Attempts to analyse the relationship between the variation in the exchange rate of the Algerian dinar and the evolution of the foreign trade balance

محاولات تحليل العلاقة بين تباين سعر صرف الدينار الجزائري وتطور الميزان التجاري الخارجي

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Abstract:

The purpose of this article is to analyze and empirically estimate the relationship between the evolution of foreign trade and the variation in the rate of the Algerian exchange rate (compared to its first reference currency, the dollar). Annual data were used, they cover the period from 2000 to 2022. The econometric analysis of the time series was carried out through the practice of the Johanson cointegration test (for verification of the long-term relationship) we also had use of autoregressive modeling (VAR) noted an absence of correlation between short-term variables. The result is the non-existence of a significant relationship between our two variables; this reflects the existence of other factors affecting the variation in the rate of the Algerian dinar, which will need to be investigated.

Keywords: Exchange rate, Foreign trade, Cointegration, VAR model.

Jel Classification Codes : E42, F31, C22, C51.

ملخص

الغرض من هذا المقال هو التحليل والتقدير التجريبي للعلاقة بين تطور التجارة الخارجية والتباين في سعر الصرف الجزائري (مقارنة بعملته المرجعية الأولى، الدولار). تم استخدام البيانات السنوية، وهي تغطي الفترة من 2000 إلى 2022. وتم إجراء التحليل الاقتصادي القياسي للسلاسل الزمنية من خلال ممارسة اختبار جوهانسون للتكامل المشترك (للتحقق من العلاقة طويلة المدى)، كما استخدمنا نمذجة الانحدار الذاتي (VAR) لاحظ عدم وجود علاقة ارتباط بين المتغيرات قصيرة المدى. والنتيجة هي عدم وجود علاقة معنوية بين المتغيرين لدينا؛ وهذا يعكس وجود عوامل أخرى تؤثر على تباين سعر الدينار الجزائري، والتي ستكون بحاجة إلى دراسة.

الكلمات المفتاحية: سعر الصرف، التجارة الخارجية، التكامل المشترك.

تصنيف JEL: E42, F31, C22, C51.

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INTRODUCTON

Since the adoption of the floating exchange rate system in 1973, the variability and uncertainty of exchange rates have been the source of an ongoing debate. it concerns in particular the impact of exchange rate variations on international trade operations.

An overview of the literature allowed us to note that this question has attracted considerable attention from researchers. Indeed, several economists and financial analysts have tried to answer this question: Clark (1973), Ethier (1973), Baron (1976), Hooper et Kohlhag en (1978) Cushman (1983), De Grauwe (1988), Chowdhury (1993), Arize (1995). Although the results appear logical in certain cases, these studies nevertheless support several controversies and consider them selves on the whole to be contradictory, which does not allow us to have a definitive answer as to the existence of a relationship between exchange rate variability and foreign trade.

The model developed by Hooper and Kohlhagen is an export supply and import demand model that incorporates exchange rate risk. De Grauwe (1988) in a longer term perspective concluded that the volatility of real exchange rates is likely to generate protectionist pressures which would reduce the growth of international trade.

The work of Frankel (1986) and Sercu (1988) presents a different approach where Frank proposes a long-term dynamic model (based on optimal control theory) which determines an optimal commercial strategy for the exporter. Risk aversion is excluded.

These different researches and empirical analyses pushed us to develop our article in which an attempt to analyze the relationship of the Algerian exchange rate and the foreign trade balance is presented.

The Algerian exchange system has become a multifaceted and complex phenomenon. The exchange rate regime adopted by the Bank of Algeria is a managed floating regime located between two regimes (fixed parity and floating exchange rate) deviating from the purely administrative fixing of the exchange rate, however with relative flexibility allowing the Bank of Algeria to adjust the exchange rate according to structural and macroeconomic determinants (such as the balance of payments, purchasing power, foreign exchange reserves, the rate interest…), all taking into account changes in the exchange rates of the main currencies on international markets.

Before moving on to our study, a brief history of the evolution of the Algerian trade balance since independence to date will be briefly presented.

1. Evolution of foreign trade since independence up today

1.1. Phase 1962-1970

Towards the mid-1960s, we witnessed a certain stagnation of imports with a low volume of exports. The Algerian State chose the path of planning to achieve its development objectives, it followed a management system administered to foreign trade. This management began with limited state control of commercial exchanges in order to gradually arrive at exclusive state control. From 1963, control procedures were introduced through the establishment of exchange controls, the establishment of a customs tariff and a quota framework for foreign trade, the latter which consists of fixing in advance the quantities of goods to be imported (import quotas) and by import licenses.

Table n°01: EVOLUTION OF ALGERIA'S FOREIGN TRADE. PERIOD: 1963-1973

Values in Million USD

YEARS	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
IMPORT	586	704	672	640	680	816	1010	1259	1228	1491	2241
EXPORT	732	728	642	623	725	831	935	1010	857	1304	1889
TRADE BALANCE	147	24	-30	-17	45	15	-75	-248	-371	-187	-353

Source: report from the General Directorate of Customs "The achievements of Algeria's foreign trade - Period: 1963–2010, National Center for Information and Statistics.

1.2. Phase 1971-1989

In 1971 with the nationalization of hydrocarbons. This nationalization will generate internal and external resources to finance Algeria's economic development programs and the administered management of foreign trade will be organized by public companies; but in reality this system posed difficulties and the State moved to the global import authorization system. Despite this, on the internal level, a situation of tension and shortage of goods and services as well as the reduction of financial resources from 1986 and the external debt crisis following the sudden fall in the price of oil.

This lack of resources forces the authorities to carry out profound reforms of the economic and commercial organization which put it on the path to a market economy.

Tableau n°02 : EVOLUTION DU COMMERCE EXTERIEUR DE L'ALGERIE. PERIODE: 1974-1992

Values in Million USD

YEARS	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
IMPORT	4024	5993	5318	7102	8675	8410	10552	11259	10743	10415	10292
EXPORT	4259	4292	4977	5805	6117	9873	15613	13283	11481	11183	11869
TRADE BALANCE	235	-1702	-341	-1297	-2558	1463	5061	2024	738	768	1577

YEARS	1985	1986	1987	1988	1989
IMPORT	9840	9213	7056	7323	9208
EXPORT	10145	7820	8233	8104	8968
TRADE BALANCE	305	-1393	1177	781	-240

1.3. Liberalization of foreign trade 1990-2009

The first concrete dismantling of the state monopoly on foreign trade and the transition to free trade and financial activity in Algeria was the promulgation of the law on currency and credit in 1990. This law with the law of complementary finance for the same year, authorized the establishment of a network of national and foreign dealers and wholesalers. Subsequently, it was extended to any natural or legal person registered in the Algerian trade register to import goods for resale (executive decree no. 91-37). Then in 1994 a process of liberalization of foreign trade was initiated in Algeria as part of the structural adjustment program (P.A.S).

During the nineties, period (1995-1999), imports of consumer goods and inputs experienced considerable anxiety, which made it possible to generate a surplus in the trade balance.

1.4. From 2009 to the present

Imports of the Algerian economy have continued to grow, they recorded an excessive evolution going from 9.35 billion dollars in 2000 to 59.67 billion dollars in 2014. From 2014, the Algerian authorities imposed strict measures regarding imports in order to rationalize and control imports.

The opening of trade has given rise to the multiplication of a number of participants, particularly import/export companies. For its part, the 2009 finance law in article 69 concerns the obligation to pay for imports by "documentary credit" which must be opened with approved Algerian banks.

In 2015, the overall results obtained in terms of Algeria's foreign trade achievements show a trade balance deficit of -18.08 billion dollars, compared to a quasi-balance recorded during the year 2014 (+0.50) –consequence of the oil shock and the fall in the price of a barrel of oil)

followed by consecutive deficits for the following years. Although this deficit contracted from -18.2 in 2015 to -20.13 in 2016, -13.51 in 2017 and -6.47 in 2018, and falling again after 2018 to -8.49 in 2019 and - 13.5 in 2020; this was justified by the global health crisis of Covid 19 that the world was going through.

Faced with these dramatic situations, the Algerian authorities have taken certain measures to control its foreign trade, including mainly:

- In 2015, the application of the import licensing system was imposed aimed at cleaning up foreign trade and protecting national production. Import licenses are governed in Algeria by Executive Decree No. 15-306 of December 6, 2015.
- Instruction No. 05-2017 of October 22, 2017 sets the specific conditions relating to the domiciliation of import operations of goods intended for resale as is.
- a limitation on the period of validity of importers' trade registers was included through the ruling of November 2, 2017 of the Minister of Commerce for resale as is.
- In 2018, article 116 of the finance law for 2018 modified article 16 of order n°03-04 of July 19, 2003 relating to the general rules of import operations with the aim of reestablishing balance of payments balance;
- A list of 851 products subject to temporary import suspension was published in Executive Decree No. 18-02 of January 7, 2018. We find in particular food products (meat, yogurt, cheese, carrots, eggplant, avocados, strawberries, pasta, etc. as well as household appliances and electronic products).
- For its part, the finance law for 2018 tightened the tax and customs regime.

After eight years of serious imbalances between 2013 and 2021 (macroeconomic difficulties culminating during the health crisis in 2020), and the Covid-19 pandemic which affected Algeria at the start of 2020 like other countries in the world has had a considerable impact on the global economy, Algeria, strongly connected to this economy, particularly through hydrocarbon revenues, is fully experiencing this crisis, hence the urgency of developing adaptation strategies. Its impacts affected almost the majority of productive sectors and produced a deterioration of the various markers of the economy. Indeed, the consequences of the pandemic such as general lockdowns, strict preventive health measures, border closures, and the slowdown or cancellation of investments, and the fall in oil prices have pushed the government to tighten your seatbelt. He therefore decided to reduce the state operating budget by 30%.

Subsequently, in February 2022, the Russian-Ukrainian conflict broke out which upset the global economic balance and caused an energy shortage in the world. The surge in oil and natural gas prices has made Algeria one of the main winners of the energy crisis.

In 2022, Algeria is the leading producer of natural gas in Africa and the seventh in the world.

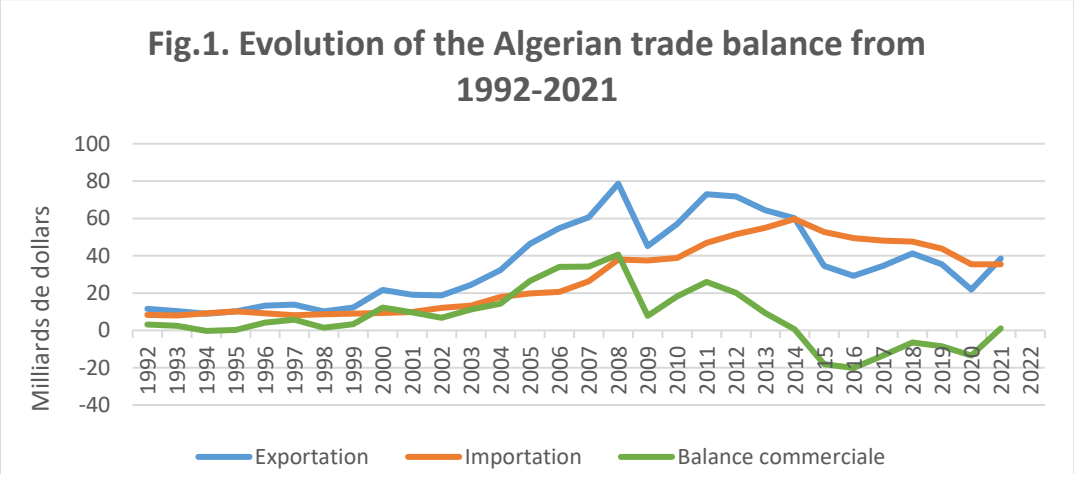
A summary table of the main indicators of the Algerian balance of payments is presented below from 1992 to 2021, followed by a graph representative of the evolution of the Algerian trade balance:

Table n°03: Evolution of the Algerian trade balance from 1992-2021

Value in billions USD

Designation	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Export	11,5	10,41	8,89	10,26	13,22	13,82	10,14	12,32	21,65	19,09
Import	8,3	7,99	9,15	10,1	9,09	8,13	8,63	8,96	9,35	9,84
Trade balance	3,21	2,42	-0,26	0,16	4,13	5,69	1,51	3,36	12,3	9,61
Overall balance	0,23	-0,01	-4,38	-6,31	-2,09	1,16	-1,74	-2,38	7,57	6,19
Designation	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Export	18,72	24,47	32,22	46,33	54,74	60,59	78,59	45,19	57,09	72,89
Import	12,01	13,32	17,95	19,86	20,68	26,35	37,99	37,4	38,89	46,93
Trade balance	6,71	11,14	14,27	26,47	34,06	34,24	40,6	7,78	18,2	25,96
Overall balance	6,35	7,47	9,25	16,94	17,73	29,55	36,99	3,86	15,33	20,06
Designation	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
Export	71,74	64,38	60,12	34,56	29,3	34,57	41,16	35,31	21,92	38,55
Import	51,57	54,99	59,67	52,65	49,44	48,08	47,59	43,8	35,42	37,4
Trade balance	20,17	9,38	0,5	-18,08	-20,13	-13,51	-6,47	-8,49	-13,5	1,15
Overall balance	12,06	0,13	-5,88	-27,54	-26,03	-21,76	-15,82	-16,92	16,37	1,48

Source: personal design based on values published by the Bank of Algeria. https://www.bank-of-algeria.dz/



Source: Established by us based on several reports from the Bank of Algeria

2. Impact of the trade balance on the exchange rate

The table N° 4 (below) details the evolution of the trade balance and the evolution of the USD/DZD and EUR/DZD prices over the period from 2000 to 2022.

YEARS	AVERAGE ANNUAL RATES USD/DZD	ANNUAL CHANGE USD/DZD RATE	COMMERCIAL BALANCE
2000	75,31	-	12,30
2001	77,27	**-1,96**	9,61
2002	79,69	**-2,42**	6,71
2003	77,37	**2,32**	11,14
2004	72,06	**5,31**	14,27
2005	73,36	**-1,30**	26,47
2006	72,64	**0,72**	34,06
2007	69,36	**3,28**	30,54
2008	64,59	**4,77**	40,60
2009	72,64	**-8,05**	7,78
2010	74,40	**-1,76**	18,20
2011	72,85	**1,55**	25,96
2012	77,55	**-4,70**	20,17
2013	79,38	**-1,83**	9,38
2014	80,56	**-1,18**	0,50
2015	100,46	**-19,90**	-18,08
2016	109,47	**-9,01**	-20,13
2017	110,96	**-1,49**	-13,51
2018	116,61	**-5,65**	-7,46
2019	119,36	**-2,75**	-8,49
2020	126,82	**-7,46**	-13,50
2021	135,17	**-8,35**	1,15
2022	142,00	**-6,83**	18,10

Value in billions USD

Source: Personal design following the collection of data from the annual reports of the Bank of Algeria.

As was cited at the beginning of this document, the relationship between the trade balance (foreign trade) has been the subject of numerous studies and analyses in order to decide the nature of the relationship which links us two economic variables. The fundamental question that arises is:

Is there a correlation relationship between the exchange rate and the trade balance?

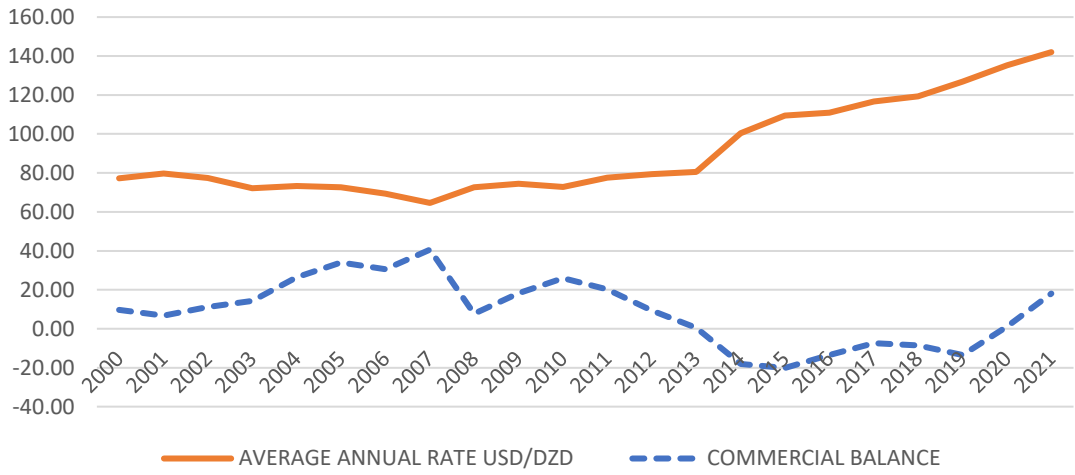
To address this issue, we put forward the following hypotheses:

H1: there is a significant relationship between the balance of trade and the variation in the exchange rate of the Algerian dinar.

H2: any variation in the exchange rate affects the balance of the trade balance and vice versa

In order to verify the content of our hypotheses, we chose an econometric approach where our research parameters are detailed in table no. 4 (namely the balance of the trade balance and the USD/DZD exchange rates) over the period 2000- 2022. Our data comes from reports published annually by the Bank of Algeria.

Fig.2. Impact of the trade balance on the exchange rate



Source: Established by us based on several reports from the Bank of Algeria

Our processing methodology is purely econometric, since our variables are time series. Firstly, an analysis of the stationarity of the variables is verified through the Dickey-Fuller test (ADF). Following this, and in a second point our series are subjected to the Johanson cointegration test in order to verify the existence of a relationship between our long-term variables.

- **Estimation and analysis of results:**

The stationarity test confirms the non-stationarity of our time series and the existence of a unit root (for the three models), the results are detailed in table no. 5 presented below:

Table no. 5: Results of the Time Series Stationarity test (ADF)

	Variables	T-stat	Critical value at 5%	P-Value
In level	**Balance trade**			
	Model (3)	-1,587	-3,632	0,764
	Model (2)	-1,539	-3,004	0,495
	Model (1)	-1,335	-1,95	0,1629
	Cours USD/DZD			
	Model (3)	-0,701	-3,632	0,960
	Model (2)	1,786	-3,004	0,999
	Model (1)	2,977	-1,958	0,998

Model (3) = model with trend and constat

Model (2) = model with constant

Model (3) = None = model without trend and constant

Source: results obtained from Eviews 13

Then we chose the most significant model of the three models of the Dickey-Fuller test using the sequential strategy method; which is the model (None=without trend and without constant) this means and confirms that our series are stochastic series which correspond to a random walk (PURE RANDOM WALK).

Before checking the existence of a relationship between our long-term variables using the Johanson cointegration test; our series were subject to a first difference correction using the Akaike and Hannan Quinn criterion (see table no. 6)

Table no. 6: Results of the Time Series Stationarity (ADF) test in first difference

	Variables	T-stat	Critical value at 5%	P-Value
In 1st difference	**Balance trade**			
	Modèle (1)	-4,236	-1,598	
	Cours USD/DZD			
	Model (1)	-2,63	1,958	

The selection of the delay for the estimation of the model is of order 1 and this is verified by all the criteria (see results below obtained from Eviews 13).

VAR Lag Order Selection Criteria
Endogenous variables: BC USD
Exogenous variables: C
Date: 09/13/23 Time: 12:35
Sample: 2000 2022
Included observations: 22

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-188.5794	NA	114664.7	17.32540	17.42458	17.34876
1	-143.5739	77.73669*	2766.375*	13.59763*	13.89518*	13.66772*

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

Source: results obtained from Eviews 13.

- **The Johanson cointegration test** reveals the following results:

Johansen Cointegration Test

Sample: 2000 2022
Included observations: 23
Lags interval (in first differences): 1 to 1
Endogenous variables: BC USD
Deterministic assumptions: Case 2: Cointegrating relationship includes a constant

Rank Tests

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.** Critical Value
None	0.406009	12.00914	20.26184	0.4480
At most 1	0.049695	1.070421	9.164546	0.9422

Trace test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Max-eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.** Critical Value
None	0.406009	10.93872	15.89210	0.2564
At most 1	0.049695	1.070421	9.164546	0.9422

Max-eigenvalue test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source : results obtained from Eviews 13.

The results obtained affirm that there is no cointegration relationship between the trade balance and the price of the dinar compared to its first reference currency the US dollar in the long term. Based on these results, our next step is the analysis using the VAR model with the objective of modeling the dynamic causal relationships that can exist between our variables, their meaning and their temporality.

• **Estimation of the Vector auto-regressive VAR model**

Standard errors in ( ) & t-statistics in [ ]

	DBC	DUSD
DBC(-1)	-0.004598 (0.35244) [-0.01305]	-0.162770 (0.16470) [-0.98825]
DBC(-2)	0.023360 (0.28827) [0.08104]	-0.091687 (0.13472) [-0.68058]
DUSD(-1)	0.288182 (0.72850) [0.39558]	0.960350 (0.34045) [2.82081]
DUSD(-2)	-0.105766 (0.84867) [-0.12463]	0.165085 (0.39661) [0.41624]
C	-15.99180 (15.4854) [-1.03270]	-7.790660 (7.23680) [-1.07653]

Source: results obtained from Eviews 13.

According to the VAR model we deduce that:

- Past values of the trade balance have no impact on the variation of the USD/DZD price and do not explain it.
- Past values of the USD/DZD rate have, in turn, no significance on the trade balance and there is no impact of the variation in the USD/DZD rate on the trade balance.
- However, any variation in the USD/DZD price explains its value after a difference of one year.

We conclude that: the exchange rate is only affected by itself delayed by one period.

The fact that the balance of trade has no impact on the variation in the exchange rate and vice versa, can be explained by state interventionism on the exchange rate in order to follow the economic situation.

Which allows us to argue that in Algeria, the determinants of the exchange rate only play an abstract role as long as the formal exchange rate of the dinar does not reflect economic reality.

According to the models of Kouri (1976), Calvo and Rodriguez (1977) Branson and Henderson (1985) Bleuze and Sterdynaik (1988), State intervention aims to control the money supply through its monetary policy, while contemporary practices instead consist of fixing interest rates (PTI) or purchasing power parity (PPP).

Obstefeld and Rogoff (1995) demonstrated that the increase in the money supply on the market leads to a nominal depreciation.

Another analysis was made by Algerian economist Boucheta Yahia confirms that external debt has a significant and positive effect on the real exchange rate in the long term.

The Algerian trade balance can impact the exchange rate via hydrocarbon revenues; however, the latter are subject to convertibility restrictions and are intended to fund foreign exchange reserve accounts.

As a general rule, official foreign exchange reserves are held with the aim of achieving a series of objectives of which we cite mainly: limiting external vulnerability by maintaining liquid foreign exchange reserves in order to absorb shocks in times of crisis.

Compared to the Algerian case, the exchange rate is a very sensitive variable and it is increasingly difficult to establish a diagnosis on the determinants of the exchange rate. In this context, knowing the most important economic variables affect the Algerian dinar exchange rate is of crucial importance. Indeed, Algeria has experienced difficulties in its external and macroeconomic balances; this is a result of several factors; high interest rates on international markets, price volatility, low production and over issuance of money on the markets.

During the 2000s, the good performance of the fundamentals of the national economy, and the positive result of the trade balance made it possible to stabilize the real effective exchange rate at its fundamental equilibrium level of the year 2003. Indeed, Algeria has experienced macroeconomic stabilization since the 2000s, the economic situation has completely changed under the lasting effect of the favorable evolution of hydrocarbon prices. Thus, it implemented three successive five-year public investment plans (to which colossal budgets were injected). These are supposed to promote economic growth and price stability. During this period, the Bank of Algeria took measures to strengthen control of excess liquidity in the money market (which are the result of revenues derived from the export of hydrocarbons) through indirect policy instruments. monetary.

A progressive appreciation of the dinar against the dollar was recorded from 2002 to 2008; the price increasing from 79.7 dinars per dollar on average in 2002 to 64.6 dinars per dollar on average in 2008, an appreciation of 23.4% over the period.

During this same period, Algeria completed the early repayment of all of its rescheduled debt. Indeed, agreements have been signed on the early repayment of debts in particular with Poland, Saudi Arabia, Turkey, India, Slovenia and Portugal, according to the local press. With its public creditors from the Paris Club, Algeria closed the entire early repayment process in mid-November 2007 for a total amount of 7.75 billion dollars. It also prepaid its rescheduled debt with the London Club in September 2007 for an amount of $800 million. Outstanding external debt fell from more than $33 billion in 1996 to less than $4.5 billion in 2007.

Table n°6 : Evolution of Algerian External Debt in (US$ billions) from the Year 2000 to the Year 2021

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2018	2019	2020	2021
Amount of debt (in US$ billions)	25,5	22.7	22,9	23,6	22,3	17,3	6,02	5.91	6,04	5,79	5,8	4,44	3,99	3,83	3,44	3,07

Source: Bank of Algeria December 2021

During 2009, the fundamentals of the national economy experienced a sharp deterioration, in the wake of the international economic and financial crisis. Oil prices thus fell by 37.7%, from nearly $100 per barrel in 2008 to $62.3 per barrel in 2009, leading to a sharp drop in hydrocarbon export revenues, causing a drop in the trade balance surplus from 40.6 billion dollars in 2008 to 7.78 billion dollars in 2009. These developments led to a depreciation of the dinar against the dollar.

From the second half of 2014, the collapse of the oil price was accompanied, in 2015, by an external current account deficit of 16.4% of GDP and a budget deficit of 15.3% of GDP. Recording in 2015, a deficit equal to -18.08 billion dollars. This sharp deterioration of one of the main fundamentals of the national economy, in the context of unfavourable inflation and productivity differentials and the need to maintain public spending at a high level, to support growth and employment, has led to a depreciation of the dinar, on an annual average, of 19.9% against the dollar and 4.54% against the euro between 2014 and 2015, taking into account the evolution of exchange rates between these two currencies on international markets. Thus, faced with the large-scale and lasting external shock, the dinar exchange rate played, to a large extent, its role as a shock absorber, in the absence of budgetary consolidation. This made it possible to contain the strong deviation of the REER from its equilibrium level, induced by the substantial

deterioration of fundamentals and to contribute to limiting the impact of the external shock on macroeconomic stability, in the medium term.

Even if many attribute the depreciation of the dinar to the printing policy adopted in 2017 to deal with the liquidity crisis, other experts do not share this analysis, among them, professor Raouf Boucekkine, who believes his side that the inflationary trend is "a phenomenon fueled by imported inflation due to the fact that the prices of raw materials and food products have experienced major growth".

The doctor of finance, Nemouchi Farouk, declares that "the government was advised to depreciate the currency to cope with the shrinking money supply as well as the budget deficit, but also, to preserve the level of foreign exchange reserves".

In 2020, With the price of a barrel of oil twice lower than expected and a world economy paralyzed by Covid-19, Algeria, very dependent on hydrocarbon exports, will go through a strong zone of turbulence. The government will inevitably have to draw on its foreign exchange reserves. Remember that foreign exchange reserves increased from less than 5 billion dollars in 1999 to more than 110.18 billion dollars in 2007.

Following the dizzying fall in oil prices, foreign exchange reserves fell from $193 billion in May 2014 to $105 billion in July 2017. In April 2019, they were estimated at $72 billion then, at the beginning 2020, at $62 billion; they are estimated at nearly 43 billion at the start of 2021. Finally, in December 2022, Mr. Salah Eddine Taleb, the governor of the Bank of Algeria, specified that "foreign exchange reserves currently exceed 60 billion USD, or nearly a year and a half of imports of goods and services".

the governor of the bank of Algeria affirmed that the Algerian banking system has shown "great flexibility" despite a difficult international situation, particularly marked by the Covid-19 pandemic and the 2014 oil crisis.

The year 2022 presented a "new challenge" in terms of controlling inflation as a global phenomenon, with the Central Bank having focused on adopting a "pragmatic" monetary policy, notably the exchange rate, as a mechanism to mitigate imported inflation and preserve the purchasing power of the citizen in light of the first balance of payments surplus since 2014.

Conclusion

Our analysis and study is based on verifying the existence of a relationship between the exchange rate and foreign trade. For this we performed the Johanson cointegration test (to study

the possibility of the existence of a long-term relationship), we also undertook auto-regressive modeling on the variables retained from 2000 to 2022.

The results of the estimation of our VAR model, in turn, stipulate that in the short term the USD/DZD exchange rate does not affect the trade balance and that for its part the trade balance does not impact the USD/DZD exchange rate. From this we deduce that this is only the consequence of state interventionism with the aim of protecting its economic situation, in particular the internal and external stability of the national currency, precisely in periods of economic shocks and crises. This can be justified by the fact that Algeria is a rentier economy (since these hydrocarbon exports are equivalent to around 90%) and that its production and exports excluding hydrocarbons remain discreet.

Adding to this, the fact that revenues from the export of hydrocarbons create a liquidity management problem at the level of public banks. Where excess liquidity must be intended to finance the economy in order to improve economic growth while controlling the money supply in circulation knowing that the latter is strongly correlated with inflation (which constitutes one of the determinants of the rate of exchange).

Which allows us to argue that in Algeria, the determinants of the exchange rate only play an abstract role as long as the formal exchange rate of the dinar does not reflect economic reality.

Finally, we conclude that the study and analysis of the determinants of the Algerian exchange rate remains increasingly complex, particularly in these increasingly complex and turbulent economic and political contexts experienced by the world economy in general and the Algerian economy especially.

Bibliography List :

Journal Article :

Denis Bélanger et Sylvia Gutiérrez. (1990). Impact de la variabilité des taux de change sur le commerce international : un survol critique de la littérature. Volume 66, N°1, 65-83.

Hooper, P. and Kohlhagen. S.W. (1978). The Effect of Exchange Rate Uncertainty on the Prices and Volume of International Trade. Journal of International Economics, 8, 483-511.

University of El Oued, Algérie, volume 06, Numéro 01, juin 2023, 1341-1360.

Mohamed KENNICHE, Farouk TCHAM. (2022). Estimation de la relation de cointégration entre le taux de change parallèle et officiel du dinar algérien, Revue Algérienne d'économie et de gestion. University of Oran2, Algeria, volume 16, N°01, 288-304.

Paul R.Krugman. (1978). Purchasing Power parity and Exchange Rates: Another look at the Evidence », Journal of International Economics, 379-407.

Rabah RENNANE, Habib BENBAYER. (2023). Le régime de change en vigueur en Algérie : une expérience d'une cinquantaine d'années. Revue Afak Ilmia, Volume 15, Numéro 02, 2023, 33-52.

Rogoff Krugman. (1996), The purchasing Power parity puzzle, Journal of Economics Literature, vol XXXIV, 647-668.

Wassila IGUERGAZIZ, Yamina BOULIFA. (2023), Evolution of Algerian trade policy since independence and the impact of oil prices on the balance trade. EL-Manhel Economique.

Ziad M hamed et MOUTASSEM Dahou. (2021). Taux de change et commerce extérieur en Algérie : Essaie d'estimation. Les cahiers du MECAS, volume 17, N°4, 2021, 215-226.

Zidat Rafika, Amina Nassira (2021). Les déterminants du taux de change en Algérie : approche économétrique. Journal of contemporary Business and Economic Studies, Volume 04, N°2.