Efficacy of Monetary Policy Rules in India

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(Speech by Shri Deepak Mohanty, Executive Director, at Delhi School of Economics, Delhi, 25th March 2013)

I thank Professor Pami Dua for the opportunity to interact with this distinguished gathering of professors and young scholars.The Delhi School of Economics has a formidable reputation world over in teaching and research in economics. I will be speaking on the subject of monetary policy rules, not only because it relates to my area of work, but it offers considerable scope for research.

My scheme of presentation is as follows. First, I begin by giving you a snapshot of the evolution of monetary framework in India to contextualise how short-term interest rate has emerged as the key operating objective of monetary policy. Second, I briefly focus on the debate on rule *versus* discretion in the conduct of monetary policy. Third, I present simple Taylor rule estimates for India covering the recent period of 2001-2013 reflecting greater use of interest rate as an instrument of monetary policy. I will conclude with some thoughts on the way forward.

Monetary policy operations

Let me briefly highlight the evolution of monetary policy operating framework in India, to place our discussion on interest rate rules in perspective. In India, as in most countries, monetary policy framework has evolved in response to and as a consequence of financial developments, openness and shifts in the underlying transmission mechanism. The evolution of monetary policy framework in India can be seen in phases. In the formative years during 1935–1950, the focus of monetary policy was to regulate the supply of and demand for credit in the economy through the bank rate, reserve requirements and open market operations (OMO). In the development phase during 1951–1970, monetary policy was geared towards supporting plan financing. This led to introduction of several quantitative control measures to contain consequent inflationary pressures. While ensuring credit to preferred sectors, the bank rate was often used as a monetary policy instrument. During 1971–90, the focus of monetary policy was on credit planning. Both the statutory liquidity ratio (SLR) and the cash reserve ratio (CRR) were used to balance government financing and the attendant inflationary pressure.

Subsequently, structural reforms and financial liberalisation in the 1990s shifted the financing paradigm for the government and commercial sectors with increasingly market-determined interest rates and exchange rate. By the second half of the 1990s, in its liquidity management operations, the Reserve Bank was able to move away from direct instruments to indirect market-based instruments. Starting in April 1999, the Reserve Bank introduced a full-fledged liquidity adjustment facility (LAF). It was operated through overnight fixed rate repo and reverse repo in November 2004. This process helped to develop interest rate as an instrument of monetary transmission. This framework was reinforced in May 2011 when the weighted average overnight call money rate was explicitly recognised as the operating target of monetary policy and the

repo rate was made the only one independently varying policy rate (Mohanty, 2011)[1].

Chart 1: The new LAF framework is based on explicit interest rate targeting
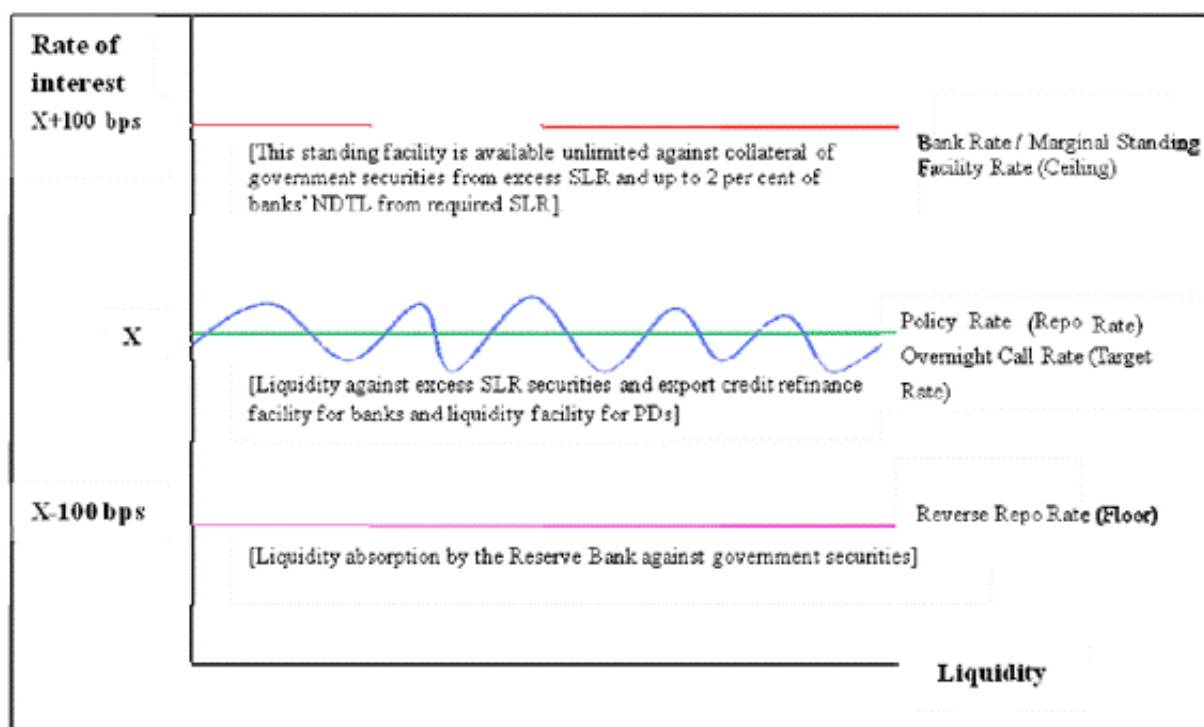
The new operating framework illustrated in Chart 1 with the modified LAF assigns a greater weight to the interest rate channel of monetary transmission. This means that once the Reserve Bank changes policy repo rate, it should quickly impact the overnight interest rate which is the operational rate and then transmit through the term structure of interest rates as well as bank lending rates. Increasing importance of this channel was also evident from the mix of instruments of policy actions. Over the years, in comparison with CRR, the use of interest rate instruments such as the Repo rate by the Reserve Bank has been more frequent, except for the year 2008-09, which was the peak of the global financial crisis (Chart 2).

Chart 2: In the recent years frequency of policy interest rate changes has increased
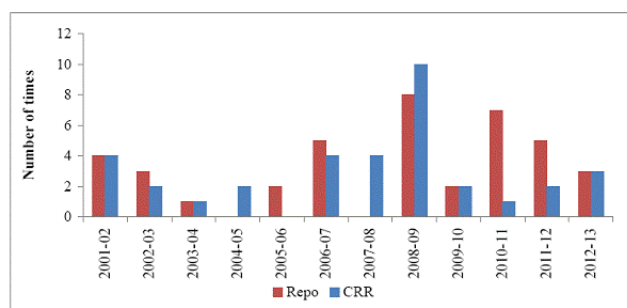
Rule *versus* discretion

As the Reserve Bank has started explicitly targeting overnight interest rate as the operational objective with the instrument of policy repo rate, there are relevant questions those arise: How that interest rate should be determined? Should it broadly follow a rule or should it be based on the central bank's discretion? The debate about rule *versus* discretion is as old as monetary economics. This issue received added impetus as the monetary system transited from gold standard to fiat money. When Kydland and Prescott (1977) in their seminal article presented the time inconsistency argument in favour of rules, the debate became even sharper[2]. Subsequently, Taylor (1993) demonstrated how even in the practical world of monetary policy making, the monetary policy reaction function could be modeled as predetermined rules with superior policy outcome[3]. Let me briefly touch upon the pros and cons of rule-based monetary policy before turning to the formulation of Taylor rule.

A number of reasons have been advanced in the literature as to why rule-based monetary policy could be more effective. First, a rule towards a credible commitment by the central bank to maintain price stability can reduce the inflation bias from monetary policy. Second, rules enhance economic efficiency by reducing uncertainty about future policy. Third, rules help policymakers avoid pressures from special interest groups and facilitate action consistent with long-run goals. Fourth, rules facilitate communication, promote transparency and increase accountability.

Similarly, there are arguments against application of rules. First, the economic system is too complex to be characterized by any rule. Second, the same rule may not work over the business cycle. Third, rule-based policy reduces the flexibility to respond to exogenous shocks. Fourth, rules do not allow for policy surprises which may be desirable for policy effectiveness under certain circumstances. Fifth, rules are ill suited to developing economies characterized by underdeveloped financial markets and rapid structural transformation.

In practice, it is difficult to come across central banks, which explicitly spell out their policy rules. However, for modern central banks, empirical assessments and policy evaluations are increasingly based on rules ever since Taylor's influential paper. In empirical work, original Taylor rule is modified and extended in a variety of ways for adapting to specific country set up and evolving monetary framework. These include forward-looking Taylor rule, Taylor-McCallum type rule, non-linear framework for addressing asymmetric behavior of monetary policy and time-varying nature of its parameters.

Taylor rule

Taylor rule is an interest rate feedback rule for a central bank for setting short-term interest rates to achieve both its objectives of stabilizing the economy and achieving price stability as economic conditions fluctuate. This could be expressed as:

$$i_t^* = r_t^* + \pi_t + \beta(\pi_t - \pi_t^*) + \gamma(y_t - y_t^*) \ldots\ldots\ldots\ldots (1)$$

Where, i_t^* = short-term (target) nominal interest rate, π_t = rate of inflation, π_t^* = desired rate of inflation, r_t^* = real (equilibrium) interest rate, y_t = real GDP growth rate and y_t^* = potential real GDP growth rate. From the Taylor rule specification, one can define 'neutral' rate of interest i_t^* as the short-term interest rate for which the economy is growing at its potential level and inflation is at its desired level. Hence, 'neutral' rate of interest $i_t^* = r_t^* + \pi_t^*$.

The rule recommends that short-term interest rate should be changed according to the deviation of inflation from its predetermined target and output from its potential level. Essentially, the combination of inflation and output gap should determine what should be the appropriate policy rate that would return the economy to its potential level without causing inflation.If these goals are in conflict in the sense that inflation is above its target and the economy is growing below its potential or vice versa, the rule provides guidance on how to balance these competing considerations in setting an appropriate level for the policy interest rate.

While ? and ? could be estimated from data, Taylor assumed those as 0.5 each. In a sense it assigns equal weights to both inflation and growth objectives. This is a reasonable assumption considering that most central banks are concerned both with inflation and growth. These dual objectives are built into many central bank statutes, including that of the US.He also additionally assumed that desired level of inflation for the US was 2 per cent per annum and the equilibrium real policy rate was 2 per cent per annum. Taylor (1993) showed that a simple monetary policy rule, where the US Fed raises the interest rate if inflation rate exceeds a 2 per cent implicit target or if real GDP growth is higher than its potential, describes quite well the actual path of the Fed funds rate between 1987 and 1992.

The linear framework of Taylor rule is, however, criticized by many on the ground that central banks have asymmetric preferences for interest rate smoothing depending on the direction of their monetary policy stance. In addition to changes between discretionary and rule-based policy regimes, economic theory provides several reasons for deviating sometimes from a symmetric and linear policy rule framework (Gerlach, 2000)[4]. An accepted way of representing such behaviour in literature is to assume that actual interest rate i_t gradually adjusts to the desired rate as: $?_t = ?i_{t-1} + (1-?) ?_t^*$, where 0