

INFLATION TARGETING: A MONETARY POLICY MANAGEMENT FRAMEWORK FOR THE ATTAINMENT OF PRICE STABILITY IN NIGERIA

By

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The paper appraised the conduct of monetary policy based on the objective of achieving price stability through targeting of monetary (intermediate) variables and that based on an explicit inflation target. The paper came to the conclusion that inflation targeting is preferred to monetary or intermediate variable targeting because the former moderates inflationary expectations which encourages price stability. Empirical evidence also show that countries that adopted inflation targeting were more successful in achieving price stability.

I. INTRODUCTION

This paper proposes the adoption of inflation targeting framework in Nigeria by the Central Bank of Nigeria (CBN) for the conduct of monetary policy with a mandate to maintain price stability.

The growing interest on price stability as a major goal of monetary policy has been borne out by recent developments in economic theory which tend to show that a reduction in the inflation rate impacts measurably and positively on economic growth (see for instance Barro, 1996). Furthermore, another strand of this economic thought as explained by Bruno and Easterly, 1996; and Mishkin and Posen, 1997, imply that there is no long-run trade-off between inflation and economic growth. Put differently, increases in economic activities can occur without a spell of inflationary pressure as envisaged by the Phillips curve hypothesis. The on-going prolonged economic expansion in the United States of America with low inflation is a clear example of this phenomenon. Additionally, other high points of these

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intellectual developments include:

- (i) the generally held view, firmly espoused by Milton Friedman, that the effects of monetary policy have long and variable lags which tend to make the use of discretionary monetary policy difficult to stabilise output and reduce unemployment in the short-term; and
- (ii) the time-inconsistency problem of monetary policy, which raises inflationary expectations through wage and price setting processes when central banks are perceived to be pursuing expansionary monetary policy.

Thus, as central banks focus primarily on maintaining price stability, they concurrently promote economic growth and development.

While price stability has been generally accepted by many central banks as the primary goal of monetary policy, there is no consensus among them on what constitutes price stability. Shiratsuka (1997) provides three definitions of price stability as follows:

- (i) a tolerable target range for inflation rate (if achieved assumes the attainment of the price stability objective);
- (ii) sustainable economic growth under price stability, implying price stability is achieved at the inflation rate consistent with sustainable economic growth; and
- (iii) stability of inflation expectations.

This third definition emphasises stabilising economic agents' inflation expectations. Shiratsuka terms this the clearest definition which incidentally falls within the Chairman of United States Federal Reserve Board, Alan Greenspan's operational definition of price stability which states that price stability obtains when economic agents no longer take account of the prospective change in the general price level in their economic decision making.

In order to achieve this broad objective of monetary policy, many central banks have resorted to inflation targeting regimes. While many countries such as New Zealand, Canada, United Kingdom, Sweden, Finland, Australia, Spain, Israel and recently Korea have adopted the practice of inflation targeting, the Central Bank of Nigeria still targets a monetary aggregate, notably the broad measure of money (M2) or a derivative. The question is: why did these countries decide to switch from monetary (intermediate) to inflation (final) targeting? What are the pre-requisites and advantages of inflation targeting? And what are the lessons the CBN can learn from their experiences? The rest of the paper attempts to answer these questions.

II. CONCEPTUAL ISSUES IN INFLATION TARGETING

Essentially, inflation targeting is a monetary policy framework which sets an explicit inflation target and uses an operating target without explicit intermediate target to achieve the central bank's policy objectives. According to Oh (1999), the monetary policy framework aims at pre-empting future inflationary expectations through changes in operating targets. Under inflation targeting, policy instruments (open market instruments, cash reserve requirements, moral suasion, etc) are adjusted to influence an operating target such as short-term interest rates so as to impact on the final target (policy goal or objective, the price level or its rate of change) in a desired direction. The absence of an explicit intermediate target such as a monetary aggregate is the major difference between an inflation and monetary (intermediate) targeting regimes as practised by some central banks. The characteristics of operating and intermediate targets as well as the main features of inflation targeting systems are shown in Tables 1 and 2, respectively.

Table 1: Operating and Intermediate Targets of Monetary Policy in Major Countries

	Operating Targets	Information Variables	Intermediate Targets
New Zealand	MCI (Monetary Conditions Index)	Exchange rate, interest rate, Slope of yield curve, Productivity, Wages, Interest rate on money & credit, etc.	None
Canada	MCI (Monetary Conditions Index)	M1, M2, M2+, Call rate, Credit, Wages etc.	None
U.K.	Minimum dealing rate on short-term bills	M0, M4, Exchange rate, Assets price, Inflation expectations, Capacity utilization ratio, Wholesale & retail sales, Wages, etc.	None
Sweden	RP rate	Output gap, Capacity utilisation ratio, Wages, Unemployment rate, Import price, Money, Exchange rate, Interest rates, etc.	None
Finland	Overnight short-term rate	Money, Interest rate, Asset prices, Various price indexes, etc.	Exchange rate
Spain	Overnight short-term rate	AI, PF (Liquid assets held by the public + shares in mutual funds), Producer & Consumer prices, Prices of agricultural products, Wages, Corporate profits, etc.	None
U.S.A.	Federal Funds rate	M2, M3, Interest rate, Exchange rates, Unemployment rate, Various price indicators.	M2, M3
Germany	Overnight short-term rate	Potential growth rate, Change in velocity of money, Normative & medium-term rate of inflation ¹⁾ , Various price indicators	M3
France	Overnight short-term rate	Total domestic debt, M1, M2, M3, Capacity utilisation rates, Production costs, Various price indicators	Exchange rate, M3+P1 (M3+Savings deposit-Savings certificate)
Japan	Interbank market rate	Money, MT1 (Monetary Thrust Index), Exchange rate, Interest rate, Assets price, Various price indicators.	M2+CD

Notes: 1) Inflation rate that reflects only measurement errors and does not affect seriously real sector activities (below 2%).

Source: Oh (1999)

Table 2: Salient Features of Inflation Targeting Systems in Major Inflation Targeting Countries

	Date of Introduction	Target Inflation	Price Index	Inflation report
New Zealand	March 1990	0 - 3%	CPLX (CPI excluding credit service)	Semi-annual (from Mar., 90)
Canada	Feb. 1991	1-3%	Underlying inflation (CPI excluding indirect taxes, food & energy prices)	Semi-annual (from May 95)
Israel	Dec. 1991	7 - 10%	CPI and underlying inflation as a supplementary indicator	Semi-annual (from Mar., 98)
U.K.	Oct., 1992	2.5%	RPIX (CPI excluding mortgage interest rate)	Quarterly (from Feb., 93)
Sweden	Jan., 1993	2-1%	CPI and underlying Inflation as a supplementary indicator	Quarterly (from Oct., 93)
Finland	Feb., 1993 short-term rate	2%	Underlying inflation (CPI excluding indirect tax, mortgage interest rate, government subsidy and housing prices)	None
Australia	April., 1993	2-3%	Underlying inflation (CPI excluding indirect tax, food & energy prices, mortgage interest rate)	Semi-annual (from May, 97)
Spain	Nov., 1994	Below 2%	CPI (CPI excluding mortgage interest rate).	Semi-annual (from May, 97)

Source: Oh (1999)

Generally, the framework for the conduct of monetary policy can be derived from a simple quantity theory of money equation which shows how changes in monetary aggregates influence output, inflation and the velocity of money, as shown in Equation 1.

$$M = KPY \quad (1)$$

where

- M = Money Stock
- K = an inverse of the velocity of money, v.
- P = the price level
- Y = national output as measured by the Gross Domestic Product, GDP.

Taking the logarithm of Equation 1 and differentiating gives

$$m = p + y + k \quad (2)$$

$$\text{or } m = p + y - v \quad (3)$$

where m , p , y and v are the rates of change of the respective variables. By Equation 3, the central bank can target the money stock as an intermediate target in order to influence inflation (p), rate of growth of income (y) and velocity (v) or target inflation, income and velocity directly. The choice of the anchor has varied over time but most central banks started with a monetary aggregate before switching over to inflation targeting framework.

The reasons advanced for the change are many and varied but center mainly on:

- (i) the instability and shifting relationship between different measures of money and income due mainly to financial innovations;
- (ii) decoupling central bank monetary policy functions from political pressures aimed at increasing income for political gains;
- (iii) the perceived ability of an inflation target to hold down future inflation expectations and its consequent favourable implications for economic growth;
- (iv) the problems associated with various income concepts as anchor for the conduct of monetary policy; and
- (v) the transparency inherent in and public understanding of an inflation target.

To derive the central bank long term operating strategy, assume Equation 4 to be the central bank's target equation for m , p , y and v .

$$m^1 = p^1 + y^1 - v^1 \quad (4)$$

From Equations 3 and 4, when the central bank meets its monetary target ($m - m^1 = 0$), the resultant price-gap equation (Hallman et al., 1991; and Neumann, 1996) becomes:

$$p - p^1 = (v - v^1) - (y - y^1) \quad (5)$$

According to Neumann, the price-gap model assures a process of reversion towards long-term equilibrium when monetary targets are met as short-term output and velocity changes tend to cancel out.

III. ISSUES IN DESIGNING INFLATION TARGETING STRATEGY

There are many important issues involved in the design and implementation of an inflation targeting regime. These include the:

- (i) **Definition and Measurement of the Target**

Because an inflation target requires a quantitative value consistent with the price stability objective, an inflation rate of a few percentage points above zero is normally recommended. The target series must be clearly defined, accurately measurable, readily available and quite understandable by the public. In fact, there are suggestions (for example by Wynne, 1999) that the inflation measure should be appropriate for monetary policy purposes. Some also argue for inflation measures excluding food and energy as well as indirect taxes. Australia adopted the headline consumer price index (excluding interest charges) as its target in 1998 because of its perceived stronger ability to influence public's inflation expectations (Cockerell, 1999).
- (ii) **Choice of Inflation Target**

Another relevant point to note is the appropriate target to monitor: the price-level or inflation rate. Mishkin and Posen (1997) argue that a price level target sets the path for the price level so that inflation, if above or below the target rate needs to adjust along the line to achieve the price level target in contrast to an inflation target which has the problem of base drift. In all, price level target is argued to help in fixing price-level expectations in the long-run, however, with the possibility of short-run volatility. Dittman, Gavin and Kydlung (1999) suggest that targeting the price level is a better policy option when there is persistent output gap.
- (iii) **Recognition of Transparency**

Transparency is one of the rationales for the adoption of inflation targeting. Mishkin and Posen (1997) emphasise that a variety of institutional arrangements, published materials, testimony and speeches can help in building public support for and understanding of the pursuit of price stability as well as communicating the stance of monetary policy to economic agents. In designing the target, a decision needs to be made on who is to be responsible for setting the target: the government, the central bank or both of them.
- (iv) **Need for Flexibility**

The design of an inflation target regime should be flexible enough to

respond to some shocks, while there are arguments in favour of a point or a range target. Varying the inflation targets over time could be one of the tools for achieving flexibility in coping with economic shocks.

(v) **Importance of Timing**

Because monetary policy affects inflation with long lags, it is expected that a reasonable time horizon be proposed. Similarly, it is important that the central bank has high credibility to achieve the target, while the timing of the start of the programme should coincide with a period when there is relative macroeconomic stability.

(vi) **Choice of Operating Target**

Many of the inflation targeting countries use various operating targets, ranging from overnight short-term interest rates to monetary conditions index (MCI) which, in the case of Canada, is a weighted index of interest and exchange rates. The choice of operating target is influenced by the availability and controllability of the instrument by the country's central bank. In the same vein, the operating target is expected to influence inflation over a period of time and have the signalling ability in conveying the monetary authority's policy stance so as to influence market expectations.

(vii) **Availability of Quality Data and Technical Knowledge**

Availability of timely and quality data is very essential for the smooth operation of an inflation targeting regime. In this regard, there is need for adequate data compilation and inflation forecasting capacity.

(viii) **Government Commitment to Price Stability**

The commitment of government to the concept of price stability is very crucial to the success of inflation targeting such that the coordination and harmonization of fiscal, monetary and other economic policies could easily be realised. Hence, political support for price stability would also ensure the success of an inflation targeting regime.

IV. EXPERIENCES IN INFLATION TARGETING

Formal inflation targeting regimes started to emerge in the early 1990's when the Reserve Bank of New Zealand Act of 1989 took effect on January 1, 1990. Since then, seven more countries, Canada, Israel, United Kingdom, Sweden, Finland, Australia and Spain, have joined that policy framework, while others such as South

Africa are working towards its adoption for the conduct of monetary policy (see for instance Jonsson, 1999). Prior to this, the German Central Bank, the Bundesbank, operated a monetary policy framework which is similar to inflation targeting but which is anchored on setting targets for monetary aggregates. The highlights of the Bundesbank monetary targeting regime, according to Mishkin and Posen, are:

- A numerical inflation goal which is a key element in German monetary targeting, suggesting that the differences between monetary targeting as actually practised by Germany and inflation targeting as conducted by other countries are not that great.
- German monetary targeting is quite flexible: the convergence of the medium-term inflation goal and the long-term goal has often been quite gradual.
- Under the monetary targeting regime, monetary policy has been somewhat responsive in the short run to real output growth as well as other considerations such as the exchange rate.
- The long term goal of price stability has been defined as a measured inflation rate greater than zero.
- A key element of the targeting regime is a strong commitment to transparency and to communication of monetary policy strategy to the general public.

Neumann (1996) presents a detailed overview of monetary targeting in Germany. By targeting and announcing growth rates of monetary aggregates, Bundesbank drives inflation expectations and output towards desired levels. The core of Bundesbank's targeting procedure is based on the price equation:

$$\Delta p_t = \Delta m_t + \Delta v_t - \Delta y_t \quad (7)$$

which is derived from the equation of exchange. The monetary target equation is given by

$$\Delta m_t^1 = \Pi_t^1 + E_{t-1} (\Delta y_t^* - \Delta v_t^*) \quad (8)$$

where Δ is the difference between the value of a variable in two-time periods, while E is the expectations operator.

Equation (8) implies that the ability of the Bundesbank to maintain inflation at a level consistent with its monetary target depends on the net effect of the expectations on the movements between long-run output and velocity growths. When

the bank meets its monetary target ($\Delta m_t = 0$), it will be seen from equations (7) and (8) that Germany's price level will grow within its inflation target level, depending on fluctuations in velocity and output around their long-run equilibrium levels. While Neumann reports that the Central Bank misses its target some of the time in response to abnormal developments in the economy, the bank is still credible, in part because of its independence, and has thus maintained inflation below those of most of the other European countries.

New Zealand²

- Inflation targeting in New Zealand followed legislation that mandated a Policy Target Agreement (PTA) between the elected government and the then newly created independent central bank, which resulted in a jointly decided numerical target for inflation.
- Inflation targeting was adopted only after a successful disinflation had largely taken place.
- Rather than using the headline consumer price index (CPI), the central bank uses a core-type price index to construct the inflation target variable; the variable excludes not only energy and commodity prices, but also, in particular, the effects of consumer interest rates as well as other prices on an ad hoc basis.
- The same entity that is accountable for achieving the inflation target, the Reserve Bank of New Zealand, also defines and measures the target variable when "significant" first-round impacts from terms-of-trade movements, government charges and indirect taxes arise. The ultimate long-run target variable of CPI inflation, however, is compiled by a separate agency, Statistics New Zealand.
- Although New Zealand's inflation-targeting regime is the most rigid of the inflation-targeting regimes, it still allows for considerable flexibility: as in Germany, the central bank responds to developments in variables other than inflation, such as real output growth.
- Accountability of the central bank is a key feature of the inflation-targeting regime: the Governor of the central bank is subject to possible dismissal by the government if the target is breached.
- The inflation target is stated as a range, rather than as a point target—with the midpoint of this range above zero, again suggesting as in the

2. *The rest of this section drew heavily from Mishkin and Posen.*

German case, that the long-term goal of price stability is defined as a measured inflation rate above zero.

- Strict adherence to the narrowness of the inflation target range and the one-year time horizon of the target has resulted in two related problems: (1) a control problem-that is the difficulty in keeping inflation within very narrow target ranges and (2) an instrument instability problem-that is - wider swings in the policy instruments, interest rates, and exchange rates than might have been desirable.

Canada

- Inflation targeting in Canada was not the result of legislation. However, as in New Zealand, the inflation target in Canada is jointly determined and announced by both the government and the central bank.
- As in New Zealand, inflation targeting was adopted after substantial disinflationary pressures were already evident.
- In Canada, there is a clear-cut separation between the entity that measures the inflation variable to be targeted (Statistics Canada) and the entity that is accountable for achieving the inflation target and assessing past performance (the Bank of Canada).
- The consumer price index (CPI) inflation rate has been chosen as the primary target variable because of its "headline" quality, although a core inflation rate that excludes energy and food prices and the effects of indirect taxes is also used and reported in assessing whether the trend inflation rate is on track for the medium term.
- The Canadian inflation-targeting regime is quite flexible in practice, as are all the regimes studied, with real output growth and fluctuations considered in the conduct of monetary policy. Indeed, in Canada, the inflation target is viewed as a way to help dampen cyclical fluctuations in economic activity.
- In Canada, as in New Zealand and even Germany, the chosen rate of convergence of the medium-term inflation goal and the long-term goal has been quite gradual.
- The Canadian inflation target is stated as a range rather than a point target, often with greater emphasis placed on the bands than on the midpoint.

- The midpoint of the inflation target, 2 per cent, is above zero, as in all the cases examined.
- Although accountability is a central feature of the inflation-targeting regime in Canada, the central bank is more accountable to the public in general than to the government directly.
- A key and increasingly important feature of Canada's inflation-targeting regime is a strong commitment to transparency and the communication of monetary policy strategy to the public.
- As an adjunct to implementing the inflation-targeting regime, the central bank makes use of a monetary conditions index (MCI), a weighted average of the exchange rate and the short-term interest rate, as a short-run operating target.

United Kingdom

- Like the other countries examined, the United Kingdom adopted inflation targets after a successful disinflation. Unlike these countries, however, the United Kingdom took this step in the aftermath of a foreign exchange rate crisis in order to restore a nominal anchor and to lock in past disinflationary gains.
- In the United Kingdom, there is less attempt to treat inflation targeting as a strict rule than in New Zealand, making the targeting regime more in line with the German and Canadian approach.
- As in the other inflation-targeting countries, monetary policy in the United Kingdom also responds flexibly to other factors, such as real output growth.
- Like Canada, but unlike New Zealand, the United Kingdom separates the entity that measures the inflation target variable (Office for National Statistics) from the entity that assesses whether the target has been met (the Bank of England).
- In the United Kingdom, the headline consumer price index (CPI) is not used in constructing the inflation target variable; the target variable excludes mortgage interest payments, but does not exclude energy and food prices or other adjustments.
- Initially, the Bank of England targeted an inflation range, but then shifted to a point target.

- Because the British central bank lacked independence until the May 1997 election, it was accountable for meeting the inflation targets but did not fully control decisions about the stance of monetary policy. Indeed, up until May 1997, the bank was limited to providing the principal forecast of inflation performance. As a result, the bank functioned as the Chancellor of the Exchequer's counter inflationary conscience.
- In part, because of its weaker position before May 1997, the Bank of England focused its inflation-targeting efforts on communicating its monetary policy strategy and its commitment to price stability, relying heavily on such vehicles as the Inflation Report, an innovation that has since been emulated by other inflation-targeting countries.

Though, inflation targeting has been a recent phenomenon, dating back to only the 1990's, an early appraisal of the performance of the regime has been favourable. McCallum (1996) reports that since Canada, New Zealand, Sweden and the United Kingdom adopted inflation targets, inflation and growth in real output have performed better than the average for all industrial countries. Similarly, Mishkin and Posen conclude that since New Zealand, Canada and United Kingdom adopted inflation targeting, they have maintained low inflation, an achievement that eluded them in the past.

(V) LESSONS FOR NIGERIA

It can be deduced from the exposition that the net benefits of pursuing price stability as the major objective of monetary policy and its implementation under an inflation targeting regime have encouraged most countries to adopt the practice. Thus, for a forward-looking central bank like the CBN, there is a need to realign our current targeting procedure towards inflation targeting. Already,

- (i) efforts are being made to restructure the bank's institutional framework for effective central banking;
- (ii) arrangements are being made to improve the bank's information technology infrastructure so as to enhance the quality and timeliness of data;
- (iii) government has agreed to limit its deficit, financing from the CBN to the statutory limit of 12½ per cent of government's recurrent revenue, a measure which would enhance liquidity management;
- (iv) the Research Department of the Central Bank of Nigeria has acquired substantial knowledge about the Nigerian economy and experience

in monetary targeting so that any transitional arrangement to inflation targeting would not pose a serious problem (see for instance Oresotu and Mordi, 1992; Fakiyesi, 1996; Uchendu, 1995a, 1995b, 1996, 1998, 1999). Furthermore, even though the Federal Office of Statistics has the statutory right to announce inflation in Nigeria, the Research Department has an in-house capacity to thoroughly define and estimate the relevant measure of price or inflation that would be targeted as it had done in the past for its internal use;

- (v) interest rate movements have been responsive to CBN's monetary operations;
- (vi) inflationary pressures have subsided considerably; and
- (vii) public confidence in CBN's management of monetary policy is very high and growing, since the inception of the new management.

What needs to be done now is an internal review and a coherent articulation of the policy, followed by external technical assistance from the International Monetary Fund and or some of the central banks currently practising inflation targeting.

(VI) CONCLUSION

The paper reviewed the concepts of price stability and inflation targeting and identified their benefits. Price stability encourages economic growth, while inflation targeting has been successfully used as the framework for achieving price stability. Specifically, the high point of inflation targeting is that it dampens inflationary expectations which give rise to price stability. The experiences of countries which have adopted the objective of price stability and the framework of inflation targeting to achieve it have been very satisfactory. In those countries, inflation has been curtailed and economic growth has been achieved.

Overall, based on the experiences of these countries, it is highly recommended that once the environment is conducive, the CBN should adopt price stability as the major thrust of monetary policy and an inflation-targeting regime as the framework for achieving that goal.

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