The monetary policy of the Central Bank of Tunisia after the Tunisian Revolution

by

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Abstract. The Tunisian economy has been affected by political and social post-revolution instability which has led to a decline in investment and perturbation of prices. To fight against inflation, the Central Bank of Tunisia has adopted the policy of inflation targeting in twinning with the Bank of France. It contributed to the conduct of monetary policy during the critical phase of transition after the Tunisian Revolution in 2011. The objective of this paper is to determine the role of the Central Bank of Tunisia to absorb monetary disturbances after the Tunisian Revolution. In this paper, we examine the evolution of monetary policy of the Central Bank of Tunisia and present the twinning between the Central Bank of Tunisia with the Bank of France and its effects on the volatility of inflation.

Key words: The monetary policy, the policy of inflation targeting, the Central Bank of Tunisia.

JEL classification: E52; E58.

1 Introduction

The policy of the Central Bank of Tunisia based on simple instruments to ensure the continuing process of gradual liberalization of the Tunisian economy and enhance its integration into the global economy. But the post-revolution instability prompted the Central Bank of Tunisia to adopt many monetary policies against the disturbances of the Tunisian Revolution in 2011.

2 Evolution of monetary policy of the Central Bank of Tunisia

The monetary policy adopted in Tunisia has experienced a continuous evolution. Since 1986, the program of monetary reform was part of the need for effective contribution of monetary and financial system for economic requirements. Monetary policy became autonomous and the Central Bank of Tunisia (CBT) focuses on objectives and effects of its monetary policy. In 2009, the Central Bank of Tunisia incorporated “the standing facilities of deposits and lending” to improve the dynamics of money market average rate. But, a situation of illiquidity appeared in June 2010 and worsened after the revolution forcing the CBT to improve its expansionary monetary policy by increasing the amount of refinancing and reducing the required reserve ratio. This monetary policy has led to an increase of inflation prompting the CBT to adopt the policy of inflation targeting, in 2013, to reduce the inflation rate.

Figure 1. Evolution of interest rates after the Tunisian Revolution in 2011

Source: Authors

According to figure 1, we note the decrease of key rate following the situation of illiquidity. Also, we note the change of evolution of money market rate after adopting the policy of inflation targeting in 2013.
The adoption of the monetary policy of inflation targeting is made on the basis of several detailed analysis of the economic situation, the outlook of the economic activity apprehended through forecasting models and the assessment of inflation risks in the medium term which has affected the evolution of interest rates.

The inflation targeting is a monetary policy that enables the central bank to ensure a low inflation rate. The Targeting is the determination of an inflation target fixed, in advance, to be achieved. It allows publishing inflation forecasts and adopting the necessary measures to control prices. But, inflation targeting requires from the central bank a minimum of independence and the establishment of an appropriate analysis and forecasting system.

The targeting involves choosing between a rate target and target area (the target will be in the range of rates). This last option is usually chosen by the central banks because of the difficulties in forecasting inflation. The policy of inflation targeting has several advantages:

- It allows to fix the expectations of agents at a relatively low level (close to the target), which helps to ensure price stability in the medium term and reduce the volatility of inflation;
- It increases the transparency of the central bank;
- The monetary authorities try to achieve its inflation target at all times.

The policy of inflation targeting keep inflation close to a target in which the central bank can use three methods: a numerical target, a zone of indifference and a target surrounded by a margin of fluctuation. The CBT has chosen the 4% target in the end of 2014.

3 The policy of inflation targeting of the Central Bank of Tunisia

3.1 Emergence and the macroeconomic effects of the policy of inflation targeting

The policy of inflation targeting has become a new monetary strategy to a large number of countries. This monetary policy framework has been adopted by both emerging and developing countries. Table 1 presents some countries that have adopted this monetary policy.

<table>
<thead>
<tr>
<th>Developing Countries</th>
<th>Developed Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Countries</td>
<td>Years of adoption</td>
</tr>
<tr>
<td>Tunisia</td>
<td>2013</td>
</tr>
<tr>
<td>Turkey</td>
<td>2006</td>
</tr>
<tr>
<td>Romania</td>
<td>2005</td>
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<tr>
<td>Philippines</td>
<td>2002</td>
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<tr>
<td>Hungary</td>
<td>2001</td>
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<td>Thailand</td>
<td>2000</td>
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<tr>
<td>Mexico</td>
<td>1999</td>
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<tr>
<td>Brésil</td>
<td>1999</td>
</tr>
<tr>
<td>Poland</td>
<td>1998</td>
</tr>
<tr>
<td>Peru</td>
<td>1994</td>
</tr>
<tr>
<td>Chile</td>
<td>1991</td>
</tr>
</tbody>
</table>

Source: Authors

According to table 1, we note the increase number of countries adopting the policy of inflation targeting which explains its effectiveness. But this monetary policy can be vulnerable to some countries; for that certain factor must be taken into consideration before the adoption of this monetary policy. Mishkin (2004) identifies five characteristics of emerging economies risk this vulnerability:

- A weak fiscal institutions;
- A weak government supervision;
- A low credibility of monetary institutions;
- A currency substitution and debt dollarization;
- Vulnerability of capital flows.

Levin & al. (2004) and Batini & Laxton (2007) stipulate that the existence of an inflation target helps to stabilize the expectations of economic agents. According to Mishkin (2004), the strategy of inflation targeting is based on the following four elements:
• Public announcement of the policy of inflation target and the fixed level reached at a time horizon. Also, this target can be expressed as a range which the fluctuations of inflation are allowed;
• The ability of the central bank to make good predictions of target variables determines the success of inflation targeting;
• Communication, to the public, is seen as a way to guide the agents' expectations to increase the transparency and the credibility of the monetary action;
• The central bank must reports the results achieved and be subject to any penalties for abuse on its policy.

The effect of the policy of inflation targeting is not limited only to the control of inflation but it still has an impact on real activity. It has a positive effect on the average growth for both developed and emerging countries. Sargent & Wallace (1981) consider financial stability is a fundamental condition for the adoption of inflation targeting policy and to ensure its effectiveness.

But, volatility of growth decreases with the adoption of inflation targeting. Gonçalves & Salls (2008) shows that the adoption of inflation targeting reduces the volatility of economic growth in emerging countries.

In the report of the International Monetary Fund in 2008, a study was conducted on emerging economies, was to compare various monetary policies to identify countries that have mastered their inflation during the 2008 crisis. The results showed that emerging economies adopting the policy of inflation targeting are the countries that have the inflationary expectations better anchored than those taking other monetary rules.

Roger & Stone (2005) show a direct link between inflation targeting and improved economic performance. The three major findings after the adoption of the policy of inflation targeting are:

• The level and volatility of inflation and interest rates declined;
• The volatility of output declined;
• The pass-through of exchange rate seems to be less important.

Bernanke & al. (1999) and Truman (2003) agree on the success of the policy of inflation targeting by improving the economic situation of countries. In addition, several empirical studies confirm this finding:

• Lin & Ye (2009) consider different groups of emerging markets and come to the conclusion that a significant effect of inflation targeting on average inflation and its volatility.
• Vega & Winkelried (2005) show that, according to the studies included in the OECD countries, emerging economies and developing, that inflation targeting is beneficial to decrease inflation.

3.2 The twinning project between Central Bank of Tunisia and Bank of France

Under the support Program of the Association Agreement and Neighbourhood Action Plan (P3A II) between Tunisia and the European Union, the Central Bank of Tunisia has put in place a modern monetary policy framework focused on inflation targeting.

The twinning project between the Central Bank of Tunisia and the Bank of France, funded by the European Union for an amount of 1.113.000 Euros was launched May 28, 2011 in order to strengthen the technical and analytical skills of executives General Directorate of Monetary Policy in the CBT through close cooperation with European central banks (the Bank of France and the National Bank of Poland).

The idea behind the choice of the policy of inflation targeting is that the CBT should have one objective: price stability, which is the best possible contribution of this institution to promote conditions a sustainable growth.

The period of this project is two years (May 2011 to May 2013) and has the following objectives:

• Make a diagnosis of existing resources in the CBT and evaluate the degree of
compliance of the Tunisian economy to the conditions of inflation targeting;

- Treat the statistics available through advanced statistical techniques and compensate the lack of some data by the use of surveys;

- Implement an analysis and prediction based on a better understanding of the transmission mechanisms of monetary policy technical and the development of econometric models for forecasting of inflation in short and medium terms;

- Set a suitable decision-making process and a communication strategy for the CBT.

The objective of this project is provide to the Central Bank of Tunisia a frame of analysis and forecasting that allow it to migrate to the policy of inflation targeting and benefit from the input of the international experts of the Bank of France, the National Bank of Poland and the Bank of England.

3.3 The commitment of the CBT in the period of targeting inflation

The situation has changed a lot over the last two years (after the Tunisian Revolution in 2011) with an acceleration of inflationary pressures hence the adoption of the policy of inflation targeting belongs to macroeconomic stability context. The Central Bank of Tunisia has gradually tightened monetary policy by increasing its key rate twice and rise to 4%. Also it gave greater flexibility to the interbank interest rates and better functioning of market mechanisms. In addition, the communication was developed to introduce the main concepts of monetary policy of the CBT to the public and to share its vision of the evolution of prices. The communication about monetary policy improved gradually with the regular publication of press releases after each Executive Board on the website of the CBT and the local press which makes decisions more transparent and better argued.

In the banking system, the Central Bank of Tunisia has committed on a process of modernization to improve market practices and increase the solidity and competitiveness of banks. Several actions have been taken in this direction, including the promulgation of legislation to strengthen the rules of good governance in credit institutions such as the gradual increase of the minimum solvability ratio to 9% in 2013 and 10% in 2014. Also, the CBT has initiated, with the State, to a restructuring of the three public banks. Thus, they will be subject to full audit missions and to be followed by the implementation of strategic plans for recovery based on the results of these audits.

A monetary policy strategy based on inflation targeting allows developing financial markets, liberalizing prices and strengthening the coordination between monetary policy and fiscal policy. All these actions require the contribution and commitment of all economic agents, especially the public authorities and banks.

4 Empirical Analysis

The modernization of the conduct of monetary policy is one of the keys of the reform program. It’s necessary to ensure the best conditions in the transition period to complete the process of liberalization of the Tunisian economy. Until the end of 2011, the inflation has been contained within acceptable limits and global balances. But, with the succession of external shocks such that the global financial crisis and internal shocks including the Tunisian Revolution, we note a rising inflationary pressures since 2012 prompting the Central Bank of Tunisia to adopt the policy of inflation targeting.

Inflation is the phenomenon of widespread price increases and corresponds to a sustainable decline in the value of the currency. It is a persistent phenomenon that raises prices in all sectors.
According to figure 2, we note the inflation rate reached a high level (13.5%) in 1981 which led Tunisia to an economic crisis (1982-1986). Inflation rate has remained above 6% during the 80s which left the country in a very difficult economic environment, especially after the failure of two economic policy: the socialist experiment (1961-1969) and capitalism under control (1970-1981). The Tunisian Revolution brought many social and political disturbances. These events pushed the Central Bank of Tunisia to adopt an expansionary policy to absorb disruptions of the banking sector but inflation increased to 6.4% in 2012. This increase has participated to reduce the purchasing power of the Tunisian consumer. In this paper, we calculate inflation rate with Taylor rule and we estimate the inflation rate in 2012 and 2014 and compare it with the target inflation of the CBT.

4.1 Inflation with the rule of Taylor

In the first part, we will calculate the inflation rate with the Taylor rule. For this, we will transform the formula to get inflation rate as endogenous variable. Then, we will compare inflation rate calculated with the real values of inflation rate. Also, we will calculate it in a space of three dimensions to determine all the possibilities of evolution of inflation rate. The Taylor rule (1993) was popularized by its simplicity and its ability to describe the behavior of the monetary authorities in setting interest rates. It is as follows:

\[ i = \pi + 2 + 0.5(\pi - 2) + 0.5(y - y^*) \] (1)

With:
- \( i \) = interest rate
- \( \pi \) = annual inflation
- \( y \) = growth rate of GDP
- \( y^* \) = growth rate of GDP filtered (the Hodrick-Prescott’s filter)

To get inflation as an endogenous variable, we can transform this formula as following:

\[ \pi = \frac{[i - 1 - 0.5(y - y^*)]}{1.5} \] (2)

According to figure 3, we note the decrease of inflation rate since 1995, especially after the adoption of economic policy “Upgrading of the economy” (1995-2010) and the process of globalization. Also inflation depends on the interest rate and the rate of growth of GDP, but the difference between the real value and the calculated value shows that inflation depends on other financial, economic and social variables.
In addition, in this section, we will use this new formula to calculate inflation rate in three-dimensional space with the Matlab software.

![Figure 4: Evolution of inflation calculated in a space of three dimensions. Source: Authors](image)

According to figure 4, we note that, for all possibilities, inflation rate has a downward trend (1995-2012) despite the cyclical increases following the financial and economic conditions of Tunisia.

4.2 Estimate of inflation

The objective of the second part is to estimate the inflation rate in 2012 and 2014 and compare it with the inflation target adopted by the CBT during the policy of inflation targeting. For that, we used daily data of the period 1957-2012 from the website of the Central Bank of Tunisia. The estimation methodology is based on several steps.

4.2.1 The stationarity

In the first part of the methodology, we will transform the series of inflation rate to confirm its stationarity. For this, we will use new series of variable following some modification and the ADF test.

<table>
<thead>
<tr>
<th>ADF statistic</th>
<th>Test critical values (5%)</th>
<th>Probability of ADF test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>10.44</td>
<td>-2.91</td>
</tr>
<tr>
<td>Trend and intercept</td>
<td>10.23</td>
<td>-3.5</td>
</tr>
<tr>
<td>None</td>
<td>10.57</td>
<td>-1.94</td>
</tr>
</tbody>
</table>

According to table 3, we note that the inflation rate is stationary and without trend or intercept. In the second part of the methodology, since the variable is stationary, we can apply the method of ordinary least squares (OLS) to estimate in the long term. For that, we must examine the Correlogram which show that the inflation rate follows the process of type moving average with two delayed values [MA (2)] in 2010 and 2012.

4.2.2 The results of the estimation

Based on the results of the regression analysis using the method of OLS, we note that the probability of MA (1) and MA (2) are below the critical values of 5% in 2010 and 2012.

In the last part of the methodology, we will use the EGARCH model to estimate inflation rate in 2012 and 2014.

The estimated coefficients of the variance equation of EGARCH model is written as follows:

- Estimating equation in 2012:
  \[ \log(\sigma_t^2) = -0.0196 + 0.0296\log(\sigma_{t-1}^2) + 0.2355\left| \frac{\varepsilon_t - 1}{\varepsilon_{t-1}} \right| + 0.9713\left| \frac{\varepsilon_{t-1}}{\varepsilon_{t-2}} \right| \]

- Estimating equation in 2014:
  \[ \log(\sigma_t^2) = 0.0551 - 0.0604\log(\sigma_{t-1}^2) + 0.2075\left| \frac{\varepsilon_t - 1}{\varepsilon_{t-1}} \right| + 0.9722\left| \frac{\varepsilon_{t-1}}{\varepsilon_{t-2}} \right| \]

This allows us to calculate the estimated values of inflation rate in 2012 and 2014.
According to figure 5, we note that in 2012 the value of the inflation rate was lower and close to the estimate value. But, the estimate value indicates that the inflation rate may be 9% in 2014 this amounts to the financial and economic disturbances after the Tunisian Revolution. This has prevented the Central bank of Tunisia to adopt the monetary policy of inflation targeting with a target of 4% at the end of 2014 to control inflation.

Our results can be summarized as follows:

- Inflation rate in Tunisia depends on the interest rate and the growth rate of GDP, but also on other financial and social variables.

- For all possibilities, inflation rate has a downward trend (1995-2012) despite the cyclical increases following the financial and economic conditions of Tunisia.

- Inflation rate could be at 9% in 2014 if the Central Bank of Tunisia does not change its monetary policy.

The goal of this paper is to determine the effectiveness of the policy of inflation targeting adopted by the Central Bank of Tunisia against the disturbances of the Tunisian Revolution. For that, we calculate inflation rate with Taylor rule and we estimate the inflation rate in 2014 to compare it with the target inflation of the CBT. According to our results, we note that inflation rate can be above the target 4% following the evolution of many economic, financial and social variables. Also, according to our estimate, we notice that inflation rate could be at 9% in 2014 due to disturbance of the Tunisian Revolution.

We note that the policy of inflation targeting is necessary to stabilize prices in Tunisia. Also we notice that the new policy of inflation targeting can be effective to control inflation mainly it is based on a database of 5000 variables to take into account to several characteristics of the Tunisian economy.

5 Conclusions

The policy of inflation targeting is considered as the most flexible and more resistant system against economies shocks and could be an option, in the future, to exit from perturbations. This twining was allowed to strengthen the technical capabilities of the Central Bank of Tunisia, to improve its understanding of the mechanisms of monetary policy and develop a diverse predictive model of inflation and growth to conduct the monetary policy. It is important, for Tunisia, to prepare new strategies that can guide the expectations of economic agents, to ensure price stability and preserve social welfare. We can conclude that the experience of the CBT may be a method of getting out of the financial and banking disturbances to other central banks in future.

References


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