

Inflation Targeting as a Tool of Monetary Management: International Experiences

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I. Introduction

Central banks across the globe have the traditional mandates of ensuring the stability of the value of their respective domestic currencies and the normal functioning of the internal and external payment systems. A framework for achieving these mandates is through price stability as reflected in low and stable inflation sustainable over time. For a long time, price stability has become an important goal of monetary policy. In recognizing the central role of price stability in achieving the primary responsibility of central banking, inflation targeting has increasingly assumed a significant role in monetary policy management. Inflation targeting (IT), is referred to as the main medium to long run goal of monetary policy. This is based on the premise that high and variable inflation rate is socially and economically costly while short run manipulation of monetary policy to achieve the ultimate goals of output and employment could conflict with price stability goal.

This new approach of controlling inflation through monetary policy, *inflation targeting*, is one of the orthodox approaches of monetary management. However, monetary authorities' focus on ensuring price stability recognises their powers and limits regarding inflation's influence over the rest of the economy. Monetary policy, in the long run determines inflation and other nominal variables (e.g., monetary aggregates, nominal interest rates, and nominal exchange rates). However, its powers to methodically and steadily influence real variables such as output, employment, investment, relative prices (e.g., real exchange rate, real wages and real interest rate) are very limited. But, in the short run, it is a powerful instrument for stabilizing business cycles. Monetary policy does influence the value of real variables by cushioning the volatility of output and employment when shocks occur. Monetary policy under inflation targeting has countercyclical influence by reducing the volatility of inflation and output.

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This approach to monetary policy management has been the mostly debated and increasingly being adopted over the past two decades in advanced, transition and developing countries. While only 8 countries adopted the approach in the early 1990s,¹ 54 countries had adopted explicit inflation target by 1998 (Agenor, 2000). Since then, the rate of adoption is becoming widespread.

Several factors have motivated the increasing adoption of inflation targeting (IT) as a tool of monetary policy management—exchange rate crises, money demand instability, and the need to avoid social and economic costs of high and volatile inflation (Svensson, 1997 and 1998; Agenor, 2000; and Odusola 2006). The hallmark of adopting this framework is the urge to improve transparency of monetary policy making process as well as to ensure policy credibility. As a nominal anchor for monetary policy, its increasing adoption is also premised on its simplicity, maintaining public and explicit commitment to economic management discipline, improving inflation predictability, clarifying communication, accountability and transparency² coupled with need to reduce inflation variability (Galindo et al, 2005). Announcing inflation targets to the public in a more transparent and accountable way has been argued to be the best guarantee against policy mistakes as well as to obviate shortcomings associated with inherent monetary policy discretion. Monetary policymaking would be devoid (or reduce to a large extent) of personal and ideological considerations.

Other benefits associated with the adoption of inflation targeting include: improving the output-inflation trade off, reducing output variability, reducing inflation bias inherent in discretionary policy regime. It is a tool of overcoming credibility problems because it mimics incentives for performance contract and it also allows policy makers to respond more flexibly to economic shocks. IT lengthens the yield curve arising from the gradual extension of the maturities of fixed income instruments while it also contributes to solving the dynamic consistency problem

¹New Zealand was the first country that introduced inflation targeting as an explicit strategy of monetary policy in 1989. Within a period of one year it became more popular in such central banks as the Bank of Canada, the Bank of England, Sweden Riksbank and the Reserve Bank of Australia) and later spread to emerging countries (e.g., Brazil, Chile, Israel, Korea, Mexico, South Africa, the Philippines and Thailand). This policy framework is now popular even among transition economies like the Czech Republic, Hungary and Poland (Odusola, 2006).

²Results from inflation targeting have shown that countries that were able to achieve improved transparency also experienced greater form of central banks independence that are accompanied by enhanced accountability.

(Clifton et al, 2001; Svensson, 1998 and 1999; Knight 2007). As further argued by Bernanke (2003), it serves as a tool for anchoring the private sector's expectations for future inflation while Keleher (1997) argues that it allows price system to work more effectively. Keeping inflation close to zero has an advantage of limiting the microeconomic costs and tax distortions caused by inflation³. The fact that inflation targets are now public information, will contribute to the stabilization of economic markets such as the short and long-term money markets, foreign exchange market, equity and commodity markets (JEC, 2005). In practical sense, the main motivation is the direct benefits of price stability for economic efficiency and growth (Odusola, 2006).

In spite of these potential benefits, IT has, however, been criticized on a number of grounds. The inability of the approach to address serious ills of the economy- poverty, employment and inequality- for instance, has been a major source of attack (Esptein, 2005). IT has been criticized for its inability to simultaneously bring about a more stable asset price environment (Fildaro, 2004); and achievement of price stability with increasing asset price bubbles and financial instability (Borio and White, 2004). Despite the criticisms that trailed the implementation of IT, as enumerated above, no country that adopted the strategy had abandoned it. Even in countries where asset prices reacted negatively to the strategy (e.g., Israel and Sweden) they have learned how to accommodate such developments in the implementation of IT.

What are the fundamental principles guiding the implementation of IT across the globe? What are the emerging challenges and concerns? How best can the benefits of IT be maximized and the costs minimized? This paper focuses on providing answers to these questions. Its overall objective is, therefore, to address the main prerequisites and key challenges of implementing inflation targeting across many countries and draws relevant lessons for countries that are contemplating the adoption of IT. To achieve this objective, the rest of the paper has been structured as follows. Following the introduction is part II which examines the theoretical framework for IT while the review of international experiences is contained in part III. Contemporary issues and challenges are considered in part IV while recommendations and conclusion are the focus of part V.

³However, it has been argued that there is need to insure against deflation, which in most cases is counterproductive. This informs Bernanke et al (1999) suggestion that greater-than-zero inflation targets is always a better policy option.

II. Theoretical Framework for Inflation Targeting

IT, a framework for policy decisions in which the central bank makes an explicit commitment to conduct policy to meet a publicly announced numerical inflation targets within a particular time frame, has become a major monetary policy management tool over the past two decades. As espoused above, IT - a neoliberal approach to central banking does not only attempt to keep inflation at a very low level, but also tries to reduce central banks support to government fiscal deficits; help to manage country's integration into the world trade and financial systems; and to systematically reduce the influence of discretion on central banks policy making process (Epstein, 2005; Odusola and Onwioduokit, 2005; and Odusola, 2006). It also serves as a coordinating framework for economic activities of the private sector.

Monetary policy, in general, deals with the relationship between rates of interest and the total money supply (currency and credit) in the economy with the primary aim of influencing one or more of the following: economic growth, inflation, exchange rates and unemployment (Wikipedia,2006). It is about the ability of monetary authority to alter the money supply or rates of interest to influence macroeconomic variables towards the most desirable outcomes. Depending on the policy goal, a monetary policy could be contractionary if it reduces the size of money supply or raises the interest rate, or expansionary if it raises the money supply or reduces interest rates.

A monetary policy is accommodative if monetary authorities alter the interest rates to promote economic growth; neutral if it is neither to spur economic growth nor inflation; and tight if it intends to reduce inflation. Monetary policy can be conducted through administrative fiat or market operations; however, the latter has become the norm in a market based economy. Essentially, the primary means of conducting monetary policies include (i) open market operations (managing the quantity of money in circulation through buying and selling of various credit instruments, foreign currencies or commodities); (ii) discount window lending (lending of last resort); fractional deposit lending (i.e., changes the reserve requirement ratios); (iii) moral suasion (i.e., cajoling certain market players to achieve specified outcomes); "open mouth operation"(i.e., talking monetary policy with the market).

The main focus of strict inflation targeting is stabilization. This is premised on the assumption that once stabilization is achieved, the achievement of other macroeconomic goals follows. Hence, achievement of economic growth, employment generation and poverty reduction now serves as implicit assumptions of strict inflation targeting. The linkage between inflation targeting and the ultimate

macroeconomic goals is through trickle down effects from economic stabilization to growth, employment and income distribution.

The starting point of analyzing the linkage between inflation targeting and monetary policy is to have a clear understanding of the dynamics of monetary policy -monetary policy transmission mechanisms. Inflation is a long-term monetary phenomenon; a clear indication that prices and money are closely related over a prolonged period. The theoretical underpinning of the linkage between monetary aggregates and price level derived its theoretical basis from the crude quantity theory of money. The theory assumes that price level will change proportionately with changes in quantity of money. This belief is often summed up in the phrase, 'money is long run-neutral'. The rate of money creation is reflected in the rate of inflation in the long run. It further posits the existence of the classical dichotomy between relative and absolute prices determination. The crude quantity theorists, focusing on long-run relationship, posit that the theory of value explains the relative prices (because they are determined in the real sector) while monetary theory explains absolute prices. A change in quantity of money will only change the general level of absolute prices; it will not affect outputs, or relative prices (Lucket, 1980 and Struthers and Speight, 1986). The theoretical inspiration for inflation targeting derives from the equation of exchange as proposed by the crude quantity theory.

While this classical framework argues that changes in income are determined in the real markets⁴, it however, unequivocally provides the basis for monetary authority's control over absolute price movements. Money and prices tend to move together in the same direction and that the primary changes in the price level are brought about by changes in the quantity of money in the economy. This framework holds the view that the quantity of money can be used to control long run inflation dynamics. Since inflation is very vital in economic agents' decision-making, they often monitor inflation through monetary authorities' policy changes. The ability to capture this depends on how well-defined the transitory dynamics are as well as the ability to separate the long run relationship from the noise introduced by the transitory learning dynamics (Bullard, 1994).

Under inflation targeting, the main monetary policy instrument is the interest rate and not money *per se* which does not invalidate the relationship between money and prices as argued above. To ensure that it reflects market dynamics, inter-bank offer

⁴*The tendency for economic activity to grow could derive from development of institutions, the quantity and quality of factors of production as well as public policies.*

rate (overnight lending rate) is often used. It becomes an instrument of ensuring consistency of the growth of broad money supply with the target growth of real GDP and inflation rate. The fundamental variables to watch are excessive demand pressures either because of high fiscal deficit or because of excessive foreign inflows. When either of these holds, money supply grows faster than growth in productive sectors and generates demand pressures that manifest in rise in inflation rate (Akhtar, 2007). Changes in prices are a function of the target and market agents' expectations about future interest rates. Interest rate does not immediately translate to lower or higher prices; rather it affects economic activities (through changes in capacity utilization and employment). Due to lag structure in the transmission mechanism⁵, prices adjust gradually rather than suddenly to changes in monetary policy changes. After a while, the developments in the real economic activities affect inflation. Over a long period of time, monetary policy effects on inflation depend on the propagation mechanisms. This propagation or pass-through effect can be bounded or shortened if monetary policy is implemented appropriately and inflation targeting is adjudged to be credible by the public.

The monetary propagation mechanism or pass-through effect from monetary policy to inflation is as illustrated in Figure 1 below. Monetary policy affects inflation in developing countries in many ways. The actions and reactions of interest rate changes, for instance, work through the financial markets, aggregate demand functions, cost correction process and, finally, through absolute price movements. The typical ways through which monetary policy affects inflation in developing countries include, but not limited to:

- Influence on financial market assets prices;
- How changes in asset prices affect decisions on spending, production and employment;
- The implications of the foregoing on costs and margins by market agents;
- The inflation expectations generated by developments arising from changes in monetary policy; and
- How all the factors mentioned above ultimately affect general price level movements?

Where rational expectation holds among market agents, policy makers are sometimes misconstrued about monetary policy stance when such targets are not announced. For instance when low inflation is anticipated and the marginal benefits

⁵The reason for delayed market response to changes in interest rates could arise from many reasons such as cost inherent in price corrections, nominal rigidity in prices and wages, and information asymmetry inherent in the market (Banco Central de Chile, 2007:20).

of increasing economic growth outweighs inflation cost, monetary authorities have incentives to pursue an expansionary monetary policy with a view to lowering interest rates. These incentives are often misinterpreted by market agents thereby anticipating high inflation. Hence, unless monetary authorities make their announcement on low inflation more credible, such efforts will be misconstrued by market agents and could be a major source of inflation pressure.

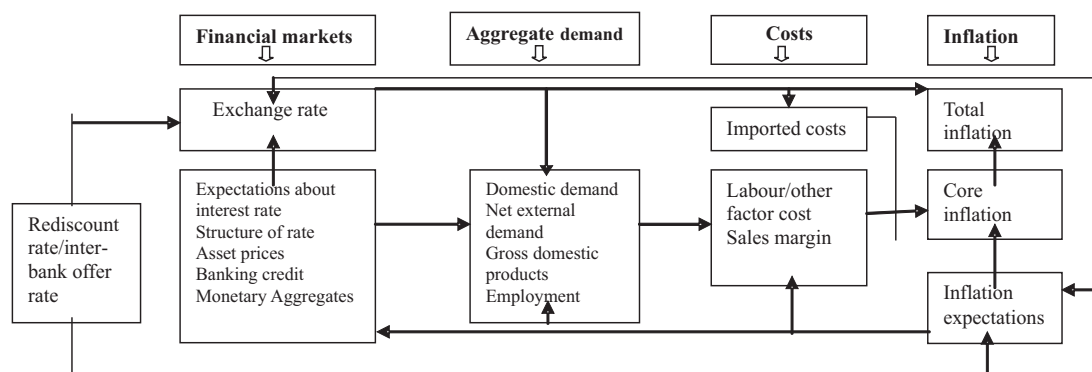
III. Inflation Targeting As a Tool of Monetary Policy: International Experiences

The goal of inflation targeting is to make the process and outcomes of monetary policy more transparent and the monetary authorities more accountable to the public. The transparency and accountability of central banks become imperative since any failure to keep inflation within check as prescribed by the targets makes it necessary for central banks to provide copious explanations for not meeting the targets. IT has become a major yardstick of measuring the performance of central banks in many countries. This section intends to find out how countries effectively operationalise the implementation of IT to achieve the goals it was set for? It also examines the guiding principles for implementing IT. Table 2 provides the emerging consensus on the operations of IT in advanced, transition and developing countries.

What distinguishes inflation targeting from other types of monetary policy regimes?

Obviously, the main distinction lies in the set of instruments and target variables that are used by the monetary authorities to achieve their goals. Table 1 provides a good illustration of the dividing line among the various types of monetary regimes.

Figure 1: Monetary Policy Transmission Mechanisms under Inflation Targeting



Inflation target, for instance, relies heavily on periodic adjustment to the central banks policy interest rate and or inter-bank offer rate. Although both inflation targeting and price level targeting use the same set of instrument, the objectives, however, differ.

Table 1: Monetary Policy Regimes, Targets and Objectives

Monetary Policy Regime	Target Market Variable	Long Term Objectives
Inflation Targeting	Interest rate on overnight debt	A given rate of change
Price level targeting	Interest rate on overnight debt	A specific CPI number
Monetary aggregate	The growth in money supply	A given rate of change in the CPI
Fixed exchange rate	The spot price of the currency	The spot price of the currency
Gold standard	The spot price of gold	Low inflation as measured by the gold
Mixed policy	Usually interest rates	Usually unemployment and CPI change

Source: Adapted from Wikipedia (2007): http://en.wikipedia.org/wiki/Monetary_policy.

How is inflation targeting managed?

The starting point is a clear definition of how inflation is measured. The most common approach is the CPI definition⁶ (i.e., annual 12-month change for Chile and quarterly for Sweden in recent times). Within this framework, a desired rate of price change that is congenial to the achievement of economic growth objective of government is targeted. There is no consensus on the choice of inflation rate to adopt. While some countries prefer 'core' inflation (e.g., Thailand) others such as Chile and Sweden use 'headline' inflation. The argument for the choice of headline inflation, for instance, is its representativeness, credibility, reliability and public familiarity with the index while core inflation is premised on predictability and

⁶In measuring inflation, as argued by Boskin et al, 1996 and Agenor, 2000, existing price indices suffer from three main sources of bias: substitution bias (e.g., switching from one expensive to cheap commodities), quality bias (i.e., changes in quality of product that are not reflected in the computation of their prices, and new product bias (this is about inability of the price computation process to take account of new products entering the market while old ones continually exit the market).

absence of volatility or seasonality element, e.g. perishable goods and energy prices. Core inflation is more closely tied to inflationary trend and it is an important factor in probable inflation. Countries that are susceptible to external shocks and supply side shocks often prefer to target core than headline inflation.

The choice of Inflation target varies from country to country; while some have adopted static or point targets others favoured flexible approach of targeting inflation within a bound (see Table 2). The choice of a particular inflation target or target bound is premised on two fundamental factors. The first is the rate of inflation that maximizes the growth potentials and the second is the rate that is congenial to the welfare of the population. The two factors are never mutually exclusive; the rate should not be too high or too low to damage economic growth and reduce employment generation. It is never a universal rate, it is determined by the circumstances of each economy. Finland and UK are known for static targeting while countries like Canada, Sweden, Brazil, Chile and South Africa use bounded targets.

Besides, *a time horizon is always chosen for the duration of the inflation level or the target*. The targeted inflation is achieved through periodic adjustments to the desired interest rate target. During this period, it is important for central banks to communicate to the public that some temporary deviations from the targeted rate will be allowed. Other countries with targeting horizon include Israel, New Zealand, Spain, Brazil and Thailand.

Initial inflation condition matters in the introduction of IT. The framework is better introduced when low and stable inflation has been attained. Introduction of IT at this stage makes maintenance of price stability easier. This is the case in many countries that have implemented IT such as Sweden, Australia and Thailand. Countries with historically high inflation often start with high level of targets. Examples of this include Chile, Brazil, Poland and Czech Republic.

Based on best practices, the most common short-term interest rate is the interbank rate at which banks lend to each other overnight for cash flow purposes. Through the use of open market operations, the interest rate is kept constant for an allowable fixed period and reviewed on monthly or quarterly basis by a policy committee. Changes in interest rate are made in congruence with the market

fundamentals⁷. This underscores a clear understanding of the fundamental determinants of interest rates in each of the economy. In any case, the barometric role of the minimum rediscounting rates of the central banks remains undoubted. Where the discounting rate has lost its influential role, inflation targeting becomes pretty difficult to manage. In Pakistan for instance, it is mandatory for banks to adjust their interest rates within *three days* when the State Bank of Pakistan (SBP) has adjusted the discount rate.

In practice, the *independence of central banks* is required for successful implementation of inflation targeting. The power to formulate, conduct and implement monetary policies is non-negotiable for result-oriented inflation targeting, either strict or flexible. The power to impose limit on government borrowing from central banks is often enshrined within the Central Bank Act. It has autonomy over management of its budget and policy decisions. This is an important area of ensuring central banks independence. These powers are enshrined into the laws guiding the operations of central banks. For instance, in Sweden, it is explicitly stated in the Swedish Riksbank that Executive Board members are expressly forbidden to seek or receive instructions when carrying out monetary policy task (Ingves, 2007b).

One major prerequisite is *absence of fiscal dominance*. Monetary policy independence of fiscal financing needs is vital for success. In practical sense, a way of addressing this issue is the need to *ensure proper coordination of monetary and fiscal policies*. A pillar for monetary policy effectiveness is a responsible and predictable fiscal policy which ensures public sector solvency and eliminates the possibility of subordinating monetary policy to fiscal policy. As such, the establishment of Fiscal and Monetary Policies Coordination Committee is inevitable. This inter-agency committee has been a major source of success in implementing inflation targeting. Sweden, Chile and Pakistan are good examples of countries having strong coordination of monetary and fiscal policies. In these countries, coordination is done to maximize the effectiveness of both policies and respect for each body's independence.

⁷This is essentially about responding to demand and supply pressures of the economy in line with trends in monetary assets and liabilities. While the latter (monetary assets) capture the growth in domestic credits and the former focuses on the growth in currency and deposit base. Money supply growth has to be consistent with growth in real GDP and inflation rate.

As a corollary to the foregoing, domestic debt management is inextricably linked with monetary policy management. Countries with large domestic debts may have some challenges in adopting inflation targeting as a tool for managing monetary policy. Steering interest rates during period of high domestic debts coupled with fragmented financial system makes the framework very tasking to manage; monetary policy is driven by public debt burden.

Another prerequisite is the *absence of financial dominance*. Clearly, for inflation targeting to be effective, monetary policy must be independent of insolvent banks' rescue needs. Central banks absolve themselves from providing rescue packages to crisis ridden banks. This underscores the need to ensure that the *regulatory and supervisory framework governing the financial system is based on prudential regulations and standards*. When this is in place, monetary conditions and foreign exchange policies can be adjusted without exposing the financial system to unnecessary risks that can destabilize overall macroeconomic management.

When inflation targeting is fully institutionalized, there should be *absence of other nominal anchors*. Nominal anchors such as exchange rate and money supply cannot be made explicit and have to be complementary to inflation targeting. Absence of nominal anchor is needed to make the monetary authorities more focused as well as to avoid confusing the public on the overriding goal of the monetary policy.

In a globalizing economic setting, free inflows and outflows of capital improves access to international savings and diversify risks, however, they expose the country to external shocks that could destabilize the entire economy if not well managed. *Adoption of a flexible exchange rate⁸ management* has been recognized as an effective strategy of limiting the consequences of such external shocks and correcting relative prices. Another fundamental prerequisite for success is the *ability of central banks to forecast economic trend with marginal errors*. It must have a good understanding of the key market indicators that substantially explain the dynamics of economic trajectory of the country. In addition to this, the central banks must have a good understanding of the money markets and the dynamics of the fiscal environment. Simply put, the central banks ability to forecast money demand and fiscal pressure to levy the inflation tax by adjusting the monetary base rapidly should

⁸*The adoption of flexible exchange rate policy makes it easier for countries to bounce back from real shocks as well as prevent severe exchange rate misalignments, avoids costly corrections in terms of the output variable, and weakens movement in speculative capital (Banco Central de Chile, 2007).*

Table 2: Inflation Targeting in Action in Selected Countries – Advanced, Transition and Developing Economies

Country	Inflation Measures (IM)	Items excluded from IM	Inflation Target (%)	Calculation period	Contingencies for breach of targets	Targeting horizon	Adoption date	Separate inflation report	Who sets targets	Publishes inflation targets
Australia	CPI	Mortgage interest, government controlled prices & energy prices	2-3	Cycle	None	None	01/01/93	No*	Govt	No
Canada	CPI†	Indirect taxes, food & energy prices	2-4 (1992) 1.5-3.5 (June 94) 1-3 Dec 93-Feb 01‡	Annual	None	No	02/26/91	Yes	Joint	No
Finland	CPI	Housing capital cost, indirect taxes & government subsidies	2 annual average from 1995	Annual	None	No	02/02/93	No§	Central bank	No
Israel	CPI	None	14-15 (1991-92) 8-11 (1995), <4 (1999), 3-4 (00-01)	Annual	Short term influences embedded in certain components of price index, e.g., process of fruits, vegetables, housing and imports.	Yes	01/01/93	Yes	Central bank	Yes
New Zealand	CPI**	Commodity process, gov't controlled prices, interest & credit charges	3-5 (Dec 1990) 2.5-4.5(Dec 1991) 1.5-3.5 (1992) 0-2 (1993-96) 0-3 (Since 96)††	Annual	'Unusual' events that do not generate general inflationary pressure.	Yes	03/02/90	Yes	Joint	Yes

The Governor is, however, available to report on the conduct of monetary policy twice a year to the House of Representative's Committee on Financial Institutions and Public Administration.

Although the target is officially specified in terms of overall CPI, the Bank of Canada focuses on the CPI excluding food, energy and the effects of indirect taxes.

Renewed in February 1998.

Finland reports on quarterly inflation outlook in the monthly bulletin.

Since December 1997, the CPI excluding credit services is targeted. Before the date overall CPI was targeted, in the later 1999 mortgage services were removed from the target.

The terms of the new Policy Target Agreement (PTA) coincides with the term of the Governor which expired August 2003.

Table 2 Cont'd: Inflation Targeting in Action in Selected Countries - Advanced, Transition and Developing Economies

Spain	CPI	Mortgage interest costs	3.5-4 (June 96) 3-3.25 (1997:Q1) 3 upper limit for 1997, 2.5-2.75 upper limit for late 97 & 2 for 1998	Annual	None	Yes	01/01/95	Yes	Central Bank	No
Sweden	CPI	Nominally none but conditional on indirect taxes, subsidies	1-3 since 1995	Annual	None	No	01/15/93	Yes	Central Bank	Yes
United Kingdom	CPI	Mortgage interest payments	1-4 until June 1997 2.5 since June 1997	Annual	None	No	10/08/92	Yes	Government	Yes
Brazil	CPI	None	2-8 (1999) 2-6 (2000) 2-4 (2001) 2-3.5 (2002)	Annual	None	Yes	06/21/99	Yes	Joint	Yes
Chile	CPI	None	18 (1991) 3.5 (2000) 1-3 (2001 onwards)	Annual	None	No	09/01/90	Yes	Central Bank	Yes
South Africa	CPI	Mortgage interest costs	3-6 (2002)	Annual	Major unforeseen events outside central bank control	Yes	02/01/00	Yes	Central Bank	Yes
Thailand	CPI	Raw food and energy prices	0-3.5 (2000-01)	Annual	None	Yes	05/01/00	Yes	Central Bank	Yes
Czech Republic	CPI		0.5-8 (1998) 0.5-4.5 (1999) 1-4.5 (2000) 1-3 (2001) 1-2 (2002)	Annual	Substantial deviation in raw materials prices, energy prices and other commodities Major deviations in exchange rate not connected to domestic fundamentals	Yes	12/21/97	Yes	Central Bank	Yes
Poland	CPI		8-8.5 (1999) Below 4 (1999-03)	Annual	Any available information which could jeopardize the target	Yes	09/01/98	Yes	Central Bank	No

Source: Agenor (2000), pp.82-83

be unquestionable. Essentially, central banks' staff must have a very good understanding of the monetary policy transmission mechanism of the economy. This is vital for evaluating the consistency between current monetary policy and future/expected price trends.

From experience, *reduction in inflation expectations takes a long time to achieve* especially when low inflation is not yet a tradition. As such the slow adjustment of expectations has made the task of monetary policy management quite daunting. Researches in determining the speed of adjustment is still very rudimentary in many countries. This explains why countries like Chile, Brazil and Czech Republic started with high inflation target before reaching moderate inflation targets.

The effectiveness of *inflation targeting relies on credible announcements*, i.e., the private agents must believe that inflation announcement will reflect actual future policy. When private agents do not believe such announcements, wage settings will anticipate high-level inflation, hence, wages will be higher and inflation will rise. The key sources of inflation will be the increase in consumers' demand (demand pull inflation) and increasing firms' cost (cost push inflation). The import of this is that if policy makers' announcement of monetary policy is considered by the private agents not to be credible, the policy will not have the desirable effects. This points to the significance of credibility announcement.

Evidence from best practices has shown that credible announcement can be achieved through various means. An important factor that influences private agents' expectations about low inflation is the independence of the central bank. For instance, central banks can be given incentives to meet their targets when they have control of their budgets including the compensation for the top echelon of the banks. The independence of central banks, whether instrument or policy, increases reputation and commitment to low inflation.

Mere independence does not, however, automatically generate announcement credibility. Reputation is built over time and it is an important aspect of monetary policy implementation. Reputation is achieved through good performance in conducting monetary policy in the immediate past. Market agents' confidence is built on the basis of past record of performance on the chosen policy stance, targets and objectives. The import of this inflation targeting cannot be achieved unless there is a reasonable level of favourable perception from the public about central banks' primary mandates as dictated by their past policy actions/records.

It has also been observed that *reputation is not synonymous with commitment*. While reputation plays an important role in the perception of the public about central banks commitment, optimal commitment to inflation targeting is built around central banks' leadership distaste for inflation than the rest of the economy on average (Rogoff, 1985). It is not about statistical gymnastics where the public perceived the actual inflation to be higher than the published figures. Rather, it is about believing in low inflation and continuously ensuring that the target is achieved. Other practical issue emerging from the implementation of IT is the *possibility of changing targets and the implication on credibility*. Practical experience has shown that it is possible for targets to be changed. The change can occur under the following conditions. First, when inflation projections are not consistent with the set targets especially when new information about the economy and some exogenous factors emerge which do not conform to the original assumptions. Second, targets can be changed to conform with the degree of stimulus expected from the monetary policy. This is premised on the fact that future inflation depends on economic agents' expectations about future monetary policy interest rate, the impact of interest changes on term structure of interest rates and asset prices.

It is also obvious that private expectations, for different horizons, could differ systematically from the target inflation rate. When this persists over a longer term, it is often seen as a loss of credibility of the monetary anchor. This could be as a result of central banks inability to meet the original commitment. Alternatively, it could also be a signal for a change in the targets. It is, however, important to note that under inflation targeting, policy surprises should be an exception rather than being the rule.

One practical issue demanding adroit skills is *managing the policy instruments under inflation targeting*. This relies heavily on the ability of the staff of central banks to prepare weekly and monthly cash flows of the financial system and determine all flows that will expand or contract the monetary base. Essentially, it is about managing the portfolio maturity of the financial system with a view to injecting or mopping up liquidity as circumstance demand.

To do this effectively, central banks should have access to a range of instruments to swiftly accommodate liquidity to keep the observed inter bank rates near to the target. These include reserve requirement ratio; open market operations instruments such as repurchase operations, outright purchase or sale of government securities, issuance of bonds, and foreign exchange swaps; and standing facilities (such as collateralized standing overnight credit facilities). All these require monetary policy instruments that are fully market determined short term interest rates.

The foregoing constitutes the principles and requirements for implementing an effective IT in any economy. They need to be thoroughly understood before inflation targeting is embarked upon. Even when their fundamentals are clearly mastered, some issues deserve to be given serious consideration while implementing IT. Some of these are examined below.

IV Contemporary Issues and Challenges in the Implementation of IT

The implementation of IT in many countries, advanced and developing, has led to the emergence of some issues and challenges for monetary authorities to address if monetary policy effectiveness is to be achieved. An emerging issue, which has been at the core of the criticism against IT, is the existence of little evidence on the link between inflation targeting and the ultimate macroeconomic goals. The adoption of inflation targeting in most countries has made employment creation and promoting real economic growth to be relegated to the background from many central banks agenda. There is urgent need to foster the linkage between inflation targeting as a monetary policy framework and the promotion of economic growth, employment creation and poverty reduction. The dire need to look for an alternate monetary policy regime that fosters this linkage has been the main preoccupation of many research institutes such as the Political Economy Research Institute over the past one decade.

Evidence from many countries with success story on the implementation of inflation targeting is adherence to adequate coordination of monetary and fiscal policies. Due to the serious implications of fiscal profligacy, the need to have *rule based fiscal policies* is inevitable. In many countries Fiscal Responsibility and Debt Limitation Act has been established. This requires a strong cooperation between central banks and ministries of finance and to some extent the agency responsible for debt management at the country level.

The design of an effective monetary policy framework underscores the need to identify the main determinants of inflation and understand how monetary policy interacts with them to affect the rate of increase in the consumer price index. The main sources of inflationary pressures are vital for informed monetary policy decisions. Essentially, it is necessary to understand the monetary policy transmission mechanism or the pass-through effects. Although the fundamental assumption under inflation targeting is that non-monetary factors mostly have temporary impact on inflation while only monetary factors have long term impact on inflation, this requires empirical verification. Two alternative frameworks tend to provide some illuminating explanations to this hypothesis. One school holds the view that

traditional monetary explanation and exogenous shocks to money supply cause inflation. The second school of thought is based on the assumption that price rigidities, shocks to key prices in the economy (e.g., wages, exchange rate and process of public sector outputs such as fuel prices in Nigeria) affect inflation directly while monetary policy merely accommodates these shocks. Based on this framework, the effectiveness of policy accommodation is central to managing the long-run inflationary impact of the shocks from economy-wide prices. The main challenge is the knowledge of monetary policy operators in understanding these dynamics and the linkage between inflation on one hand and monetary and non-monetary factors on the other hand.

Inflation targeting in an open economy creates its own challenges - exchange rate becomes an essential component of the monetary policy transmission mechanisms. Exchange rate affects the target variables of the monetary authorities: inflation and output gaps through variety of channels (e.g., through prices of imported goods, aggregate demand and supply (via cost of production)). Inflation targeting is, therefore, consistent with the floating exchange rate regime. Stable inflation is a critical factor for long term stability in exchange rate. Arising from co-movements between nominal exchange rate and inflation, a flexible exchange rate system further reinforces stable prices because it has the potential of avoiding speculative attacks to the domestic currency and to prevent exchange rate misalignment. The capacity to manage the adjustment of real exchange rate towards its long run equilibrium in the face of external shocks is also required. This is particularly so because exchange rate stability is a major source of central banks credibility from the public perspective. This realization, for instance, has informed the need to complement inflation targeting with floating exchange rate in Chile. This is further reinforced by the conclusions from Agenor (2000:41) thus:

With the exception of Israel and Spain, all countries implementing inflation targeting did so in the context of highly flexible exchange rate regime.

The inability of these two countries to implement flexible exchange rate has been a major constraint to achieving inflation objective. In Israel, for instance, the level of interest rate to achieve the inflation target was inconsistent with the level required to maintain the nominal exchange rate with the prescribed diagonal exchange rate band. Adoption of IT, in principle, precludes the monetary authority to any commitment to a particular value of exchange rate.

For inflation targeting to be in congruence with floating exchange rate management, the 'thermostatic' role of short term interest rate must not be in doubt. For instance,

where an exogenous shock causes a sharp nominal depreciation of the domestic currency, management of monetary policy becomes relatively complicated especially in countries with a history of high inflation. When the shock is perceived to be permanent, it will translate into increases in the prices of tradables which further put pressures on general price levels. This could trigger another round of price movement if the public adjust their inflation expectations upward (e.g., on wages and non-tradable goods). Central banks also need to balance the demand for and supply of base money at rate of interest above the current market rates. However, this is not the case in many developing countries.

Besides, the liquidity of foreign exchange market is vital for managing exchange rate in a way that is consistent with inflation targeting framework. To ensure exchange rate stability, central banks need appropriate instruments to monitor and manage the liquidity of the foreign exchange market. This could, however, be difficult to achieve under a deregulated capital accounts management and the level of integration into the global economic system. Central banks need substantial reserves to defend the currency when it is temporarily under some form of attacks.

One major critique against this framework is the little attention given to 'real' factors such as employment, investment, real growth, poverty reduction and income distribution in countries where inflation targeting has been adopted as a tool of monetary policy management. As argued by Esptein (2005) (but countered by (JEC, 2005) among others), 'inflation targeting has generated significant costs-slow growth, sluggish employment generation and high real interest rates -while yielding, at most, minor benefits'. Some others have also mentioned the side effects of inflation targeting such as asset price bubbles, new incentives to take risks and possibility of financial instability. The conclusions from the Governor of Swedish RIKSBANK (i.e., the Central Bank of Sweden) one of the most successful implementers of inflation targeting across the globe provide the key challenges from this debate (Ingves, 2007:6):

Inflation targeting so far has proved to be a successful way of conducting monetary policy, but there are unresolved issues and one concerns the treatment of house and other asset prices; it has been hard to formally fit asset price development into the frameworks researchers and central banks use when they study inflation targeting.

Where economies are characterized by uncertainties, *an inflexible and undue reliance on inflation forecasts with minimal attention to the supply-side factors can*

create policy problems. IT should, therefore, give room for flexibility with attention given to the volatile supply-side components (which are often assumed off as a short run phenomenon). In the presence of supply shocks, flexible inflation targeting could bring about trade-off between inflation variability and output gap variability. An optimal combination of the goals becomes imperative for the monetary authorities optimal policy frontier. The higher the relative weight attached to output fluctuations in central banks policy loss function, the longer it will take inflation to converge to its target value when shocks occur. Experience has further shown that too much of target flexibility weakens the credibility of central banks.

The key challenges, as examined above, include understanding the key determinants of inflation, knowing in detail the transmission mechanisms of monetary policy, and the adoption of a rule based fiscal system. In addition to these, since most countries operate open economies, the centrality of adopting flexible exchange rate policy is vital for the objective of IT to be achieved. The challenge of devising mechanisms for handling the ripple effects emerging from asset price development, especially mortgage institutions, also remains daunting. Finally, the challenge of adopting a flexible IT that takes into consideration optimal combination of goals also deserves some consideration.

V Recommendations and Conclusion

Recommendations: Are there lessons that Nigeria can learn from countries that have implemented IT? Yes, lessons abound. The present banking consolidation has created an era of possibility in the country's monetary authorities. This has created some level of credibility for central bank's operations in the country. The Central Bank of Nigeria's Act has created the required independence by *de jure*; this should be complemented by *de facto* independence.

A necessary condition for success in implementing IT is the need for stronger collaboration among the fiscal and monetary authorities in fashioning harmonious and result-oriented macroeconomic policies and strategies. The establishment of the Economic Management Team in Nigeria, since 2003, could be likened to this. However, its composition is currently biased against monetary agencies. There is need to have a smaller group with adequate representation from the monetary and fiscal agencies. The committee will be responsible, among others, for alignment of monetary and fiscal coordination especially the Medium Term Fiscal Strategy and Medium Term Financial Sector Strategy.

The environment for implementing inflation targeting cannot be conducive unless fiscal responsibility acts are legislated across the three tiers of government and strictly monitored. This is crucially important because lower tiers of government account for relatively more than 50 percent of public resources in the country. Evidence from countries that have adopted inflation targeting reveals the need to invest constantly and appreciably in improving macroeconomic models with a view to strengthening analytical framework that support monetary policy pass through mechanisms and also to support decision making processes. Although efforts have been initiated in this respect by the management of the CBN, such initiatives should be scaled up and made more focused. Human and institutional capacity should be built to understand and analyze the key determinants of inflation, the dynamics of monetary policy transmission mechanisms, operations and management of flexible exchange rate policy as well as managing the ripple effects of asset price bubbles. Adroit skills in macroeconomic modeling and forecasting are vital for success.

The need to pay attention to asset prices and real factors is well appreciated. While the need to ensure that inflation targeting captures the dynamics of asset prices in the financial markets especially those determined by economic fundamentals is imperative for success, it is also important to note that inflation targeting is not an end but a means to achieving socio-economic and human development. While the consideration for real factors such as investment, employment, real economic growth and poverty is necessary for substantial progress, attempt to re-introduce erstwhile regulatory and repressive financial system under the guise of capturing real factors will be counterproductive and should be avoided.

Nigeria is challenged on which inflation target to adopt. The country faces external and supply side shocks which tend to suggest the choice of core inflation. However, to the Nigerian public, headline inflation matters. Core inflation is merely seen as a technical issue which does not have serious impact on welfare. Hence, the choice of core inflation poses some credibility problem for central banks. With IT, the CBN leadership must believe in having low inflation and must show commitment to it. The CBN should invest heavily in generation of high frequency data that support regular communication to the public. The current level of transparency and accountability is appreciated; however, there is more room for improvement. Credibility can only be built on transparent and accountable process.

Conclusion

Conducting monetary policy, especially IT, is in many ways a learning process. Implementers have a good mastery of the process when challenges emerge and are surmounted. This is particularly important given the globalised, constantly changing environment most central banks operate and which always makes new demand on the operation of monetary policy. This underscores the need to constantly refine and improve the monetary policy strategies and frameworks. For central banks to successfully build credibility and to demonstrate their commitments to IT regime, it is imperative to set IT suitable to current economic realities and conditions. For developing economies, like Nigeria, a flexible IT is advised- price stability should be a long term goal of monetary policy while the central bank, to some extent, is equally concerned with the stability of interest rates, exchange rate, real economic growth and employment. This, to a large extent, links monetary policy to broad macroeconomic policy goals.

The fact that developing countries have higher inflation than advanced countries, predicting inflation is challenging and the case of missing inflation targets is a common place. The autonomy of most central banks in developing countries is more of a statutory and not a *defacto* factor. Independence of central banks is not only in the choice of inflation target but also in the choice and manipulation of policy instruments. Another requirement for IT is the absence of a *defacto* targeting of the nominal exchange rate. It will be difficult to operationalize IT without a strong commitment to improved communication strategy, transparency and accountability. All these make IT daunting and challenging in developing countries.

The foregoing issues, among others, determine the readiness of countries for adopting IT. Other important factors that determine the readiness for the adoption of IT are the size of domestic debt which complicates the interest rate steering role of the monetary authorities; absence of fully integrated financial markets as financial market segmentation obfuscate monetary policy transmission mechanisms; and the ability to develop a representative measure and determinants (including monetary and supply-side measures) of inflation for the purpose of inflation targeting. IT requires central banks to have technical and institutional capacity to model and forecast inflation, understand the monetary transmission mechanisms, and have unquestionable knowledge of the lags between the adjustment of monetary policy instruments and their effects on outputs and prices.

The centrality of the barometric role of official interest rates in the economy cannot be underestimated. Market interest rates respond relatively quickly and significantly to changes in official interest rate. This still remains a daunting challenge in Nigeria due to a weak linkage between the policy rate and inter-bank offer rate in the country.

IT as a tool of monetary policy is not a panacea to the problem of inflationary pressures. A strong coordination of monetary and fiscal policies is vital for success while the government will also need to alleviate the supply side constraint arising from market structure and distribution system. Low and stable prices are not ends in themselves; hence, central banks should focus on inflation targeting that is amenable to promoting real economic growth and employment generation.

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