Economic Sciences, Management and Commercial Sciences Review | Volume: 13 / N°: 02 (2020), p 326-338

Inflation Modeling in Algeria: Analytical and econometric Study

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Received: 16/09/2020 **Accepted: 05/11/2020** **Published:18/11/2020**

Abstract:
This study aims to model the inflation rate in Algeria, by applying the ARDL model and the Toda-Yamamoto causality test for the period 1990-2018. Through the results, the cause of inflation in Algeria is mainly structural, due to the weakness of domestic production, which increases imports. Although imports into Algeria play the role of an automatic regulator of domestic markets and limit inflation (3.35%), it is also an important channel for imported inflation, and a monetary reason linked to the size of the money supply and the inability to control it (1.1%), while the impact of public spending (0.0252%) and the Algerian dinar exchange rate (0.2949%) remains somewhat limit.

Keywords: Inflation; Imports; Money supply; ARDL model; Toda-Yamamoto causality test.
Jel Classification Codes: C5, E641, E51

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1. INTRODUCTION

Inflation is an expression of a state of continuous rise in prices, and as a result, the flip side of it is the continual decline in the purchasing power of the monetary unit. Inflation reflects cases of economic imbalance in the markets for goods and services and production factors, and in general, inflation is caused by instances of imbalance between cash flows and flows of goods and services in the market, as the increase in cash flows is at a higher rate than the increase in commodity and service flows, which leads to the emergence of a state of inflation in the concerned economy, and even its transformation into a phenomenon that the economy suffers from by the persistence of the high money supply in circulation compared to the commodity supply in the market.

Inflation is a complex phenomenon, its origin has long concerned economists and remains the subject of much controversy. From a theoretical point of view, the economic literature distinguishes several explanatory causes of inflation, some of which are monetary in origin, others having their root in the real economy. These causes can sometimes combine with each other and further accelerate the effect of price increases.

Through this research document, we will try to analyze the causes of inflation in Algeria and understand the mechanisms that cause it, because this represents a big bet in order to develop an appropriate economic and monetary policy to fight against this phenomenon, which has a heavy economic and social cost. So, the problem that we can raise in this regard is what are the internal and external factors that affect the rate of inflation in Algeria?

2. LITERATURES REVIEW

Keynes holds that the monetary view, represented in the quantity theory of money, assumes that the economy has a mechanical tendency to operate at the level of full employment, but if the economy is operating at a level less than full employment, then

Keynes holds that the change in spending will affect production and employment more than Its effect on prices. Keynes refused to accept the critical point of view that there is a moral substitution relationship between money and physical assets, such as homes, cars and consumer goods, considering that this relationship is very low and immaterial.

Keynes proposed an alternative mechanism, known as the income multiplier, that involves a multiplier relationship between self-spending (that is, independent of income level) and total income. Keynes emphasizes the determinants of spending more than he does on the money supply, which means that he sees fiscal policy as a force more influencing income and employment than monetary policy. So, Keynes calls for relying on the government budget to achieve stability economic rather than monetary policy. (Bernier & Simon, 2007, pp. 45-50)

Which argues that units (Rational Expectation) on the other hand, there is a school of rational economic expectations that will not act rationally if their future vision of price change always follows the actual change in prices. The main idea of this school is that the regular change in the stock of money it will always be completely predictable, so it will not have an effect on real variables, it will only affect it in price. As for cost-payment inflation, it occurs due to an unexpected increase in wages or an increase in the prices of raw materials. (Pesaran H. , 1989, pp. 226-227)

The increase in input prices is reflected in the output prices. However, cost inflation is not always easy correction is usually difficult to separate from inflation by attracting demand, as an increase in wages or profits raises the return of Economic agents, and thus the demand for consumer and investment goods increases, leading to an acceleration of inflation rates.

As for the inflationary forces that occur in developing countries, they are explained by many economists as the result of a structural imbalance in their economic structure, as the most important sources of their backwardness and the most important manifestations of economic imbalance are as follows: the structural nature of specialization in the production of raw materials, the rigidity of the financial system and the deterioration of tax revenues. The growth rates of agricultural production and the aggravation of the food problem, the imbalances that the development process creates in its early stages, in addition to the disparities that the development process results in in the distribution of incomes and the disparity in living standards. (Romer, 1993, pp. 869–903) The more open a country (the ratio between its imports and its GDP), the less vulnerable to unexpected monetary expansion, and consequently, internally lower rates of inflation. (Lane, 1997, pp. 327–347) On the other hand, this inverse relationship between debtor and inflation resulted from Latin American countries when they were forced to increase their income to pay off the interest on debts. (Terra, 1998, pp. 641–648)

There is also the view that focuses on the balance of payments, considering that the deterioration of the exchange rate is due to the balance of payments deficit will lead to domestic price inflation, either by raising prices by making imports or by increasing inflationary expectations. A study of data from Poland and Hungary, they found that the shocks occurred in the balance of payments. The two countries were important in explaining

the movements that occurred in domestic price levels, especially in Hungary. (Dibooglu & Kutan, 2005, pp. 107–131)

International inflation plays a clear role in influencing local inflation rates. The relationship between degree of openness and inflation is based on Barro and Gordon 1983 model which argued that an unexpected monetary expansion can lead to an increase in inflation rates. As for Romer, who relied on the same model believes that there is an inverse relationship between openness and inflation, due to the effect of openness on the desire of decision-makers to achieve expansionary policies. In this the situation, Romer says, will bring inflation down. (Barro & Gordon, 1983, pp. 101-121)

3. INFLATION IN ALGERIA

3.1 Post-independence period 1962-1979

After independence, it was necessary for Algeria from its various public administrations to intervene directly in the various economic sectors, as the national economy at that time was dominated by the French colonialists and private companies.

After independence, Algeria adopted the socialist approach that is based on central planning. In this context, prices were predetermined, and on May 12, 1966, the decision to form prices came in the various stages of production and distribution, and on February 02, 1968, another decision came to support the first decision and support administrative price control. These decisions were aimed at:

- Expanding the field of administrative control
- Simplify the concept of trading margin
- Simplifying methods of calculating prices for domestic and imported goods and services.

In this regard, we find four systems for determining prices that were approved on April 29, 1975, and they are:

- Fixed prices: relate to basic materials "large consumption products".
- Special prices: These prices are independent of the cost price in order to preserve the purchasing power of consumers. This system applies to agricultural products in addition to some industrial products that are used in agricultural production.
- Stable prices: It touches the prices of investment projects in order to reduce the impact of price fluctuations on

The international level on the cost of realization, and this system concerns building materials (cement, wood ...).

- Controlled prices: All products and services not mentioned in the previous three systems are subject to the direct control system by the administration, and this is by setting profit margins or price ceilings. (Benissad, 1979, pp. 219-235)

3.2 The period 1990-1998

One of the most important aspects of the transition of the Algerian economy from a planned economy to a market economy, was the establishment of institutions and instruments that are compatible with the mechanisms and requirements of the new orientation, in particular, by the promulgation of law n ° 90-10 of April 14, 1990 relating to

money and credit.

This period was characterized by high inflation rates, as it moved from 16.6% in 1990 to 31.7% in 1992, to reach an average of 29% in 1994. All this can be explained by the following:

- Accelerate or accelerate the process of price liberalization beginning in 1989, with 85% of prices moving to free system.
- The strong depreciation of the Algerian dinar was a result of addressing the imbalance in the exchange that led to the increase prices of imported goods.
- The structural adjustment concluded with the International Monetary Fund, and within the framework of this program, Algeria was able to improve the effectiveness of the exploitation of its resources by canceling profit margin controls in April 1994, which affected most products
- Staples excluding sugar, grains, oil, and social finance. As for price rationing, it remains only for three basic food items (soft wheat, durum wheat and milk), energy products and public transport fares.
- The elimination of subsidies for food and energy products led to a 100% increase in their prices between 1994 and 1995. After the liberalization of prices and the second devaluation of the dinar, the inflation rate reached 29% in 1994 and 29.8% in 1995, to stabilize at 5% in 1998. (Bank of Algeria report, 1999)

3.3 The period 1999-2018

Within the framework of implementing the structural adjustment program in cooperation with the International Monetary Fund, Algeria was able to:

However, the year 2001 witnessed the return of inflationary pressures with a rise in the inflation rate to 4.2%, the difference between this level and the level of the year 2000, which was estimated at 0.3%, can be explained by the impact of purchasing power resulting from higher job wages.

The public and the basic national wage in the context of weak supply, as the gross domestic product decreased from a growth rate of 27.5% in 2000 to 4.76% in 2001, which led to the return of prices to the increase, but they decreased in the years 2002 and 2005, when the inflation rate reached 1.4% and 1.6% respectively. (Bank of Algeria report, 2005)

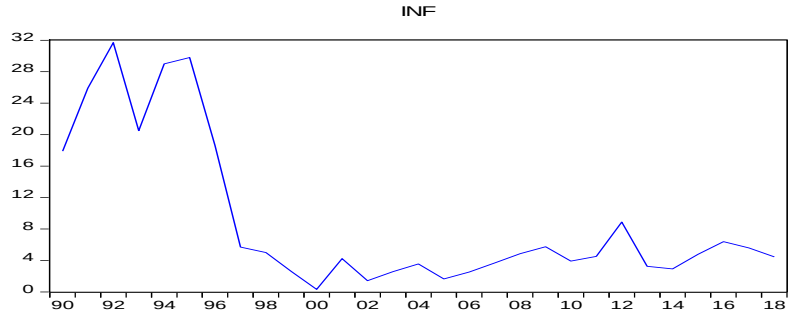
The prices of basic materials recorded a significant increase in the years 2010 and 2011, reversing the high levels recorded in 2008 associated with the increase in international prices of basic products. The inflation rate reached 3.91% in 2010 and 4.52% in 2011, while in 2012 the inflation rate recorded an increase of 8.89%. This historical peak is mainly explained by the increase in prices of some fresh products in the first quarter of 2012. (Bank of Algeria report, 2012)

Average annual inflation which had reached a ten-year high by 8.9% in January 2013, started to decrease in February of the same year and this downward trend has continued for 19 months, reaching its minimum of 1.5% in August 2014. It has since turned around again to grow and reach 5.3% in September 2015. The insufficiency of supply, the expansion of availability monetary held by households, the trend in world prices of imported basic products, which is moreover downward, cannot be the origin of the scale of inflation in

2015. It would rather be look for the root causes in the dysfunctions of the market and in particular in that of fresh agricultural products characterized by limited traceability of transactions, the multiplication of intermediaries as well as by its weak regulation. (Bank of Algeria report, 2015)

The average annual rate of inflation, which had accelerated for twelve consecutive months until March 2017 (7.07%), had slowed down during the second quarter of 2017 to reach 5, 59% in December then 4.33% in April 2018. Inflation then began to rise slightly to reach 4.82% in August then fall to 4.69% in September 2018 and finally to 4.27% in December 2018. (Bank of Algeria report, 2018)

Fig.1: The evolution of the inflation rate in Algeria (1990-2018)



Source: O.N.S (National Office of Statistics)

In view of all of the above, we can say that during the period from 1990 to 2018, there were several variations in the rate of inflation. In 1992 we recorded the highest value of the inflation rate which was 31.66% and in 2000 we recorded the lowest value which was 0.33%.

4. EMPIRICAL INVESTIGATION

4.1 ARDL models Auto Regressive Distributed Lag/ARDL

Dynamic models, the latter have the particularity of taking into account the temporal dynamics (adjustment period, expectations, etc.) in the explanation of a variable (chronological series), thus improving the forecasts and effectiveness of policies (decisions, actions, etc. .), unlike the simple (non-dynamic) model whose instantaneous explanation (immediate effect or not spread over time) only restores part of the variation in the variable to be explained. In the family of dynamic models, there are three types of models.

In a dynamic model, a dependent variable (Y_t) can be explained both by:

- Its own staggered values. Such a dynamic model is called an "autoregressive model" (AR) and can be written:

$$Y_t = a_0 + a_1 Y_{t-1} + \cdots + a_p Y_{t-p} + \varepsilon_t$$

$$Y_t = a_0 + \sum_{i=1}^{p} a_i Y_{t-i} + \varepsilon_t \ldots\ldots\ldots\ldots 1$$

- The present values of the independent variables (X_t) and their time-shifted values (X_{t-j}). These are "staggered delay models" (DL) which have the form:

$$Y_t = \beta + b_0 X_t + \cdots + b_q X_{t-q} + z_t$$

$$Y_t = \beta + \sum_{j=0}^{q} b_j X_{t-j} + z_t \dots\dots\dots 2$$

- Its own shifted values, present values of independent variables (X_t) and their time shifted values (X_{t-j}). These types of models combine the characteristics of two previous models and are called "Auto Regressive Distributed Lag" (ARDL model). Below are their following mathematical formula:

$$Y_t = \varphi + a_1 Y_{t-1} + \cdots + a_p Y_{t-p} + b_0 X_t + \cdots + b_q X_{t-q} + e_t$$

$$Y_t = \varphi + \sum_{i=1}^{p} a_i Y_{t-i} + \sum_{j=0}^{q} b_j X_{t-j} + e_t \dots\dots\dots 3$$

Note that "b_0" reflects the short term effect of X_t on Y_t. To calculate the long-term effect of X_t on Y_t (ie "λ"), starting from the following long-term or equilibrium relationship: $Y_t = k + \lambda X_t + u$, we will do:

$$\lambda = \frac{\sum b_j}{1 - \sum a_i}$$

The ARDL models, which inherit the characteristics of the AR and DL models, suffer from certain econometric problems which complicate its estimation by Ordinary Least Squares (OLS), collinearity between explanatory variables (DL model), autocorrelation of errors (AR model), etc. Robust estimation techniques are generally used. (Pesaran, Shin, & Smith, 2001, pp. 289-326)

4.2 Toda-Yamamoto causality

Toda and Yamamoto propose non-sequential procedures to test the causality between series. For these authors, the preliminary tests of stationary and co-integration (Granger's sequential procedures) are of little importance to the economist who must worry about testing theoretical restrictions instead (they secure level information). These two authors will propose to estimate a corrected level VAR (over-parameterized), which should serve as a basis for the causality test, under the hypothesis of a probable potential co-integration between series that they integrate into the model without the study as such (explicitly). The procedure of the Granger causality test proposed by Toda and Yamamoto is as follows: (Toda & Yamamoto, 1995, pp. 225-250)

- Find the order of maximum integration of the series under study (dmax) by resorting to stationary tests.
- Determine the optimal lag or shift of the VAR in the level under study (k) or autoregressive polynomial (AR) using the information criteria (AIC, SIC and HQ).
- Estimate a VAR in increased level of order "p=k+dmax".

4.3 The model application

4.3.1 Description of the Data

We chose the model variables on the basis of internal influences, through knowing the effect of fiscal policy (public spending) and monetary policy (money supply and exchange rate) on inflation rate in Algeria on the one hand, and external influences through knowing the effect of the degree of trade openness on the other hand.

The data that is the subject of our study are annual and taken from O.N.S (National Office of Statistics), Bank of Algeria databases and reports of the World Bank (WDI). These annual data cover the period from 1990 to 2018. The variables used are as follows:

Variables	Descriptions and data
INF	Inflation (the consumer price index CPI), O.N.S (National Office of Statistics)
G	Public spending % GDP, World Bank (WDI)
EXR	Algerian Dinar exchange rate (1USD/DA), World Bank (WDI)
MS	Money supply in the broadest sense in billions of dinars, Bank of Algeria
M	Imports % GDP ,World Bank (WDI)

$$INF = f(G, EXR, MS, M)$$

If we intend to capture the short-term and long-term effects of the above explanatory variables on INF, the ARDL representation of the function:

$$\Delta INF_t = a_0 + \sum_{i=1}^{p} a_{1i}\,\Delta INF_{t-i} + \sum_{i=0}^{q} a_{2i}\Delta G_{t-i} + \sum_{i=0}^{q} a_{3i}\Delta\, EXR_{t-i} + \sum_{i=0}^{q} a_{4i}\,\Delta MS_{t-i} + \sum_{i=0}^{q} a_{5i}\Delta M_{t-i} + b_1 INF_{t-1} + b_2 G_{t-1} + b_3 EXR_{t-1} + b_4 MS_{t-1} + b_5 M_{t-1} + e_t$$

4.3.2 Stationary test of series ADF test

Table 1. Unit root test ADF (Test of Stationary)

Vs	Level			1st difference			decision	lags
	Intercept	Trend and intercept	None	Intercept	Trend and intercept	None		
INF	-1.9820 (0.2924)	-1.7920 (0.6804)	-2.0523** (0.0405)	-5.0242* (0.0004)	-5.5174* (0.0007)	-4.8048* (0.0000)	I(0)	1
G	-1.8300 (0.3587)	-2.5749 (0.2933)	0.2262 (0.7443)	-4.4145* (0.0019)	-4.3318** (0.0105)	-4.4230* (0.0001)	I(1)	1
EXR	-0.6760 (0.8365)	-1.6875 (0.7289)	1.5073 (0.9639)	-2.9094 (0.0579)	-2.8344 (0.1985)	-2.0911** (0.0373)	I(1)	1
MS	-0.1946 (0.9276)	-2.0896 (0.5273)	1.1840 (0.9348)	-1.6638 (0.4365)	-5.0626* (0.0020)	-3.7331* (0.0006)	I(1)	2
M	-2.1949 (0.2136)	-4.1489** (0.0189)	-0.2915 (0.5686)	-2.3599 (0.1647)	-0.5734 (0.9693)	-2.3088** (0.0236)	I(0)	2

(.): Probabilities; *: stationary at 1%; **: stationary at 5%

Source: Eviews program outputs

Through the results of the stability obtained, it is clear that the time series of the model variables are not integrated with the same degree, which makes the co-integration test of Engle and Granger (multivariate case) and that of Johansen ineffective, and makes the test of ARDL appropriate.

4.3.3 Co-integration test from Pesaran et al 2001

We reported that the co-integration test at the terminals of pesaran et al. (2001) was adapted for our series. Also, remember that there are two steps to follow to apply the

Pesaran co-integration test:

- Determine the optimal offset above all (AIC, SIC)
- Use the Fisher test to test for co-integration between series.

Optimal offset and estimation of the ARDL model, we will use the Schwarz Information Criterion (SIC) to select the optimal ARDL model, one that offers statistically significant results with the least of the parameters. Below are the estimation results of the optimal ARDL model selected (Table N°2, Figure N° 2).

Table 2. ARDL model (1, 3, 3, 3, 3)

Dependent variable : INF				
Variables	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.***
INF(-1)	-0.108740	0.204130	-0.532700	0.6087
G	0.022756	0.001712	13.29200	0.0009
G(-1)	0.008830	0.004321	2.043298	0.1336
G(-2)	-0.008408	0.002683	-3.134434	0.0519
G(-3)	0.004221	0.001110	3.802215	0.0320
EXR	0.292677	0.170075	1.720872	0.1236
EXR(-1)	-0.387203	0.269330	-1.437648	0.1885
EXR(-2)	0.189988	0.334762	0.567533	0.5859
EXR(-3)	-0.422537	0.241301	-1.751075	0.1180
MS	0.375825	0.160480	2.341879	0.0473
MS(-1)	0.283489	0.150543	1.883116	0.0964
MS(-2)	0.564320	0.281537	2.004423	0.0800
M2(-3)	0.004847	0.177529	0.027303	0.9789
M	-1.367183	0.521421	-2.622032	0.0306
M(-1)	-0.588688	0.426799	-1.379309	0.2051
M(-2)	-1.827588	0.584423	-3.127170	0.0141
M(-3)	0.067112	0.440604	0.152317	0.8827
C	5.887167	5.561401	1.058576	0.3207
$R^2$0.943681 Durbin-Watson stat 2.164795 F-statistic 7.885248				
Adjusted R^2 0.824005 Prob (F-statistic) 0.002899				

Source: Eviews program outputs

Table 3. Results of diagnostic tests of the estimated ARDL model

Test hypothesis	**tests**	**Values**	**(probability)**
Autocorrelation	Breusch-Godfrey	1.3709	prob(0.3233)
Heteroskedasticity	Breusch-Pagan- Godfrey	0.6018	prob(0.8198)
	Arch test	0.8843	prob(0.3568)
Normality	Jarque-Bera	0.7520	prob(0.6866)
Specification	Ramsey (Fisher)	2.3727	prob(0.3666)

Source: Eviews program outputs

The null hypothesis is accepted for all of these tests. Our model is thus statistically validated. The estimated ARDL model (1, 3, 3, 3, 3) is generally good and explains at 94%.

4.3.4 Stability tests of the model

The two tests used to detect the presence of any structural changes in it are the cumulative sum of returned residues (CUSUM) and the cumulative sum of the squares of recurrent residues (CUSUM of Squares), and which we find in the ARDL model, So that the

structural stability of the estimated coefficients of the error correction formula of the self-regression model of distributed time gaps is achieved, if the graph of the CUSUM and CUSUM of Squares tests falls within the critical limits at the level of 5%. The results are shown in the following figures:

Fig.2: CUSUM test

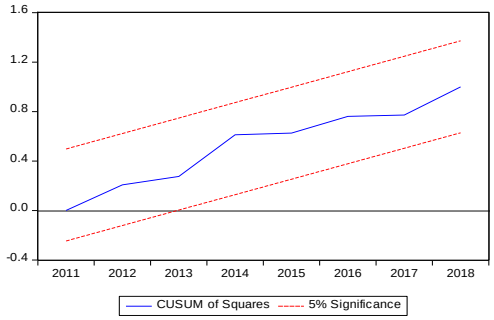
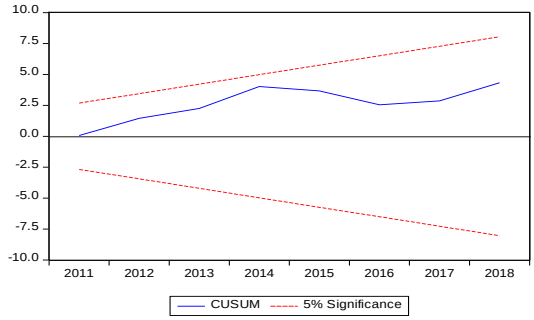


Fig.3: CUSUM of Squares test



Source: Eviews program outputs

Table 4. Results of the co-integration test of Pesaran et al. (2001)

variables	INF G EXR MS M	
F-stat calculated	-3.012882	
Critical threshold	**Bound <**	**Bound >**
10%	-2.57	-3.66
5%	-2.86	-3.99
2.5%	-3.13	-4.26
1%	-3.43	-4.6

Source: Eviews program outputs

The results of the terminal co-integration test confirm the existence of a co-integration relationship between the series under study (in the table N° 4 the value of F-stat is > that of the upper bound), which gives the possibility of estimating the effects long-term G EXR MS M on INF.

4.3.5 Causality between variables

When non stationary variables are not co-integrated or are integrated in different orders, the traditional Granger causality test becomes inefficient. In this case, we resort to the causality test in the sense of Toda-Yamamoto which is based on Wald's "W" statistic, which is distributed according to a chi-square. The null hypothesis states the absence of causality between variables (probability Chi-sq > 5%).

From the Table N°5, we deduce the following causalities in the sense of Toda-Yamamoto: One-way causalities: the dynamics of INF are caused by all the variables which are G EXR MS M, It is a one-way causation, there is no a causal relationship in both directions (there is no a feed-back).

Table 5. Toda-Yamamoto Causality Test Results

k	**dmax**	**Vs**	**Explanatory or causal variables / VC (probability)**				
			INF	**G**	**EXR**	**MS**	**M**
		INF	-	2.53 (0.28)	0.57 (0.75)	0.78 (0.67)	0.54 (0.76)

4	1	**G** →	7.39** (0.02)	-	0.70 (0.70)	1.80→ (0.40)	5.17*** (0.07)
		EXR→	8.22** (0.01)	1.13 (0.56)	-	1.35 (0.50)	0.72 (0.69)
		MS→	12.50* (0.00)	4.03 (0.13)	2.03 (0.36)	-	3.30 (0.19)
		M →	12.89* (0.00)	2.74 (0.25)	1.74 (0.41)	0.73 (0.69)	-

(.): Probabilities (p-value); *: significant at 1%; **: significant at 5%;***: significant at 10% and values = statistics of Chi-sq

k: optimal lag of the level VAR (SIC); dmax: maximum order of integration of variables

Source: Eviews program outputs

4. RESULTS AND DISCUSSION

4.1 Short-term coefficients ST

In the short term, public spending positively affects the inflation rate in Algeria, when it rises by 1%, the inflation rate would rise by 0.0227%, which is a very weak rate, and the impact was reduced in the next year (0.0116%).

The exchange rate has no effect on the inflation rate in Algeria in the short term.

The money supply affects the inflation rate positively in the short term, as if the money supply increases by 1%, the inflation rate will rise by 0.37%.

Imports also have an impact in the short term, when it rises by 1%, it would reduce the inflation rate in Algeria by 1.36%, but after the next year it would lead to an increase of 1.76%. This is evidence that imports in Algeria contribute to adjusting the balance of local markets due to the lack of internal supply as a result of weak domestic production.

Table 6. Estimation results of ST coefficients

Dependent variable : INF				
Variables	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.***
C	5.887167	2.552063	2.306827	0.0499
D(G)	0.022756	0.001305	17.43927	0.0004
D(G(-1))	0.011620	0.001311	8.863161	0.0030
D(G(-2))	0.003212	0.001146	2.801265	0.0678
D(EXR)	0.292677	0.195242	1.499050	0.1722
D(EXR(-1))	0.232549	0.242043	0.960774	0.3648
D(EXR(-2))	0.422537	0.276043	1.530689	0.1644
D(MS)	0.375825	0.154054	2.439557	0.0406
D(MS(-1))	-0.569167	0.253935	-2.241385	0.0553
D(MS(-2))	-0.004847	0.200022	-0.024232	0.9813
D(M)	-1.367183	0.447179	-3.057349	0.0156
D(M(-1))	1.760477	0.615870	2.858520	0.0212
D(M(-2))	-0.067112	0.474867	-0.141327	0.8911
CointEq(-1)*	**-1.108740**	**0.238516**	**-4.648500**	**0.0016**

Source: Eviews program outputs

4.2 Long-term coefficients and short-term dynamics ST

If public spending in Algeria increases by 1%, it will lead to an increase in the inflation rate by 0.0252%, which is a weak rate as was the case in the short term. This result can be explained by the weak purchasing power of individuals in Algeria, and so the public spending did not clearly contribute to improving the purchasing power of Algerians, nor did it increase demand, and thus it did not have a significant impact on price levels and therefore the rate of inflation in Algeria.

The Algerian dinar exchange rate did not have an effect on the inflation rate in the short term, but it does have an effect in the long run. If it falls by 1%, the inflation rate will rise by 0.2949%. This ratio is somewhat weak indicates that Algeria is linked to a fixed exchange rate system rather than flexible (managed floating exchange system). A clear tendency to fixed it, and the a clear intervention of the monetary authorities to cover it.

If imports increase by 1%, this will lead to a decrease of the inflation rate by 3.35%, which is a very important percentage. Although this result appears illogical at first, it can be interpreted as having a large domestic demand in Algeria. If imports decrease, this will be directly reflected in the quantity supplied and whoever is done will lead to disruption of local markets, due to the increase in demand and the lack of supply, the reason for this The latter is primarily due to poor production. And when demand rises above supply, it is an inevitable consequence of a rise in the general level of prices and of the increase in the inflation rate. Therefore, imports in Algeria play the role of an automatic regulator to avoid disruption of the local markets. Limiting imports, especially with regard to widely consumed products in Algeria, would greatly affect their prices due to their low supply and high demand.

An increase in the money supply in Algeria by 1% leads to an increase in the inflation rate by 1.1%, which is also an impressive rate. This can be explained by a number of reasons, including:

- Increase in state revenues as a result of high oil prices in the early 2000s, and significant accumulation of liquidity in public banks.
- The great dealings with liquidity in various economic transactions, and the weakness of other means of payment, especially electronic payment.
- Recently, the create currency has increased, and the size of the monetary mass outside the banking circle has expanded and the monetary authorities are unable to absorb it.

Table 7. Estimation results of LT coefficients

Dependent variable : INF				
Variables	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.***
G	0.025219	0.010114	2.493337	0.0082
EXR	-0.294997	0.041375	-7.129881	0.0001
MS	1.107998	0.266442	4.158491	0.0032
M	-3.351867	0.773543	-4.333135	0.0025

Source: Eviews program outputs

4. CONCLUSION

Through the study that we conducted, which tried to clarify through a number of variables that were chosen to form the study model, which are variables related to the phenomenon of inflation, which have been widely mentioned in various economic literature that tried to explain the causes of inflation in different economies. They are variables that combine internal and external factors.

From the results we have obtained, inflation in Algeria is caused by structural causes related to the nature of the structure of the Algerian economy, which is characterized by a large weakness in production in various economic sectors. This is explained by the situation of imports in Algeria, as it is considered an external channel for the transmission of inflation and this is known as imported inflation, but at the same time it plays the role of an automatic regulator for local markets due to the weakness of local production, as mentioned. This imported inflation increases the exacerbation of inflation in Algeria, and it turns into a more severe inflation, which is structural inflation.

There is also another reason for inflation in Algeria, which is no less important than the first reason, namely, monetary inflation, which complicates matters further, as the increase in the money supply and its lack of control in the absence of a strong economy capable of producing and covering the needs of local markets, and Absorbing the excess monetary mass, would increase the inflation rate in Algeria, in a way that inevitably affects the value of the national currency and the purchasing power of individuals.

Therefore, in order for us to face the increasing rate of inflation in Algeria, the following conditions must be realized:

First, make strong local production in various sectors, especially those related to the production of amply consumed goods in Algeria, so that a balance is achieved between supply and demand at the level of local markets until self-sufficiency is achieved.

Second, imports must be controlled in a way that is consistent with the needs of the local market and domestic supply, and gradually reduced in coordination with the local production capacity, and this will only be if the first condition is realized.

Third, controlling the money supply, especially if there is a weakness in domestic production, and the first condition is necessary to achieve this condition as well, and there must be an developed banking system that works to mobilize savings and direct it to the proper direction of real productive investment, In addition developed other means of payment, In the first class electronic payment.

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