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SALOUA NASSIMA CHAOUCHE
ENSSEA, Algeria

RACHID TOUMACH
ENSSEA, Algeria

TAYLOR RULES AND THE INTEREST RATE BEHAVIOR IN ALGERIA

Abstract:

The Taylor rules represent a guideline for central bank while setting their monetary policy in the aim to ensure the macroeconomic stability. The estimated Taylor rule and McCallum rule can be considered as a benchmark explicit formula for the central bank to follow when making monetary policy decisions.

The Taylor rules capture the essential of the monetary authority's behavior, and determine the level of short term interest rates compatible with price stability, keeping the output at its potential level. The gap between the rule's rate and the observed one is used as an indicator of the appropriatemonetary policy with respect to inflation targeting and output gap targeting.

In this work, we tried to asses if the short term interest rates announced by the Algerian Central Bank, fit the different version of The Taylor rule. It is an attempt to assesses the operational performance of three version of the Taylor rules in Algeria over the period 1996–2011 using quarterly data, with a view to analytically informing the conduct of monetary policy. The different estimations showed that the Taylor rule can be somehow and in some version the appropriate predictor of interest rate behavior in Algeria.

Keywords:

Monetary policy, Taylor's rule, Interest rate , Forward-looking , Smoothing Interest rate , Backward-looking

JEL Classification: A10, A00

Introduction

The economic aims of controlling inflation and limiting economic instability, to ensure long term economic growth, is pursued through the tools of monetary policy. Central banks role is to achieve this goal in developed and developing countries.

Many developing countries increasingly adopting an explicit or implicit inflation targeting framework, implemented with market oriented instruments such as short term interest rates.

There is a considerable number of research works about conducting monetary policy in developed countries, but the literature on conducting monetary policy in the developing countries specially in the north African context is very limited.

Considering some contributions such as Saxegaard (2006), he examined the pattern of excess liquidity in Sub Saharan Africa (SSA) and its consequences for the effectiveness of monetary policy, he concluded that commercial banks may hold excess reserves due to asymmetric information problems, and to the lack of competition in the financial sector. He argued that understanding the consequences of excess liquidity requires quantifying the extent to which commercial bank holdings of excess liquidity exceed the levels required for precautionary purposes.

Monetary policy can boost economic activity and inflation by lowering short term central bank interest rates, or depress economic activity and inflation by raising interest rates. Changes in output and employment caused by monetary policy are of a temporary nature: in the long run, there is consensus based on theory and evidence that changes in the money supply affect only inflation and have little effect on the economy’s growth rate.

Monetary policy has two attainable goals: to promote economic stability by minimizing the fluctuations in the business cycle and price stability by ensuring a low and stable inflation.

Regarding monetary policy rules, there exist two kinds of methodology. One is theoretical derivation of the optimal monetary policy rule.

The optimal monetary policy rule can be obtained by analyzing the optimal behavior of central bank in context of the social welfare and the economic structure constrains. The other is to set the monetary policy rule exogenously, that is, let instruments variables respond to inflation, output gap, etc..

In the developing countries context central bankers gave a big interest on the choice of simple and explicit rules for conducting the monetary policy. Many types and version of monetary policy rules have been presented, discussed and become widespread in the economic literature. Some economists believe that economic growth can be enhanced, price stability achieved and credibility reinforced by implementing a monetary policy rule Indeed the rules are argued to reduce policy

mistakes, improve the transparency of policy and end political influence on policy making .

In the practice, monetary rules have two types: target's rules and instrument's rules. This kind of monetary policy rule includes Taylor rule and McCallum rule (Taylor, 1993,1999 ; McCallum, 1988,1999) . The rules that seems to be the most used and experimented with in macroeconomic models in recent years and that characterize the behavior of the monetary authority is the Taylor instrument rule proposed by J.B.Taylor in 1993.

Since the first use of the original Taylor rule in 1993 , there have many modifications to it in order to take into account others macroeconomic variables that have influence on the monetary policy. These modifications affect the weights of the inflation gap and the output gap and the inclusions of additional variables that allow tracking observed interest rates more closely to the Taylor rate.

The aim of this work is to present the original Taylor rule, review the modifications made to its original form, to review the empirical issues related to the use of the Taylor's rule and try to verify the application of this rule to the Algerian Central Bank's interest rate.

Brief literature review

The expression « Taylor Rule » comes from the seminal work of Taylor (1993). Taylor showed that US monetary policy, covering the brief period of (1987 - 1992), is well described by movements in the federal funds rate that respond to deviations of inflation and real GDP from their target and potential levels, respectively.

After Taylor (1993), a stream of empirical literature studied and tested Taylor rule and its extensions. McCallum (2000) adopted historical analysis to test Taylor rule using the economic data of U.S. and U.K. during the period from 1962 to 1999, and Japan from 1972 to 1998. He suggested that rules' messages are more dependent upon which instrument rather than which target variable is used.

Clarida et al. (1998) estimated forward-looking monetary policy rules by using the Generalized Method of Moments (GMM). They found that the central banks in the United States, Germany and Japan have pursued an implicit form of inflation targeting. The United Kingdom, France and Italy were constrained by their European Monetary System commitments had a strong influence on monetary management within these countries.

Clarida et al. (2000) found that central banks in developed countries followed the Taylor rule (1993) in their interest setting behavior. The authors estimated a forward-looking monetary policy rule for United States pre - and post - October 1979, the beginning of Paul Volcker's. They found that the Taylor rule interest rate coefficients followed the Taylor principle during the Volcker-Greenspan term but not before 1979.

Judd and Rudebusch (1998) and Nelson (2000) combined the historical analysis with the reaction function method. Based on the analysis of monetary historical data, they successfully estimated the central bank's reaction function of U.S. during the period from 1970 to 1997 and U.K. during the period from 1992 to 1997, respectively.

Ball (1999) established the policy rule under the open economy, and added the exchange rate in Taylor rule to decide the interest rate. Indeed, interest rate or monetary condition index are chosen by central bank as policy tool.

Berger and Kempa (2012) identified the Canadian - US equilibrium exchange rate based on a simple structural model of the real exchange rate, in which monetary policy follows a Taylor rule interest rate reaction function. In particular, the exchange rate is explained by relative output and inflation as observable variables, and by unobserved equilibrium rates as well as unobserved transitory components in output and the exchange rate. Using Canadian data over 1974-2009, they found that Canada's equilibrium exchange rate evolves smoothly and follows a trend depreciation. The transitory component is found to be very persistent but much more volatile than the equilibrium rate, resulting in few but prolonged periods of currency misalignments.

By taking into consideration variable inflation targets, Yazgan and Yilmazkuday (2007) estimated forward-looking monetary policy rules for Israel and Turkey. They found that forward-looking Taylor rules seem to provide reasonable description of central bank behavior, in both countries, even with only two response variables such as deviation from targets and output gap.

Aklan and Nargelecekenler (2008) estimated the backward-looking and forward-looking monetary policy reaction functions of the Central Bank of the Republic of Turkey by considering the post-crisis period from August 2001 to September 2006, with a special emphasis on inflation targeting. They indicated that the Central Bank of the Republic of Turkey followed the Taylor rule in its interest setting behaviour. In forward-looking models, the response coefficient of inflation and the output gap is greater than that of backward-looking models.

The results of forward-looking models reflect, the policies conducted in Turkey.

In the post-crisis period, expected inflation has been the main reaction variable for the Central Bank of the Republic of Turkey.

Belhadj (2009) estimated national Taylor rules in three countries of the Maghreb countries (Tunisia, Morocco and Algeria) over the period 1990-2006. He indicated that the letter will not choose identical monetary rules to achieve their stabilization objectives. Tunisia has to grant more weight to inflation, Morocco has to grant a similar weight to inflation, activity and exchange rate while Algeria has to grant more weight to activity. It follows that the application that the application of a unique monetary policy over the whole zone of Maghreb would not be beneficial for all countries.

Some modifications have been made to the standard specification and instrument rate in order to deal with circumstances in the developing countries. In this context, our work the interest rate is used as the monetary policy instrument to account for the transmission mechanism in Algeria.

Algeria's monetary policy framework

High liquidity has been the hallmark of the Algerian monetary policy framework for

most of the 2000s. Under current provisions, hydrocarbon resource inflows have to be deposited in dinars in the banking sector. As a result, in the early part of the 2000s, rapid net foreign assets (NFA) accumulation fueled by large hydrocarbon exports and rising prices and large public spending led to a fast rise in liquidity. The interbank market progressively dried out. With no financing needs in the banking sector, the Banque d'Algérie (BA) progressively shifted its toolkit from interest rates towards liquidity management tools, developing deposit auctions instruments and using required reserves actively to contain the growth in liquidity.

Monetary policy managed to keep inflation under control, increasing volumes of liquidity absorption, together with price controls and a relatively stable exchange rate are likely to have contributed to this outcome. Growing imports also limited pressures on domestic absorption and the associated tension on prices, while a prudent fiscal policy, marked by the accumulation of sizeable fiscal savings, contributed to sterilizing liquidity.

Monetary policy instruments and transmission channels

The current monetary policy framework was set in 2003, and adjusted over time to

reflect the developments of the economic environment. The main bodies in charge of monetary policy are the Money and Credit Council (Conseil de la monnaie et du crédit), which defines, monitors, and assesses monetary policy, and the BA, which is responsible for operational implementation.

Monetary policy is tasked with targeting both the internal and external stability of the currency, with price stability explicitly established as a policy objective in 2010. Base money has been the main intermediate instrument of monetary policy since 2001–03, following years of targeting net domestic assets (NDA) under the structural adjustment period. The exchange rate regime is managed, and exchange rate policy targets a real effective exchange rate in line with its fundamental value.

The BA has three policy instruments: liquidity management tools (required reserves and deposit facilities), interest rates, and the exchange rate. In a context of ever-increasing liquidity, developments in the monetary policy toolkit have been dominated by the introduction of liquidity. Management instruments, which have become the main policy tool. In April 2002, the BA introduced a 7-day deposit auction facility; a 3-

month deposit auction facility was set up in August 2005; and a remunerated deposit facility was put in place in June 2005.

In January 2013, a 6-month deposit auction facility was added to the liquidity management toolkit. The BA has also been using required reserves actively since 2004. The lack of refinancing need in the banking system has led the BA to give up using the discount rate as a signaling instrument, while auction rates have been set at very low and stable levels. The exchange rate is assigned to preserving competitiveness, but has occasionally been used to contain price pressures, a policy that is easily implemented thanks to the price-maker status of the BA on the Forex market.

Methodology

The best-known simple instrument rule is the Taylor rule, where the instrument - the nominal short-term interest rate - responds only to inflation and to the output gap. Taylor (1993) suggested this rule as an explanation of the monetary policy setting.

Since the rule described a complicated process in very simple terms and fitted the data very well, it quickly became very popular. We start by describing the original Taylor rule (1993) and present the modifications it has since undergone.

The Taylor rule

The equation proposed by Taylor in 1993 become a benchmark rule for most research works, it described how a central bank should adjust its interest rate policy instrument in a systematic manner in response to change in inflation and macroeconomic activity.

In other words the interest rate reacts to the inflation deviation and output gap, and the rule describes how can central bank maintains low and stable inflation and avoids large fluctuation of output and employment by using the interest rate as instrument

The backward-looking Taylor rule(1993)

John Taylor in 1993 proposed that U.S. monetary policy that can be described by an interest-rate feedback rule of the form

$$r = r^* + \pi + 0.5(\pi - \pi^*)0.5(y) \quad (1)$$

Whit r is the federal fund rate, r* is the equilibrium real rate, π is the average of current and the previous three period, π* is the inflation target, y is the output gap, (0.5 values were determined after simulations on the US economy to ensure twofold: A long-term objective (Price Stability) and a short-term goal (regular GDP growth).

This equation makes clear that when the current rate of inflation is above the inflation target, the central bank will increase the interest rate to control inflation, if the current

growth (change in real GDP) is higher than potential growth, the central bank will raise the interest rates to avoid overheating of the economic activity, and thus the nominal interest rate is positively related to inflation gap and the output gap, which explain the positivity of the parameters 0,5 .

A special case of the USA monetary policy is

$$r_t = \pi_t + 2\% + 0.5(\pi_t - 2\%) + 0.5$$

$$r_t = 1.5\pi_t + 1\% + 0.5y \qquad (2)$$

According to this rule, one point increase in inflation will raise the interest rate by f 1.5 points. inversely one point increase in the output gap will increase the interest rate by 0.5 point. Thus the interest rate should react to changes in inflation and the output gap, to maintain the desired level. When inflation equal its target rate, and the rate of change of GDP reaches its trend value, the real interest rate equals the growth rate of the economy, 2% for USA monetary policy.

One can not apply a standard rule for all countries, some countries take into consideration other key variables that are not included traditional Taylor rule, thus come the notion of the Taylor rule type. That concept was born of the results of different specifications of the rule for different countries, these specifications are slightly different from the original rule.

The greatest strength of the Taylor rule is its simple that leads many central bankers to conclude that the coefficients in the rule and the equilibrium interest rate must differ across countries and overtime.

We can summarize in some important points ;

- The choice of the three variables: inflation, output gap and the neutral (equilibrium) real interest rate. There are different ways to measure inflation, to estimate the equilibrium real interest rate and potential output. The robustness of estimation results can be sensitive to data selection and depend on the estimation of trend GDP, the measure of inflation.
- The timing of the information used by the rule. Taylor used contemporaneous observations of inflation and output in his rule while in reality central banks must rely on lagged information. The structure of the Taylor rule assumes that policy makers consider only current information when making policy decisions and this view is at odds with the forward-looking nature of central banks.
- The parameterization chosen by Taylor reflected exactly the preference of the American monetary authority but they must differ across countries.

Taylor rule type: Smoothing coefficient of interest rates

A simple monetary rule such as that proposed by Taylor for the United States does not capture the trend of the central bank to smooth the changes in the nominal interest rate. Smoothing the interest rate is an adjustment of the Taylor rule, it can be

incorporated into a Taylor rule type assuming that at the time of the decision on the current level of interest rates, the central bank weights the last period level of the latter, in addition to deviations of inflation and output. This can be explained by the fact that concerned central bank aims to maintain its credibility by avoiding high volatility of interest rates.

The reaction function of the central bank can therefore be described in terms of partial adjustment of the interest rate in each period. It adjusts to the desired weighted average interest rate and the rate carried interest during the previous period.

This behavior is expressed by the following equation:

$$r = pr_{t-1} + (1-p)r_t^* \quad (3)$$

Where r_t is the Nominal interest rate smoothed, r_t * is the Target interest rates by the central bank.

In other words, it is the only rate in response to changes in inflation deviations and output gap (the rate of the original equation TAYLOR) .

Including this rate in the original equation we get the following equation:

$$\mathbf{r_t = pr + (1-p)r^* = pr_{t-1} + (1-p)[r* + \alpha(\pi_t - \pi_t^*) + \beta(y_t - y_t^*)] + \varepsilon_t} \quad (4)$$

If p = 0, the estimated Taylor rule will be the same that was proposed in 1993 for the USA. Simplifying we get

$$r_t = pr_{t-1} + (1-p)[r^* + \alpha(\pi_t - \pi_t^*) + \beta(y_t - y_t^*)] + \varepsilon_t \quad (5)$$

Where r_t is the nominal short-run interest rate at period t and p is a parameter measuring the degree of smoothing of the interest rate with a value between 0 and 1.

The Taylor type rule : The forward looking Taylor rule

McCallum (1993) noted that the policy makers need a kind of information that they do not have at time t, have introduced changes to the definition of variables, with the introduction of output and anticipated inflation. According to this point of view, the variables in the Taylor's rule should be replaced by their expectations.

This specification of the rule implies that the appearance of a future inflation is immediately offset by an increase in the nominal interest rate based on the parameter α, this result is supposed to ensure a reduction in inflationary pressures.

A Taylor rule that describes the behavior of the central bank by a forward looking version incorporating a partial adjustment of the interest rate mechanism is of the form

$$r_t = pr_{t-1} + (1-p)[r^* + \alpha(E(\pi_{t,j}|\Omega) - \pi_t^*) + \beta(y_t - y_t^*)] + \varepsilon_t \quad (6)$$

Where E() represents the inflation anticipation , j is the period for which the inflation is anticipated , omega is the all information available at period t . Thus, in this context of

rule, economists expect inflation using the previous inflation and the output gap, (Svenson)

$$\boldsymbol{\pi_a = \pi_t + \alpha y_t} \quad (7)$$

Where π_a is the Expected inflation , π_t is The inflation rate in period t, yt is The output gap.

However, Taylor (1999) criticized the concept of "forward looking rules." According to him, these rules are based on current and / or delayed data because forecasts are based on past and present data. Therefore, a rule with expected inflation is not very different rules explicitly using current data and / or delayed.

According Grdesmeir and Roffia (2003), the equations without specifying a forward-looking can be estimated by ordinary least squares, excluding the estimated forward-looking version of the OLS is because the endogenous variable, as the inflation variable is anticipated with the previous inflation and is therefore endogenous.

Estimation of monetary policy for Algeria

There are two methods to estimate the reaction coefficients of the monetary policy rule. One is calibration, that is, choosing different figures and testing which figures are the best to fit the actual interest rate or money growth movements. The second is the use of the econometric analysis methods such as GMM, OLS to estimate the response parameters. The widely cited forward-looking Taylor rule proposed by Clarida et al.(2000) is conducted by GMM method. In this work , we used the GMM and OLS method to estimate three monetary policy rules.

The Estimations are based on quarterly data for the period 2001-2012, for four monetary rules specifications:

- The traditional Taylor rule (Backward-looking)
- The Taylor rule with smoothing interest rate (Backward-looking)
- The Taylor rule with introduction expectations (forward-looking)

For our purpose, a rigorous methodological approach was followed, this one is inspired by the following research:

- KossiTennou, Taylor rule, briefings and Statistics No. 523, Central Bank of the States of West Africa, in 2002.
- Jean-StéphaneMésonnier and Jean-Paul Renne, Taylor Rule and monetary policy in the euro area, NER 117, Banque de France, 2004.

Data :

To estimate the different rules we opted for quarterly data for the period from 2000 to 2014. This choice of such frequency can be justify by the lack of monthly data on some variables such as GDP, and the fact that some aggregate data are not available because of confidentiality reasons. However the frequency we used does not diminish

the interest of the study in describing the line of conduct of the Bank of Algeria.
The data used are taken from different sources following: The National Statistics Office for the consumer price index, the nominal gross domestic product. The official website of the World Bank for the real gross domestic product .The bank of Algeria for monetary data such as interest rate and money supply.

Variables measures:

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- Inflation: The inflation rate is measured by the percentage of the quarterly change in the consumer price index (CPI) . The determination of the quarterly inflation formula is :

  $$\mathbf{inflation}_t = 100 * [(\Sigma \mathbf{IPC})_{s=1}]_t - [(\Sigma \mathbf{IPC})_{s=1}]_{t-1} / (\Sigma \mathbf{IPC})_{s=1_{t-1}} \quad (8)$$

  With t and s time indices, respectively represent the months and quarters considered.
- Expected inflation: The expected inflation is determined through the literature , it can be calculated by an annual smoothing for a given quarter, taking the deference between the index of the previous quarter and the same quarter of the year before it.
- The target inflation: An implicit inflation rate of 3% is retained as part of this work. The choice of this value arises from the fact that the policy of the Central Bank aims to maintain inflation equal to the average rate achieved during the last 10 years and is 3% for BA.
- Monetary data: The monetary data are the interest rate and the money supply M1, they are available directly in quarterly accounts.
- The output (GDP): The Algerian GDP is available in annual data only in the course of our study, we will use the two aggregates of GDP after trimestrialisation.
- The potential GDP Potential GDP is defined in the literature as the production associated with the optimal use of production factors. Generally the Potential GDP is estimated using statistical method of smoothing or filtering of the GDP series, such as Hodrick and PRESCOTT.

Before the estimation, we used the Unit Root Test to verify if the data are stationary. We used the Dickey-Fuller test for this objective. This step is very important because the estimation of the coefficients require that the data are stationary. The test concerned the following used variables: Rediscount rate (Rediscount), difference between real GDP and potential (Outputgap), difference between current and target inflation (Infgap) , difference between anticipated inflation and the inflation target(Gapinfa) , growth rate of the money supply (Tclm1), difference between nominal GDP and potential (Gapnominal)

Table 1: The ADF test results

Variables	*Calculated value*	*Critical value*	*Model*	*Lags*	*Stationary*
REESCOMPTE	*-3.82*	*-3.57*	*M2*	*1*	*I(0)*
INFGAP	*-7.64*	*-1.94*	*M1*	*0*	*I(0)*
OUTPUTGP	*-3.35*	*-1.94*	*M1*	*2*	*I(0)*
GAPINFA	*-4.14*	*-2.61*	*M2*	*1*	*I(0)*
TCM1	*-7.73*	*-2.60*	*M1*	*2*	*I(0)*
GAPNOMINAL	*-7.44*	*-1.94*	*M1*	*1*	*I(0)*

The use of the Augmented Dickey Fuller (ADF) test, which is based on Akaike Information Criterion, Swatzch Bayesian Criterion and Hannan Quinn Criterion to examine the presence of unit root in the series showed that all the variables are I(0) and significant at 1 and 5 per cent.

Accordingly, the OLS estimation method cannot be used to estimate the monetary rules, moreover the problems of violation of assumptions necessary for the implementation of the OLS estimation. The GMM estimation method seems to fit better the monetary rule estimation

The backward looking rule estimation

$$\boldsymbol{r_t = r^* + \alpha inflationgap + \beta outputgap + \varepsilon_t} \quad (9)$$

$$i_t = 0.041 + \quad 0.28 inflationgap + \quad 0.006\, outputgap + \varepsilon_t$$

(0.0025) (0.414) (0.13)

[17.22]** [0.68] [0.46]

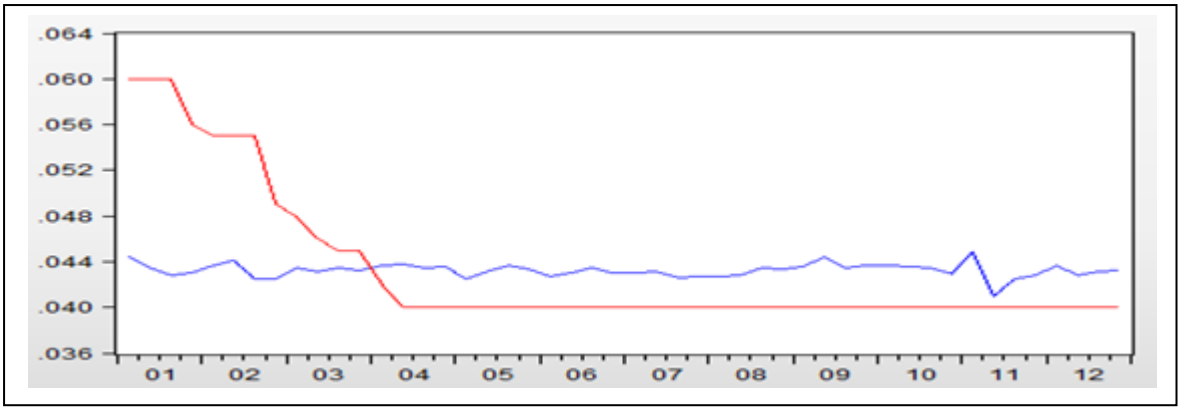
$\mathrm{R}^2 = -0.56$ DW$= 2.14$ LM$=41.45 > \mathrm{X}^2_{0.05}(4)=9.48$

White test $2.87 < \mathrm{X}^2_{0.05}(4)=9.48$

(**) is 5% level respectively

The estimation results show that the coefficient of inflation gap and the output gap are positive and it is consistent with the theory .The weight of the inflation gap is higher than the weight of output gap which is fully compatible with the monetary policy of the Algerian Central Bank. However, these coefficients are not significant. The regression determination coefficient is negative , which means that the model explicative variables do not explain the interest rate determined by the central bank.

Figure 1: Taylor backward looking Rule and Actual Rate



Source: Own adjustment based on BA data

The figure shows the actual interest rate of the Algerian central bank and the resulting Taylor rule rates, it clear that the resulting interest rate does not fit to the one of the central bank and actual central bank rate is not in line with the rule's predictions.
In addition the non-significant coefficients in the estimated the model shows the poor explanatory power of the estimated equation. Consequently, the simple rule of Taylor cannot be considered as the central bank reaction function.

The Taylor smoothing interest rate rule estimation:

Several researchers have proposed to add a smoothing factor of the interest rate in the Taylor rule. Justifying that the nominal interest rate does not adjust to its target instantaneously, but it is gradually adjusted by the central bank in order to preserve its credibility and excessive exchange rate volatility.

$$\boldsymbol{r_t = pr_{t-1} + (1+p)(r^* + \alpha\, inflation\ gap + \beta\, output\ gap) + \varepsilon_t} \quad (10)$$

$$\mathrm{r_t} = 0.86 + (1 + 0.86)(0.03 + 0.05\mathrm{inflation\ gap} + 0.005\mathrm{output\ gap}) + \varepsilon_t$$

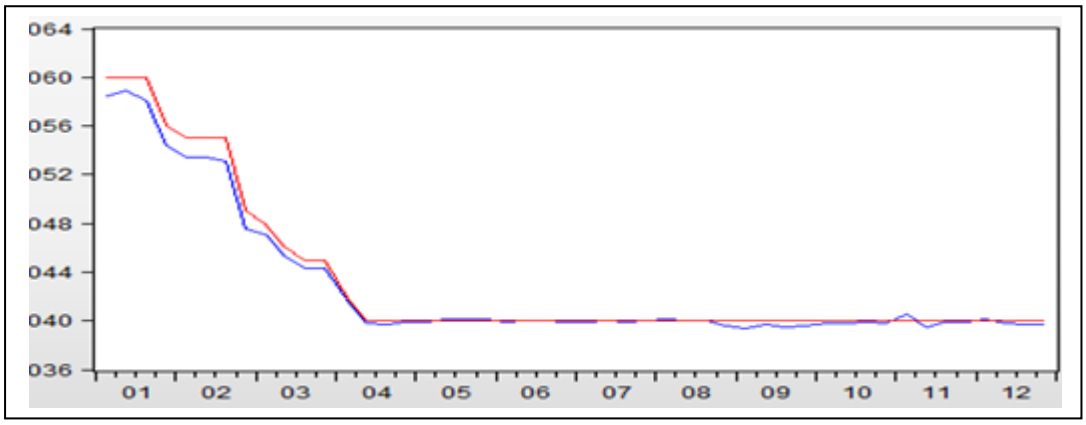
(0.068) (0.006) (0.072)

[12.60]** [0.77]** [0.73]**

$R^2 = 0.92$ DW= 2.4 LM=10.39>9.48 White test 45.80<$X^2_{0.05}(6)$=12.59

(**) is 5% level respectively

Figure 2: Taylor smoothing interest rate Rule and Actual Rate



Source: Own adjustment based on BA data

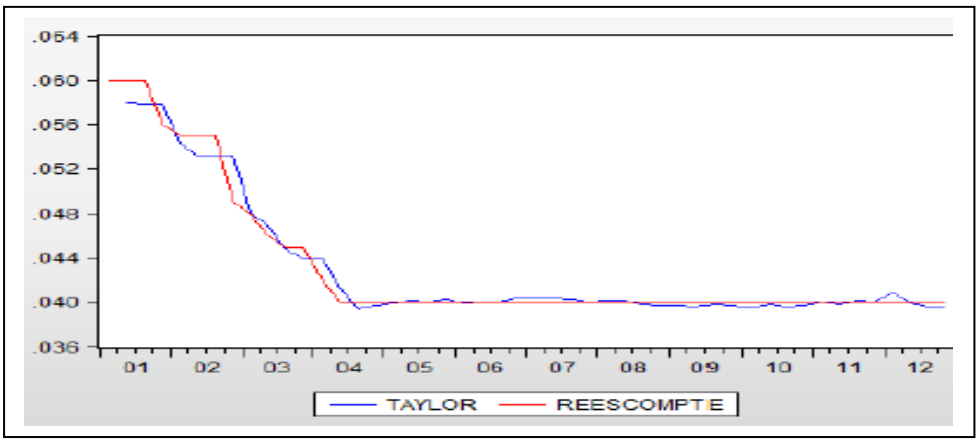
The forward looking rule estimation

$$i_t = p i_{t-1} + (1-p)[r* + \alpha(\Pi_{t+4} - \Pi_t^*) + \beta(y_t - y_t^*)] + \varepsilon t \qquad (11)$$

Variable	Coefficient	Std error	T-Stat	Signif
Constante	0.005041	0.001797	2..805315	0.0076
pi_{t-1}	0.881922	0.037618	23.44442	0.0000
y_t-y_t*	0.000957	0.006321	0.151397	0.2957
Π_t-Π_t	-0.011353	0.010722	-1.058876	0.8804

P	A	B	R^2	r*
0.881922	-0.0961	0.004827	0.96	0.04269

Figure 3: Taylor forward looking Rule and Actual Rate



Source: Own adjustment based on BA data

The estimated reaction function has a negative and statistically no significant inflation gap coefficient, the value of the output coefficient is low and not significant too. Regarding the coefficient of partial adjustment of the interest rate, it is 0.88, and is significant, this is explained by a strong trend BA in setting the level of the discount rate based on its past value. This coefficient contradicts the simple Taylor rule (1993) that makes the implicit the assumption of short-term interest rate is independent of its past values.

The figure shows an acceptable representation of the estimated interest rate dynamics according to the forward-looking equation. The results are similar to those obtained in the estimation of the previous equation. Using the high value of R^2 we can conclude that the inclusion of delayed interest rate is among the practices of BA, but that the introduction of expectations does not provide any additional explanation training policy rate in its relation to inflation and output The Taylor rule type in its forward-looking version is not representative of the reaction function of the Bank of Algeria, due to lack of interest it attaches to inflation expectations and the output gap, fixing director rate of the BA is explained by other economic variables.

According to the economic literature, if the inflation and output gap coefficients were significant, adding other economic variables could provide a better explanation for the policy rate. These variables are generally monetary aggregates and the exchange rate. The results obtained clearly show that there is no link between the inflation target and the rate of the BA.

Conclusion

The original Taylor monetary policy rule stipulates that the instrument of the monetary

authority reacts to two key goal variables: deviations of contemporaneous inflation from a pre-set target rate and deviations of contemporaneous real output from its potential level.

The Taylor type rules are simple, tractable, but at the same time capture the essence of the behavior of the monetary authority. Taylor rule still performs well in many different models because it responds directly to the central banks behavior.

This work, estimated the reaction function of the Banque d'Algerie using quarterly data from 2000:2012. Over the investigation period, it was observed that Taylor rule based monetary policy was not conducted to set interest rates in Algeria. According to empirical results, the forward-looking equation does not explain the policy rate., and the forward-looking Taylor rule does not appear to provide a reasonable description of the Banque d'Algerie. Estimates have shown that the key rate adjustment policy is not justified by the control of inflation, nor that of production. Generally, the conduct of monetary policy in Algeria through the interest rate is not close to the theoretical foundation of the Taylor rule.

The 90-10 amendment on money and credit was the starting point of a remarkable breakthrough in controlling inflation and price stability. However, strengthening the independence of the Banque d'Algerie, the introduction of appropriate instruments and the development of a coherent system for forecasting are prerequisites to develop an optimal rule, able to translate the behavior of the Bank of Algeria and intervene in future situations.

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