

The Algerian Exchange Rate System: a Cointegration Analysis

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Abstract—Based on the theoretical background given in the previous chapter, we try in this chapter to study the exchange rate policy in Algeria by using a cointegration analysis. Unfortunately, we are not going to test the Efficient Markets Hypothesis of the Algerian Dinar. This is simply due to the lack of forward exchange rates. Nevertheless, we are going to look for other aspects of exchange rate in Algeria, mainly the parallel exchange rate. Thus the first part of this chapter examines the situation of exchange rate in Algeria by giving an historical review. Secondly, we will define the main factors behind the development of the parallel exchange rate market that lead to a situation of misalignment. Then, in the third part of this chapter, we show that the Algerian parallel exchange rate is more efficient than the official rate using a purchasing power parity approach. Section 4 gives the implications and recommendations. Evidence shows that authorities should take into account information provided by the parallel exchange rates in deciding the level of the appropriate official exchange rate.

Key Words— Algerian Dinar, Official Exchange rate, Parallel Exchange Rate, cointegration

I. INTRODUCTION

The breakdown of the Bretton Woods system of pegged exchange rates has since 1971 given developing countries a wider range of choices with regard to their exchange rate regimes that had previously existed. With the emergence of a variety of exchange rate regimes, increasing attention has been given to the rationale for choosing one type of regime over another and how variations in the nominal or real exchange rate affect the economies of these countries.

The issue of the choice of exchange rate regime has been an area of debate in international economics already in many years. In particular, with quest for high economic growth, developing countries have been interested to know whether to fix or float their exchange rate. In this regard, a number of economic factors have been found to determine the choice of exchange rate regime in these countries. Empirical studies has not yet been conclusive as to what really are the factors that determine the adoption of exchange rate regimes in developing countries. Some authors tried to explain the adoption of exchange rate systems in developing countries from a social point of view, by 'learning from neighbors' (Khamfuka, 1999). Quite amazing and puzzling is the tendency of some exchange rate regimes within a geographical region. For instance, by 1995 there had been a remarkable diffusion of managed float Asian developing countries, an independent float in Central

America and a crawling peg in South America, (IMF statistics). Does this tendency to adopt a similar type of exchange rate regime over time has anything to do with learning among regional neighbours?

In the case of the Algerian system, however, the answer could only be negative as far as the above 'learning from neighbours' doctrine is concerned. In fact, Algeria experienced different exchange rate systems, since 1962, that are totally different from those of neighbours. This is due probably to the different political system compared to other North African countries.

Another feature of the exchange rate regimes in the developing countries is the co-existence of a parallel or black market along with the official market for foreign exchange. This is the case of the Algerian exchange rate system. Several factors are responsible for the emergence of the black market for foreign currency. In the literature some of the factors mentioned are; overvaluation of the currency, foreign exchange control, capital control, and trade restrictions (Agenor, 1992). In this literature on black market exchange rate, however, there are no discussions about whether these markets are efficient or not.

One of the factors that is responsible for the existence of black exchange rates is the overvaluation of the national currency. This situation is known as the misalignment of the exchange rate.

In chapter we try to investigate in the factors that are behind the development of the black market for foreign exchange that has led to a situation of misalignment. Then, in the next part of this chapter, we show that the Algerian parallel exchange rate is more efficient than the official rate using a purchasing power parity approach. Evidence shows that authorities should take into account information provided by the parallel exchange rates in deciding the level of the appropriate official exchange rate.

Considerations are first given to an overview of the Algerian exchange rate policy.

II. THE ALGERIAN EXCHANGE RATE POLICY

The objective of any exchange rate policy is the determination of the exchange rate of the national currency. The exchange rate is the price to which a national currency can be exchanged against another. The exchange rate that is frequently used is the bilateral rate which is listed by discount brokers in exchange rate markets or published by a financial newspaper. The bilateral exchange rate of the Dinar / US Dollar which was 94 dinars to 1 US Dollar in 1974, has exceeded the value of 70 Dinars in 2000 and attended more than 83 Dinars in 2002.

To evaluate a currency on the foreign exchange market, by studying one or more bilateral exchange rates, can be misleading same manner as to consider the general price level by considering only the prices of one or several baskets of products. Just like any price index, the bilateral exchange rate of a particular currency can be combined in various ways In order to build an index of an effective exchange rate.

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Before discussing the various theoretical approaches concerning the measurement of the exchange rate, we initially try to expose, briefly, different time periods of the Algerian exchange rate policy.

The policies instituting the regulations of the national currency knew four principal phases:

From 1962 to 1970:

After independence, Algeria was attached to the Franc zone. The currency was freely convertible and transferable. Unfortunately, and facing the risks generated by the massive capital flight and with the balance of payments disequilibria, the monetary authority instituted in 1963 exchange controls on all the operations with the rest of the world. This change was accompanied by various actions aiming at controlling the foreign trade; we can quote: the quotas system, the creation of the national office of trade, the control of all export and import operations.

These restrictions were followed in April 1964 by the creation of the national monetary unit, the ‘Algerian Dinar’, with a fixed value of 180 Mg of fine gold. Thus the Algerian Dinar (DA) replaced the new Franc (NF) at the parity of 1DA = 1NF.

For political reasons, Algeria decided to peg the value of its currency to a basket of currencies chosen according to its principal trade partners. The value of the Dinar is determined administratively according to the variations of the currencies composing the basket. The course of each currency is affected of a weighting coefficient giving the importance of the foreign trade expressed in the same currency.

The advantage of pegging the Dinar to a basket of currencies is to enable the stability of the effective nominal exchange rate, but urges a variability of bilateral rates relatively to the currencies that compose the basket. This will increase the exchange rate risk for the decision makers.

From 1971 to 1988 :

This stage is characterized by the application of a new management system for public enterprises, particularly with the Socialist Management of Enterprises (Gestion Socialiste des Entreprises), the General Statute of the Workers (Statut Général des Travailleurs) and the launching of the economic development plans. The objective being to stimulate the productive investment and to facilitate the of foreign trade operations. Many legal texts came to regulate the investment.

This period is marked by the total monopoly of the state on the economy. All the operations of production and marketing are entrusted to the offices of the state. The legal texts laid down the methods of access to the exchange market.

All the imports registered within the framework of the monopoly are subjected to what is called the GAI (Global Authorization of Importation); And ny product not appearing in this framework requires a license of importation

The public and private enterprises cannot profit from the retrocession of the hard currencies generated by their activities with the rest of the world, except for the mixed investment companies whose amount of retrocession is fixed at 20%.

Thus since 1974 the access controls to the exchange market accompanied by policies of fixing of quotas of the imports gave rise to the parallel exchange market (parallel market, unofficial market or black market for foreign

exchange). The table (8.1) shows the evolution of the Algerian Dinar in the official and parallel exchange market.

Table (1):

Official exchange and parallel rates in Algeria

	1970	1974	1977	1980	1987
Official market	1.0	1.0	1.3	0.62	0.80
Parallel market	1.0	1.1	1.5	2.0	4.0

Source: Henni, A. *Essai sur l'économie parallèle*. Ed. Enag 1991

From 1988 to 1994 :

The events which shook Algeria in 1988, gave rise to an incipient rupture with the mode of socialist management.

Thus new reforms in economic and legal matter came to give a new breath to the Algerian economy, among which it is necessary to quote: the law on the autonomy of the enterprises (1988), the law on the currency and the credit (1990), the law on the prices.

The objective of these new reforms was to break with the monopoly of the State on the foreign trade, to rehabilitate the private enterprises, to gradually offer an autonomy of management to the public companies so they could operate a good transition to the market economy, finally to ensure the autonomy of the Central Bank with regard to the Treasury.

The reforms recommend that the private enterprises can enter the official exchange market via the commercial chamber, the launching of a partial convertibility (current account) since 1991, and the realization of a total convertibility in 1993.

From 1994 to date :

The access to the official exchange market is made possible by the IMF to all the economic operators (public or private) after the signature by Algeria in 1994 of a first agreement concerning rescheduling of part of its debt.

2 the origin of the Parallel Exchange market

The unofficial or parallel exchange market exists in the majority of developing countries. In some cases governments respond to balance of payments crisis by creating a legal parallel (or dual) foreign exchange market for financial transactions. The objective is to limit the short-term effects of a depreciation of the exchange rate on domestic prices while maintaining some degree of control over capital outflows and international reserves. In other cases, extensive controls on foreign exchange restrict access to official markets and lead to the emergence of an illegal parallel market. The illegal market then grows in importance as authorities respond to a deteriorating balance of payments by tightening and extending controls rather than reducing aggregate spending or devaluing the official exchange rate, or both (Kiguel and O'Connell, 1995). Clearly this is the case of the Algerian Dinar parallel market.

The causes which govern the emergence of this type of money market are similar for all the countries. For instance, the imposition of restrictions in the exchanges with rest of the world, the control of the capital movements with the rest of the world, the fixing of imports quotas and prohibition to import certain products, the inflation which the

majority of developing countries knows and where the foreign currency is regarded as a blue-chip stock.

These are the causes which gave rise to the parallel exchange market of the Algerian Dinar. This market is considered as a free market, and the price of the foreign currency is determined by the traditional practice of supply and demand. Contrary to the official exchange market, the parallel market is attached to only one currency: the French Franc. Nowadays, it is attached to the Euro for a parallel value of 107 DA/Euro compared to the official value of 86 DA/Euro.

A market is always constituted by supply and demand of unspecified goods. As far as the parallel exchange market is concerned, the restrictions imposed by the exchange rate policy, generated a demand for means of payment which is explained by the demand side by: capital transfers, invisible payments, some illegal imports (especially of consumption); and in the supply side by: transfers of the immigrants, imports invoicing, smuggling (trabendo), and the contribution of the foreign tourists.

The table (2) shows the evolution of the official exchange and parallel for the period 1970 – 1996.

Table (2):

Evolution of the parity of the Dinar compared to the F.F in the official and parallel exchange markets.

Year	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	
official rate	1	1.1	1.3	0.62	0.61	0.71	0.8	1.2	1.5	1.8	3.75	4.36	4.2	10.5	11	11												
parallel rate	1	1.4	1.5	2	3	4	4	5	6	6.8	7	9.5	10	12.5	13	14	2	2	3.1									
Level of the rebate	0	0.3	0.2	1.38	2.39	4.29	3.2	3.8	4.5	5	3.25	5.14	5.8	2	2	3.1												
Variations of the parallel rate	100	110	150	200	300	400	400	500	600	680	700	950	1000	1250	1300	1420												
Rate of inflation	-	-	-	-	10.5	12.4	7.4	5.9	9.3	16.7	20	31	31	35.5	30	-												

Source: Algerian review of economy and management, May 1997, University of Oran.

Table (2) enables us to make the following observations: from 1970 to 1996 the parallel exchange market did not cease moving due to the high demand for hard currencies; the importance of the parallel exchange is increased in 1986 because of the economic crisis rising from the fall of the prices of the hydrocarbons which involved a fall of 56.5% of the export earnings for the same year; a strong correlation exists between the annual variation of the parallel exchange rate and the rate of inflation. These results, which go against the findings of Park (1995) and Morris (1995), confirm the work of Pinto (1991) by showing that a variation of parallel rate of exchange causes necessarily an increase in inflation.

The evolution of the official and parallel exchange rate is illustrated by the graph below which shows that the level of the rebate between the official exchange rate and the parallel exchange rate started to appear from the end of 1970 and has increased in 1993 with a rebate of 5.8.

3 The Dinar: What is the appropriate rate?

The very strong depreciation of the Dinar on the parallel market (currently more than 100 DA / 1 Euro against 72DA approximately / 1 Euro at the official market), and the extremely careful attitude of the monetary authorities towards to a devaluation raises the question of the " true " value of the Algerian Dinar, or rather of its desirable rate.

The careful attitude of the authorities is explained by the fear of the impact of the devaluation of the Dinar on the prices and also on the situation of the enterprises already put at evil by the shortage of the provisioning. It is also explained by the implicit consideration that the parallel market is a marginal market for the fixing of exchange rate.

Several questions arise then: How can we explain the strong drift of the Algerian Dinar at the parallel market and t what would be the appropriate rate for the Dinar in order to achieve a better convertibility at the official level and under which conditions ?

Moreover, the creation of the economic and monetary Union (EMU) opened a new chapter in the debate on the choice of the modes of the exchange rate . It is a question of finding the mode which will serve best the interests of Algeria within the framework of the euro-Mediterranean partnership -.

Algeria, which is experiencing a market economy transition , may strongly find it beneficial to adhere to the Euro zone, which will offer a certain number of economic advantages, mainly low risk premiums, interest rates and transaction costs. All the question is to know if there is an ideal exchange mode.

The studies carried out show however that the direct impact of the introduction to Euro will be positive but limited. In fact, the principal debate, in the short run, rests on the influence which this currency can or must have on the modes of exchange in the Mediterranean. An illustration of the plurality of the modes of exchange is exposed in the table (3):

Table (3):

Exchange rate regimes in the Mediterranean

Country	Exchange Rate Regime	Basket or target Currency
Algeria	Managed Floating	US \$
Cyprus	Fixed anchor	Euro
Egypt	Managed Floating	US \$
Jordan	Fixed anchor	US \$
Lebanon	Managed Floating	US \$
Malta	Fixed Anchor	Euro
Morocco	Fixed Anchor	Basket of currencies
Syria	Fixed Anchor	US \$
Tunisia	Managed Floating	Basket of currencies
Turkey	Managed Floating	Rule of real exchange rate

Source: The IMF, World economic outlook, 10/1998

4 the misalignment of exchange rates

Numerous authors have studied the theoretical relationship between exchange-rate management and international trade flows [Cushman (1983), Dixit (1989), Gagnon (1993), Hooper and Kohlhagen (1978)]. This relationship concerns both the impact of exchange rate changes and the impact of exchange-rate variability on trade. While there was a consensus on the impact of exchange rate changes on trade, the effect of variability was much more controversial (Reinhart & Reinhart, 2002). Variability is defined as fluctuations of exchange rate around its equilibrium level. Two types of fluctuations are considered. One type concerns frequent and non persistent fluctuations. This type of fluctuation is labelled volatility. The second concerns less frequent and more persistent swings: the exchange rate departs from its equilibrium level over several periods. This second type of variability is labelled misalignment. In developing countries (LDCs) real exchange rate (RER) misalignment is generally associated with a substantially overvalued RER with respect to its market clearing. This is often an outcome mismanagement of economic policies. This is the case of the Algerian Dinar.

Moreover, inconsistent policies increase the volatility of RER. Recent analyses of the damaging influence of RER variability on trade in LDCs are Medhora (1990), Paredes (1989), Grobar (1993) and Sekkat and Varoudakis (2000).

4.1 Theoretical Considerations

At the beginning, the macroeconomic literature abounded with models arbitrating between the pure fixed exchange and the pure flexible exchange .During the Nineties, the IMF has decided for the adjustable fixity on a currency or a basket of currencies in a time when perfect flexibility generally involves conflicts of economic policy .These achievements were lengthily analyzed by the new tendency of the political economy of the reforms (Edwards S., 1994). The IMF statistics confirm initially the retreat of the modes of fixed exchange - the number of currencies which was declared in fixed exchange regime or with limited flexibility moved back considerably, then symmetrically the managed float regime has increased.

The economic literature abounds of articles analyzing the exchange rate determination theories . The maladjustment of the traditional exchange rate theories (Purchasing power parity PPP, interest rate Parity , monetary models, portfolio models) to the current situation of financial integration of the emergent economies, and the problems of validation which they meet lead towards the theories of long term real equilibrium exchange rate ..

Recently the debate is focused on the causes and the effects of the appreciation of the real exchange rates in developing countries . The points of view are opposed: the first is related to the " Misalignment view " for which the appreciation of the real rate generates a loss of competitiveness which is translated in its turn by a deterioration of the current balance; and the second, that of " fundamentalist ", considers that this appreciation translated by the exchanges on the level of the fundamental real sectors which are likely to involve a degradation of saving-investment equilibrium (Marouani A., 2000).

4.2 The real effective exchange Rate

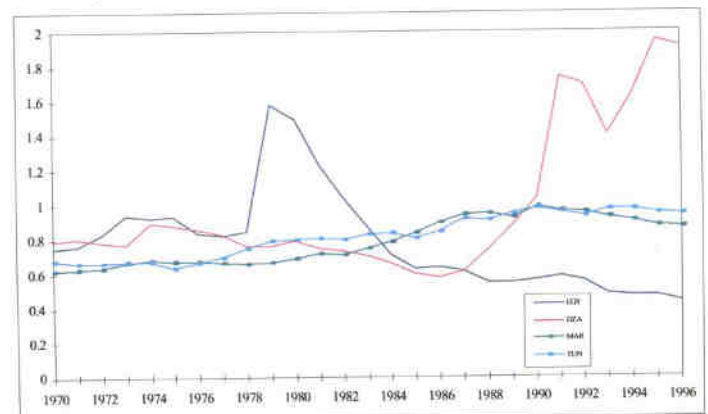
Theoretically, the real exchange rate is the relative price of the exchangeable goods compared to the non-exchangeable goods. Empirically, however, there is not a single method to measure the effective exchange rate. (Sekkat K. & Achy L, 2000) propose an index of real exchange rate " Real Effective Exchange Rate=REER " which takes into account the degree of competitiveness of the products of the countries of the Middle-East and North Africa (M.E.N.A) compared to the European products. The table (8.4) gives the results of the real effective exchange rate. The table shows that this rate knew significant movements during the last 16 years. We can note that the degree of variation is not the same one for all the countries. With a minimum of 74.3 and a maximum of 306 Algeria knows much more variation than Morocco or Tunisia. These latter show a light stability in the real exchange rate. These contrasts find their explanation in the exchange rate reforms of undertaken by these two countries.

Table (4):
Basic Statistics from the effective real exchange rate

	Algeria	Morocco	Tunisia
Average	134.2	82.2	75.2
Standard deviation	67.7	17.4	19.5
Minimum	74.3	61.3	65.9
Maximum	306.0	94	106.5

Source: K.Sekkat & Achy L, Femise, June 2000

As shown in Figure (2), among Northern African countries, Morocco and Tunisia exhibit a slight but steady trend of real effective rate depreciation. In the 1990s the RER seems to have been stabilised in the case of these two countries. On the contrary, Algeria and Egypt seem to have suffered from exchange-rate mismanagement. Algeria had a steadily appreciating real exchange rate from 1975 to 1986. Then it experienced a sharp real depreciation, followed by erratic RER movements over the 1990s, that increased the variability of the RER. Egypt experienced a sharp real depreciation following a devaluation in 1979, and then continuous real appreciation up to the 1990s.



Real Effective Exchange rate , North African Countries

Source: Sekkat K.& Varoudakis A. (1998)

Figure (2)

4.3 The real exchange Rate and misalignment:

One simple and direct approach to estimating misalignment is the premium on parallel market (PMP) of exchange rate. The intuition behind is that the more overvalued the REER is, the tighter will be the control on foreign exchange and, as an outcome, the higher will be the PMP. Table (5) reports the (PMP) extent of parallel market premium expressed as a percentage of nominal official exchange rate against the US dollar. Except for Morocco and Tunisia where over the whole period the size of PMP was low, the three other countries experienced very high levels of PMP. This is specifically the case of Turkey where parallel market rate of Turkish Lira was more than seven times lower than its official rate during the period 1974-1979. This is also the case of Algeria where the black market of the Dinar was almost four times lower than its official rate during the period 1985-89 and two times lower during the period 1990-97. Thanks to exchange rate reforms undertaken in Turkey and Egypt, aiming at easing restrictions on foreign exchange holding by residents, the level of PMP in both countries has significantly decreased during the last period.

Table (5)
Parallel Market Premium(PMP) (% of the official exchange rate)

<i>Period</i>	<i>Algeria</i>	<i>Morocco</i>	<i>Tunisia</i>
1970-1974	51	5	15
1974-1979	96	7	5
1979-1980	242	5	8
1985-1989	379	3	4
1990-1997	194	4	4

Source: K.Sekkat & Achy L, Femise, June 2000

Table (6), reports the implied rate of misalignment of MENA currencies with respect to European currencies. Real exchange rate is overvalued (Mis>0) whenever it is below its "equilibrium value" and vice versa. According Sekkat & Achy (2000), during the period 1990-1997, all currencies were overvalued except the Moroccan dirham. The overvaluation is more pronounced for the Algerian Dinar, which experienced an overvaluation of 6.77%, The Tunisian Dinar and the Egyptian Pound have experienced, roughly, 3% overvaluation. The Turkish Lira is closer to its equilibrium value.

Table (6)
Misalignment rate with respect Euro currencies

<i>Period</i>	<i>Algeria</i>	<i>Morocco</i>	<i>Tunisia</i>
1970-1974	-9.14	2.54	-5.40
1974-1979	-1.10	0.73	0.56
1980-1979	-3.76	0.29	-2.47
1989-1985	2.12	-3.47	1.66
1997-1990	6.77	-0.16	3.33

Source: K.Sekkat & Achy L, Femise, June 2000

5 The parallel exchange rate: a test of efficiency

In our research, We will try to show at which point we will be able to apply the purchasing power parity (PPP) hypothesis in Algeria, by using initially the official exchange rate in the absolute version of the PPP, and next by using the parallel exchange rate to show which rate perform better.

The PPP hypothesis is an important assumption in most models in international economics. Although its validity has at times failed to pass empirical tests, PPP does however, highlight the plausible factors that are behind exchange rate movements (Krugman and Obstfeld, 1997). It has also been used as a basis for assessing levels of exchange rates, and in comparing income levels between countries.

Although the PPP framework has certain limitations, there is no doubt that it is still appealing as a starting point for quantitative exercises regarding assessing the appropriate level for new parities of exchange rates (Isard, 1995). Thus, PPP can help policymakers to assess the appropriateness of exchange rate levels in Africa, or as Isard (1995) puts it,

if used intelligently, along with other approaches to assessment, PPP calculations can have significant diagnostic value.

This continuing importance of PPP in economics merits further tests to establish its validity. As econometric methods undergo more development and refinement, better techniques for undertaking empirical tests of PPP become available. This study employs one of the latest techniques, the Cointegration method(Engle & Granger, 1987), for testing PPP in Algeria.

This method is used to test the validity and the stability of the economic models as well in the short term as in the long term. A number of methods for testing for long-run PPP have evolved over time. However, of late, cointegration tests seem to have dominated the literature. Cointegration tests that have been done by most researchers have tended to offer support for long-run PPP, unlike traditional tests, which are criticised for having low power.

The statistical studies confirm the stability of the mathematical model of the purchasing power parity (absolute and relative version) (Frenkel, 1981). Cointegration methodology put the assumption that the variables used are unit root series (Dickey and Fuller, 1981).

In order to test the validity of the purchasing power parity theory (PPP), the best method consists in knowing if exchange rates and the prices are cointegrated. The work initially carried out by Taylor (1988) rejected this hypothesis for Germany, the United Kingdom, France, Canada, and Japan for the period 1973 to 1985. The results show that the exchange rates and the prices are not cointegrated, which implies the non validity of the PPP in the long term. The same results was found by (Jones, 1989).

As mentioned earlier, before proceeding to test for cointegration, it is necessary to determine the order of integration of the series of the logarithm of exchange rates (for both official and parallel market) and the logarithm of the price level. The results of our study are reported in the table (8.7) and (8.8). The selected period is 1970 to 1996. In fact we have used the statistics given by (Henni, 1991) and World Table Statistics (1998). In order to test for the unit roots in these three series, the Dickey-Fuller (DF) and the Augmented Dickey Fuller (ADF) are used. The results of the test is presented in table(7). For each of the variables concerned we are unable to reject the null hypothesis that the series are I(1). In other words, all the variables are integrated to order I(1).

After determining that the variables are of order I(1), we now turn to examine whether they are cointegrated or not. The first step is to run a cointegration regression. In the present analysis two cointegration regressions are set. In the first one , we regress the logarithm of the price level on the

logarithm of the exchange rate and an error term. In the second equation we regress the logarithm of the exchange rate on the logarithm of the price level. The two regressions are presented in table (8). In testing for cointegration three tests were used, namely, Cointegration Regression Durbin Watson (CRDW), Dickey-Fuller (DF) and Augmented Dickey-Fuller (ADF).

Table (7):

Unit root Tests for official and parallel exchange rates

III. VARIABLE	DF	ADF
PE _R	-1.21	-2.08
OE _R	-1.47	-2.22
A. CPI	-1.65	-1.98

1) DF and ADF stand for the Dickey-Fuller and Augmented Dickey-Fuller Tests

PE_R : Parallel exchange rate.

OE_R : Official exchange rate

2) CPI: Consumer price index

The Null hypothesis is that series in question are I(1)

Approximate critical values at the 5% level is -2.89,

rejection (θ $\theta < -2.89$)

Table (8):

	Dependent Variable	Constant	S _t	P _t	DW	DF	ADF
Official exchange rate	S _t	5.36	-	1.4	-3.4	-4.1	-3.5
	P _t	1.79	-0.3	2	8	2	9
Parallel exchange rate	S _t	1.25	-	-1.2	-2.1	-2.8	-3.1
	P _t	0.36	-0.8	2	1	0	2
			5	-	-2.2	-1.9	-3.15
					8	8	

The Critical values for DF, ADF and DW are: -3.37, -3.17 and -3.86 respectively.

The Null hypothesis is that series in question are I(0).

The results of the table (8) show that the hypothesis of the validity of the PPP by using the official exchange rate cannot be accepted. This hypothesis, on the other hand is valid by using a parallel exchange rate. This result shows that the long run purchasing power parity is accepted when using the parallel rate rather than the official exchange rate. We can argue that the unofficial exchange rate is more efficient than the official rate.

The parallel exchange rate is indeed much more close to the effective real exchange rate. As these markets are efficient, authorities should use the information provided by the black market rates in deciding the level of the official exchange rate. In particular, the Central Bank should pay attention to the signal provided by the premiums in the black market rate. If the premium exceeds some target level, the authorities should change the official rate. We are, however, not suggesting overnight unification of the official and black market for foreign currency. Some empirical evidence (Roberts, 1989, Kiguel and O'Connell, 1995) show that unification of the official and black Market rates for foreign currency, without supporting macroeconomic policy can lead to inflation and other related malaise.

6 Conclusions and recommendations

In this work we initially carried out a description of the role of the parallel exchange rate in the Algerian economy. We have exposed the causes which led to the emergence of the parallel market for the various evolution periods of the Algerian economy. Black market for foreign currency has emerged in countries that have used foreign exchange control and trade restrictions. These restrictions have led to leakage of funds from the economy; capital flight and mis-invoicing using the black market as a conduit exacerbating the very problem that they were supposed to alleviate.

In our research, we have shown that while rejecting the validity of the purchasing power parity hypothesis using official exchange rates, we, however, accept it using the parallel exchange rate. This result shows that black markets are generally efficient. The other result is that this test can show the degree of misalignment and how much the official exchange rate is overvalued.

Accordingly, we can propose the following recommendations: Authorities should consider gradually withdrawing foreign exchange control in combination with stabilization policies, and then unify the black market with official market for foreign exchange. Thus the black exchange rate could be used as an indicator for the determination of the appropriate exchange rate.

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