the real exchange rate, and then we try to apply the Edwards (1989-94) and developed by (1994) Elbadawi to test and Estimate the regression of error correction and concurrent integration of the value of the real exchange rate in Algeria. Finally, through the estimated transactions of the co integration synchronous integration regression, we are formulating an estimated series of real exchange rates in the long term and thus creating a record number for not Balance (misalignments).

2. Theoretical framework

Empirical studies in emerging economies generally depend on the real exchange rate approach of behavioral behavioral equilibrium exchange rate. "Where you work to estimate the shorthand formula that describes the dynamic behavior of the real exchange rate that depends on some basics imposed on internal and external balance. This methodology allows the limited holdings of the commercial volume chain in emerging economies to be overridden by the constraints used in the Williamson methodology or for each structural model.

2.1 Edwards Model:

By Model Edwards (1989-94), the real exchange rate is defined as the relative price of tradeable goods and non-tradable goods that allow at the same time an internal and external balance, and that the immediate internal and external balances determine the values that are supported by the variables in place Study, such as global exchange rates, trade policies, capital flows.

Edwards[1] (1989-94) developed a model to determine the real exchange rate and the real and monetary factors that contain the real exchange rate in short term, and in the long run only the basics affect the real exchange rate of the twins, that this model has taken into account the impact of some policies Economic such as exchange control, trade barriers, and the existence of parallel markets.... etc.

The Edwards model is based on a simple open economy consisting of three productive sectors: import goods sector (I), tradeable goods Sector (x), and non-tradable goods sector (N), since all of these types of goods are the proceeds of a large number of competitive enterprises, and the three factors of production (Work, wealth, capital), and consumers in this economy consume three types of goods.

Edwards added a bilateral exchange system and the government's potential to fund a cash deposit (introduction to the cash perimeter) in the Edwards command assumes that the government and private sector cannot lend abroad and there is no public debt. The bilateral exchange rate regime is fixed at a nominal exchange rate for commercial transactions (e): Nominal exchange rate (EF) for financial transactions.

This model also assumes the existence of import duties, export price $[P_x^* = 1]$, to free external money installed equal to unity, the expectations of the agents were complete, and of it the Edwards also assumes control over the movement of capital[2].

Edwards assumes that the government, like the private sector, cannot borrow from abroad. Moreover, there is no domestic public debt, and for the sake of clarity, we only provide the relationship between the external sector.

External sector[3]:

$$[1] Nx = X(e_x) - P_M^* . C_M(e_M, nfa) - P_M^* G_M$$

$$[2]\ \Delta RES = Nx_9\ \ \Delta F = 0$$

$$[3] \Delta M = \Delta Cd + e\Delta RES$$

$$[4] RER_t^* = \beta e_M^* + (1 - \beta)e_X = e[\beta P_M^* + (1 - \beta)P_X^*]/P_N$$

[1] Edwards,S,-M.A.Savastano(1994),"Exchange Rates in Emerging Economies: What Do We Know?", NBER Working paper 7228,National Bureau of Economic Research, INC.

[2] Couharde C -Mazier J (2000),"La determination des taux de change d'equilibrefondamentaux":une approche simplifiee", Economieapplique

[3] Aguirre, Alvaro, and César, Calderón(2006), "Real Exchange Rate Misalignments and Economic Performance",Working Papers Central Bank of Chile 316.

that the two equations [1] and [2] summarize the external sector, and the equation [1] The current account is known as the foreign currency concept, where and (e_x)(e_M)are the prices relative to exports and imports for non-tradable goods repre (nfa)sents the net assets of countries with local currency, and the equivalent [2] The balance of payments and are ΔRES defined by the current account Nx for each period measured where there is control over the movement of capital, and the equation [3] points to the linkage between changes in reserves and changes to domestic credit, that the government consumes import and non-negotiable goods To trade, use local taxes and debts to finance expenses, and ultimately the equation [4] is known as Real exchange rate

According to Edwards (1989) The exchange rate of the values given and supported for certain variable and basic numbers such as (taxes, exchange ratios, trade policy, capital flows and technological progress (to study and achieve immediate internal and external balances, depending on the internal balance here To realize the current and foreseeable balance in the domestic market for non-exchange goods, and the external balance rises when the present and future balance of appropriate current account with long-term supported fundamentals, so it's about improving the real exchange rate in the long run. Where the current real exchange rate should be approximating the situation in the place of economic policy (monetary and exchange dimensions) appropriate, and in Edwards (1989) The deviation between the real exchange rate and the level of equilibrium will fade or the imperfections tend to fade slowly, and that economic policy The flexible college is working to recover the real exchange rate towards its level, if a state is experiencing an imbalance in my name devaluation the national currency can accelerate the convergence of the real exchange rate towards the long-term level.

At the imperial level, countries that maintain the real exchange rate near the level of equilibrium have proven to be best performing for the Good subject to adjustmen The Edwards model leads us to a shorthand equation for the long term real exchange rate up to a limit if the following conditions are met:

1- The market for non-tradable goods is in balance.
2- The external sector is in equilibrium (no changes in precautions, as is the case with the current account).
3- The Government's fiscal policy is supported.
4- Balance of financial portfolio investigator.

The real exchange rate that is raised under the terms of the real long-term exchange rate (RER_{LT}^*)

If the form Edwards, which reaches the following results:

$$[5] RER_{LT}^* = \phi\left(p_M^*, \tau, \rho, nfa, g_n\right)$$

This equation shows the value of the real exchange rate in the long term and is related only to the basic this economy means real variables (capital flows(nfa) that take account of the official and parallel exchange rate. Government expenditure(g_n) fee no(τ)n-negotiable commodity prices of foreign exchange trade) in the short term, Monetary variables such as domestic credit also concern the real exchange rate.

Judging from this model the Edwards puts an intuitive number of relationships between the real exchange rate and the basics:

1. To improve the terms of exchange at the very least or not to estimate the real exchange rate.
2. The lifting of customs rights tends to improve the real exchange rate within which the fees for government expenditures for non-exchange goods are raised.
3. Increasing capital flows in a direction that is attracting improvement.

4. Unsupported economic policies are generally combined with the loss of current account deficit reserves because of higher interest rates and an exaggerated real exchange rate (a resident is greater than its real value).

Like all the models defined for the real exchange rate, the Edwards model offers limits such as the existence of absolute expectations, in a consistent way that allows for an explanation of the behavior syntheses of macroeconomic policies that can manufacture the exchange rate for emerging countries, based especially on demand elements where the loss The primary determinant of the real exchange rate defined means that the relative productivity deviation Edwards chooses to resolve this problem by inserting a Balassa effect into the shorthand equation in the real exchange rate in addition to the question of supporting the built-in capital flows in determining the asymptotic exchange rate, these The point may be essential for emerging countries that have received very important inflows of investments.

(1994) Elbadawi proposes to add enhancements to the Edwards Model (1989), from which the Edwards model only ensures that the non-reciprocal goods market is in equilibrium at a given point, and does not take a particular consider the potential evolution of the core, and itself does not display a window that allows the merging of supported and basic values and dynamic behavior For the real exchange rate, a successful modeling of the definition of the real exchange rate is presented as a function of the fundamentals that tend to converge the balance gauge and takes into account the impact of macroeconomic and exchange policies in the medium term on the real exchange rate.

2-2-Elbadawi model:

The approach (1994) Elbadawi is based on an extensive experimental theoretical convergence of the real-time exchange rate, and that (1994) Elbadawi combines this business with the price parameters real exchange of emerging countries in the model of unemployment but, first, the relative inflation rate of capital flows, the limits of exchange. (1994) Elbadawi proves that the conditions proposed by the Edwards in order to obtain a long-term balance may not be realized at some point, and the definition of the real exchange rate proposed by the Edwards does not explain the impact of the expected evolution of the fundamentals principle.

Elbadawi the success of the real exchange rate modeling is suspended by three basic elements:

1. The exchange rate must be determined as a function of the basics.
2. The dynamic of adjusting the real exchange rate to the exchange rate is required.
3. The specificities of the work impact on policies must allow the medium-term economical macro to be the real price.

Based on the Edwards model, Elbadawi developed the following theoretical model:2

$[6] AB = D_G + D_P$

Where AB: Represents the nominal local absorption, DP: Local private expenditures,and D_g: The estimated government spending on political variablesThe ratio shows the gross domestic product (PIB).

$[7] D_G = \delta . Y$

Government expenditures are on the other hand a vehicle to define the non-reciprocal composition of the boundary of the goods, showing a proportion of total government expenditures.

$[8] D_{GN} = \delta_N . D_G = \delta_N . \delta . Y$

Ratios for private sector expenditures for total DPN 1.2 DP and internal variables, function in local export prices (PX), and imports (PM) for non-tradeable goods (PN):

$$D_{PN} = d_{PN}(P_x, P_m, P_N) . E_P = d_{PN}(P_x, P_m, P_N) . [A - (\delta . Y)]$$

that the equations [8] and [9] permit the definition of demand for non-exchange goods as follows:

[9]$D_N = D_{PN} + D_{GN} = d_{PN}(P_x, P_m, P_N).[A - (\delta.Y)] + \propto \delta_N.\delta.Y$

The supply of non-tradable goods is related to gross domestic product (domestic) as well as a function of the sum of three prices:

[10] $O_N = S_{PN}(P_x, P_m, P_N).Y$

The following equation shows the balance conditions in the non-tradable goods market (DN = on

[11] $S_{PN}(P_x, P_m, P_N) = d_{PN}(P_x, P_m, P_N)\left[\dfrac{AB}{Y} - \delta\right] + \delta_N.\delta$

That world prices for exports and imports are denominated in USD px * and PM * and assume that they are external in the case of a small country, however, local prices are related to PX and PM independent of the real exchange rate and trade policies.

If E represents the nominal exchange rate.Yx and PM represents net duties on exports and imports, and local prices for exports and imports are written as follows:

[12]$P_x = E(1 - \gamma_x)P_x^*$

  [13]$P_m = E(1 - \gamma_m)P_m^*$

And the definition of real exchange rate RER:

[14] $RER = P_N/EP_x^{*\tau}P_m^{*(1-\tau)}$

And by combining the terms of the real exchange rate, the RER * is presented as follows:

$RER^* = \Psi\left(\dfrac{AB}{Y}, \gamma_x, \gamma_m, \dfrac{D_{GN}}{D_G}, \dfrac{DG}{Y}\right)$

In the logarithm formula, we get the following equation:

[15] $\log RER^* = \propto_0 + \propto_1 \log(TOT) - \propto_2 \log(OPEN) + \propto_3 \log\left(\dfrac{AB}{Y}\right) + \propto_4 \log\left(\dfrac{GD}{Y}\right) + \propto_5 \log\dfrac{CR.G.D}{G.D}$

Although:

TOT: External exchange rates are known as the following (PX *)/(PM *)

Where: DP private domestic spending (PIB%) F: DG Government $AB = D_G + D_P$ Expenditure (PIB%)

$OPEN = \left(\dfrac{X+M}{PIB}\right)$: Represents the degree of economic openness.

G: General Government expenditure.

$\left(\dfrac{AB}{Y}\right)$: The planned preparations of the PIB.

CR: balance of current balance.

   Elbadawi has been modelling the impact of net capital flows (NFA) with reduced absorption expectations and the reduction prospects are increased by savings and the relative absorption of income decreases$< 0(\log RER_{t+1} - \log RER_t)$

[16] $\dfrac{AB}{Y} = \sigma\left[\dfrac{NFA}{Y}, r^* - \sigma(\log RER_{t+1} - \log RER_t)\right]$

Where:

[17] $\log\left(\dfrac{AB}{Y}\right)_t = \beta_0 + \beta_1\left(\dfrac{NFA}{Y}\right)_t - \beta_2(\log RER_{t+1} - \log RER_t)$

of the equations [16] and [17] The dynamic formula for the real exchange rate can be found as follows:

[18] $\log RER_t - \lambda_t \log RER_{t+1} = \varphi_0 + \varphi_1(TOT)_t - \varphi_2 \log(OPEN)_t + \varphi_3 \log\left(\dfrac{NFA}{Y}\right)_t + \varphi_4 \log\left(\dfrac{G.D}{Y}\right)_t + \varphi_5 \log\left(\dfrac{CR.G.D}{G.D}\right)_t$

Where: :$\lambda = \dfrac{\alpha_3\beta_2}{(1+\alpha_3\beta_2)} < 1$

The fundamentals of the real exchange rate (fund) are as follows:

$$FUND = \left\{\log(TOT), \log(OPEN), \log\left(\dfrac{NFA}{Y}\right), \log\left(\dfrac{D_G}{Y}\right), \log\left(\dfrac{D_{GN}}{D_G}\right)\right\}$$

The real exchange rate of the RER * is the value that fits the equation [18] Taking into account that the basics are defined based on the values supported. We can isolate three implicit relationships to define the real exchange rate:1

The real exchange rate is not a fixed number, and from it all adjustments to variables affecting the internal and external balance of States get the exchange rate real tweezing, and that the real exchange rate path of the affects not only current values and fundamentals but also future values despite There is a potential for internal time between consumption and external debt and between production and investment, and anticipated future events, such as projected changes of global exchange ratios that affect current and foreseeable future values of the real-time exchange rate, and that the factors Cash plays a role in real exchange rate behavior in the short and medium term that the evolution of the monetary issue and pricing them has an impact on the price dynamics exchange and can attract cases where the real exchange rate is far from the long-term value.

3-Estimation of the real exchange rate in Algeria (1980-2018):

In this section we will model the actual value of the real exchange rate in Algeria for the period (2018-1980) according to the methodology of the BEER and rather use model Edwards (1989-94) developed by Elbadawi (1994) Where this approach illustrates the actual value of the real exchange rate as a function in variables Basic in the medium and long term thus, the estimated value of the real exchange rate will be derived by the optimum values of the underlying variables in case of persistence. The index will then be calculated for the real exchange rate mismatch by taking the differences between the estimated values and the actual values of the real exchange rate index number.

3-1- Shorthand formula for real exchange rate:

The equation that describes the value of the real exchange rate in the long term as a function of the underlying variables is as follows:

$$[19] \quad \log \mathbf{RER}_t^* = \beta_0 + \beta_1 \log(\mathbf{TOT})_t + \beta_2 \log(\mathbf{OPEN})_t + \beta_3 \log(TECHP)_t + \beta_4 \log(\mathbf{NFA})_t + \log(\mathbf{GOVC})_t + \mathbf{U}_t$$

The real exchange rate determinants (RER) defined by the literature are the fundamentals of the economy. Applied to a sample of developing countries:

1-Terms of Trade (TOT):

The ratio of the export price index to an indicator on the import index. The improvement in terms of trade is expected to improve the balance of payments that will result in a rise in the real exchange rate.

2- Restrictions on foreign trade and Foreign Exchange (OPEN):

The severity of trade restrictions is measured by the use of a variable of trade openness, and the liberalization of balance-of-payments transactions in the balance of payment results in an increase imports the deficit is thus aggravated by the current balance, which will result in a decline in the real exchange rate.

3- Technical Progress (TECHP):

Measures the impact of "Balassa". Technical progress is resulting in an increase in the productivity of the economy and thus a rise in the real exchange rate.

4- Restrictions on capital flows (NFA):

Liberalization of capital flows can improve or worsen the balance-of-payments capital account based on the gap in interest rates between the local economy and the global economy prior to the liberalization of capital account transactions. If the deregulation of capital flows increases capital flows, then the real exchange rate will rise and vice versa.

5- Government expenditure on tradable goods (GOVC):

The increase in this expenditure is expected to result in an improvement in the balance of payments balance and hence a real exchange rate appreciation.

3.2. Definition and construction of data:

The values of the variables to be studied, which we have taken from the statistics of the International Monetary Fund (IFS) and (WEO), are annual data for the period 1980 to 2018, i.e., the sample size is 38 views. These variables are as follows:

1- Variable actual real exchange rate:

Calculated in consumer price index: Index Numbers (2005 = 100): Periodaverages and our symbol with the symbol (Lrer) after the logarithm is entered, the data is taken from the IMF statistics (CD-ROM-IFS/FMI).

2- Terms of trade:

Used as proxy indicator (proxy variables) for external status and its impact on export earnings and is calculated as the ratio between export price and import price (Px ∕Pm) after entering the logarithm with the symbol L (TOT), data is taken from the statistics (WEO) World economic Outlook.

3- Degree of commercial openness:

It is calculated as OPEN = (X + M /PIB), as the value of exports at current prices is "CIF" for Algeria's total exports, as well as the value of the country's imports at current prices "FOB", and the raw interior output is taken at constant prices, the data is taken from CD-IFS/FMI.

4. Technical progress:

The technological progress element is introduced by using the real growth variable of the crude GDP (LTECHP) which measures the impact of Balassa. Data from Statistics (WEO) World Economic Outlook.

5. Capital flows:

Owing to the absence of an indicator measuring the degree of control of the capital market, the capital flow variable (LNFA), data from the IFS/FMI statistics will be used.

6- Government expenditure on tradable goods:

Which reflects government expenditure directed at consumption for tradable goods and its symbol (LGOVC), data are derived from the IFS/FMI statistics.

3.2. Model estimate:

At first we estimate the general model of the underlying parameters, which shows that the long-term parameter is correctly defined for all the variables in question and this is due to the statistic of the student (t). And we reject the nihilism hypothesis (H_0) at a moral point (1%)

**Table (01): Long-term integration decline for the period 1980-2018**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LTECHP	5.534701	5.150170	1.074664	0.2932
LTOT	-55.91899	48.10093	-1.162534	0.2564
LGOVC	-0.439483	0.116681	-3.766544	0.0009
LNFA	0.716079	0.277417	2.581238	0.0164
LOPENS	-138.2166	188.9141	-0.731637	0.4715
C	416.5795	88.53501	4.705251	0.0001

Source *:eviews 10*

The negative reference to government expenditure for consumption is a result of the Government's policy, as excessive government spending to the appreciation of the real exchange rate, and on the other hand showing the statistical morale of the degree of openness to the outside world that a more economical Open and liberalized should be followed by a decline in the real exchange rate and this is illustrated by the real exchange rate and shown by the mid-eighties (OPEN) shape the graph of the fluctuation of the oil market prevailed, and the depreciation of the dollar in 1986 led to a decline in export earnings between 1985 and 1986 by 56,5%, which has had a negative impact on macroeconomic balances, manifested through budget deficits and cash imbalances as well as balance-of-payments deficits the external indebtedness had worsened, making the country take some action for economic rectification in coordination with the International Monetary Fund, which had been Among its conditions is the liberalization of foreign trade and greater openness to the outside world.

Figure (01): The relationship between the real exchange rate and the degree of openness in Algeria.
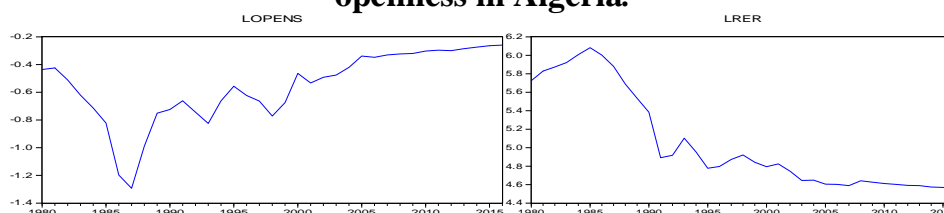
For exchange rates and capital flows, they were also intangible for the real exchange rate.

3.2.1. Testing the mono root of fundamental variables:

One of the prerequisites for simultaneous integration tests is that time series are equally stable, otherwise there can be no concurrent integration between variables, we use here an "ADF" test for a single root.

Table (02): Test stability of Algeria's basic variables during

the period (1980-2018)

Variable	Lag mic	ADF test	prob
LRER	0	-1.218438	0.887712
LTOT	0	-0.713939	0.398754
LOPENS	4	-0.561186	0.862496
LTECHP	2	-1.505538	0.121452
LNFA	0	1.931092	0.999785
LGOV	3	0.915383	0.999874

Source:eviews 10

Note from the above table that the values $(t\varphi_j)$ are greater for all the variables in question than the critical tabular values at all levels (1%), (5% (10%), so we accept the nihilism (H_0), i.e., the existence of a unitary root and therefore not stability these time series for the variables studied and To return it stable we apply the differences.

Table (03): 1différence ADF Test

Variable	Lag Mic	ADF test	prob
ΔLRER	0	-4.236541	0.000000
ΔLTOT	0	-0.635214	0.000000
ΔLOPENS	0	-3.763404	0.000001
ΔLTECHP	0	-6.504820	0.000000
ΔLNFA	0	-6.954935	0.000000
ΔLGOV	0	-19.235241	0.000000

Source:eviews 10.0

An ADF test of the first outbreaks of unstable variables has given values to $(t\varphi_j)$, which is calculated from the critical values tabular at all levels which means rejecting the hypothesis of non-this means that all the variables in place of study are **COI(1)** so the strings are stable.

3.2.2. Long-term relationship assessment:

At this stage we are conducting integration-matching tests that test the existence of a long-term relationship between the basics studied and thus we're going to do two tests first, test the stability or determine and analyze the degree of integrity of the variable (random variant) in a gradient corresponding to the integral Concurrent and second is about conducting a test of the mono root of the interpreted variables.

Table (04): ADF test.

De.coint	Lagmic	ADF test
Coi(0)	0	-6.75680

Source:eviews 10

And from it we reject the nihilism hypothesis that the limit of the collision is stable and complete (0).

Table (05): Test the level of integration between the real actual exchange rate of the dinar and the basics in Algeria

Prob.**	0.05 Critical Value	Trace Statistic	Eigenvalue	Hypothesized No. of CE(s)
0.0000	95.75366	209.0831	0.973772	None *
0.0000	69.81889	110.7785	0.814414	At most 1 *
0.0005	47.85613	65.30414	0.700042	At most 2 *
0.0219	29.79707	32.79308	0.488112	At most 3 *
0.0654	15.49471	14.71252	0.328912	At most 4
0.0470	3.841466	3.943430	0.135888	At most 5 *

Trace test indicates 4 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

The number of delays taken in this test was determined by the use of "Schwarz" and "Aicaike", which we found (3) (P = 3), due to the small size Lof the sample taken. The study will be limited to a moral level (5%), which has five concurrent integration relationships. This means accepting all apparent variables in a regression that corresponds to integration as long-term variables at an acceptable moral level and thus confirms the results on the rejection of the hypothesis (H_0) that there is no simultaneous integration.

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3.2.2.1. estimation of cointerration :

To create relationships for simultaneous integration, we use the "Granger" test, which is considered a test applied to the Bouaki (the proposed equations), so we can extract these relationships as follows:

Table (06): Relationship between real exchange rate and fundamentals in the long term

LRER	LTOT	LOPEN	LTECHP	LNFA	LGOVC
1	-0.91	1.13	-0.19	0.13	-0.17
T – STAT	-12.89	2.72	-2.39	16.53	-2.91

Source:eviews 10

3.2.2.2..Derivation of the error correction model(ECM)of the integration test for Johansson:

The error correction model is an adjustment path that allows for short-term changes in the long-term relationship, and this form is in two forms.

1. Self-regression model (VAR) to correct the error:

Let's have a beam of Yt variables as follows:

[20] $\quad Y_t = Y_t^d + Y_t^a = M + \gamma.t + V^{-1}(L)U_t$

Y_t^d : General trend Vehicle (tendance).

Y_t^a : Random vehicle.

So the model (EC) is in the form of a self-regression beam as follows:

[21] $\quad \nabla Y_t = c - \pi Y_{t-1} + \sum_{i=1}^{p-1} \Phi_i \nabla Y_{t-1} + U_t$

Substitute $\pi\ Y_{t-1} = \beta.Z_{t-1}$:

We get the self-regression model to correct the error:

[22] $\quad \nabla Y_t = c - \beta Z_{t-1} + \sum_{i=1}^{p-1} \Phi_i \nabla Y_{t-1} + U_t$

∇Y_t :Represents a stable relationship.

$C - \beta.Z_{t-1} + \sum_{i=1}^{P-1} \phi_i \nabla Y_{t-1} + U_t$:Represents an unstable relationship, and to be stable the vehicle must be :

Stable. $Z_{t-1} = \alpha\ (Y_{t-1} - \delta\ (t-1))$

Through this result there are three cases:

First case: The ϕ matrix rank is absolute, any level of variable number, variables here are stable around a general direction, so it is sufficient to construct a model for normal variables of the type of a regression beam without resorting to the error correction model.

Case 2: The matrix is equal to zero (0) in this case, you should simply construct a form from a self-regression shape for variable differences.

Case 3: The concurrent integration rank is limited to the full level and the equivalent of zero (0), in this case the ideal model is a model error correction, if the matrix rank is equal to one, the estimation method for this form is the two-stage "Engle-granger" method, and the status The other uses the "Jonansen" method.

2. Model for correcting errors from the shape of moving averages:

From the equation [25] beam The Yt variables divide it into the general direction vehicle and the random vehicle, we write in the form of the first differences as follows:

[23] $\quad (1-L)Y_t = \delta + \psi(L)e_t$

We write the equation [23] in the following manner:

[23]' $\quad Y_t = \mu + \delta\ t + \psi(L)S_t + \psi(L)e_t$

$S_t = \sum_{j=1}^{t} e_j$:Random path BeamMarche aléatoire.''

$\psi(L)$:Represents many limits to delay (L).

μ :Beam constants.

Multiply the equation ' [23] in (B) we get the second shape of the model's moving averages:

$Z_t = \beta.\mu + \beta.\psi(L).S_t + \beta.\psi(L).e_t$

$\beta.\mu + \beta.\psi(L).S_t + \beta.\psi(L).e_t$: Represents a stable relationship.

Z_t :Represents an unstable relationship because the random path beam is unstable.

So we estimate the error correction model as in the following table:

Table (07): Regression error correction (ECM)

T-VALUE	The coefficient	The variables
8.57	0.909	**D(LRER)1**
- 0.76	-0.1362	**D(TOT)**
1.74	0.13	**D(TOT)2**
- 1.1	0.29	**D(OPEN)**
2.17	-0.13	**D(OPEN)2**
-1.03	-0.1841	**D(TECHP)**
1.84	0.5121	**D(GOV)**
-3.14	-0.41	**D(GOV)2**
3.51	0.04	**D(FNA)**
- 1.2	-0.145	**ECM(1)**

The equation [24] that describes the value of the real exchange rate in the long term as a function of the underlying variables to estimate these in Algeria, we are taking the estimated transactions from the long-term decline of simultaneous integration and as defined by the programme as follows:

LRER = 1.37424799984 * LRER(-1) - 0.450219952712 * LRER(-2) + 11.5806429813 + 0.00293847606585 * LGOVC - 0.0195911384565 * LNFA - 39.3453801196 * LOPENS + 4.57666967784 * LTECHP + 7.09289960116 * LTOT.

It will use a moving average of five base periods and then a record of the value of the Algerian dinar. The following figure illustrates the index of actual value of the real exchange rate and the value of the 1980-2018 period.

Figure (02): Difference between real actual exchange rate and value
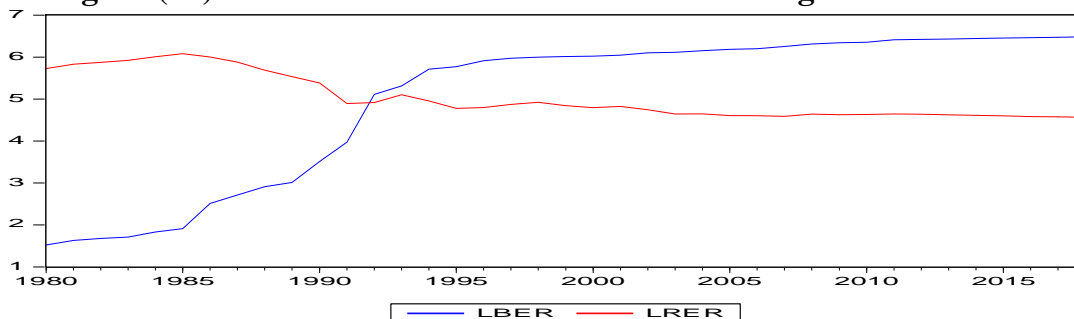
As shown in the graph, the observed real exchange rate mismatch and the exchange rate value of the beer methodology, since the issuance of the national currency in 1964, the exchange rate of the dinar administratively (administrative pricing system), until 1988, was characterized by a stable settlement at this stage, after these The dinar period defines decisive twists, especially in 1991 and 1994, and what can be said that during the period 1971-1990 we conclude that:

1. The official exchange rate of the dinar during this period was valued at a value higher than its real value (administrative pricing), which does not reflect at any moment, domestic and foreign price changes, as the rate of appreciation rose from 32, 85% in 1971 to 60, 67% in 1990.

2. Evolution of the real exchange rate shows that there must be a reduction in the nominal price of the dinar and the rate of reduction rises as the inflation gap between Algeria rises and their trading partners, as the rate of inflation in Algeria had increased more than in partner countries in the 1980s.

3. The exchange rate on the market reflects the reality of the purchasing power of the dinar, as in the parallel market it is determined by supply and demand, it takes into consideration the danger premium, because the exchange control at that time prevents the sale and purchase of hard currency, without the permission of the central bank.

4. Real exchange rate changes depend heavily on two factors, oil export revenues (hard currency supply), and spending or import policy (demand for hard currencies).

The higher the real exchange rate, the greater the hard currency.

The reason for raising the value of the Algerian dinar is due to:

1. The industrialization strategy adopted by Algeria was aimed at keeping the value of the Algerian dinar high in order to allow the manufacturing sector to make its basic income less costly.

2. The national economy was also a planned economy, so the exchange rate was determined by the authorities and not by the supply and demand factors (market forces).

During the period and beginning of 1991, with a growth rate of 17.3% compared to the second hexagon of 1990,With 20, 68%, this translates the gradual sliding of the dinar from 1987 to 1991, where the express reduction in the value of the dinar by 22% for the dollar, and a further devaluation of the dinar in 1994 by 40, 17% in the light of this decision, the dinar exchange rate was 36, 742 Da/$, and after 1995 he knew some sort of Stability until 1998, when it was known to continue rising after the second six-year period of 1998, with a value of 58, 701 Rapid share Da/$, up to 79, 889 rapid share Da/$ During the second hexagon of 2002, after which the value of the dinar against the dollar has been defined downward since 2003, to stabilize during the first six years of 2004, the impact of the international fluctuation of the most important currencies on the national economy was limited by the operation of the Reserve Bank of Algeria and the provision of the necessary conditions to protect our national economy cannot be achieved without a strong and diversified economy, and this does not preclude the assertion that our economy has achieved such a relative exchange thanks to the circumstances , which since 2000 has helped to restructure reserves and generate current-account surpluses, and to provide a hard currency structure corresponding to the external payment structure.

4. Conclusion:

Correcting the exchange rate imbalance is one of the main objectives of macroeconomic policy in emerging countries and a prerequisite for developing economic performance and ensuring economic stability where the exchange rate imbalance in the country in question is described away from the long-term level for the sustainability of the real exchange rate level. It was therefore necessary to determine the level of the exchange rate and then to interpret its course. The determination of the exchange rate depends on how the free exchange rate changes with the changes in the economic situation, thus determining how this situation affects the exchange rate for become indicators of the exchange rate, of which several methods have been used to determine the price of the exchange rate, from which the exchange rates are The real behavioral BEER that is based on the economic situation modeling that affects the real exchange rate in the long run, where we have through this search apply this

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approach to the case of Algeria, which shows that there is a mismatch between the real exchange rate and the exchange rate value of the BEER methodology.

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