Egypt’s Monetary Policy Regime: History, Present and Future

Monetary Policy Department
Central Bank of Egypt

This report has been prepared by the Central Bank of Egypt’s Monetary Policy Department in response to a request by the COMESA Monetary Institute.

“The overall objective of this study is to design an appropriate monetary policy regime to be implemented in the medium to long term by member countries in the region” COMESA MONETARY INSTITUTE
Table of Contents

1. INSTITUTIONAL ARRANGEMENTS FOR IMPLEMENTING MONETARY POLICY 3

2. THE CURRENT MONETARY POLICY REGIME 3
   AN OVERVIEW 3
   THE TRANSMISSION PROCESS 4
   THE ROLE OF MONEY 8

3. THE RECOMMENDED MONETARY POLICY REGIME 12
   PERFORMANCE AND CHALLENGES OF THE CURRENT MONETARY POLICY REGIME 12
   THE NEED FOR AN EXPLICIT AND SUSTAINABLE NOMINAL ANCHOR 14
   RECOMMENDED MONETARY POLICY REGIME: (FLEXIBLE) INFLATION TARGETING 16
   CHALLENGES OF THE INFLATION TARGETING FRAMEWORK 17

4. CONCLUSION 18

APPENDIX: CORE EQUATIONS OF THE MONETARY POLICY DEPARTMENT’S SEMI-STRUCTURAL GAP MODEL 19

REFERENCES 20
1. Institutional arrangements for implementing monetary policy

The Central Bank of Egypt (CBE) was founded 1961 according to law No. 163 of 1957 and its amendments. According to law No. 88 of 2003 of the central bank, the banking sector and money, the CBE is a public legal person directly subject to the president of the republic. The law entrusts the CBE with the formulation and implementation of monetary policy, with price stability being the primary and overriding objective.

In 2004, the board of directors agreed to establish several committees to facilitate the compliance with the objectives of the law No. 88 of 2003. The monetary policy committee (MPC) convenes on Thursday every six weeks to decide on appropriate actions with respect to key policy rates. The MPC consists of seven members of the board, including the CBE’s governor and two deputy governors. To enhance transparency, the MPC’s decisions are communicated to the market through a statement, which is released on the CBE’s external website immediately following each MPC meeting.

Furthermore, a monetary policy department (MPD) was established with the aim of providing objective monetary policy analysis, assessment, and modalities of communication with the market through its research and other functions.

In 2005, according to the presidential decree No. 17, a coordinating council for monetary policy was established under the chairmanship of the prime minister. The purpose of this council is to enhance consistency of the economic objectives among the government and the central bank. Members are the ministers of finance, planning, investment and the governor of the CBE, the two deputy governors, in addition to a number of international experts.

2. The current monetary policy regime

An overview

Monetary policy regimes can be categorized into a regime with an implicit nominal anchor and there are alternative frameworks adopted by central banks, namely: money targeting, exchange rate targeting and inflation targeting (Czech National Bank, 2014). On June 2, 2005, the CBE’s monetary policy framework abandoned a money targeting regime in favor of putting in place an inflation targeting regime. Over the transition period, which expanded to date, the monetary policy regime could be expressed as a regime with an implicit nominal anchor, as the CBE does not publicly pre-announce an inflation target or a succession of targets that it is determined to achieve.

However, the CBE moved from a quantitative operational target, excess reserves, to a price target, overnight interbank rate, in June 2005. It launched two overnight standing facilities, one for deposit and one for lending, which define a
corridor within which the interbank rate should fluctuate. The corridor system limited the volatility of interbank rates witnessed during the monetary targeting regime and enabled monetary policy implementation to control interbank rates via the adjustment of key policy rates, i.e. the rates of open market operations and standing facilities (Figure 1).

**Figure 1: Overnight Interbank and CBE Corridor Rates**

*(monthly average, in percent)*

![Graph showing overnight interbank and CBE corridor rates](image)

Source: Monetary Policy Department, Central Bank of Egypt

The transmission process

The model of the economy used for monetary policy analyses at the MPD is based on the principles of the new neoclassical syntheses (Goodfriend and King, 1997). In this context, over the short-run, monetary policy can affect real activity and successively inflation given the existence of imperfections, but it has little direct effect on the supply capacity. Over the long-run when equilibrium is restored, monetary policy determines only the nominal value of goods and services i.e. the general price level.

Figure 2 describes key channels of the transmission of changes in the official rate to inflation. The figure is from the Bank of England (2012) as it embodies the MPD’s view, which is also in line with the transmission mechanism published by many central banks. Changes in key policy rates immediately transmit to market interest and exchange rates. There is a direct effect of exchange rate changes on domestic inflation via prices of imported goods. The other effects are indirect and occur via changes in aggregate demand. These are induced by both, long-term interest rates –either directly or via their effect on asset prices– and the exchange rate. It is important to highlight that it is real interest rates, particularly the longer-term, that affect other asset prices and spending in many transmission channels. Nominal wage and price rigidities imply that a change in the nominal policy rate affects real interest rates directly. Long-term interest rates are defined as an average of the current interest rate and the expected future path of interest rates Thus, expectations play an important role, as policy
can have an impact on both, inflation expectations and expectations of future rates. Woodford (2003) regards management of expectations as a primary responsibility of the monetary authority.

**Figure 2: The transmission mechanism of monetary policy**

Changes in expectations, market rates, asset prices and the exchange rate then impact aggregate demand and inflation. According to Boivin, Kiley and Mishkin (2010) the transmission channels can be categorized into neoclassical channels, in which financial markets are perfect, and non-neoclassical channels that involve imperfections, other than nominal wage and price rigidities, referred to as the credit view. The importance of non-neoclassical channels is difficult to assess, because the theoretical guidance for this type of macroeconomic empirical research has been limited. Neoclassical channels are built upon the core models of investment, consumption and international trade. For investment, the key channel is the direct interest rate channel operating through the user cost of capital (Jorgenson, 1963) and the closely related Tobin’s (1969) q channel. For consumption, the channels operate through wealth effects and inter-temporal substitution effects, in terms of the life-cycle hypothesis of saving and consumption developed by Brumberg and Modigliani (1954). For trade, the direct channel operates through the exchange rate and its effect on net exports.

To quantify the magnitude, persistence and time-span of policy impulses, while striving to incorporate the findings of the science of monetary policy about the transmission process, particularly Lucas’s (1976) critique, price rigidities, and the importance of expectations, the MPD developed with IMF-technical assistance a semi-structural quarterly gap-model for policy analysis with partly forward-looking economic agents. The model is semi-structural because equations have clear micro-based foundations and can be derived from first order principles of rational agents, however, some ad-hoc rigidities and features were added to replicate the Egyptian data. The model is a gap model because of the assumption that the evolution of any real variable has two basic components. The first component is the trend, which is the part driven by economic fundamentals and out of the scope of monetary policy. The second component is
the gap, which represents the behavior of a variable within the business cycle, and can be determined by monetary policy actions in the medium term horizon.

The model encompasses around sixty equations. However, it can be described using four behavioral equations known in the literature as (1) New Keynesian Phillips curve (NKPC), (2) Uncovered Interest Rate Parity (UIP), (3) output gap equation (IS-curve), in addition to (4) a monetary policy rule (Taylor-rule). These set of equation are completed using some important identities and definitions. The basic equations are in the Appendix. The NKPC (equations 1-5) incorporates partly forward and backward looking expectations. It satisfies the long-term monetary policy neutrality condition as the parameters in front of the expectations sum up to one. Furthermore, the equation postulates real marginal costs (RMC) as a source of inflation. The UIP (equations 6-8) was modified from standard UIP representation, which in its simplest case relates the expected exchange rate to interest rate differential and to the risk premium. Here it was designed to allow for interventions by the CBE. The output gap (equations 9-10) allows for persistence and is inversely related to real monetary conditions index (RMCI) and positively related to the foreign output gap. The monetary policy rule (equation 11) proves a standard monetary policy reaction function under inflation targeting, but further captured the effects of different monetary policy regimes.

Consequently, responses to a monetary policy impulse can be analyzed under different policy regimes, which is especially useful during the transition from the current regime with an implicit nominal anchor to a pure inflation targeting regime. Impulse-Response functions are presented in Figure 3. The blue line indicates a pure inflation targeting regime, the red line indicates a fixed exchange rate regime, and the green line indicates an intermediate regime. Results imply that monetary policy has the strongest and fastest effect on inflation in a pure inflation targeting regime and the weakest in a fixed exchange rate regime. In the intermediate regime, the full impact of a 1 percentage point interest rate shock on inflation is around 0.3 percentage points. It takes around 6 months to reach the full impact and the shock is not persistent as effects fade away completely after around 2.5 years. This is somewhat faster than what Al-Mashat and

---

1In the context of IMF technical assistance to the CBE, two experts from the Czech National Bank spent 6 consecutive months in 2008 with the Monetary Policy Department at the CBE to design a small open economy gap model with forward looking expectations and with the endogenous monetary policy response, which can be classified as a reduced form New Keynesian Model (NKM). Model properties, impulse responses and forecasting abilities were assessed. The model provided acceptable assessment of initial conditions and reasonable forecast results and alternative policy response scenarios through 2009Q1 before challenges started to emerge. The Monetary Policy Department amended the original model in an attempt to solve the disconnect that started to emerge between the observed inflation and the model generated measures of inflationary pressures that continued following the successive supply shocks that faced the economy. While improvements continue to be tested on the core model, other near-term forecasting models are used to forecast inflation and present to the Monetary Policy Committee every quarter.
Billmeier (2008) estimated using a VAR-model, quantifying the impact of a monetary policy measure on inflation to take around 9 months and to fade away completely after 3 years. In part, the reason why the semi-structural model exhibits faster dynamics is that it contains an endogenous policy response function, i.e. a monetary policy reaction consistent with fulfillment of an inflation target. Such a reaction is necessary in the transition towards an inflation targeting regime. Analyses via cross correlations reveal similar results to the semi-structural model, albeit with a somewhat stronger magnitude (Figure 4).

**Figure 3:** Responses to 1 percentage point monetary policy impulse in the semi-structural model

Source: Monetary Policy Department, Central Bank of Egypt
The role of money

Based on the New Keynesian model described above, which has become the principal workhorse among central bankers and academic economists for forecasting and policy analyses, short-term interest rates have become the main policy instrument without direct concern for monetary aggregates (Beck and Wieland, 2010). In part, that is why the CBE’s monetary policy framework moved from a quantitative operational target (excess reserves) to an interest rate target (overnight interbank rate) in June 2005. Under money targeting, broad money serves as an intermediate target that provides information about the expected path of the ultimate target (prices), as the inflation forecast serves as an intermediate target under inflation targeting. The central bank strives to control the intermediate target via its operational target, which is excess reserves or base money more generally in the case of monetary targeting, and short-term interest rates in the case of inflation targeting. The most important reasons for abandoning money targeting are related to the potential timely instability of money demand and velocity, in addition to the limited ability to control broader monetary aggregates via base money or excess reserves, i.e. the instability of the money multiplier. More recently in Egypt a significant wedge between M2 and M0 appeared in abrupt phases as in June 2011 and September 2013 (Figure 5). In many countries, sources of the instability were largely the result of a combination of deregulation and a wave of financial innovation by banks and other financial entities that resulted in important changes in the way that the public held their financial assets, significantly affecting the various measures of money (Freedman and Laxton, 2009). In the words of the Governor of the Bank of Canada (Bouey, 1982) “we didn’t abandon the monetary aggregates, they abandoned us”.

Figure 4: Cross correlations of interest rates and inflation

Cross correlations between the real interest rate in month \((t)\) and monthly changes in domestic consumer prices in month \((t+j)\)

<table>
<thead>
<tr>
<th>Months ahead ((j))</th>
<th>Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-0.45</td>
</tr>
<tr>
<td>2</td>
<td>-0.40</td>
</tr>
<tr>
<td>3</td>
<td>-0.35</td>
</tr>
<tr>
<td>4</td>
<td>-0.30</td>
</tr>
<tr>
<td>5</td>
<td>-0.25</td>
</tr>
<tr>
<td>6</td>
<td>-0.20</td>
</tr>
<tr>
<td>7</td>
<td>-0.15</td>
</tr>
<tr>
<td>8</td>
<td>-0.10</td>
</tr>
</tbody>
</table>

Source: Monetary Policy Department, Central Bank of Egypt
Patinkin (1965) explains the transmission process of money to prices via the real balance effect, after clarifying that the supply and demand dispositions of economic agents depend on their real money balances \((M/P)\), which is part of their net assets. Money is an asset only when it is “outside money”, i.e. a liability of the public sector (central bank / government). Higher outside money then raises the initial money volume at temporary constant prices, which raises real money balances and net assets of economic agents. Higher net assets spur higher consumption to savings ratio, which cause excess demand for goods and services and thus higher prices.

The transmission mechanism via short-term interest rates is different compared to the transmission mechanisms outlined in many textbooks, which begin with changes in money supply. It may also seem to differ from the central tenet in monetary economics that “inflation is always and everywhere a monetary phenomenon” (Friedman, 1963). However, the central message of Friedman’s proposition remains basically intact, if we shift our attention away from monetary aggregates, and look at interest rates or prices more generally (Shirakawa, 2014). For each path of the policy rate there is an implied path for monetary aggregates (Bank of England, 2012). For instance, a cut in policy rates induces reduction in bank lending rates, which would likely lead to higher loan portfolios and broad money.

The monetary view is usually motivated by the quantity theory of money developed, among other, by Fisher (1911). The theory suggests that the price level \((P)\) varies directly and proportionally with the quantity of money \((M)\). It is derived from the identity, equation of exchange (Mill, 1848),

\[
Mv = PY
\]
ultimately impact inflation.

A relationship between monetary aggregates and the general price level determined by the error demand for money monetary policy stance.

Changes in money demand: liquidity shocks have temporary effects, with persistence \( \varepsilon^{-1}_{t} \) and velocity \( \varepsilon^v_t \) shocks. These shocks drive a wedge between the final outturn of monetary aggregates and the monetary policy stance. While shocks to velocity have persistent effects on the demand for money, liquidity shocks have temporary effects, with persistence determined by the error-correction specification of money demand.

An error correction specification (Andrle et al., 2013) that allows for both, short- and long-run dynamics, and illustrates the role of velocity and liquidity shocks can be presented as follows:

\[
\Delta m_t = w_y \Delta y_t - w_{rs} \Delta r_{st} - \Delta v_t + w_m \tilde{m}_{t-1} + \varepsilon^{md}_t
\]

Changes in demand for real money balances \( \Delta m_t \), where \( m_t = M_t - P_t \), depend on the growth rates of output \( (y_t) \), the nominal interest rate \( (r_{st}) \), velocity \( (v_t) \), and the real money gap \( (\tilde{m}_t) \). The real money gap is defined as the error-correction term, i.e., the deviation between real money balances from their long run trend:

\[
\tilde{m} = m_t - (\theta_{\text{const}} + \theta_y y_t - \theta_{rs} r_{st} - v_t)
\]

Velocity is assumed to follow the autoregressive process in first differences:

\[
\Delta v_t = \rho_v \Delta v_{t-1} + (1 - \rho_v) \Delta \bar{v} + \varepsilon^v_t
\]

This specification implies that we can distinguish two types of exogenous changes in money demand: liquidity \( \varepsilon^md_t \) and velocity \( \varepsilon^v_t \) shocks. These shocks drive a wedge between the final outturn of monetary aggregates and the general price level (Figure 6).

Al-Mashat (2009) and more recent empirical work internally within the Monetary Policy Department (2013), covering the period between 2003:Q1 and 2013 Q3, examine the effect of the real money gap on inflation. These exercises were motivated by the principle that in the long term, there is a positive relationship between monetary aggregates and the general price level. A money growth persistently higher than the growth of the real economy will ultimately impact inflation.
The recent study shows that a positive money gap has been building up since the end of 2012 and during 2013, which contributes to underlying inflationary pressures (Figure 7). The gap has been widening at a rapid pace to reach 3.5 percentage points as of 2014 Q1 up from 0.8 percentage points recorded in 2013 Q2. This comes as the largest real money gap since 2007 Q4. It is worth to mention that the emergence of the money gap was largely driven by excess borrowing of the government from the banking system. During the first 8 months of fiscal year 2013/14, the share of net claims on the government of the total change in broad money was 116 percent.

Thus, while monetary aggregates are neither an operational nor an intermediate policy target, they provide corroborative and sometimes leading indicators of the course of spending behavior, especially that they are available in advance of...
much of the national accounts data. Moreover, shocks to spending can have their origin in the banking system and not directly caused by changes in interest rates. For instance, this can occur via a credit crunch caused by losses of capital on non-performing loans which lead to tighter lending conditions (Bank of England, 2012).

3. The Recommended monetary policy regime

Performance and challenges of the current monetary policy regime

Inflation has undergone several phases, where it was largely affected by successive supply shocks, in addition to one short period of demand pressures in 2008 (Figure 8). These shocks were mainly characterized by food supply shortages along with disruptions in distribution channels of butane gas cylinders. In 2003 and 2004, as well as more recently, the exchange rate depreciation has led to more widespread price increases across the CPI basket.

Splitting the monetary policy cycles into six periods with conditions characterized as either tight or loose, it is clear that the volatility of the monetary policy tools, whether the interest or the exchange rate, were significantly lower than the volatility of both GDP growth and the two inflation measures (Figure 9). In fact, the volatility of inflation was more than 12 times that of the overnight interest rate and 24 times that of the exchange rate. This indicates that it was the monetary policy objectives that acted as shock absorbers, rather than the monetary policy tools.2

---

2 It is worth noting that there was a structural break in the GDP growth rates since the revolution in 2011, which dropped from an average of 5.1 percent in 2009 and 2010 to
Furthermore, the capital flight following the 2011 revolution (Figure 10) undermined the transmission of changes in interest rates to exchange rates.

The lack of an explicit and sustainable nominal anchor weakened the effectiveness of the monetary policy framework and made it difficult to use the expectations channel, which, as described above, can be regarded as a primary responsibility of the central bank. Moreover the lack of coordination with other economic ministries about the inflation objective exacerbated the repercussions of supply shocks on inflation outturns.

an average of -0.8 percent in 2011, increasing the volatility by 13 times compared to the period between September 2009 and December 2010.
The need for an explicit, sustainable nominal anchor

It is the role of a monetary policy framework to provide a nominal anchor to the economy. A nominal anchor is a nominal variable that monetary policy can use to tie down the price level. The economy’s general equilibrium forces determine a set of relative prices. Assuming that there are N-markets in the economy, the number of equilibrium relative prices should therefore be N-1. In this general equilibrium framework, the nominal scale of the economy, i.e. the price level in terms of domestic currency, is not determined. Thus, fixing the price of any nominal variable would determine the nominal scale of the economy (Martinez, 2010).

Traditionally, the exchange rate has served as the main nominal anchor in Egypt with long periods of nominal exchange rate stability followed by occasional depreciations (Figure 11).

![Figure 11: The EGP/USD exchange rate](chart.png)

However, for the exchange rate to sustainably serve as a nominal anchor the current account balance must exhibit sustained surpluses to accumulate reserves in order to strengthen the central bank’s credibility in pursuing its exchange rate management regime and its ability to combat speculative attacks. However, this is not the case as actual current account balance outturns, excluding official transfers, reveal (Figure 12).
Even taking official transfers into account, gross international reserves are close to the threshold of three months of next year’s imports (Figure 13), which is considered the minimum level consistent with external viability. Nevertheless, dollarization per se did not occur in the banking system following the 2011 revolution given a set of administrative rules and controls that prevented it in addition to the rationing of foreign exchange auction volumes. Consequently, exchange rates in unofficial markets emerged.

Thus, it can be concluded that under such an environment it is difficult to credibly pursue exchange rate targeting. In addition, it would undermine the independence of monetary policy to pursue domestic stability objectives in the context of the open economy trilemma (Obstfeld and Taylor, 1997) and optimal monetary policy. Furthermore, the loss of international competitiveness would be exacerbated, leading to a further deterioration of external balances.
Consequently, in the context of the monetary policy regime categories highlighted in the overview, and as money targeting was abandoned in June 2005 as described above, we recommend inflation targeting as the sustainable monetary regime with an explicitly announced inflation target and communicated forecast to anchor expectations of economic agents. This recommendation is inline with the objectives of the CBE’s monetary policy framework change in June 2005.

**Recommended monetary policy regime: (Flexible) Inflation targeting**

The science of monetary policy reflected in the elements of the new neoclassical syntheses has received consensus by almost all academic economists and central bankers. Even the lessons from the 2007-2009 global financial crises did not in any way undermine or invalidate them (Mishkin, 2010). The monetary policy strategy that follows from the elements of the new neoclassical synthesis is referred to in the academic literature as flexible inflation targeting. It involves a strong, credible commitment by the central bank to stabilize inflation in the long run, often at an explicit numerical level, but also allows for the central bank to pursue policies to stabilize output around its natural level in the short run.

The main difference between this suggested regime and the current regime is the explicit announcement of a numerical target, a nominal anchor; and guiding expectations of economic agents towards this anchor via a well designed communication strategy that is transparent and reflects the CBE’s understanding of the economy. Compared to the current regime, it can only result in improved performance, as the CBE would be able to employ an additional transmission channel, the currently untapped expectations channel. The cost of dealing with the successive supply shocks that have faced the Egyptian economy are expected to decline as expectations become better anchored.

In the literature, a relatively long list of requirements has been identified for countries to successfully operate an IT framework. These requirements include, but are not limited to: (i) a strong fiscal position and entrenched macroeconomic stability, (ii) a well-developed financial system, (iii) central bank instrument independence and a mandate to achieve price stability, (iv) reasonably well-understood channels between policy instruments and inflation, (v) a sound methodology for devising inflation forecasts, and (vi) transparent policies to build accountability and credibility. The background for implementing IT— in particular the initial conditions— has been very diverse among IT countries, including the initial inflation rates at the time of inception, the degree of exchange rate flexibility, the level of financial sector development, the government’s fiscal position, and the levels of economic growth. Experience has shown that the transition to IT can vary greatly from one country to another. For instance, Chile spent more than 10 years in a transition from quasi IT to fully-fledged IT. On the other hand, Brazil’s transition was triggered by a crisis and continued for only a number of months.

Al-Mashat (2011) assesses and contrasts Egypt’s preparedness for inflation targeting and highlights a number of key points. Banking Law 88 of 2003 grants
the central bank of Egypt instrument independence and declared price stability as the overriding objective. The CBE has enjoyed operational (instrument) independence as monetary policy decisions are the sole responsibility of the Monetary Policy Committee (MPC) within the CBE. Moreover, the CBE has strengthened its analytical and forecasting capabilities despite data shortcomings. Alternative models to forecast inflation have been developed. Assessing and improving the current forecasting models used in monetary policy formulation is a continuous process. Furthermore, in the Egyptian context, to enhance transparency and help anchor inflation expectations, MPC’s decisions are communicated to the market through a monetary policy statement, which is released on the CBE’s external web-site after each meeting. In addition, the MPD has completed an inflation report, which was shared with several central banks and international organizations for feedback. While the report is presented during MPC meetings, it has not been published yet. Nonetheless, compared to other emerging market countries that have adopted IT, Egypt’s budget deficit has been considerably higher and widened following the revolution as reflected in the size of the public debt. A widening budget deficit is not uncommon in the period leading up to the implementation of inflation targeting, since in some cases it marks the culmination of a crisis that forces the abandonment of a currency peg. A process of fiscal consolidation is underway in Egypt which is consistent with the move towards inflation targeting.

Hence from the analysis in Al-Mashat (2011) it appears that there is nothing inherent in Egypt’s economy that would disqualify it from adopting an IT framework, notwithstanding a few areas of improvements such as consolidating the fiscal position through a transparent medium-term fiscal consolidation strategy and improving the macroeconomic database.

**Challenges of the Inflation targeting Framework**

The challenges of adopting inflation targeting would not be Egypt specific. The theory of optimal monetary policy starts by specifying an objective function that represents economic welfare, and then maximizes this objective function subject to constraints that are provided by a macro-econometric model of the economy (Mishkin, 2010). Both the objective function and the constraints are based on the principles of the new neoclassical synthesis and are embodied in a linear quadratic framework with a representative agent.

However, the dynamic behavior of the economy may well exhibit nonlinearities in response to some shocks. Moreover, the use of a quadratic objective function does not reflect the extent to which most individuals have strong preferences for minimizing the incidence of worst-case scenarios. Furthermore, the distribution of shocks hitting the economy is more complex. In some instances, the uncertainty facing the economy is clearly skewed in one direction or another. In addition the shocks hitting the economy may exhibit excess kurtosis, that is, tail risk, because the probability of relatively large negative disturbances is higher than would be implied by a Gaussian distribution. Finally, as developments in the financial sector can have a major impact on economic activity undermines the representative-agent framework.
4. Conclusion

Egypt’s main challenge following the three-year transition after the 2011 revolution is the restoration of macroeconomic stability: sustainable economic growth, low and stable inflation, the viability of external and fiscal accounts.

At the center of macroeconomic stability is the expected fiscal consolidation, which involves price adjustments of many administered goods and services with a direct impact on inflation. Therefore it becomes paramount for the central bank to capitalize on the steps undertaken since 2005 in its transition towards inflation targeting. A monetary policy regime with an explicit inflation (forecast) target provides benefits versus the current regime with only an implicit anchor via the activation of the untapped expectations channel. Inflation targeting would minimize the macroeconomic loss expected from the fiscal consolidation underway.
Appendix: Core Equations of the Monetary Policy Department’s Semi-Structural Gap Model

\[\pi_t^{Core} = b_{11}\pi_{t-1}^{Core} + (1 - b_{11})\pi_{t+1} + b_{12} \text{rmc}_{t}^{Core} + \varepsilon_{t}^{Core} \]  
(1)

\[\pi_t^{Food} = b_{21}\pi_{t-1}^{Food} + (1 - b_{21})\pi_{t+1} + b_{22} \text{rmc}_{t}^{Food} + \varepsilon_{t}^{Food} \]  
(2)

\[\pi_t^{Adm} = b_{31}\pi_{t-1}^{Adm} + (1 - b_{31})\pi_{t} + \varepsilon_{t}^{Adm} \]  
(3)

\[\pi_t = \omega \pi_t^{Core} + \omega \pi_t^{Food} + \omega \pi_t^{Adm} \]  
(4)

\[\text{rmc}_{t}^{Core} = h_{13}(w_{1}^{US}z_{1}^{EU} + w_{2}^{US}z_{2}^{EU} + 2\pi_{t}^{Food}) + (1 - h_{13})\hat{\gamma}_{t} \]  
(5)

\[s_{t}^{US} = c_{1}^{US}s_{t}^{USTar} + (1 - c_{1})\left[\pi_{t}^{USTar} + \left(i_{t} + \pi_{t}^{US} + \text{prem}_{t}\right)/4 + \varepsilon_{t}^{UIP}\right] \]  
(6)

\[\Delta s_{t}^{USTar} = c_{3}\Delta s_{t}^{USTar} + (1 - c_{3})\left[\pi_{t}^{USTar} - \pi_{t}^{US} + \Delta\pi_{t}^{US}\right] \]  
(7)

\[s_{t}^{USTar} = s_{t-1}^{US} + \Delta s_{t}^{USTar}/4 \]  
(8)

\[\hat{\gamma}_{t} = a_{1}\hat{\gamma}_{t-1} - \text{rmc}_{t} + \varepsilon_{t}^{Demand}\]  
(9)

\[\text{rmc}_{t} = a_{3}\hat{\gamma}_{t} - d_{3}\left[w_{1}^{US}z_{1}^{EU} + (1 - w_{1}^{US})\hat{\gamma}_{t}^{EU}\right\]  
(10)

\[i_{t} = d_{1}\left[d_{1}\hat{\gamma}_{t-1} + (1 - d_{1})\left[i_{t}^{Neutral} + d_{5}\left(\pi_{t} - \pi_{t}^{USTar}\right) + d_{3}\hat{\gamma}_{t}\right] + \varepsilon_{t}^{MP} \right] + \left(1 - d_{1}\right)\left[\Delta\pi_{t}^{US} + i_{t}^{US} + \text{prem}_{t} + \varepsilon_{t}^{UIP}\right] \]  
(11)

- **\(\pi\)**: Overall inflation
- **\(\pi_{t}^{Core}, \pi_{t}^{Food}, \pi_{t}^{Adm}\)**: Core, highly volatile food items, and administrated price inflation
- **\(\pi_{t}^{US}\)**: US inflation
- **\(\Delta\pi_{t}^{US}\)**: Trend in real exchange rate appreciation against US
- **\(\pi_{t}^{USTar}\)**: Domestic inflation target
- **\(\text{prem}\)**: Country risk premium
- **\(\varepsilon_{t}^{Core}\)**: Monetary policy shock
- **\(\varepsilon_{t}^{UIP}\)**: Shock to nom. exchange rate
- **\(\text{rmc}_{t}\)**: Real monetary condition index
- **\(\varepsilon_{t}^{Food}\)**: Real interest rate gap
- **\(\hat{\gamma}_{t}\)**: Output gap
- **\(\hat{\gamma}_{t}^{EU}\)**: Exchange rate shock
- **\(\text{rmc}_{t}^{Core}, \text{rmc}_{t}^{Food}\)**: Indicator of future inflation - real marginal cost for core and highly volatile food price inflation
- **\(\Delta\pi_{t}^{US}\)**: Growth of exchange rate target
- **\(\Delta\pi_{t}^{US}\)**: Gap of relative world food price
- **\(\hat{\gamma}_{t}\)**: Target level for EGP/USD exchange rate and growth of exchange rate target
- **\(\hat{\gamma}_{t}^{EU}\)**: Nominal exchange rate EGP/USD and EGP/EUR

\[\pi\]

- **\(\hat{\gamma}_{t}\)**: Output gap

\[\varepsilon_{t}^{UIP}\]

- **\(\Delta\pi_{t}^{US}\)**: Trend in real exchange rate appreciation against US
- **\(\pi_{t}^{USTar}\)**: Domestic inflation target
- **\(\text{prem}\)**: Country risk premium
- **\(\text{rmc}_{t}\)**: Real monetary condition index
- **\(\varepsilon_{t}^{Food}\)**: Real interest rate gap
- **\(\hat{\gamma}_{t}\)**: Output gap
- **\(\hat{\gamma}_{t}^{EU}\)**: Exchange rate shock
- **\(\text{rmc}_{t}^{Core}, \text{rmc}_{t}^{Food}\)**: Indicator of future inflation - real marginal cost for core and highly volatile food price inflation
- **\(\Delta\pi_{t}^{US}\)**: Gap of relative world food price
- **\(\hat{\gamma}_{t}\)**: Target level for EGP/USD exchange rate and growth of exchange rate target
References


