

Inflation Targeting as the Monetary Policy Framework: Bangladesh Perspective

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ABSTRACT

Inflation targeting strategy has become a widely accepted monetary policy framework in many countries all over the world. Our study finds that the central bank of Bangladesh is neither inflation targeting nor does follow any other rule-guided monetary policy, rather the policy is formulated with substantial discretion under the guidelines of donor agencies. This paper provides the evidence that monetary sector of Bangladesh economy has gained considerable degree of maturity and fulfils a number of prerequisites to adopt inflation targeting strategy. Using data over 1980-2010 we estimate an error correction model in order to examine if interest rate policy could fight the inflation. This is evident that deviation in inflation from target can be corrected via the changes in interest rate. Empirical findings jointly with few descriptive statistics provide strong evidence to recommend inflation targeting as the monetary policy strategy for Bangladesh.

KEYWORDS: *Bangladesh, Inflation Targeting, Monetary Policy*

JEL Classification: *E44, E52, E58*

Introduction

Inflation targeting as a monetary policy strategy is becoming increasingly popular among the emerging and advanced economies. With the collapse of Bretton Woods system in the early 1970, the room of explicit inflation targeting by the central banks of emerging economies has been opened. This new strategy was first approved by New Zealand in 1990, followed by Bank of Canada and Israel in 1991 and the Bank of England in 1992. Numerical inflation target determining other countries are Czech Republic, Korea in 1988, Poland, Brazil, Columbia in 1999, South Africa and Thailand in 2000. The twenty years old inflation targeting strategy is accepted by more than twenty countries so far. A number of other countries have adopted certain aspects of this new regime and some are currently considering to adopt fully-fledged inflation targeting in the next few years. According to Petursson (2004) the reason for this increasing popularity is that inflation targeting is thought to combine the two aspects important for successful monetary policy: providing a credible medium term anchor for inflation expectation and allowing policy enough

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flexibility to respond to short-run shocks without jeopardising the credibility of the framework. It is evident from the available literatures that many of the inflation targeting countries have been successful in fighting high inflation without harming output growth or increasing business cycle variability. Popularity of inflation targeting is unanimous but there is no study if Bangladesh could switch to this new regime. A good number of researches have been carried out regarding the suitability of inflation targeting in non-targeting countries like India, Pakistan, China and many others. Mishra and Mishra (2009) concluded that inflation band targeting should be a suitable monetary policy strategy for India. One research by Malik and Ahmed (2007) firmly suggests that Pakistan can adopt Taylor rule-based monetary policy that is indeed the reaction function under inflation targeting framework. This paper is the first effort to explore the implementability of inflation targeting in Bangladesh.

The paper is organised such that next section illustrates the basic features of inflation targeting. Section 3 explains the rationale for inflation targeting, section 4 discusses the mechanism of inflation targeting, section 5 documents the preconditions of inflation targeting with some empirical results, section 6 examines the impact of inflation targeting and section 7 concludes.

1. Basic Features of Inflation Targeting

To be inflation targeter there should have a public announcement of a numerical target of inflation with the commitment of maintaining price stability. Price stability obtains when economic agents no longer take account of the prospective change in the general price level in their economic decision making (Greenspan, 2004). Petursson (2004) illustrates, “the chief characteristic of inflation targeting can be said to involve a public announcement of numerical target to which the central bank commits itself to keep inflation as close as possible by implementing a forward-looking policy”. Inflation targeting is sometimes referred to as “inflation forecast targeting” because the inflation forecast over some horizon is the de facto intermediate target of policy (Svensson, 1997). There is a consensus among researchers that for a successful implementation of inflation targeting central banks have to be transparent and accountable. Transparency is the extent to which an institution discloses information that is related to the policy-making process (Gosselin, 2007). According to the IMF, the effectiveness of monetary policy can be strengthened if the goals and instruments are known to the public. This is to be stressed that even there are some central banks that view price stability as their policy objective and publicly announce the inflation target but they are not inflation targeting. European Central Bank is one such. At the same time it is not guaranteed that monetary policy was transparent at the time of introducing inflation targeting. In many cases publication of inflation reports did not begin until several years after the country moved on to the new regime. The bank of Israel began publishing inflation reports in 1998 and the Central Bank of Chile in 2000, six and ten years respectively after they had formally begun targeting. Official inflation forecasts in Sweden, Mexico and Poland were not published until some time after targeting was adopted. Australia, Canada and Iceland did not announce monetary policy decisions until some time after the targeting strategy was introduced. The survey by Schmidt-Hebbel and Tapia (2002) found that only twelve of the sample twenty inflation-targeting countries interpreted their inflation forecasts as intermediate monetary policy targets.

Mishkin (2006) concluded that with the adoption of inflation targeting strategy, inflation and interest rate levels have declined and output volatility has not increased, exchange rate

pass-through seems to be attenuated. Inflation persistence is lower and inflation expectation appears to be better anchored in inflation targeting countries. Mishkin, however, argues that such developments do not imply that the inflation targeting countries have done better than the non-inflation-targeting countries since these developments were also experienced by the non-targeting countries. There is a consensus that inflation targeting has led to substantial developments in the practical aspects of monetary policy (Gosselin, 2007). These developments include a more systematic and consistent internal decision process, more transparent communication with the private sector and a high degree of accountability (Svensson, 2005). Roger and Stone (2005) view inflation targeting as standard, transparent, accountable and credible. Paulin (2006) concludes that the resilience of the regime is attributable to its credibility and flexibility.

2. Rationale for Inflation Targeting

The time inconsistency literature argues that a purely discretionary policy setting leads to higher long-run inflation (Kydland and Prescott, 1977; Barro and Gordon, 1983). Rule-based monetary policy may be the best strategy to avoid high inflation and to lower the variabilities in inflation and output. Monetary authority cannot directly control the ultimate objectives of monetary policy. Under rule-based regime central banks set explicit values for the intermediate target which they can control and which are strongly related to the ultimate goals of monetary policy like output and inflation stabilization. In recent times emerging market economies have experimented with three nominal targets at various times: exchange rate, money supply growth and inflation (Jha, 2006). Exchange rate targeting strategy fixes the inflation rate for internationally traded goods and thus directly contributes to keeping inflation under control. Being simple, direct and well understood by the public, exchange rate provides an automatic rule for the conduct of monetary policy. The main disadvantage is that an exchange rate target leads to a loss of independent monetary policy (Obstfeld and Rogof, 1996). Exchange rate peg may persuade large scale foreign borrowing. Huge accumulation of such borrowing may lead to crisis, especially in emerging market economies where the loans are denominated in foreign currency. Mishkin (1997) argues that exchange rate peg can lead to financial fragility.

Monetary targeting enables a central bank to adjust its monetary policy to cope with domestic consideration. Monetary targeting is an accountable strategy that is easily understood by the common people. Existing literatures, however, identify at least two basic disadvantages of monetary targeting. Firstly, the link between money growth and inflation is subject to long and uncertain lags. Secondly, the demand for money may not be stable, there may be instability of velocity and money supply may not be controllable (Jha & Rath, 2003).

Inflation targeting enables monetary policy to focus on domestic consideration and to respond to shocks to the domestic economy. The goals of inflation targeting are defined almost exclusively in terms of addressing inflation shocks. Inflation targeting is easily understandable to the public and, above all, since the central bank has an explicit numerical inflation target, the possibility of slipping into a time inconsistency trap is reduced (Jha, 2008). Inflation targeting is more flexible strategy as the short-term deviation of inflation from the target are acceptable and do not necessarily translate into losses in credibility. The scope for greater flexibility could reduce variability in the output gap. Inflation targeting involves a lower economic cost in the face of monetary policy failures. It seems inflation

targeting provides a bridge to fill the gap between rules and discretion in pursuing monetary policy. Thus Svensson (1999) argues that inflation targeting is 'decision making under discretion' with central bank following a targeting rule which sets interest rates to reduce the deviation between conditional inflation forecast (the intermediate target of monetary policy) and the inflation target to zero over the target horizon. Bernanke et al. (1999) describe inflation targeting as "constrained discretion" where the target imposes the constraint while interpretation and implementation provide the flexibility.

Developing countries have weak institutions, small information set, low capacity of professionals and monetary policy having multiple objectives without clear prioritisation (Malik & Ahmed, 2007). Calvo and Mishkin (2003) identify five fundamental institutional problems in developing countries: weak financial institutions, low credibility of monetary institutions, currency substitution, liability dollarisation and sudden stops in capital inflows. These practicalities induce the policy makers of developing countries employ their discretion. But in the face of such financial crises it would be in their interest for the developing countries to adopt a rule-based monetary regime.

Bangladesh economy faces a number of challenges stemming from both demand and supply sides. Highly volatile world price of oil causes considerable changes in general price level in the country. Besides oil, Bangladesh has to import food stuff to feed the big-sized population. Increasing world prices of food and oil exert upward pressure on domestic inflation. Moreover, limited provision for industrial employment can absorb only a minor portion of labour force every year. Under the above circumstances, the central bank of Bangladesh- the Bangladesh Bank has to be much prudent in structuring monetary policy. Apart from the basic objectives of price and output stabilities, Bangladesh Bank has to take account of government's fiscal management. This comes from the narrow base of fiscal revenue relative to fiscal and development expenditures.

The central bank of Bangladesh implements monetary policy by setting the reserve money (RM) as the operating target and broad money (M2) as intermediate target in the monetary policy framework. Reserve money is defined as the sum of currency outside bank, balances of deposit money banks (DMBs) and other financial institutions with Bangladesh Bank, and cash in tills of the DMBs. Broad money (M2), on the other hand, is defined as the sum of currency outside banks, demand deposits and time deposits. Bangladesh Bank influences the RM by using various policy tools. Success of monetary policy largely depends on the controllability of reserve money. In the context of Bangladesh economy there are four players who influence the money supply process, e.g., Bangladesh Bank, government, DMBs and public depositors and borrowers of DMBs. The Bangladesh bank projects GDP growth and inflation rate, and in line with projected GDP growth rate and inflations expectations it sets safe limit of M2 growth target. Reserve money expansion is targeted in a way that it is consistent with M2 projection. But despite the aforementioned measures, the Bangladesh Bank has a rather loose control over money supply which is evident in the existing gap between targeted and actual money growth (see Islam, 2008).

Both direct and indirect policy tools are employed by Bangladesh Bank to maintain reserve money at the desired level in line with targeted M2 growth. Among others the main tools are SLR, CRR, repo, reverse repo, open market operation, intervention in the foreign exchange market and moral suasion. Until the early 1990s, the central bank of Bangladesh used to frequently change CRR, SLR, and the bank rate along with other direct instruments. Before introducing repo and reverse repo instruments in 2003 Bangladesh Bank relied on open market operations through government treasury bills (T-bills) auction in the 1990s, on

its own T-bills (30-day and 90-day) and on interbank repo for meeting short term liquidity of DMBs. Bangladesh Bank reintroduced its own 30-day and 90-day bills in 2006 in the event of changing debt management by the government.

Under financial sector reform programme of 1990, the monetary authority of Bangladesh performed several restructuring in policy framework by replacing a few direct tools. Instead, it took liberal interest rate policy and market based policy tools including flexible exchange rate system in 2003. Since January 2006 the central bank introduced the practice of announcing the bi-annual monetary policy stance through the monetary policy statement (MPS).

The dynamics of money supply in Bangladesh economy is tractable via the equation (1)

$$M2 = \xi \cdot RM \quad (1)$$

Where, ξ indicates money multiplier that mainly depends on currency-deposit ratio, reserve-deposit ratio, and the excess reserve-deposit ratio. Whether Bangladesh Bank can implement effective monetary policy depends on if it has enough control over reserve money. Actual behaviour shows that reserve money level most often exceeded the target level which is due to government's pressure on central bank to take part in financing fiscal deficit. The above features characterise an incompetent monetary policy existence in the country. Both government and monetary authority have the consensus that a policy should be in place which can ensure price stability, maintain high growth, generate employment and at the same time stabilise exchange rate. Recently price stability has become the most overriding concern in Bangladesh because all other variables are posting favourable signs except inflation. Point-to-point inflation is about to reach a double digit rate whereas economic agents are quite inflation-averse. With reasonably good expansion of the real economy and sound stock of foreign currency reserve the country has the opportunity to head toward a successful inflation targeting strategy.

3. Inflation Targeting Mechanism

Monetary policy committee meetings of the central bank revise its inflation and output forecast using updated information. Interest rate is raised if central bank finds a higher forecast of inflation than the target. Agents plan their consumption and investment accordingly. Inflation targeting central banks, in practice, would set their interest rate as a function of current inflation, output gap and the difference between current inflation and targeted inflation. Such formulation of reaction function is the famous Taylor (1993) rule. Taylor rule is a linear algebraic rule described by equation (2) below that specifies how the Federal Reserve must adjust its funds rate according to the inflation rate and the output gap:

$$i_t = \bar{r} + \pi_t + h(\pi_t - \pi^*) + by_t \quad (2)$$

where, i_t is the nominal rate of interest

\bar{r} is the long run equilibrium real rate of interest

π_t is the year on year inflation rate

π^* is target inflation rate

y_t is percentage deviation of real output from potential output.

Equilibrium real interest rate, \bar{r} together with current inflation rate, π_t provides a benchmark recommendation for the nominal interest rate. Inflation gap adjustment factor, $(\pi_t - \pi^*)$ recommends raising the interest rate above the benchmark if inflation is above the target and lowering the interest rate below benchmark if inflation is below the target. The last term is an output gap adjustment factor based on the gap between real GDP and potential GDP. This factor recommends raising the interest rate above the benchmark if the gap is positive and lowering the interest rate below the benchmark if the gap is negative. Taylor (1993) sets both the long run equilibrium real interest rate and the target inflation rate equal to 2, and h and b are set equal to 0.5. Taylor applied his rule to the US for the period 1987-92 where he found that the proposed rule describe the actual performance of policy very well. Inflation targeting, however, is not applied mechanically. The inflation targeting rule does not simply focus on current inflation but on containing inflation as a medium-term goal. Hence central banks pay close attention to indicators that can predict future inflation accurately (Bernanke & Mishkin, 1997).

4. Preconditions for Inflation Targeting

A number of prerequisites are expected to hold for the inflation targeting to be successful. However, there is no strong consensus that success of inflation targeting strictly adhere to these prerequisites. We have documented several conditions below that are theoretical requirement for implementing inflation targeting but in practice these are neither necessary nor sufficient conditions for the success of this regime.

4.1 Central Bank Independence

For a successful introduction of inflation targeting there should have central banks' independence with considerable freedom in setting monetary policy instruments and a minimum burden of financing government deficits. Deficit financing is feared because high deficit causes high inflation that raises interest rate and that ultimately raises the deficit itself by raising debt service payment. Successful implementation of inflation targeting requires the avoidance of fiscal dominance. Mishra and Mishra (2009) define fiscal dominance as a situation when irresponsible fiscal policy (or a large fiscal deficit of the government) puts pressure on the monetary authorities to monetize debt, thereby producing rapid money growth and high inflation. Truman (2003) suggests, the probability of adopting inflation targeting increases with improved fiscal position. Mishkin and Schmidt-Hebbel (2001) and Truman (2003) argue that the more independent the central bank, the greater the probability of adopting an inflation target but they did not find any significant correlation between inflation targeting adoption and central bank independence. Amato and Gerlach (2002), however, show that fiscal performance improved after inflation targeting had been adopted. Therefore, it should not be strictly viewed as a prerequisite. Israel and the Phillipines, for example, had high public debt/GDP ratios and larger fiscal deficits at the time they adopted inflation targeting. Central bank independence was not done for the Bank of England until 1997 and Swedish Riksbank until 1999 although both adopted inflation targeting some years earlier.

4.2 Disappearance of External Dominance

External dominance is defined as the presence of large external shocks that generates instability in the economy and may jeopardize the fulfilment of inflation target. Inflation targeting countries are more open to international trade and have comparatively less fiscal debt. Mishkin and Schmidt-Hebbel (2001) show that the probability of adopting inflation targeting increases the more open the economy is. As open economies are more vulnerable to external shocks they may have difficulties maintaining a fixed exchange rate regime, therefore choosing an inflation targeting to provide a nominal anchor (Calvo & Mishkin, 2003). Gerlach (1999) concludes that countries with relatively undiversified export base are more likely to adopt inflation targeting. If the export base is narrow then the economy is more vulnerable to the external shocks. In such situation it is difficult to maintain a fixed exchange rate. Inflation targeting should be the best alternative that matches floating exchange rate. Some researchers, however, do not find significant relation between openness and inflation targeting adoption.

4.3 Sound Financial System

Inflation targeting requires an advanced and stable financial system for an independent and efficient implementation. If the financial sector is fragile and prone to financial crisis or segmented, it poses problems in the independent conduct of monetary policy. Developing economies often lack stable financial system thereby find inflation targeting framework risky to implement. Immature financial market results in lack of confidence among the investors. Volatility in stock market creates panic among the small scale investors. Such occurrences are frequent in emerging market economies. Bangladesh, for example, experienced terrible stock market crash in 1996. Thousands of investors lost their capital overnight in the face of massive fall in capital market index. Recently, in December 2010, Dhaka Stock Exchange showed symptom of volatility through the biggest crash in its 55-year history. Analysts, however, predict that stock market of Bangladesh does not seem to experience further catastrophic event similar to one took place in 1996. If such prediction holds true then confidence on financial market of Bangladesh is likely to be regained. Overall monetary indicators including the stability of export and foreign remittances in this country seem to have improved over last couple of years. Our understanding favours the possibility of launching inflation targeting strategy in Bangladesh provided that financial sector of this economy continues to maintain the current level of stability in next couple of years.

4.4 Well Developed Technical Structure

Central bank must have inflation forecasting and modelling capabilities and the data needed to implement them. Amato and Gerlach (2001) argue that since inflation targeting is a forward-looking monetary policy strategy, there is need for econometric models of the inflation process and the transmission mechanism. Only with such models, policy makers can judge what level of interest rates is appropriate in given economic conditions although the existence of such model is rare in practice. Survey of Batini and Laxton (2007) reveals that the majority of industrial and emerging market targeters started with little or no forecasting capability and no forecasting model. When a small model was available, most central banks report that it was not suitable to make forecasts conditional on different assumptions for the monetary policy instrument. In addition, although industrial country targeters often had some sort of systematic forecast process in place, most emerging market targeters did not. Batini and Laxton (2007) add that inflation targeting to be implementable

prices must be fully deregulated, the economy should not be overly sensitive to commodity prices and exchange rates and dollarization should be minimal.

4.5 Interest Rate as the Policy Instrument

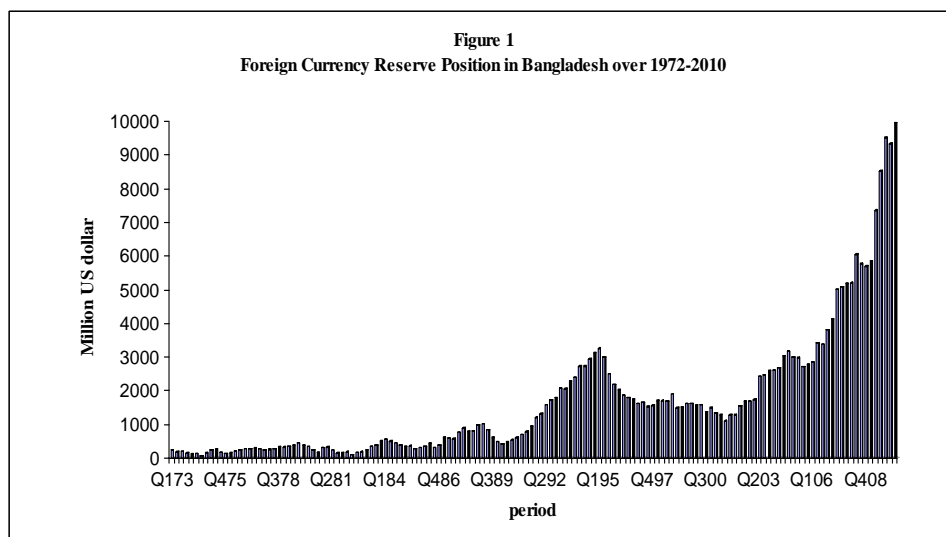
An inflation targeting framework requires short term nominal rate of interest as the policy instrument. Central bank is expected to set the rate of interest that will ensure substantial stability in terms of inflation and output variability. Nominal anchor of inflation plays the key role in inflation targeting regime. If there appears inflationary pressure, monetary authority would increase nominal rate by a substantial amount so the real rate of interest increases thereby reduce demand hence inflation. Similarly, if the economy operates above its capacity then demand would be forced down through the increase in interest rate.

Advanced economies have gained success in this regard. Federal Open Market Committee (FOMC) sets federal funds rate in the event of inflation and business cycle. Developing economies are lagging behind in this event since many of them use monetary aggregates as the policy instrument although monetary aggregate as the policy instrument is losing its popularity over time due to its vagueness.

The above preconditions are theoretical in nature as they exert little importance in practical perspectives of inflation targeting. Amato and Gerlach (2001) had one study with the conclusion that the preconditions do in fact play little role in practice, rather the evidence indicates that steps are taken to satisfy the so-called preconditions only after the adoption of inflation targeting. Mishkin (2004) has similar view:

“However, although fiscal and financial stability are necessary conditions for inflation control, I think the view that these reforms are prerequisites for attempting an inflation targeting regime in emerging market countries is too strong If an inflation targeting regime is to be sustainable, a commitment to and work on these reforms is required when inflation targeting is implemented.”

Batini and Laxton (2007) administered a survey of 21 inflation targeting central banks to investigate how policy was formulated, implemented and communicated and how various aspects of central banking practice had changed before and during the adoption of targeting. The evidence indicates that no inflation targeter had these preconditions in place before adopting inflation targeting. It indicates that failure to meet the preconditions should not be an impediment to the adoption and success of inflation targeting. Even this finding is confirmed by econometric tests carried out by Batini and Laxton where they found that no precondition enters significantly in the equations explaining the improvement in macroeconomic performance following the adoption of inflation targeting. In fact, since its independence in 1971, Bangladesh has been conducting monetary policy with significant discretion. Frequent changes in political philosophy are largely attributable to the unsustainable development program. However, the source of political instability is poor economic performance. One can convincingly argue that amongst dramatic changes in political power, the economy of Bangladesh performed comparatively better. In the meantime foreign currency market got market determined flexible exchange rate system although with substantial amount of indirect control by the central bank. Even the prominent economists within the country forecasted a probable indiscipline in the foreign exchange market but finally it survived. Figure 1 demonstrates a steady increase in foreign currency reserve until the second quarter of 2010.



Performance of foreign sector together with improving domestic economic indicators signifies the strength of Bangladesh economy to absorb inflation targeting regime. Bangladesh economy does not seem to face deliberate crises, only immediate run short lived crises appear, that do not pose a threat to overall performance. Besides, Truman (2003) argues that if a typical economy has experienced currency crisis and poor economic performance in the past, the probability of inflation targeting adoption increases. Truman argues these factors make the policymakers think that the existing framework was not successful.

Despite that Bangladesh economy did not fulfil all the preconditions above but overall representation is that the economy approaches toward rather than deviate from those conditions. Central bank's independence, by definition, is an ambitious notion in third world country perspective but central bank of Bangladesh got independence up to a satisfactory extent. Recently, for example, Bangladesh Bank- the central bank of Bangladesh took measures to introduce distinct salary structure for their employees. Besides, they have substantial degree of independence in terms of administrative and internal policy measures. Foreign sector of the economy also posts the sign of healthy behaviour. Deliberate increase in export earning and remarkable inflow of remittance lead the economy to a better position so the policymakers have the scope to think of a new regime- 'inflation targeting' as the monetary policy framework. Bangladesh bank has established a separate research organ within their own which has incredibly increased its technical capacity to introduce inflation targeting. Bank rate can't be viewed as the policy instrument because of its high degree of constancy but repo rate could be a good guide in this instance. Historical evidence suggests, in most countries inflation targeting has been introduced when inflation rate was already low- below 10%. Current rate of inflation in Bangladesh is below 10% with less volatility. We find more incentive to view Bangladesh economy very promising in terms of its real economic activity. Following diagram represents the dynamics of yearly real GDP until 2009.

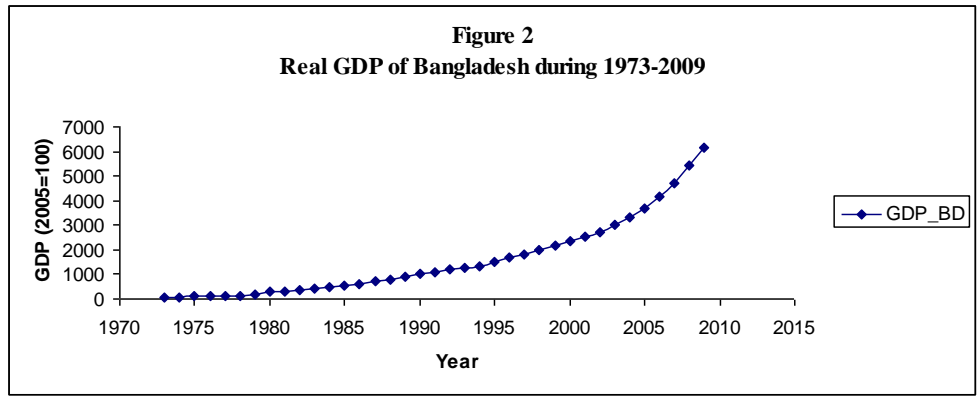
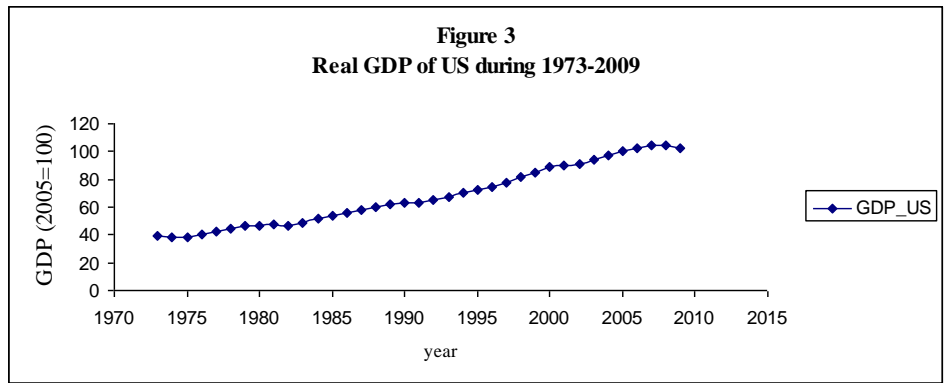


Figure 1 clearly shows an exponential increase in GDP index which signifies the strength of the economy. Recent global recession did not affect Bangladesh economy too much that is evident in upward trending GDP index. These evidences could be placed to argue Bangladesh economy’s comparative maturity. If we look at GDP dynamics of the US in figure 3, it becomes clearer that global recession slowed its growth however. Rule-guided monetary policy strategy dates back to 1980 for the US and many other industrialized countries but some emerging economies including Bangladesh are far from such strategy. There is no reason why Bangladesh economy should be termed as too rudimentary to introduce credible rule-based monetary policy. Rather, inflation targeting may result in identical success as floating exchange rate system in Bangladesh.



In addition to the above descriptive studies we also undertake some econometric studies to assess the implementability of rule-based policy in Bangladesh. Quarterly data spanning the period 1980-2010 have been used to estimate the Taylor rule. Equation (1) is manipulated to obtain the following estimable form:

$$i_t = \beta_1 + \beta_2 \pi_t + \beta_3 y_t \tag{3}$$

Where,

$$\beta_1 \equiv \bar{r} - h\pi^* \quad \beta_2 \equiv 1 + h \quad \text{and} \quad \beta_3 \equiv h \tag{4}$$

In order for the interest rate policy to be inflation-fighting, β_2 should be larger than unity and β_3 should be positive. Estimated Taylor rule is found as:

$$i_t = 15.04 - 0.01 \pi_t - 0.01 y_t \quad (5)$$

(0.21) (0.03) (0.03)

The above equation does not comply with the Taylor rule because neither the inflation coefficient nor the output gap coefficient is significant and they have wrong sign. This finding is not very surprising because the central bank of Bangladesh does not follow Taylor rule or even they are not inflation targeting. Bangladesh Bank targets broad money (M2) as an intermediate target and reserve money as the operating instrument. Reserve money is indirectly influenced by the available policy instruments namely, statutory liquidity requirement (SLR), cash reserve requirement (CRR), repurchase agreement (repo), reverse repo, open market operation (OMO) and moral suasion. Since our study focuses attention on whether interest rate policy could guide the monetary policy of Bangladesh, we have to examine whether interest rate have substantial influence on inflation. In order to examine this proviso, we resort to a simple error correction model. Unit root in both inflation and short-term nominal rate, in this case the repo rate, validates the possibility of cointegration. First we estimate the interest rate as a function of inflation and then the residual is tested for cointegration. Null hypothesis of cointegration can't be rejected thus estimate the error correction coefficients. Cointegrating relation is:

$$\pi_t = 18.71 - 0.38i_t \quad (6)$$

$$\text{Cointegrating error, } \hat{e}_t = \pi_t - (18.71 - 0.38i_t) \quad (7)$$

$$\text{Estimated error correction equations are: } \Delta \pi_t = 0.01 - 0.96 \hat{e}_{t-1} \quad (8)$$

(0.76) (0.13)

$$\Delta i_t = -0.03 + 0.001 \hat{e}_{t-1} \quad (9)$$

(0.06) (0.012)

Estimated error correcting equations have expected sign although the error correction coefficient of the second equation is insignificant. Deviation of inflation from its long run equilibrium path is corrected via the error correction term. Speed of adjustment from disequilibrium is fairly high which in our model is 96% in each quarter.

Responsiveness of inflation toward interest rate justifies the basis of interest rate rule under inflation targeting strategy in Bangladesh. The above empirical analysis bears a positive message to the policymakers of Bangladesh about the suitability of rule-guided monetary policy. This finding discards the argument of some researchers who use to argue that Bangladesh economy is too rudimentary to host such advanced strategy.

5. Impacts of Inflation Targeting

It is too early to assess the economic performance of a respective economy if the new regime did not work for a complete business cycle. We document below some observations based on early research.

5.1 Effects on Inflation

Petursson (2004) shows that in the sample 21 inflation targeting countries, inflation, inflation variability and inflation persistence have clearly fallen on average after the adoption of inflation targeting. The investigation also reveals that inflation went from over 30 percent in the last five years prior to adoption to roughly $4\frac{1}{2}$ percent after inflation targeting. Even the sample includes the four former hyperinflation countries: Brazil, Israel, Peru and Poland. Along with Petursson, Siklos (1999), Bernanke et al. (1999) Corbo et al (2001), Levin et al. (2004) have the similar investigation that inflation in the inflation targeting countries has become less volatile.

5.2 Economic Growth

The school that views inflation targeting as a strict monetary rule argues that inflation targeting can be harmful for growth. Empirically this is true only for the hyperinflation experiencing countries. The study based on inflation targeting countries carried out by Petursson (2004) concludes that there is no evidence suggesting that inflation targeting has harmed growth, rather it lowers growth variability. Truman (2003) and Ball and Sheridan (2003) find positive effects of inflation targeting on growth. Corbo et al. (2001), Neumann and von Hagen (2002) and Truman (2003) drew the conclusion that flexible inflation targeting does not only reduce variability in inflation but also in growth.

5.3 Exchange rate volatility

It is a conventional belief that inflation targeting generates higher volatility in exchange rate because the framework puts more emphasis on stabilising the domestic value of the currency. The practical scenario is different. Out of twenty-one countries, Petrusson (2004) found that exchange rate fluctuations have fallen in eleven countries and increased in ten countries. Eleven countries in the sample were on floating exchange rate regime and eight of them experienced smaller volatility in exchange rate when switched to inflation targeting. Interestingly, exchange rate volatility decreased in all the four industrial countries that were on floating exchange rate system. It seems inflation targeting reduces exchange rate volatility rather than increasing it in those countries which had a floating exchange rate before adopting inflation targeting. Bangladesh should be a good candidate in this viewpoint. Developing economy like Bangladesh could switch to inflation targeting by positively considering the evidence that some emerging countries that were fighting high inflation earlier could bring down inflation by switching to this monetary policy regime.

Conclusion

Inflation targeting can help achieve macroeconomic goals of price stability and output growth. Industrialized economies have exploited the benefits of this framework but developing economies, except a few, did not redesign their policy framework in this light. Monetary authority of Bangladesh economy formulates policy with considerable discretion which is time inconsistent. Central bank did not gain much independence in terms of policy formulation and implementation which resulted in fiscal dominance on monetary policy. Since inflation targeting strategy encompasses explicit announcement of numerical inflation target, central bank has the opportunity to gain public confidence that would eventually build a good coordination between fiscal and financial sectors.

Although there are some prerequisites to hold in order for successful implementation of inflation targeting, those are neither necessary conditions nor sufficient conditions for this success. Nevertheless, several features favourable to targeting approach do appear in Bangladesh economy which was not even the case for several inflation targeting countries. Stable balance of payment condition characterised by sound stock of foreign currency reserve, steady growth of real output and single digit inflation phenomenon are some evidences of plausibility of inflation targeting. Recently the country got the objective of achieving millennium development goal through the acceleration of growth and reduction of poverty. Under this circumstance, if price stability is not maintained then the outcome of economic growth would not lead to poverty reduction. Our descriptive and econometric findings provide evidence that the central bank of Bangladesh has substantial sophistication to undertake inflation targeting framework.

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