

Prices dynamics in Algeria ;A fiscal theory of price level analysis
La dynamique des prix en Algérie ; une analyse par la théorie budgétaire de détermination des prix

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Abstract:

In this article, we tried to determine the origin of inflation in Algeria in base ourselves on the fiscal theory of price level, for the case of Algeria during the period 1989-2013. For this purpose, we have estimated a VEC Model and a VAR model in order to identify the relation between the government liabilities and the primary budget balance. Then to determine if inflation is of budgetary or monetary origin, we have using the VAR model and the variance error decomposition. Lastly, in the aim of analyzing the monetary authorities' behavior towards inflation, we used two models VAR in order to study the impulse response to evaluate the response of the monetary instruments (money base, rediscount rate) to an innovation in inflation. According to our results, Algeria's inflation is budgetary origin due to the recourse to the internal debt and the dominating regime is an active fiscal policy and an active monetary policy.

Keywords:Inflation,Central Bank,fiscal authorities,Fiscal Theory of the Price Level, domestic public debt, central bank independence.

Codes Jel :D46, L11, R32.

Résumé :

Dans cet article, nous avons essayé de déterminer l'origine de l'inflation en Algérie en se basons sur la théorie budgétaire de détermination de niveau des prix, au cours de la période 1989-2013. À cet effet, nous avons estimé un modèle VECM et un modèle VAR afin d'identifier la relation entre les emprunts public et le solde budgétaire primaire. Ensuite, pour déterminer si l'inflation est d'origine budgétaire ou monétaire, nous avons utilisé un modèle VAR, et la décomposition de la variance de l'erreur de prévision. Enfin, dans le but d'analyser le comportement des autorités monétaires face à l'inflation, nous avons utilisé deux modèle VAR afin d'étudier les réponses d'impulsion des instruments monétaires (base monétaire, taux de réescompte) à une innovation dans l'inflation. Et d'après nos résultats, l'inflation en Algérie est d'origine budgétaire dû au recours à la dette interne et le régime dominant est un régime de politique budgétaire active et politique monétaire active.

Mots-clés :L'inflation, la banque centrale, les autorités budgétaires, la théorie budgétaire de détermination des prix,ladette publique interne, indépendance de la banque centrale.

Codes Jel :D46, L11, R32.

Introduction

Money is regarded as a variable of predilection of the economic policy, and it was theoretically established, that the prices variation of an economy, are essentially determined through the variations of money supply. The theoretical developments of the quantitative theory of K. Wicksell (1907) have suggested later to the monetary authorities to focus on the prices stability as an ultimate objective of monetary policies, thus; the traditional view of prices determination focused on the role of the monetary policy ignoring the role of fiscal policy.

The disasters caused by the crisis of 1929 in the United States permitted the budget policy to move from shadow to light, and the policy known as "New Deal" of the Democrat Franklin Delano Roosevelt who was elected in 1932 was the first historical example of effectiveness of a fiscal stimulus strategy and preceded the economic policies of Keynesian inspiration.

In fact, according to Bertrand Blancheton (2009), the macroeconomic performances of The United States in the beginning of 1930th years were spectacularly poor. The American economy was in front of deflation with great width. Roosevelt whose objectives were to break the decrease of prices and to give work for the unemployed as fast as possible and he had in reality neither doctrines, nor real economic program, he wanted only to fight with a pragmatic way against the signs of crisis by adopting several laws. After two years of governance, the renewal of activity appears slowly, but the increase of prices was real.

The theoretical support of Roosevelt policy was adopted by John Maynard Keynes (1939) who asked for the intervention of State in order to control the economy and insure price stability, and since that, the State had played a capital role expressed by the prevalence of fiscal policy in order to insure price stability, at least, until the years 1960.

The inflationary process at the end of the Sixties, and the first petroleum crisis of Seventies called into question the founded good of fiscal policies, and marked the return in strength of monetary policies defended particularly by the monetarists.

The decisions taken by the Central Bank was completely separated from the choices taken by the fiscal authorities and according to Woodford (2001) this for two reasons:

– The first one is that the fiscal policies are supposed without importance for the determination of inflation. It was often considered that inflation was purely a monetary phenomenon, consequently only the choice of the monetary policy determined the level of inflation. As the famous theorem "of Ricardian equivalence" suggests: as long as the consumers have a rational expectations, the fiscal policy shouldn't have any effects on the aggregate demand, and consequently any effects on inflation (cf. Barro 1974).

– the second reason is that the monetary policy is supposed to have a little effect on the government's budget; The budgetary effects of the monetary policy are often considered unimportant in the choice of the monetary policy for most of the industrial nations, because the seigniorage revenues represent only one small fraction of the government's revenues in those countries.

It is only during the Nineties, that a revival in the policy against inflations occurred by the birth of the fiscal theory of the price level (FTPL). This theory called into question the assertions of the preceding theory and declared that:

– An important budgetary effect generated by the monetary policy was neglected, namely, the effects of the monetary policy on the real value of outstanding government debt. With its effects on: the price level (being given that the most of the national debt is nominal), on the obligations prices, and on the real debt service required by a such debt (being given that the monetary policy can affect the real and nominal interest rates).

– in addition to that, the fiscal policy had a big importance in the determination of inflation (Sims 1994) and this occurs, primarily, by the effects of tax shocks on budgetary constraints of private sector and consequently on the aggregate demand.

The FTPL makes the rules of monetary and fiscal policy in such a way that the price level is determined by the fiscal policy and the government debt, with the fact that the monetary policy played an indirect role, which expressed a passive monetary policy and an active fiscal policy, qualified Non-Ricardian regime by Woodford (1996).

However, to be able to talk about Non-Ricardian regime, consistent with the FTPL, it is not enough to distinguish the domination of the fiscal policy on the monetary ones, but it is not also necessary to make recourse to monetization and the seigniorage in the aim to satisfy the government's inter-temporal budget constraint in the case of public deficit. However, the

central bank must be independent. Because if fiscal authorities monetized the debt, this case will be compatible with monetary theory of T. Sargent and N. Wallace (1981).

In fact, the fiscal theory of price level highlighted two regimes. The first one was known as the Ricardian regime in which the reduction of the taxes or the rising in the deficit to finance the budgetary outlays does not affect the overall demand. Because the private sector is enough informed and expects the rise of the government debt gone with the future taxes risings. The expansion in the government debt does not increase the wealth. This tax behavior relieves the monetary policy of the debt stabilization, thus releasing the central bank to aim the inflation. The second one was known as the Non-Ricardian regime in which the reduction of taxes or the rising in the deficit to finance the budgetary outlays does not predict future raises of taxes, at the beginning, the households considered that the rise of nominal debt would bring an increase in their real wealth. They tried to convert the increase of the wealth into consumption of goods, raising the overall demand and the latter brought with it a rise of prices continuing to rise until the real wealth fell again on its level to the tax reduction, and the households satisfied their original plans of consumption. Consequently the inflation which results is a budgetary inflation and not monetary.

In referent with fiscal theory of price level, the present study tries to determine if Algeria's inflation during period 1989/2013 is of fiscal origin due to the public debt, or of monetary origin due to the increase in the money supply, like identifying the mode of policy adopted to fight against inflation. This seems interesting because, firstly, the data indicates that tax imbalances caused inflation, besides of 1992 to 1996, the finance law made it possible to the central bank to grant advances to the treasure in current account to finance the deficit, that had increased inflation to 31.6%, 20.5%, 29%, 29.5%, 18.6% during these five years. Secondly, until that, no empirical work intended to identify the dominating regime in Algeria was carried out. Thirdly, as the price stability is an important aim for the monetary policy in Algeria, this study aims to identify the importance of fiscal policy consideration in the measurements undertaken by the monetary authorities in their fight against inflation. Indeed, as we will see further, the interest rates' increase by the central bank is not always the most effective means to fight against inflation, but this rates increase can even lead to an inflationary spiral in the case of an active fiscal policy.

The remainder of our article is organized as following: Section (2) the literature review, Section (3) the inter-temporal budget constraint, Section (4) Data and Econometric Methodology, Section (5) the results, Section (6) the conclusion.

1-Theoretical survey

Two views are proposed to explain the relation between the accumulation of the government debt and inflation, the first one is proposed by Sargent and Wallace (1981) which is called "unpleasant monetarist arithmetic" and the second one by Cochrane (1998, 1999), Leeper (1991, 2012), Sims (1994), Woodford (1995, 1996, 2001) which is called "the fiscal theory of price level".

The theory of Sargent and Wallace stipulates that if the monetary policy aims initially to control inflation by placing the money supply growth independently from the budget policy, then at the fiscal limit, the government must remain solvent. Then, monetary policy does not have any other alternative but to print money to produce the seigniorage revenues necessary to satisfy the payments of the debt interests. Following the monetary growth, the inflation increases by the quantitative theory's mechanism. The monetary policy of long term is led by the need for debt stabilizing, and the inflation rate is determined by the size of the entire budgetary deficit, including the payments of interests, nevertheless inflation remains monetary.

Today, most countries understood that debt monetization and seigniorage are inflationary. Thus, to fight this chaos, it would be enough to the central bank to be independent. However, in spite of the autonomy of central banks, the inflation remains always

present, and for that Cochrane, Leeper, Sims and Woodford underlined the role of the fiscal policy in the price determination at the name of the FTPL. Their works showed that the way in which is satisfied the government budget constraint in current value affects the way in which the prices are given. Indeed, if the primary surpluses vary automatically to ensure fiscal solvency for any way of prices, then the latter are given in a conventional way, i.e. by money supply and demand. In this case, we call this fiscal regime "Ricardian regime". But, if the primary surpluses followed an arbitrary process, then the way of prices balancing is determined by the condition of fiscal solvency; i.e., the price level must "jump" to satisfy a budget constraint in current value, and we call this regime "Non-Ricardian regime".

In non-Ricardian regime, the fiscal policy is the dominant one, while in Ricardian regimes it is the monetary policy, which becomes dominant. However, in order to speak about a Non-Ricardian regime compatible with the FTPL, it is not enough to only distinguish the domination of the budget policy on the monetary one, but also it is necessary not to make recourse to debt monetization and to seigniorage to satisfy the inter temporal budget constraint of the government in case of public deficit. Because if the budgetary authorities monetize the debt, this case, will be compatible to the monetary theory of Sargent and Wallace (1981).

The introduction of the fiscal theory of the price level had identified the channel by which the central bank can lose the control of inflation, even in the case of an independent monetary authority that does not need to accept targets of seigniorage dictated by the fiscal authority. This was identified by numerical calculations of Canzoneri, Cumby and Diba (1997) which suggested that central banks of the OECD countries lose the control of their price levels in a Non-Ricardian regime, since the seigniorage represents a small fraction of the total income in these countries. It is probably not reasonable to consider a central bank responsible for the price stability in a Non-Ricardian regime. However, Ricardian regimes are as plausible as Non-Ricardian regimes as had been shown by Canzoneri, Cumby and Diba (2000) which concluded that USA post-war data are more in accordance with a regime where it is the monetary policy that determines the price level and not the budget policy.

The choice of the regime should not be stated like "an assumption", but the assumption ought to be exact, and this for several reasons. For example, according to Woodford (1995) the price level is not identified if the central bank tries to block the interest rate in a Ricardian regime, but that it is only given in a Non-Ricardian regime and except this theoretical aspect, inflation reduction depends a lot on the set up regime. In Ricardian regime, the demand of the liquidity, and the way in which it progresses with time, is important for the price determination. In Non-Ricardian regime, it is only the total offer of the external capital (monetary base and government obligations) which is important, moreover, in Non-Ricardian regime, the monetary policy must function by seigniorage to satisfy the government budget constraint, if it controls the price level. On the other hand, in Ricardian regimes, the monetary policy functions by more channels that are familiar. The choice of the political régime is very important and shouldn't be made lightly if the budgetary and monetary authorities want to combine their forces in order to effectively fight inflation. In this regard, several works in several countries examine the relevance of the fiscal theory of price level. As it shows among others, the work of Oliver Blanchard (2004) about Brazil, the work of Bildirici and Ersin (2008) about Turkey, that of Attiya, Javid and Arif (2008) about Pakistan, that of H. Ayoub, J. Creel and E. Farvaque (2008) about Lebanon, that of A. Baldini and M.P. Ribeiro (2008) about Sub-Saharan Africa, the work of O. Bajo-Rubio et al. (2009) about the European Monetary Union, that of F. De Graeve and V. Queijo von Heideken (2013) about The United States, that of J. Fan et al. (2013) and of P. Antipa (2014) about the United Kingdom.

The article of Olivier Blanchard (2004) argue that the regime in which Brazil found itself in 2002 and 2003 is a Non-Ricardian regime. The model used in this article proposed the effects of the interest rate on inflation through the real exchange rate. In this study, the author shows that when the public debt is large, and mainly at short-term, an increase in interest rates, aimed

at keeping inflation within the target, raises the cost of debt service, the debt level, the default probability and the country premium. This triggers cap outflows and leading to a depreciation, rather than an appreciation, of the exchange rate, that affects inflation expectations and, eventually, inflation itself. Referring to inflation of 2002 and in spite of its engagement to target inflation, the central bank abstained from increasing the interest rate that leads to fight, in an effective way, against inflation in Brazil.

The study undertaken by Bildirici and Ersin (2008) in Turkey over the period 1933-2004, was based on the Co-integration and the vector errors correction mechanism to study the dynamics of the domestic debt on the price level and the rules of feedback followed by the budgetary authorities to Turkey. The study shows that the domestic debt has inflationary impacts over the period 1933-2004; indeed, according to results of the regression, the theorem of Ricardian equivalence is not checked for the Turkish economy, because the increase in the obligations of the government leads to effects of richness, and caused the increase in the price level. Thus, the authors affirm that, the Non-Ricardian policies, widespread in Turkey, affect the results of the anti-inflationary policies and the realization of the price stability is seriously damaged unless the policies of stability are supported by a tax engagement.

H. Ayoub, J Creel, E Farvaque (2008) examined the sustainability of fiscal theory for Lebanon. The vectorial auto-regression analysis (VAR) reveals that the inter-temporal constraint budgetary of the State is well ensured by an adjustment of the prices, which confirms that the dominant regime in Lebanon is well a Non-Ricardian regime.

Attiya et al. (2008), after having used modeling VAR for the Pakistani economy in the analysis of the interactions between the budget surplus, the accumulation of the debt and the dynamic ones of the prices, obtained contrary results. The analysis shows that when the country records a budgetary surplus, the liabilities of the government (bases monetary in addition of domestic debt) decrease. Because it uses this surplus to pay off the debt, and this proves that balance is ensured by a budgetary adjustment and not by an adjustment of the prices. Moreover, the analysis of the nominal GDP proves that a budget surplus reduced the money-income and the debt and increases inflation (because the offer is lower than the demand) and that characterizes a Ricardian regime.

The work of Baldini and Ribineiro (2008) presents a model based on the dynamic response of inflation to various shocks, including with the nominal public debt. The results prove that a certain number of countries of Sub-Saharan Africa were characterized throughout the period 1980-2005 by regime of budgetary predominance chronic, with a low or zero response of the primary surpluses to the public debt, and that the changes of the nominal public debt affect the variability of the prices by its effects on the total demand. This suggest that the fiscal incomes could be a direct source of variability of inflation, as envisaged by the fiscal theory of price level. However, the authors also note that certain countries are characterized either by a coherent adoption of a monetary predominance regime or by a lack of clear regime that it is monetary or budgetary.

In Bajo-Rubio, Díaz-Roldán and Esteve (2009) article, the authors analyze the empirical obviousness of the FTPL, for the case of EMU countries during the period 1970-2005. For this purpose, they estimated solvency equations for each country, while regress the primary surplus on the government debt, both as ratio with the GDP. Their results proved that the fiscal policy in all EMU countries (except the fiscal policy of Finland) would have been bearable during all the period, where the primary surplus answers at the ratio debt/PIB, which is indicative prevalence of Ricardian regime or monetary predominance. On the contrary, in the case of Finland the primary surplus does not answer significantly the debt/PIB ratio, which implies a possibility of a Non-Ricardian regime or of fiscal predominance.

Graeve and Queijo von Heideken (2013) as for them, prove that in spite of the weak rate of inflation noted in the United States, concerns of budgetary inflation induced an increase in the inflation of 1.6% since 2001 following the current fiscal imbalances accumulated since the beginning of the Bush administration. Whereas according to the work of Canzoneri et al.

(2000) - city higher- shows than the regime dominating for the period of post-war period in the USA (1951-1995) it was rather a Ricardian regime.

The article of Pamfili Antipa (2014) establishes the importance of the unfavorable results of the war and its implications on the sustainability of the public finance for the price level in the United Kingdom during the period 1797-1821. The author identified structural ruptures in the price level and it noted that the crucial changes in the level of price coincide with the military situations of Great Britain; the unfavorable news has an inflationary impact and the favorable news makes move back inflation. These results, it confirmed them by the analysis of the interest rates of the public debt of long term, the evolutions of this last were affected by inflation envisaged rather than the premium of defect. This evidence confirms that the regime of monetary policy put place determines the type of stabilization of the debt what allots to the monetary policy the objective of stabilization of the debt and not of inflation.

As for J. Fan et al. (2013), they check the possibility of the fiscal theory of the price level explained British inflation in the Seventies. They installed the two theories (monetary theory and the fiscal theory) as rival structural models and they examined each one against the behavior found in the data by the method of indirect inference, and they concluded that none is rejected but that the second model more capable is explained the behavior of given that the FTPL.

The results of these studies seem to suggest that budgetary predominance could be applied to incipient or war-period economies more than developed and industrialized economies. This increases our motivation to examine budgetary predominance in the case of Algeria since it is a developing country.

2 –The inter-temporal budget constraint

The analysis of the fiscal theory of price level cannot do without some the study of the inter-temporal budget constraint (IBC) of the State; a constraint according to what, the actual value of the government liabilities must equalize the present value of the primary budget surplus.

2.1-Development of the inter-temporal budget constraint

Each year, the State must collect budget revenue in the form of tax, of contribution (T_t), as it also has the seignorage (S_t) which are necessary to cover employment in the form of current public outlays and transfers them (G_t), as to pay the interest loads of the former debt (iB_{t-1}) as shows it the following equation:

$$\begin{aligned} G_t + iB_{t-1} &= T_t + B_t - B_{t-1} + S_t \\ \Rightarrow G_t - T_t - S_t + iB_{t-1} &= B_t - B_{t-1} \end{aligned} \quad (1)$$

With i : the nominal interest rate presumably constant.

The increase in debt represented by ($B_t - B_{t-1} > 0$) is the on-budget (budget deficit) (D_t), in this way the equation (1) becomes:

$$G_t - T_t - S_t + iB_{t-1} = D_t$$

That means that the on-budget is composed of the primary budget deficit ($G_t - T_t - S_t$) and the interests to pay on the previous debt (iB_{t-1}), thus, to cover the on-budget, the State must make resorts to the loan.

By taking again the equation (1), we can write the dynamics of the debt as following:

$$\frac{dB_t}{dt} = G_t - T_t - S_t + iB_{t-1}$$

Into resonant at the date (t=0), by cumulating the public balances and actualizing at the interest rate (i), we write that:

$$B_0 = \frac{B_n}{(1+i)^n} - \sum_{t=1}^n \frac{G_t - T_t - S_t}{(1+i)^t}$$

Or

$$B_n = B_0(1+i)^n + \sum_{t=0}^n \frac{G_t - T_t - S_t}{(1+i)^{t-n}} \quad (2)$$

The debt at date (n) is thus the sum of the debt at (t=0) capitalized at the rate (i), and all of the actualized public balances resulting at each period between zero and N.

The inter-temporal budget constraint thus imposes "the transversality condition":

$$\lim_{n \rightarrow \infty} \frac{B_n}{(1+i)^n} = 0 \quad (3)$$

Or in an equivalent way $B_0 = \sum_{t=1}^n \frac{T_t - G_t - S_t}{(1+i)^t}$

What means that at constant interest rate, the actualize value of the debt has the infinite to be must tend towards 0.

While supposing that (r) is the growth rate of the GDP ($P_{t+1}Y_{t+1} = (1+r)P_tY_t$), we will write the IBC and the transversality condition in ratio of debt from rapport of GDP of the form:

$$b_0 = b_n \frac{(1+r)^n}{(1+i)^n} - \sum_{t=0}^n (g_t - t_t - s_t) \frac{(1+r)^t}{(1+i)^t}$$

Or $b_n = b_0 \left[\frac{(1+i)}{(1+r)} \right]^n + \sum_{t=0}^n (g_t - t_t - s_t) \left[\frac{(1+i)}{(1+r)} \right]^{n-t}$

Or $\lim_{n \rightarrow \infty} b_n \frac{(1+r)^n}{(1+i)^n} = 0 \quad (4)$

With; $b_t = \frac{B_t}{PIB_t} = \frac{B_t}{P_t Y_t}$

$$T_t = \frac{T_t}{PIB_t} = \frac{T_t}{P_t Y_t}$$

$$S_t = \frac{S_t}{PIB_t} = \frac{S_t}{P_t Y_t}$$

According to Artus (1996), so that the transversality condition is checked, i.e. the value of the actualized future debt tends towards zero, it is necessary that the annual rate of its growth does not exceed the interest rate.

In other term, if the public debt believes in a rate $k: B_0(1+i)^n$: then the transversality condition implies that growth rate of the debt is lower than the interest rate.

By rewriting the equation (3) using (k) and (i), we obtain:

$$\lim_{n \rightarrow \infty} \frac{(1+k)^n}{(1+i)^n} B_0 = 0$$

By taking of account the growth rate of the GDP (r), then the growth rate of the debt owes raise has a rhythm inferior with $((1+i)/(1+r))$.

There exists a concept that it is necessary to motioned to have the soutenability condition, this last share of the same principle as the transversality condition, but it leans more towards the importance of the difference between the interest rate and the growth rate of the economy. The soutenability condition is checked if the growth rate is higher than the interest rate, in other term, when the government is able to release from the budget surpluses (after interest) and that the actualize debt necessarily tends towards zero.

To conclude, the IBC is not against a negative budget balance (budget deficit), however it requires a positive primary budget balance at one time given in the future (future primary budget surplus) which must cover the load of interest. Indeed debt servicing will have necessarily to be early or covered late, at least partly, by the tax rather than by the only recourse at loan. Therefore we can say that the public debt is a differed imposition i.e. which transfers the load from the loan on the future generations.

The fiscal theory of price level rises from the inter-temporal budget constraint and stipulates that it is several mechanisms to ensure the respect of this constraint, which makes appraiser two cases of figure. The first case is that where the condition of transversality is to check ($\lim_{n \rightarrow \infty} \frac{B_n}{(1+i)^n} = 0$). In this case, the State does not impose any constraint on the households and the prices do not dependent budget policies. The second case is that where the condition of transversality is not checked, i.e. the State does not ensure the respect of its own inter-temporal budgetary constraint. In this case, the general level of prices must jump in order to adjust to the primary public deficit the actual value of the obligations related to the public debt because the State must permanently remain solvent.

In both cases the inter-temporal budget constraint of the State is respected, the first case, it is the State which undertakes some by an adjustment between the receipts and the expenditure, in the second case, in fact the households undertake some while acting on the prices (the wealth effects).

2.2-Interactions between monetary policy and fiscal policy

According to Leeper (2012), there are three situations being able to lead the fiscal policy to threaten the monetary control of inflation. To start with the fiscal limit; the latter corresponds to the point to which the tax rates and the expenditure cannot adjusted any more to raise the future revenues from taxes passively and to stabilize the debt and that because the political or economic constraints. The second situation it is the risky sovereign default; when the central bank fixes the interest rate on the obligations of the government of short run, a higher probability of defect feeds current inflation directly. Finally, in a monetary union, the Member State whose regime is Non-Ricardian determines the price level of the broad union, even if the other Member States continue a Ricardian regime.

It is true that these tax disturbances affect the growth rate of the money supply of balance, but causality is not budget of the government to the money supply, and thus only of the money supply at the prices, but rather, the government budget on the prices general level, and thus, variation of the prices to the money supply. Because the higher prices have as consequence a higher money demand and it is the scenario, which the fiscal theory of price level (FTPL) proposes.

The fiscal theory of the price level operates in the case of an independent central bank, and translated rules of monetary and fiscal policy, which are complementary. It holds its roots of the influential study of T. Sargent and N. Wallace (1981) who are the first which showed how the inter-temporal budget constraint of government can affect the monetary policy conditions and, in particular, the dynamics of the prices.

The fiscal theory comes to specify two cases concerning the combination of monetary and fiscal policy. A Ricardian regime (active monetary policy/ passive fiscal policy) which stipulates that the monetary policy target inflation and the fiscal policy stabilizes the debt. A non-Ricardian regime (passive monetary policy/ active fiscal policy) which is available when the governments emit nominal obligations and this mixture assigns to the monetary policy to stabilize the debt and to the fiscal policy to order the price level, causing the balance of the fiscal theory. In the first regime, a budget deficit must be made up by a future equivalent surplus and in the second, the price level reacts in order to adjust with the primary public deficit the actual value of the contractual obligations related to the domestic public debt.

The Ricardian regime is characterized by a State troubling about the satisfaction of its inter-temporal budget constraint (where the budgetary authority adjusts its expenditure and receipts to satisfy its constraint, according to what the surplus must be identical to the debt) and of Ricardian households (which anticipates an increase of taxation when the debt increases). This regime combines an interest rate rule in which the central bank aggressively adjusts the interest rate in response to current inflation with a fiscal law in which budgetary authorities adjust sufficiently the taxes to answer the public debt in order to stabilize it.

Indeed, a tax reduction financed by the loan, which will not be accompanied by a fall public expenditure leaves unchanged consumption because the households save a great part of their incomes available to pay the tax, which will be surely required of them later. This increase in the private saving compensates exactly the reduction of the public saving and makes that the national saving remains unchanged with the result that the budgetary constraint is satisfied. Thus, this tax reduction financed by the loan does not have impact on consumption and of the blow, inflation does not influenced, and an anti-inflationary monetary policy such as the Taylor rule is perfectly effective in this kind of regime. Because an increase in the interest rates encourages the households to buy obligations, which creates a decrease in the money demand, and to keep balance on the money market, the money supply decreases thus creating a fall inflation.

This policy regime produces conventional results where inflation is always and everywhere a monetary phenomenon and an independent central bank can successfully equalized the real inflation and envisaged with target inflation.

A Non-Ricardian regime is characterized by a carefree State of the satisfaction of its inter-temporal budget constraint and of which the solvency is ensured by an adjustment of the prices, and Non-Ricardien households that does not anticipate a future increase of taxation when the State finances its budgetary outlays or a fall tax by a public debt. Indeed, when the State finances an increase in budgetary outlays or a fall tax by the loan, it causes a feeling of wealth at the households that will increase their consumption thus leading them to require quantities of good and service larger than that the market can provide. It leads to an increase in prices, which reduce the actual value of the monetary assets held by the households, which, in aggregate, is only the nominal government liabilities. The prices will cease increasing only when the real debt to be identical to the current value of expected budget surplus, with the result that the solvency of the State is permanently assured.

In such a regime, an anti-inflationary policy of the central bank such as the elastic Taylor rule (aggressive; the interest rates will increase in a manner more than proportional compared to inflation) will inevitably lead to an inflationary spiral regardless of the fact that the debt is limited or not.

3 –Data and Econometric Methodology

In this study, we will endeavor to determine the origin of Algeria's prices variation during the period 1989-2013, in base ourselves on the fiscal theory of price level. We will try to study how the budgetary sustainability is carried out: by the endogenous adjustment of primary surplus (monetary inflation), or by the endogenous adjustment of price level (budgetary inflation), because that will enable us to make a best alternative in the coordination of the monetary and fiscal policies in order to fight inflation effectively.

The choice of the variables used in our study was made based on the empirical work completed on the question and the availability of data in the bank of Algeria, in the ministry of finances and in the National Office of Statistics (ONS). Finally, we retain the following variables: budgetary outlays, budget revenue, inflation rate, money base¹, rediscount rate,

¹ It is the money supply in a strict sense (M1). It includes the immediate means of payment: fiduciary circulation except banks and sight deposits near the trade banks, CPC and Treasure.

domestic public debt, external debt and gross domestic product (GDP). All these variables are annual and cover the period going from 1989 to 2013, that is to say the period corresponding to capitalist Algeria.

We calculated the primary budget balance; which is the difference between the budget revenue and the budgetary outlays deducted from the payments of interest, and for more precision, we took it expressed as a percentage of GDP. In addition, we calculated the government liabilities like the addition of the domestic public debt, the external public debt, the guaranteed external public debt and the money base, the whole, expressed as a percentage from the GDP. As for wealth effect, we will approximately measure it by the household final consumption.

In this article, we base our study on the budgetary reaction functions, and more precisely, the methodology used by Canzoneri et al. (2000), then we will deepen the study by the analysis of the interactions between inflation on one hand and, on the other hand, the domestic public debt, the household final consumption as well as the money base. In the end, we will analyze the reaction of the central bank to inflation.

Before thinking within a multi-varied framework, we must study the stationarity of each variable by the application of the two unit root tests; Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP). The application of the ADF test requires the choice of a lag number, to do it, we apply this latter to the model [3] which includes a constant and a trend on five lags from zero up to four, and we choose the lag which minimizes the two criteria of Akaike (AIC) and Schwarz (SC).

The purpose of the first analyzed model is to identify the dominating policy regime in Algeria and to determine the behavior of the State (behavior Ricardien or Non-Ricardien) and that by determining the relation between the government liabilities and the primary budget balance. we will also check the relation of co-integration between these two variables, by the application of the Johansen co-integration test and estimate a VEC model. This method will enable us to determine two relations, a relation of long run and a relation of short run between the variables. Then we will make the analysis again by the estimation of a VAR model, and will look further into the study making an analysis of the response impulse functions of the future primary budget balance to the shocks of current liabilities. These tests are conditioned by the persistence of the primary budget balance estimated by its auto-correlation.

A primary balance with a positive autocorrelation until less the five lags, is considered positive and persistent, otherwise it is considered negatively auto-correlated. However, to estimate VEC model and to determine the order of the VAR, we must initially carry out a Granger causality test to distinguish the endogenous variable from the exogenous variable.

In the second model, we will estimate the importance of the wealth effect related to the domestic public debt and the money base growth on inflation.

According to the FTPL, under a Non-Ricardian regime, the domestic public debt causes a feeling of household's wealth which will increase their consumption leading them to require larger quantities of goods and services than what the market can provide. This create inflation caused by the increase in overall demand (measured roughly by the household final consumption or by the variation of real production i.e. growth of the GDP).

To study the interactions between inflation, household final consumption, domestic debt and money base, first, we will study the correlation between these variables, and then we will estimate a VAR model, which is going to explain the inflation rate according to the selected variables.

To look further into this study, we will determine the existence and the source of these wealth effects. To do it, we will start by estimating a VAR model with the following causal order (the money base growth rate \rightarrow the nominal domestic public debt growth rate \rightarrow growth of the household final consumption \rightarrow the inflation rate) then we realize the variance error decomposition for inflation.

This decomposition would enable us to determine the percentage in which the money growth and the domestic debt growth explain the variation of inflation via the consumption growth. If the forecast error is explained by shocks of the nominal domestic debt growth, it is said that the nominal domestic debt growth wealth effects could explain the variation of the price level, which would imply a budgetary inflation. However, if the forecast error is due to the shocks of the money growth, it is said that the monetary policy answers the debt by the monetization of the latter, causing finally a monetary inflation (Sargent and Wallace).

Lastly, the third and last stage of our study will be devoted to the identification of the monetary policy adopted by the bank of Algeria to fight against inflation. To do it, we will proceed in two steps:

Estimate a VAR model in which the monetary instrument (the money base or the discount rate) is the only variable answering directly the inflationary shocks; according to the following order : inflation \rightarrow \rightarrow the money base growth (or the discount rate).

Estimate the impulse response functions to evaluate how the monetary instrument answers an innovation in inflation. If the monetary policy is active, the rate growth of money base should answer negatively a positive shock in inflation and the discount rate should answer it positively. However, an increase in the rate growth of money base following a positive shock in inflation, or, a fall of the discount rate (rediscount) is characteristic of a passive monetary policy.

4 –Empirical results

The object of this article consists on the identification, in an econometric way, of the regime of the dominating policy in Algeria. For that, we must carry out a preliminary analysis on the selected variables, which consists on the application of the unit root tests of Augmented Dickey-Fuller (ADF) and Philips-Perron (PP) in order to study the stationarity of each following variable:

The primary budget balance expressed as a percentage of GDP (SBP_PIB)

Liabilities of government as a percentage of GDP (EMP_PIB)

The inflation rate (INF)

The rediscount rate (T_REE)

The money base growth (C_BM)

The growth of the nominal domestic public debt (C_D)

Growth of the household final consumption (C_CONS)

After having determined the number of lag of each variable, the results of the two tests ADF and PP reveal that three series, namely, the primary budget balance expressed as a percentage of the GDP, the liabilities of government expressed as a percentage of the GDP, the rediscount rate and the growth of the domestic debt, are generated by TS processes and their residues are stationary in level. The series of the inflation rate and the growth of the household final consumption are generated by DS process without constant and they are non-stationary in level and stationary in the first difference in other terms, they are integrated of order one (I (1)). As for the series of the money base growth, it is stationary in level I (0).

4.1-The relation between government liabilities and primary budget balance

We will begin this stage with the application of the test of Granger causality test, and to carry out this test, we need to determine the lag number (P) of VAR (p) model with the two stationary variables: liabilities of government (W) and primary budget balance (S). For this purpose, we use the two criteria of Akaike (AIC) and Schwartz (SC) whose results are summarized in the following table:

Table N° 01: Determination of the lag P

model	lag numbers	1	2
	selection criterion		
VAR(p)	Criterion of Akaike (AIC)	13.11055	13.0183 *
	Criterion of Schwartz (SC)	13.40506 *	13.5121

Source:result worked out starting from the Eviews4 software.

According to the table, the Akaike criterion led to choose the optimal lag P=2 while the Schwarz criterion led to retain a P=1 lag, according to the principle of Parsimony, it is appropriate to choose the model including the minimum of parameter to be estimated, therefore the one we choose here best alternative of P=1.

The application of the Granger causality test, whose results are below, show that the primary budget balance does not influence the government liabilities because the probability (0.20) is higher than (0.05), on the other hand, the government liabilities Granger cause the primary budget balance because the probability (0.04) is lower than (0.05).

Table N°02:results of the Granger causality test

Pairwise Granger Causality Tests			
Date: 05/16/15 Time: 15:29			
Sample: 1989 2013			
Lags: 1			
Null Hypothesis:	Obs	F-Statistic	Probability
W does not Granger Cause S	24	4.52607	0.04539
S does not Granger Cause W		1.73977	0.20137

Source:result worked out starting from the Eviews4 software.

4.1.1- Estimation of VEC model to SBP_PIB series by the Johansen method

We are interested in the study of Co-integration by the estimate of a VECM between the primary budget balance (SBP_PIB) and the government liabilities (EMP_PIB) both expressed as a percentage of GDP, using the method of the maximum of probability of Johansen because the two series are to integrate I (1), and that, according to the following equation:

$$\Delta sbp_pib_t = \alpha + \sum_{i=1}^m \phi_i \Delta emp_pib_{t-i} + \sum_{i=1}^m \varphi_i \Delta sbp_pib_{t-i} + \gamma_i z_{t-1} + \varepsilon_t$$

With;

(Δ) is the order of integration, (α) is the constant. (φ_i) , is the variation as a percentage of (sbp_pib) for each variation as a percentage of the (emp_pib). (φ_i) represents the variation expressed as a percentage (emp_pib) for each variation expressed as a percentage of the (sbp_pib). (z): is the Co-integration equation. (γ_i) represents the term with error correction, which must be negative and significant. (ε_t) corresponds to the residues of the model.

To estimate the VECM, we proceed in three stages:

1. The first stage consists on specifying the specifications to be retained for the relation of Co-integration and of the VECM, to do it; we will apply the trace and max-Eigen tests to determine the number of Co-integrations relations of each of the five specifications.
2. In the second stage, we will estimate VECM model of each specification, which recognizes the existence of Co-integration relation, and we will retain the one that answers to the identified specification ECM (the term with error correction must be negative and significant).
3. In the third stage, we will estimate the VECM.

Stage 1) Precision of the specifications to be retained by the Co-integration test

To carry out the trace test, the specification to be retained depends on:

- _ The absence or the presence of constants in the error correction model.
- _ The absence or the presence of constant and tendency in the Co-integration relations.

In fact, the critical values of the trace test change when we introduce a constant and/or a trend. Indeed, there are five possibilities:

- _ Specification 1: Absence of constant in the error correction model and in the relations of co-integration (the series do not have a linear trend).
- _ Specification 2: Presence of constant in the co-integration relations, but not in the error correction model (the series do not have a linear trend).
- _ Specification 3: Constant in the error correction model and in the relations of co-integration (the series are characterized by linear trends).
- _ Specification 4: Constant in the error correction model and constant with tendency in the relations of co-integrations (the series are characterized by linear trends).
- _ Specification 5: Linear trend in the error correction model and constant and quadratic tendency in the relations of co-integrations.

Then, according to the trace test, there is no relation of Co-integration between the primary budget balance and the government liabilities.

According to the test of max-Eigen, there is a relation of Co-integration between the primary budget balance and the government liabilities. Thus, it is the specification (4) which we retain, i.e. Constant in the error correction model and constant and tendency in the relations of Co-integrations (the series are characterized by linear trends as it has been shown by the tests of ADF and PP).

Stage 2) Estimation of the error correction term

The estimate of VEC model to each of the five specifications is summarized in the following table:

Table N°03:Estimates of the error correction terms

Sbp_pib	Specification				
	1	2	3	4	5
The error correction term	-0.00031 (0.03457) [-0.0090]	-0.72499 (0.18816) [-3.8530]	-0.78082 (0.20431) [-3.8217]	-0.689083 (0.13850) [-4.97543]	-0.69125 (0.14253) [-4.8499]

The values between [] correspond to the t-statistics

According to the results, all the error correction terms are negative, but it is that of the specification (4) which is most significantly different from zero, thus this is the one, which we will retain, as it was planned by max-Eigen test.

Stage 3) Estimation of VEC model for the series of the primary budget balance

Results estimation are included in the following tables

Table N° 04:Estimate of the long terms relation for the sbp_pib

the variables	Sbp_pib (-1)	C	@TREND(89)	EMP_PIB (-1)
The coefficients	1.00	64.92	-1.777	-0.496
Student stat	-	-	[2.996]	[3.970]

Source: Results in Eviews.4 software

The test of Co-integration allows the identification of the following long-term equation:

$$sbp_pib_t = 64.92 - 1.77@trend - 0.5 (emp_pib_{t-1}) + e_t$$

The estimation of the coefficients relating to the long run relation presented in the table above shows that all the coefficients are significant from a statistical point of view as it is indicated by Student statistics. We notice that an increase of 1% of the government liabilities generates a fall of 0.5% in the primary budget balance, i.e., the primary budget balance answers in a negative way to the increase of the government liabilities at the long run.

Table N° 05: Estimation of the short-term relation

The variables	The error correction term	c	Δemp_pib_{t-1}	Δsbp_pib_{t-1}	$R^2=56\%$, $F=8.36$, $\bar{R}^2=50\%$
Δsbp_pib	-0.68	-2.18	-0.38	0.08	
t-stat	4.97	2.22	2.90	0.48	

Source: Results obtained starting from the Eviews.4 software

The results of the estimation show that in the short-run, the evolution of the primary budget balance depends negatively on the government liabilities lagged only one period at 5%, in other term, the increase in this last of 1% causes a fall of the primary budget balance of 0.38%. In addition, according to the error correction term, 68% of the deviation of short-run is corrected in one (01) period, and that correction of imbalance is done in less than two (02) periods.

The VECM is given according to the following equation,

$$\Delta sbp_pib_t = -2.18 - \sum_{i=1}^{25} 0.38 \Delta emp_pib_{t-i} + \sum_{i=1}^{25} 0.08 \Delta sbp_pib_{t-i} - 0.68 (sbp_pib_{t-1} - 1.77@trend - 0.49 emp_pib_{t-1}).$$

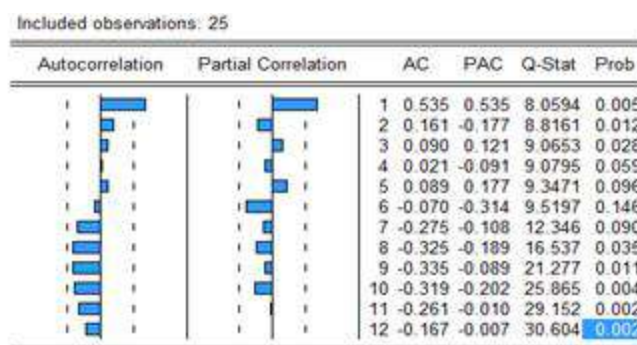
The existence of Co-integration relation between primary budget balance and government liabilities, even with a negative relation between them, shows that both series are convergent at long run i.e. they meet, which proves that the inter-temporal budget constraint is satisfied. That is confirmed in the Ricardian regime as it is confirmed in the Non-Ricardian regime. But in the short-run, the primary budget balance answers negatively to the government liabilities, and the existence of this negative relation proves that the two series are divergent in short-run, which means that the inter-temporal budget constraint is not satisfied in the short-run. That leaves to suppose that the convergence of long run is due to prices adjustment and thus this case one can affirm that inflation is budgetary and budgetary authorities adopt a Non-Ricardien behavior.

However, to check this result, we will deepen our analysis by VAR estimation for the same model (sbp_pib/emp_pib).

4.1.2 -Estimation of VAR model for the primary budget balance (S)

For this part, we will build on the methodology used by Canzonerie (2001) and we will start with the analysis of the autocorrelation of the primary budget balance by analyzing the correlogram of its stationary series (s).

Shape 1: Correlogram of stationary primary budget balance



Source: Results obtained starting from the Eviews.4 software

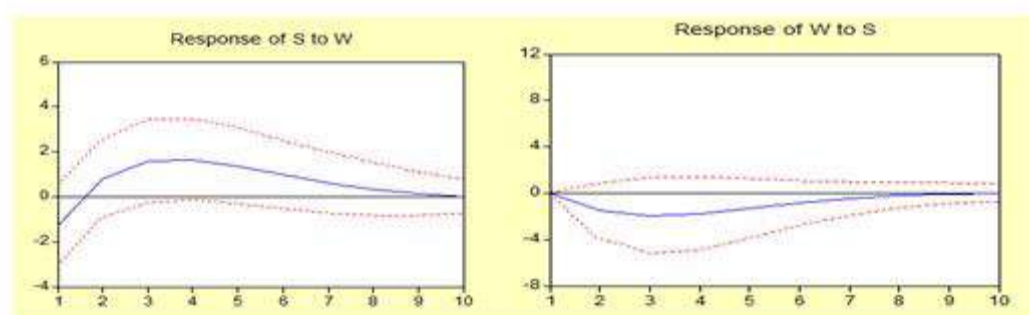
We note that there is a positive autocorrelation until the five first lags, which indicates the existence of a positive and persistent autocorrelation between the present and future values of the primary budget balance.

To study the impulse response functions between the primary budget balance and the liabilities, it will be necessary to use the stationary series (W, S) and to determine as a preliminary the order of our variables because the results obtained strongly depend on the order in which we ordered them. It is necessary to order the variables from the most exogenous to the most endogenous, or from the least dependent to most dependent, to do it, we will focus on the results of Granger causality test carried out previously.

Based on these results, we estimated a VAR (1) with constant according to the order liabilities (W) → primary budget balance (S), then we generated the graphs of the impulse response functions, and aiming to provide a graphical representation which is coherent with our study, we chose to be interested by the 2 following graphs:

Shape 1: the responses of the primary budget balance and the liabilities to an innovation in the liabilities and the primary budget balance respectively

Response to Cholesky One S.D. Innovations ± 2 S.E.



Graph (A)

Graph (B)

According to the latter, the response of the primary budget balance to a shock in the liabilities is negative (graph A), this criterion is a characteristic of an active fiscal policy. Indeed, in a regime where the State is unconcerned of the satisfaction of the IBC (State Non-Ricardien), an increase in the liabilities will not be accompanied by an increase of the primary budget balance (a growth of the taxation or a reduction in the expenditure). Because the

adjustment will be done by prices raising, which will reduce the actual value of the debt until it is equal to the value of the primary budget.

As to the liabilities, they do not answer instantaneously to the shock in the primary budget balance (graph B). The negative response after a time is probably due to the inflation that causes a drop in the actual value of the liabilities, which confirms that the primary budget balance is not used to refund the debt; a characteristic of an active fiscal policy.

4.2 -Relation between money base, domestic debt and inflation rate

To determine if inflation is of budgetary or monetary origin, we will check the existence of a possible effect of wealth, measured by households' final consumption. After we will check its impact on inflation, as well as detecting the source of this effect; does it relate to the money base growth or to the growth of the domestic debt?

4.2.1 - Correlation analysis between variables

We will begin the study of this model by the analysis of the correlation matrix of the series in level of the selected variables; the results obtained are as follows:

Table N° 06: the correlation matrix

	inf	Croi_c	Croi_d	Croi_bm
inf	1.00000	0.96177	0.17214	-0.13874
Croi_c	0.96177	1.00000	0.07578	-0.22500
Croi_d	0.17214	0.07578	1.00000	0.09756
Croi_bm	-0.13874	-0.22500	0.09756	1.00000

Source:Results obtained starting from the Eviews.4 software

According to the table, the inflation rate is in a positive correlation with the growth of the household final consumption and slightly with the growth of the domestic debt. On the other hand, the inflation rate is in negative correlation with the money base.

For the growth of the household final consumption, it is not correlated with the growth of the domestic debt. However, it is negatively correlated with the money base growth.

4.2.2 - Estimation of VAR model with inflation

Since the four variables are not integrated at the same order, the theory of co-integration is rejected. For that, we chose to estimate a model VAR (1) with the stationary variables, in which inflation appears as being endogenous variable, as for the money base growth, the growth of the domestic debt and the growth of the household final consumption; they are regarded as exogenous variables. The estimation results are summarized in the following table:

Table N° 07:Estimation of VAR (1) for the series D (inf)

The variables	D(inf)					R ² = 0.86 F-stat= 28
	c	D(inf _{t-1})	Croi_bm	C_d_st	D(croi_c)	
The coefficients	-1.59	-0.02	0.07	0.04	0.83	
t-stat	1.75	0.26	1.61	2.64	10.28	

Source:Results obtained starting from the Eviews.4 software

The estimation results show that the coefficient of the growth of the domestic debt and that of the growth of the household final consumption are significantly different from zero, and the coefficient of the money base growth is not significant.

According to VAR (1), an increase of 1% of the household final consumption generates an increase of 0.83% of the inflation rate, and a growth of 1% of the domestic debt implies a rise of 0.04% of the inflation rate. As for the money base growth, it does not have impacts on the inflation rate.

4.2.3 - Variance error decomposition analysis

We started with the estimation of a model VAR (1)² with a constant according to the following causal order³: the money base growth rate → → the domestic public debt growth rate → → growth of the household final consumption rate → → the inflation rate. Then we carried out the variance error decomposition for the growth of consumption and inflation rate (we obtain similar results for various lags and different causal orders).

According to the results, the inflation rate is explained to 5.49% by its own values, to 58.77% by the wealth effects measured by the growth of the household final consumption, to 21.07% by the growth from the domestic public debt, and 14.56% by the money base. As for the wealth effects, it is explained to 59.18% by its own values, to 2.25% by the inflation rate, to 25.22% by the growth of the domestic public debt and explained to 13.34% by the money base growth. This interpretation enables us to think that inflation in Algeria is better explained by the growth of domestic public debt than by the money base growth.

The results of the first and the second stage enable us to conclude that the Algeria's budgetary authorities, choose an active fiscal policy since the satisfaction of the IBC is ensured by an adjustment of the prices; and that inflation is explained primarily by the wealth effects which is explained primarily by the growth of the domestic debt.

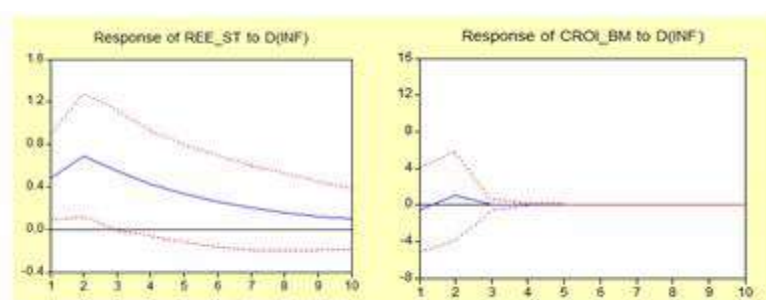
4.3 - Bank of Algeria's reactions to inflation

To fight against an inflation of budgetary origin, the central bank must abstain from increasing the interest rates in response to an increase in the price level, in other term; the central authority must adopt a passive monetary policy.

With an aim of identifying the reaction of the bank of Algeria to a raising of prices, we estimated two models VAR (1) with constant, one according to the following causal order: inflation → → money base growth, the other according to the following order: inflation → → rediscount rate. After that, we estimated the impulse responses to evaluate the answers of the monetary instruments to an innovation in inflation.

Shape 1: Impulse responses of rediscount rate and money base growth to inflation process innovation

Response to Cholesky One S.D. Innovations ± 2 S.E.



Graph(C)

Graph (D)

² The selected lag is that which minimizes the two criteria of AIC and SC.

³ it is necessary to arrange the variables of exogenous with most endogenous.

According to the graphs above, the rediscount rate answers positively to a shock in the raising of prices, and the growth of money base answers negatively to a shock in inflation.

This interpretation is in conformity with an active monetary policy, which is consistent with an economy where the dominating regime is Ricardian and where inflation is of monetary origin, but in the case of Algeria, the preceding results confirm that the inflation is of budgetary and not monetary origin, so, two possibilities arises to explain that:

- Either, we were wrong in handling, and we made errors in the identification of the origin of inflation.
- Alternatively, the monetary authorities did not become aware of the fiscal theory of price level, and they did not combine in an optimal way their instruments with those of the fiscal policy to fight inflation in a more effective way. Because in the case of budgetary inflation, the central authorities must choose a passive monetary policy while blocking or by lowering the interest rates in response to an increase in the prices.

Conclusion

In this article, we tried to determine the origin of inflation in Algeria in base ourselves on the fiscal theory of price level, for the case of Algeria during the period 1989-2013. For this purpose, we started with evaluated the Ricardien behavior of the State in base ourselves on the econometric examination of the fiscal reactions functions, and we have estimated a VEC Model and a VAR model in order to identify the relation between the government liabilities and the primary budget balance. Indeed, if the State doesn't behave in a coherent way (Ricardien behavior) with respect to its inter-temporal budget constraint, the evolution of the public debt can disturb the price stability, and in this case inflation is budgetary. According to the FTPL, if inflation is budgetary origin, the fiscal policy must be active and the monetary policy must be passive, however, if inflation is of monetary origin, the fiscal policy will be passive and the monetary policy will be active.

The VECM analysis was based on the determination of a co-integration relation between the primary budget balance and the government liabilities, and to identify two relations, a relation of long run and a relation of short run. In both cases, there is a negative relation between these two variables, this means that they converge in the long-term, but they diverge in the short run. This proves that the convergence of long run is due to an adjustment of the prices and not to an adjustment between the balance and the liabilities, which characterizes a Non-Ricardien behavior of the State.

The VAR model is based on an analysis of the impulse response functions of the future primary budget balance to the shocks in the current government liabilities. Indeed, any State involved in debt, if he wants to respect his constraint of solvency, must release in future the primary budget surpluses sufficiently raised, which translates a Ricardien behavior of the State. According to our results, the response of the primary budget balance in date (t) to a shock in the liabilities in date (t-1) is negative and the liabilities does not response instantaneously to the shocks in the primary budget balance. This means that it is not compensated by a government liabilities and this last are not used to cover the primary budget balance that is proof of an active fiscal policy.

The study of the budgetary reaction functions, which was based on the VECM or VAR analysis, show that during the period 1989 to 2013 the State is carefree satisfaction of its inter-temporal budget constraint and follows an active fiscal policy.

However, to determine if inflation is of budgetary or monetary origin, we have checked the existence and the source of possible wealth effect, and its impact on the inflation using the VAR model. This analysis is based on the variance error decomposition for the household final consumption growth and for inflation too.

Our results proved that inflation is explained primarily by the wealth effect, which is explained mainly by the growth of the domestic public debt and not by the growth of the

money base, which confirms that inflation is a fiscal origin due to recourse to the domestic public debt and not to the monetization of deficit.

Lastly, in the aim of analyzing the monetary authorities' behavior towards inflation, we used two models VAR in order to study the impulse response to evaluate the response of the monetary instruments (money base, rediscount rate) to an innovation in inflation. The results of this step affirm that the money base growth answers negatively to a shock in inflation, and the rediscount rate answers positively to a shock in the raising of prices, which confirms an active monetary policy spreading aggressively with inflation.

To conclude, according to this study, Algeria's inflation of 1989 up to 2013 is budgetary origin due to the recourse to the internal debt and the dominating regime is an active fiscal policy and an active monetary policy. Thus, the monetary authorities answer has inflation by an aggressive policy by increasing the interest rates and by lowering the money base. However, in the case of a budgetary inflation, in referents at the FTPL, the bank of Algeria must adopt a passive monetary policy, which blocks the interest rates not in order to create a wealth effect at the households and not to increase the load of interest due to the internal debt.

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