Chapter II

Revisiting the Choice of Nominal Anchor for India's Monetary Policy

1. Introduction

II.1. In recent years, inflation in India has been amongst the highest within the G-20. Household inflation expectations have risen sharply and have remained at elevated levels, unhinged from the low inflation experience of 2000-07 as also from the global inflation record (Table II.1). Professional forecasters' surveys show that the long-term inflation expectations have risen by about 150 basis points during this period (Charts II.1 and II.2).

II.2. The consequences can be far reaching. First, with high and persistent inflation, real interest rates have remained negative for savers during most of the post-global crisis period leading to a decline in domestic financial saving. Second, since India's inflation has persisted at a level higher than that of trading partners, external competitiveness is getting eroded. If the nominal exchange rate adjusts to offset the inflation differential it can set off a depreciation-inflation spiral, thereby undermining macroeconomic

stability[1]. Third, as the recent experience demonstrated, the large demand for gold as a hedge against inflation exacerbated the decline in financial savings and contributed to a widening of the current account deficit (CAD), rendering the economy vulnerable to external shocks. Fourth, the consequent weakening of the exchange rate has imposed balance
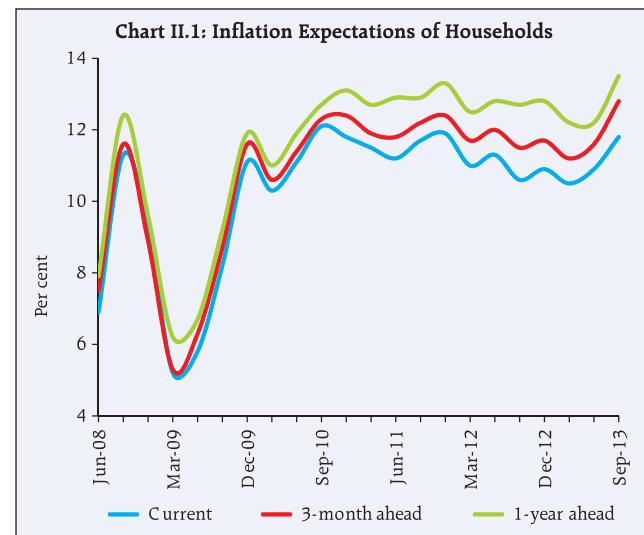

Chart II.1: Inflation Expectations of Households

Legend: Current · 3-month ahead · 1-year ahead

Table II.1: Cross-Country Inflation Comparison

(Per cent y-o-y)

	2000-07	2008	2009	2010	2011	2012	2008-12
I. Global Inflation (CPI)							
World	3.9	6.0	2.5	3.6	4.8	4.0	4.2
EMEs	6.7	9.2	5.3	5.9	7.1	6.1	6.7
BRICS (excluding India)							
Brazil	7.3	5.7	4.9	5.0	6.6	5.4	5.5
Russia	14.2	14.1	11.7	6.9	8.4	5.1	9.2
China	1.7	5.9	-0.7	3.3	5.4	2.7	3.3
South Africa	5.3	11.5	7.1	4.3	5.0	5.7	6.7
II. Inflation in India							
Consumer Price Index – Industrial Workers	4.5	9.1	12.4	10.4	8.4	10.4	10.1
Wholesale Price Index	5.2	8.1	3.8	9.6	8.9	7.4	7.5
Wholesale Price Index -Food	3.8	8.9	14.6	11.1	7.2	9.3	10.2
Wholesale Price Index –Non Food Manufactured Products	4.3	5.7	0.2	6.1	7.3	4.9	4.8

Note: Indian inflation pertains to financial year (April-March).
Source: World Economic Outlook, IMF; RBI (for India).

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[1] The Balassa-Samuelson effect implies that this offset need not be one-for-one if India's productivity growth is higher than other countries.

Chart II.2: Survey of Professional Forecasters - Long-term Inflation Expectations
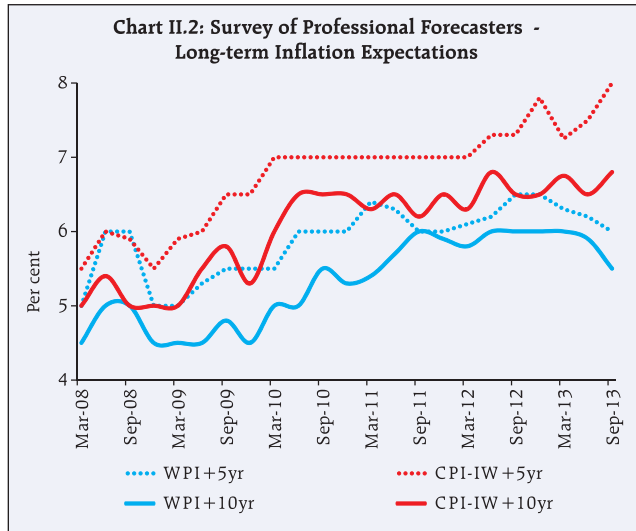
sheet risks on borrowers in foreign currency with the potential for financial instability. Fifth, persistently high inflation adversely impacts the economy's allocative efficiency and impedes growth[2]. Sixth, high and persistent inflation contributes to a worsening of income distribution as the poor use disproportionately higher cash-in-hand as part of their savings.

II.3.   Drawing from the lessons of the global financial crisis, there is a consensus gathering internationally that monetary policy should move away from its narrow focus on inflation towards a multiple target-multiple instrument approach without swerving from a commitment to price stability over the medium term. This emerging consensus, however, is reflected primarily in the form of institutionalising

greater flexibility in the prevailing monetary policy frameworks rather than an explicit regime overhaul. The Committee recognises the evolving global thinking on the subject. Yet, given the initial conditions facing India at the current juncture, bringing down inflation must be accorded primacy. Anchored inflation expectations will then provide the latitude to address other objectives without compromising on price stability.

2. Choice of Nominal Anchor

II.4.   A transparent and predictable policy framework is, almost by definition, rule-based. Central to a credible framework is a nominal anchor. Whether fixed or moving, it ties down the final goal of monetary policy and/or its path in the medium-to long-term, and the expectations of economic agents adjust accordingly. By acting as a constraint on policy discretion, a nominal anchor disincentivises time inconsistency[3], including due to pressures from interest groups.

II.5.   Broadly, three types of nominal anchors have been recorded, at least in recent history (Appendix Table II.1). The exchange rate, arguably the oldest one and an example of a fixed anchor in its original form, faces diminishing practitioner appeal today as it entails a loss of independence of monetary policy in the pursuit of national objectives, and exposes the economy to external shocks, particularly those emanating from the anchor economy. Furthermore,

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[2]   "Growing volatility of inflation and the growing departure of relative prices from the values that market prices alone would set combine to render the economic system less efficient, to introduce frictions in all markets and very likely to raise the recorded rate of unemployment" (Friedman 1977). There exists a non-zero rate of inflation where unemployment is the lowest and "operating with inflation either higher or lower leads to a higher rate of unemployment in the long-run" (Akerlof *et al.,* 2000). Empirical estimates from a growth accounting framework suggest that "inflation reduces growth by reducing investment and productivity growth" (Fischer 1993). This is also found to hold in a cross-country framework (Barro 1995).

George, A. A., Dickens, W. T., and G. L. Perry (2000): "Near-Rational Wage and Price Setting and the Long Run Phillips Curve", *Brookings Papers on Economic Activity*, 1, 1- 60.

Barro, R. J. (1995): "Inflation and Economic Growth", *NBER Working Paper* 5326, October.

Fischer, S. (1993): "The role of macroeconomic factors in growth", *Journal of Monetary Economics*, 32(3), 485-512.

Friedman, M. (1977): "Nobel Lecture: Inflation and Unemployment", *Journal of Political Economy*, 85(3), 451-472.

[3]   The problem of time inconsistency pertains to an agent (say a central bank) announcing a certain action for a future time point and not implementing the action when that time point is reached due to a preference for a different action. Hence, there is lack of consistency in the preferred course of action at various points of time. Also, other rational economic agents expect this renege on promise from the first agent.

as currency crises have repeatedly shown, an exchange rate anchor makes the monetary policy framework vulnerable to speculative attacks and consequent financial instability.

II.6   Monetary aggregates have also served as nominal anchors, but they have been undermined by instability and loss of predictability of the demand for money, discrediting accountability and communication when targets are missed.

II.7.   Since the late 1980s, several countries have adopted inflation as a nominal anchor for monetary policy, drawing upon the strong theoretical and empirical support for low and stable inflation as a necessary precondition for sustainable high growth.

II.8.   The explicit domestic orientation of inflation is seen as a clear advantage over other candidates for the nominal anchor. It tasks monetary policy to achieve price stability as an unambiguous and sustainable goal upon which the private sector can anchor its expectations about future inflation. The other positives associated with inflation as an anchor are that it is simple, easily communicated and hence, well understood by the public at large. By promoting low and stable inflation expectations, it contributes to producing a desirable macroeconomic outcome. The varied country experience with inflation targeting (IT) suggests that it has yielded significant benefits in terms of reduced inflation volatility (Svensson, 1997), reduced impact of shocks (Mishkin, 2004) and anchoring of inflation expectations (Kohn 2007,

Swanson, 2006, Levin *et al.,* 2004)[4]. Accordingly, IT frameworks have gained widening acceptance among advanced and emerging economies alike (Appendix Tables II.2A and II.3). This has catalysed the deepening of the institutional architecture around them.

II.9.   IT has disadvantages in that (a) some part of inflation, such as from food and fuel, is not easily controlled by monetary policy; (b) it is inherently a medium-term framework because of the long and variable lags in monetary policy transmission. The lack of immediate demonstrability of outcomes can result in ambiguous perceptions of the policy stance. Yet another concern has been the instability imparted to output and employment due to the overarching emphasis on achieving the inflation target, and the observed increase in output losses associated with disinflation.

II.10.   Starting with Chile in 1991, the number of EMEs (23) adopting inflation targeting as a monetary policy framework has outstripped that of AEs (9). Most EMEs used inflation targeting initially as a price stabilising device, with a sequence of annually declining inflation targets measured by headline consumer price index (CPI) which is perceived as well understood by the public and quickly available. These EMEs tended to move away from a one-year ahead inflation target to either multi-year targets or a medium-term target. Several countries in this category refer to their monetary policy framework as "inflation targeting light" (ITL)[5]. There are some 38 countries that have not committed to any specific target; among

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[4] Kohn, D. (2007): "Success and Failure of Monetary Policy since the 1950s", Speech at Monetary Policy over Fifty Years, a conference to mark the fiftieth anniversary of the Deutsche Bundesbank, Frankfurt, Germany.

Levin, A. T., Natalucci, F. M., and J. M. Piger (2004): "The Macroeconomic Effects of Inflation Targeting", *Federal Reserve Bank of St. Louis Review*, 86(4), 51-80.

Mishkin, F. (2004): "Why the Federal Reserve Should Adopt Inflation Targeting", *International Finance*, 7(1), 117-27.

Svensson, L. E.O (1997): "Inflation Forecast Targeting: Implementing and Monitoring Inflation Targets", *European Economic Review*, 41(6), 1111-1146.

Swanson, E. (2006): "Would an Inflation Target Help Anchor U.S. Inflation Expectations?", *FRBSF Economic Letter*, (Aug 11).

[5] "The ITL countries choose not to adopt a fixed exchange rate because it would leave them vulnerable to a speculative attack, Yet they do not become full-fledged inflation targeters because of constraints, such as the absence of a sufficiently strong fiscal position. Often, ITL is used as a transitional approach—aiming at maintaining monetary stability until the implementation of structural reforms in support of a single nominal anchor. Poland, for example, switched from monetary targeting to ITL before making the full transition to inflation targeting." http://www.imf.org/external/pubs/ft/fandd/basics/target.htm

EMEs, important examples in this category are Russia (to complete transition to an IT regime by 2015) and India.

II.11.   Finally, some monetary policy frameworks do not operate under an explicit nominal anchor, but such an anchor is implicit and the track record has been creditable[6] (*e.g.*, the US), with forward-looking behaviour triggering pre-emptive strikes against target warnings (Appendix Table II.2B). The main criticisms are the uncertainty in financial markets on policy actions and herding of expectations; strong dependence on individual skills and charisma of the monetary policy wielder; and susceptibility to outside pressures.

II.12.   In spite of strong theoretical positions that monetary policy can only hope to affect nominal variables, and that in the long run, there is no trade-off between inflation and employment, policy makers in some parts of the world have shown interest in bypassing nominal anchors and choosing targets from among real variables that have a direct bearing on growth and consumption. Real exchange rate targeting has been the most popular, but the experience has been that while monetary policy may be able to temporarily influence the real exchange rate, this can come at the cost of a combination of higher inflation and higher real interest rates. Additionally, this runs the risk of losing the nominal anchor completely – in the case of the real exchange rate target for instance, the rate of nominal appreciation/ depreciation becomes undetermined. The real interest rate has served as an anchor as well[7]. Here too, the experience

has shown that inflation can easily come unhinged since there is nothing to tie it down[8].

3. The Indian Experience

II.13.   India's monetary policy framework has undergone several transformations, reflecting underlying macroeconomic and financial conditions as also the dominant socio-politico-economic paradigm. Drawing from the colonial past, the initial years following independence were characterised by an exchange rate anchor set by the proportional reserve system prescribed by the RBI Act where under at least 40 per cent of the total note issue was to be backed by gold bullion and sterling. The proportional reserve system gave way to the minimum reserve system in 1957 (only ₹2 billion worth of foreign securities and bullion needed to be maintained as a backing for currency issue, of which ₹1.15 billion had to be in gold) and the use of credit aggregates as the nominal anchor for monetary policy. Changes in the Bank Rate and the cash reserve ratio (CRR) were the main instruments of monetary policy supporting its explicit credit allocation role embodied in selective credit control, credit authorisation and 'social control' measures to enhance the flow of credit to priority sectors. Setting the tone of monetary policy, the First Five Year Plan envisaged "...judicious credit creation somewhat in anticipation of the increase in production and availability of genuine savings".

II.14.   During 1971-1985, the monetisation of the fiscal deficit exerted a dominant influence on the conduct of monetary policy. The pre-emption of resources by the public sector and the resultant

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[6] "The Federal Open Market Committee (FOMC) judges that inflation at the rate of 2 per cent (as measured by the annual change in the price index for personal consumption expenditures) is most consistent over the longer run with the Federal Reserve's mandate for price stability and maximum employment……The FOMC implements monetary policy to help maintain an inflation rate of 2 per cent over the medium term." http://www.federalreserve.gov/faqs/money_12848.htm

[7] In Chile, the interest rate on indexed bonds served as the real anchor during 1985 to 2001.

[8] Other real variables such as output growth or unemployment cannot serve the purpose of credible real anchors since it is well established that monetary policy is neutral in the long run. The US, however, recently announced an explicit unemployment target – to keep interest rates low till unemployment falls below 6.5 per cent. This is consistent with what monetary policy can do, *i.e.*, to bring actual unemployment closer to the natural unemployment level or actual growth closer to the potential growth level.

inflationary consequences of high public expenditure necessitated frequent recourse to the CRR to neutralise the secondary effects of the expansion. Financial repression in the form of interest rate prescriptions, statutory pre-emptions and directed credit partly crowded out the private sector from the credit market. Against this backdrop, the Committee to Review the Working of the Monetary System (Chairman: Dr. Sukhamoy Chakravarty) recommended in 1985 a new monetary policy framework based on monetary targeting with feedback, drawing on empirical evidence of a stable demand function for money. Thus, broad money became the intermediate target while reserve money was one of the main operating instruments for achieving control on broad money growth. The Committee had also emphasized that "short-term interest rates could reinforce the anti-inflationary impact of monetary targeting if they are also used as a monetary management tool in fighting inflation".

II.15.   Analysis of the money growth outcomes during the monetary targeting regime indicates that targets were rarely met[9]. The biggest impediment to monetary targeting was lack of control over RBI's credit to the central government, which accounted for the bulk of reserve money creation[10]. Even with the CRR and the statutory liquidity ratio (SLR) raised to close to their statutory ceilings, money supply growth remained high and fuelled inflation persistence at elevated levels. With the reforms introduced in 1991, capital flows became another factor that rendered control over monetary aggregates difficult. As the pace of trade and financial liberalisation gained momentum in the 1990s, the efficacy of broad money as an intermediate target was re-assessed. Financial innovations and external shocks emanating from swings in capital flows, volatility in the exchange rate and global business cycles imparted instability to the demand for money. There was also increasing evidence of changes in the underlying transmission mechanism of monetary policy with interest rate and the exchange rate gaining importance *vis-à-vis* quantity variables.

II.16.   The structural reforms and financial liberalisation in the 1990s also led to a shift in the financing pattern for the government and commercial sectors, with interest rates and the exchange rate, increasingly market-determined. The RBI was able to move away from direct instruments to indirect market-based instruments. The CRR and SLR were brought down to 9.5 per cent and 25 per cent of NDTL of banks, respectively, by 1997. The RBI adopted a 'multiple indicator approach' in April 1998 with a greater emphasis on rate channels for monetary policy formulation relative to quantity instruments[11]. Under this approach, which is currently in use, a number of quantity variables such as money, credit, output, trade, capital flows and fiscal position as well as rate variables such as rates of return in different markets, inflation rate and exchange rate are analyzed for drawing monetary policy perspectives. The multiple indicator approach is informed by forward looking

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[9]   Report on Currency and Finance, 2009-12, Reserve Bank of India. http://www.rbi.org.in/scripts/AnnualPublications.aspx?head=Report%20on%20Currency%20and%20Finance
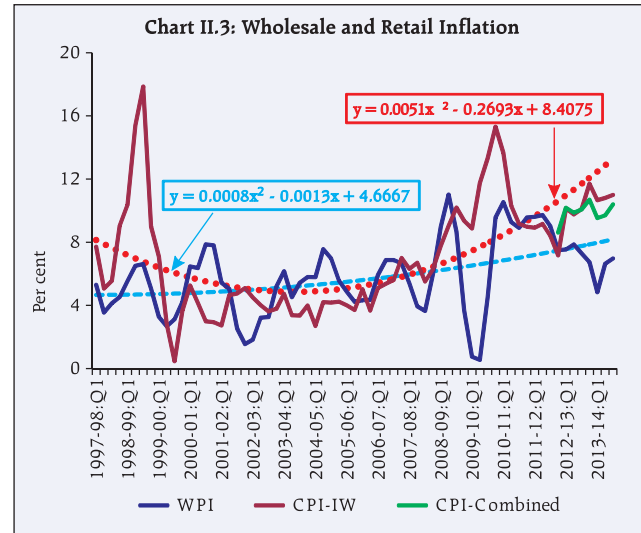
[10]   The facility of *ad hoc* treasury bills led to automatic monetisation of the government's deficit. Whenever the Government of India was in need of cash, it would issue non-marketable 91-day Treasury bills (TBs) to the RBI. This facility was phased out from April 1997. Besides, the Government of India also issued 91-day TBs "on tap" at a fixed discount of 4.6 per cent per annum, that were mostly taken up by banks. Since the RBI rediscounted the tap TBs, it added to monetisation of fiscal deficits and attenuation of monetary policy.

[11]   The RBI Annual Monetary Policy Statement (April 1998), while proposing the adoption of a multiple indicator approach, highlighted the challenges associated with the use of a single (a few) indicator(s), in particular monetary aggregates, monetary conditions index and interest rates. While financial innovations were increasingly becoming a source of uncertainty for the assessment of money demand, information on price movements in financial markets were not enough to construct a reliable measure of monetary conditions index, and the interest channel of transmission of monetary policy was still evolving. Against this backdrop, it was felt appropriate that a few key indicators may be used in conjunction with other indicators for purposes of policy making.

indicators since the early 2000s drawn from the RBI's surveys of industrial outlook, credit conditions, capacity utilization, professional forecasters, inflation expectations and consumer confidence. The RBI continues to give indicative projections of key monetary aggregates.

II.17.   The multiple indicator approach seemed to work fairly well from 1998-99 to 2008-09, as reflected in an average real gross domestic product (GDP) growth rate of 7.1 per cent associated with average inflation of about 5.5 per cent in terms of both the wholesale price index (WPI) and the CPI. In recent years, however, there has been mounting public censure of the efficacy and even the credibility of this framework as persistently high inflation and weakening growth have come to co-exist. Using a large panel of indicators has been criticised as not providing a clearly defined nominal anchor for monetary policy[12]. It also leaves policy analysts unclear about what the RBI looks at while taking policy decisions.
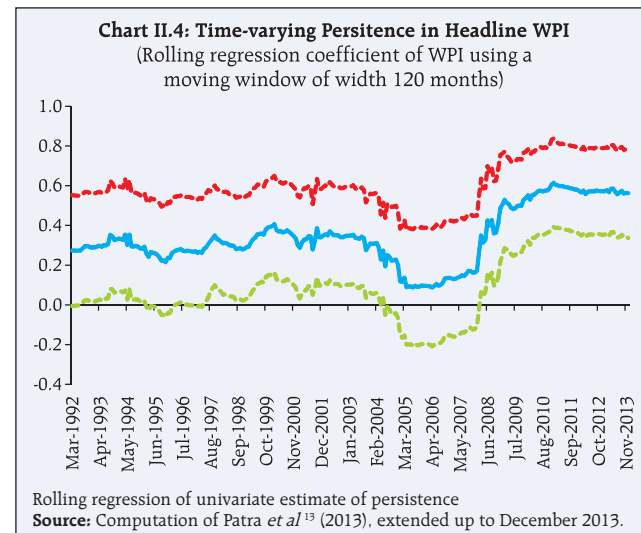
II.18.   WPI and Consumer Price Index-Industrial Workers (CPI-IW) inflation declined from 8.0 per cent and 8.8 per cent, respectively, in the monetary targeting regime (1985-86 to 1997-98), to 5.4 per cent and 5.6 per cent, respectively, during the first decade of the multiple indicator regime (1998-99 to 2008-09). Thereafter, it rose to 7.2 per cent and 10.5 per cent, respectively, between April 2009 and November 2013. Since 2008, retail inflation has trended up and has persisted at double digit levels over the last six years (Charts II.3 and II.4). In addition to supply side bottlenecks, there have been sharp increases in the minimum support prices (MSPs) since 2007-08 (Tables II.2 and II.3).

Chart II.3: Wholesale and Retail Inflation

$y = 0.0051x^2 - 0.2693x + 8.4075$

$y = 0.0008x^2 - 0.0013x + 4.6667$

3.1. Recommendations of Earlier Committees

II.19.   Since 2007 several high level Committees in India have highlighted that the RBI must consider switching over to IT.

II.20.   **The Report of the High Powered Expert Committee on Making Mumbai an International**

Chart II.4: Time-varying Persitence in Headline WPI
(Rolling regression coefficient of WPI using a moving window of width 120 months)

Rolling regression of univariate estimate of persistence
Source: Computation of Patra et al [13] (2013), extended up to December 2013.

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[12]   Mishra, A. and V. Mishra (2011): "Inflation Targeting in India: A Comparison with the Multiple Indicator Approach", *Journal of Asian Economics*, 23(1), 86-98.

[13] Patra, M. D, Khundrakpam, J. and A. T. George (2013): "Post-global Crisis Inflation Dynamics in India", *The Brookings Institution-NCAER, India Policy Forum*, July.

Table II.2: Minimum Support Price for Foodgrains according to Crop Year

(Y-o-y growth in per cent)

Year	Paddy Common	Coarse Cereals	Wheat	Gram	Arhar (Tur)	Moong	Urad
2000-01	4.1	7.2	5.2	8.4	8.6	8.6	8.6
2001-02	3.9	9.0	1.6	9.1	10.0	10.0	10.0
2002-03	0.0	0.0	0.0	1.7	0.0	0.8	0.8
2003-04	3.8	4.1	1.6	14.8	3.0	3.0	3.0
2004-05	1.8	2.0	1.6	1.8	2.2	2.9	2.9
2005-06	1.8	1.9	1.6	0.7	0.7	7.8	7.8
2006-07	1.8	2.9	15.4	0.7	0.7	0.0	0.0
2007-08	11.2	11.1	33.3	10.7	9.9	11.8	11.8
2008-09	39.5	40.0	8.0	8.1	29.0	48.2	48.2
2009-10	11.1	0.0	1.9	1.7	15.0	9.5	0.0
2010-11	0.0	4.8	6.4	19.3	52.2	33.0	34.9
2011-12	8.0	11.4	9.8	33.3	5.7	9.0	11.8
2012-13	15.7	19.9	5.1	7.1	4.1	10.0	13.2
2013-14	4.8	11.5	3.7	3.3	11.7	2.3	0.0

Source: Handbook of Statistics on Indian Economy, RBI; Ministry of Agriculture, Government of India.

Table II.3 : Mean Inflation Rates and Contribution to Overall Inflation

Year	WPI	Contribution to Inflation in percentage points			
		Food Items	Non-food Articles	Fuel Group and Minerals	Non-food Manufacturing
1983-84	7.6	3.1	0.5	0.4	3.3
1984-85	6.4	1.2	0.5	0.5	4.6
1985-86	4.5	0.5	-0.1	0.9	4.2
1986-87	5.8	2.5	0.5	0.5	1.6
1987-88	8.2	2.3	0.9	0.2	4.3
1988-89	7.5	2.1	-0.1	0.4	6.4
1989-90	7.4	1.2	0.2	0.4	7.0
1990-91	10.3	2.8	0.7	1.1	5.3
1991-92	13.7	4.5	0.8	1.2	6.9
1992-93	10.0	2.9	0.0	1.2	7.1
1993-94	8.3	1.8	0.4	1.6	4.6
1994-95	12.6	3.7	1.0	1.0	7.5
1995-96	8.0	1.1	0.4	0.5	6.1
1996-97	4.6	2.0	0.0	1.1	0.8
1997-98	4.4	1.5	0.1	1.4	1.1
1998-99	5.9	2.8	0.5	0.4	1.7
1999-00	3.3	1.6	-0.3	1.0	1.8
2000-01	7.2	-0.8	0.1	3.4	2.9
2001-02	3.6	-0.1	0.2	1.3	1.3
2002-03	3.4	0.9	0.3	0.8	1.1
2003-04	5.5	1.6	0.5	1.0	2.7
2004-05	6.5	0.9	0.0	1.8	3.6
2005-06	4.4	0.9	-0.1	2.2	1.5
2006-07	6.6	1.9	0.2	1.4	3.1
2007-08	4.7	1.4	0.5	0.2	2.7
2008-09	8.1	2.2	0.5	2.2	3.1
2009-10	3.8	3.6	0.2	-0.1	0.1
2010-11	9.6	3.0	1.0	2.4	3.1
2011-12	8.9	2.0	0.5	2.9	3.6
2012-13	7.4	2.5	0.5	1.9	2.4
2013-14 (up to December)	6.2	2.9	0.3	1.7	1.2

Source: Patra, M.D. *et al.* (2013), extended up to December 2013-14.

Financial Centre, 2007 (Chairman: Percy S. Mistry) emphasised that the gold standard for a monetary policy framework is a transparent, independent, inflation-targeting central bank. With such an arrangement the Indian State would be: (a) underlining its commitment to delivering low and predictable inflation; and (b) inducing greater confidence in the Rupee in the eyes of domestic and global investors.

II.21.   **The Report of the Committee on Financial Sector Reforms, 2009 (Chairman: Raghuram G. Rajan)** reiterated that the RBI can best serve the cause of growth by focusing on controlling inflation, and intervening in currency markets only to limit excessive volatility. This focus can also best serve the cause of inclusion because the poorer sections are least hedged against inflation. The RBI should formally have a single objective to stay close to a low inflation number, or within a range, in the medium term, and move steadily to a single instrument, the short-term interest rate (repo and reverse repo) to achieve it.

II.22.   **The Financial Sector Legislative Reforms Commission (FSLRC), 2013 (Chairman: B.N. Srikrishna)** also recommended that price stability is a desirable goal in its own right, particularly in India where inflation is known to hurt the poor and therefore the central bank must be given a quantitative monitorable objective by the Central Government for its monetary policy function. According to the Committee, the Ministry of Finance should put out

a statement defining a quantitative monitorable 'predominant' target. Additional/subsidiary targets could also be specified, which would be pursued when there are no difficulties in meeting the predominant target.

3.2. Rationale for Flexible Inflation Targeting in India

II.23. Major central banks, in both advanced and emerging economies, have adopted flexible inflation targeting (FIT) under which the inflation target is aimed to be achieved on average over the business cycle, while accommodating growth concerns in the short run (Ito, 2013).[14] While FIT recognises the existence of the growth-inflation trade-off in the short run, it is designed around the critical importance of price stability for sustainable growth in the medium run. The flexibility under FIT, however, is not relevant for conditions where the inflation target is not achieved even over a full business cycle – whether at any point of time or on an average *i.e.*, high inflation expectations exhibit far greater stickiness than inflation – despite sustained slowdown in growth; and persistently high inflation in itself becomes a risk to growth (please see footnote no. 2), which limits the space for accommodating growth concerns even in the short run. India, arguably, faces similar conditions in recent years and visible signs of stagflation – *i.e.,* high inflation co-existing with sluggish growth – warrants a refocusing on the critical importance of price stability for improving overall macroeconomic stability in the near term, and for securing growth prospects in the medium run. As set out in Paragraph II.3, India is faced with the unique challenge of experiencing one of the highest inflation rates among G-20 countries, with the level of inflation expectations having doubled over the last four years.

As enunciated earlier, elevated inflation is creating macroeconomic vulnerabilities. In the light of these unique circumstances, the foremost and dominant objective of monetary policy must be to anchor inflation expectations. A monetary policy framework with inflation as the nominal anchor is also consistent with flexibility in exchange rate management[15].

II.24. Stabilising and anchoring inflation expectations – whether they are rational or adaptive – is critical for ensuring price stability on an enduring basis, so that monetary policy re-establishes credibility visibly and transparently, that deviations from desirable levels of inflation on a persistent basis will not be tolerated. In doing so, monetary policy provides a common set of expectations to all economic agents which, in turn, influences their behaviour and thereby aggregate demand. These dynamics can be captured within the framework of the New Keynesian macroeconomic model that is widely employed by modern central banks (Box II.1).

Recommendations

II.25. *Drawing from the review of cross-country experience, the appraisal of India's monetary policy against the test of outcomes and the recommendations made by previous committees, the Committee recommends that inflation should be the nominal anchor for the monetary policy framework. This nominal anchor should be set by the RBI as its predominant objective of monetary policy in its policy statements. The nominal anchor should be communicated without ambiguity, so as to ensure a monetary policy regime shift away from the current approach to one that is centered around the nominal anchor. Subject to the establishment and achievement of the nominal anchor, monetary policy conduct should be consistent with a sustainable growth trajectory and financial stability.*

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[14] Ito, T (2013): "We are All FIT-ers Now: Is Flexible Inflation Targeting Fit to a New Financial Environment?", *Bank of Thailand and IMF Conference*, November 1-2.

[15] The RBI does not target a specific rate or level for the exchange rate. The RBI intervenes in the market only to smooth exchange rate volatility and prevent disruptions to macroeconomic stability.

Box II.1: A Theoretical Framework as a Guide for Monetary Policy

The New Keynesian (NK) research programme is one of the most influential and prolific areas of research in monetary policy analysis. The framework provides the foundations of the NK DSGE (dynamic stochastic general equilibrium) model which is the workhorse model for the analysis of monetary policy at major central banks. DSGE models are based on optimising behaviour of households and firms, rational expectations, and market clearing, *i.e.*, it adopts many of the tools associated with research on real business cycles. However, firms are modeled as monopolistic competitors, and nominal rigidities a key element of the model bring the main source of monetary policy non-neutrality (Gali, 2008a, 2008b; Walsh, 2010; Sbordone *et al.*, 2010).

The simple NK model comprises three equations. The first equation is called the New Keynesian Philips Curve (NKPC). This is the supply block of the model. This can be derived from the aggregation of price-setting decisions by firms, combined with an equation describing the relationship between marginal cost and the level of activity (see Gali 2008a, 2008b). It is given by:

$$\pi_t = \beta E_t\{\pi_{t+1}\} + kx_t + \mu_t, \qquad (1)$$

where π_t is inflation, x_t is the output gap, E_t is the expectation at time period t, and μ_t is a cost-push shock.

The second block relates the output gap positively to its expected one period value $E_t\{x_{t+1}\}$, and negatively to the interest rate gap (the difference between the real interest rate, $i_t - E_t\{\pi_{t+1}\}$ and the natural rate of interest (r_t^n)). The equation is given by:

$$x_t = -\frac{1}{\sigma}(i_t - E_t\{\pi_{t+1}\} - r_t^n) + E_t\{x_{t+1}\} \qquad (2)$$

Equation (2) is called the dynamic IS equation (DIS). The demand block exhibits a negative relationship between the real interest rate and real activity, since a rise in the real interest rate increases savings and lowers consumption (and investment). Both the NKPC and the DIS constitute the non-policy block of the New Keynesian model.

Finally, the model is closed by a monetary policy rule. Monetary policy itself is often described by a central bank, which sets the short-term nominal interest rate according to a Taylor-type policy:

$$i_t = \rho + \varphi_\pi \pi_t + \varphi_y y^*_t + v_t \qquad (3)$$

where i_t is the short-term nominal interest rate, v_t is a shock (an exogenous policy disturbance), and y^*_t represents deviations of log output from its steady state value. The policy reaction function of the monetary authority closes the model allowing for a complete description of the relationship between the key variables: output, inflation, and the nominal interest rate.

Optimal Monetary Policy

Woodford (2003) showed that the objectives of inflation targeting can be approximated by a quadratic loss function consisting of the sum of the squares of inflation deviations from target and a weight times the square of the output gap. The loss function associated with inflation targeting is given by:

$$\sum_{t=0}^{\infty} (\lambda x_t^2 + \pi_t^2), \qquad (4)$$

where $\lambda = 0$ denotes a central bank that is a strict inflation targeter, and $\lambda > 0$ denotes a central bank that is a flexible inflation targeter (*i.e.,* also concerned about the stability of the economy).

Flexible inflation targeting refers to an optimal monetary policy that minimizes the central bank's loss function (subject to equation (1)) by attaching a penalty to output gap fluctuations. It can be shown that there are potential welfare gains to be made if the central bank conveys *credibly* the extent of its anti-inflationary stance (Svensson, 1997). Further, in the context of the simple NK model in equations (1), (2) and (3), the welfare comparisons will vary depending on the weight given to output stabilization. The general result is that the smallest welfare losses are obtained when monetary policy responds to changes in inflation only.

As Gali (2008b) points out, there are two direct costs of inflation in this framework which justify why central banks should pursue a policy aimed at price stability. In the absence of cost-push shocks, inflation becomes an indicator of an inefficient level of economic activity, because of the deviation of output from its natural level due to the presence of nominal rigidities. Inflation also generates a more inefficient allocation of resources across firms and sectors, because not all firms can adjust their prices, which makes relative prices vary in accordance with firm or sectoral level shocks. This leads to sub-optimal goods being consumed and produced. Both considerations, and other practical considerations (such as the risk of hitting the zero lower bound on the nominal interest rate), suggest that a desirable policy is the attainment of a positive target for inflation over a medium-term horizon. Also, because inflation and the output gap are forward-

(Contd...)

(Concld.)

looking variables, the analysis of monetary policy in the context of models with forward-looking variables points to the importance of a credible commitment to improve the central banks trade-offs.

The NK framework can be used to evaluate the desirability of alternative monetary policy rules. It can also be used to determine the optimal monetary policy rule using welfare-based criterion. Because of its flexibility, it is able to incorporate a wide variety of country-specific characteristics of emerging market economies (commodity price shocks, formal-informal sector linkages), as well as other extensions (open economy features, credit frictions, *etc.*) for monetary policy analysis.

References:

1. Gali, Jordi (2008a) "Monetary Policy, Inflation, and the Business Cycle: An Introduction to the New Keynesian Framework", Princeton University Press, New Jersey.

2. Gali, Jordi (2008b) "The New Keynesian Approach to Monetary Policy Analysis: Lessons and New Directions", *Economics Working Papers 1075*, Department of Economics and Business, Universitat Pompeu Fabra, February

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5. Sbordone, Argia M., Tambalotti, Andrea, Rao, Krishna and Kieran Walsh (2010) "Policy Analysis Using DSGE Models: An Introduction" *Economic Policy Review*, Vol. 16, No. 2, October, pp 23-43.

6. Woodford, Michael (2003) "Interest and Prices: Foundations of a Theory of Monetary Policy", Princeton University Press, New Jersey.

7. Svensson, Lars E. O. (1997) "Optimal Inflation Targets, 'Conservative' Central Banks, and Linear Inflation Contracts", *American Economic Review*, Vol. 87(1), pp 98-114.

II.26. This recommendation is intended to better ground inflation expectations by making clear that inflation is the RBI's primary objective and that it expects to be held accountable for its performance in this regard.

4. The Choice of Inflation Metric in India

4.1 Range of Options

II.27. Until recently, the RBI communicated indicative inflation projections in terms of the WPI alone, essentially because it is the only measure of prices at a national level and CPIs have traditionally addressed prices facing specific sections of society. The three legacy consumer price indices – CPI-IW, Consumer Price Index-Agricultural Labourers (CPI-AL) and Consumer Price Index-Rural Labourers (CPI-RL) – capture the heterogeneity of the economic structure and the differences in the consumption basket across different population segments. Since October 2013, the RBI has started providing indicative projections of inflation in terms of the broader CPI-Combined. While WPI weights are primarily based on production and traded values, the CPI-Combined weighting diagram is based on the National Sample Survey Office (NSSO)'s 2004-05 consumer expenditure survey. The RBI internally conducts inflation analysis on the basis of a number of other indicators besides WPI/CPIs – inflation expectations; yield spreads; input and output prices in business expectations surveys and purchasing managers' indices; rural wages and corporate staff costs; house prices and the like.

II.28. The WPI is an imperfect substitute for a producer price index (PPI). Furthermore, it does not capture price movements in non-commodity producing sectors like services, which constitute close to two-thirds of economic activity in India. It also does not generally reflect price movements in all wholesale markets as the price quotes of some of the important commodities like milk, LPG and the like are basically taken from retail markets. Movements in WPI often reflect large external shocks. Moreover, it is often subject to large revisions; for instance, between January 2010 and October 2013, WPI inflation was

revised 43 times out of which 36 times were in the upward direction. These revisions are made two months after the first announcement, generating large uncertainty in the assessment of inflation conditions. Conducting monetary policy based on provisional numbers generally entails the risk of under-estimating inflationary pressures, especially when inflation is rising.

II.29. The true inflation that consumers face is in the retail market. Although price indices that relate to consumer expenditures are at best imperfect, they are still close indicators of the cost of living. Almost all central banks in AEs and EMEs use CPI as their primary price indicator. Other price indicators like the national income price deflator are used as a secondary indicator[16]. The choice of CPI establishes 'trust' *viz.,* economic agents note that the monetary policy maker is targeting an index that is relevant for households and businesses[17]. The widespread use of the CPI as the major price indicator reflects its advantages – it is familiar to large segments of the population and often used in both public and private sectors as a reference in the provision of government benefits or in wage contracts and negotiations. Importantly in India, unlike the WPI, the CPI is not subject to large revisions, which enhances its utility to the public and its usefulness for monetary policy purposes[18]. There is no revision in CPI-IW and in case of the CPI-Combined, revisions have so far been marginal.

II.30. It is observed that the CPI-Combined has a strong and statistically significant correlation with the CPI-IW, allowing the superimposition of the weighting pattern of the former on the price trends of the latter so as to generate a sufficiently long time series for empirical assessment. The lag in the data release of the CPI-Combined is only 12 days as against one month for CPI-IW. The CPI-Combined and the CPI-IW also show similar inflation momentum. Also, the CPI-Combined is empirically found to be robust in comparison with CPI-IW as far as price reporting is concerned. Accordingly, the argument that the CPI-Combined does not have adequate history to support data analysis is not by itself a limiting consideration.

II.31. In India, food has 48 per cent weight in the CPI-Combined. If 'food' and 'fuel and light' are excluded in order to arrive at a core inflation measure, 57.1 per cent of the consumption basket will be discarded. Also, two major energy components, *viz.,* petrol and diesel, are part of transport and communication, which cannot be further segregated (as item level disaggregated price index is not available for the CPI-Combined). This also limits the estimation of CPI core inflation based on statistical techniques other than exclusion. Furthermore, high inflation in food and energy items is generally reflected in elevated inflation expectations. With a lag, this gets manifested in the inflation of other items, particularly services. Shocks to food inflation and fuel inflation also have a much larger and more persistent impact on inflation expectations than shocks to non-food non-fuel inflation. As such, any attempt to anchor inflation expectations cannot ignore shocks to food and fuel. Furthermore, it is the headline CPI that households use to deflate nominal returns and therefore headline CPI informs their portfolio choice of financial assets *vis-a-vis* other categories (like gold and real estate). Therefore, in spite of the argument made that a substantial part of CPI inflation may not be in the ambit of monetary policy to control, the

[16] Moreno, R. (2009): "Some Issues in Measuring and Tracking Prices in Emerging Market Economies", Chapter in "Monetary Policy and the Measurement of Inflation: Prices, Wages and Expectations", *BIS Papers,* 49, December, 13-51.

[17] Bank of England (2013): "Monetary Policy Trade-offs and Forward Guidance", available at http://www.bankofengland.co.uk/publications/Documents/inflationreport/2013/ir13augforwardguidance.pdf

[18] See Annex 1 for causal relation between CPI and WPI for food and core components.

exclusion of food and energy may not yield 'true' measure of inflation for conducting monetary policy. In these conditions, the CPI-Combined based headline inflation measure appears to be the most feasible and appropriate measure of inflation – as the closest proxy

of a true cost of living index – for the conduct of monetary policy. Going forward, improvements in the index will be helpful to make the CPI-Combined a more robust and comprehensive measure of inflation conditions (Box II.2).

Box II.2: CPI-Combined as a Representative Measure of Inflation

The introduction of new CPIs in 2011, *i.e.*, all India CPI-Combined, CPI-Rural and CPI-Urban provides for the first time a nationwide retail price index in India that captures the inflation faced by households, *i.e.*, cost of living inflation. The new CPIs have a comprehensive coverage across regions as well as commodity groups including services. With a base year of 2010, the new CPIs have a weighting pattern that reflects more recent consumption patterns as compared with the other CPIs, as it is based on NSSO's 61st Round of Consumer Expenditure Survey data (2004-05). The CPI consumption basket will become up to date with its forthcoming revision based on weights from the NSS 68th round Consumer Expenditure Survey (2011-12). As per the latest NSSO survey, the weight of food in the consumption basket has gone down (from 55.0 per cent and 42.5 per cent respectively in the 2004-05 Round to 48.6 per cent and 38.5 per cent in the 2010-11 Round for rural and urban areas, as per the uniform reference period (URP) of last 30 days).

The prices data collected from across India on a monthly basis by NSSO, Department of Posts as well as through web portals maintained by the National Informatics Centre, has contributed to improving the quality of data. At times, other measures of CPI have yielded similar inflation as the new CPIs; however, due to large differences in coverage and the weighting diagram (Table 1), comparison of new CPI and old CPIs (*i.e.* CPI-IW, CPI-AL and CPI-RL) at item level, is not directly feasible.

While inflation measured by CPI-Combined is the most representative among available measures of inflation for households and therefore monetary policy, disaggregated information on weights and prices at the commodity level is not yet available. Public dissemination of disaggregated information is important for analysis and as a 'public good' in itself. Availability of data on item level indices will also help in understanding the nature of price flexibility/stickiness. Moreover, if the disaggregated information is also made available for sub-groups based on Classification of Individual Consumption by Purpose (COICOP), it would facilitate cross-country comparison of price movements.

Currently, the housing index for CPI-Urban includes different sub-samples for different months and the samples are

Table 1: Weight of Different Groups in the CPIs

Items	CPI-Urban	CPI-IW	CPI-Rural	CPI-RL	CPI-Combined
Food and beverages	35.80	46.19	56.58	66.77	47.58
Pan, tobacco and intoxicants	1.35	2.27	2.73	3.7	2.13
Fuel and light	8.40	6.43	10.42	7.9	9.49
Housing	22.53	15.27	-	-	9.77
Clothing, bedding and footwear	3.91	6.57	5.36	9.76	4.73
Miscellaneous	28.00	23.27	24.91	11.87	26.31

Note: CPI-Urban and CPI-Rural are the components of the new CPI-Combined

repeated only once in six months. Information on centres included in each sub-sample would be required to get a clearer idea of region specific movements in house prices and rent.

The CPI-Combined is compiled based on aggregation of State-level CPIs using state-based weights to derive the all India Index. Considering the heterogeneous nature of price movements across different regions, the CPI-Combined inflation could be susceptible to localised price pressures and volatility. Having indices based on national level weights at commodity level, to an extent, could mitigate this. More detailed information at the state level should also be made available in the public domain.

Given that CPI captures end-user prices which include both central and state taxes, there could be price fluctuations imparted by different tax structures across States. Currently, in the absence of a uniform GST, state level variations in tax policies and their contribution to the national inflation would have to be carefully analysed to understand the inflation dynamics. Some information on the tax component of prices at retail level, if compiled separately, could help in disentangling the effects of market driven price movements from the impact of changes in taxes on CPI.

Currently services are largely captured within the Miscellaneous group. Even within the sub-group of miscellaneous, the baskets constitute a mix of goods and services. A separate service price index as a memo item would be desirable for analytical purposes.

4.2 Rationale for the Choice of CPI

II.32.   In view of the long and variable lags characterising monetary policy, an appropriate inflation indicator has to be forward-looking, tracking inflation expectations. A wide consensus in the theoretical and empirical literature has settled around the position that inflation is driven by the output gap and by inflation expectations (either backward or forward-looking) which influence wage and price setting behavior (as typified in the "New Keynesian Phillips Curve (NKPC)"). The evidence forming in the post-2008 global financial crisis period suggest that the role of inflation expectations in shaping inflation dynamics has become even more important. Illustratively, the level of slack in advanced economies should have imparted sustained deflationary pressures in this period; instead, inflation has remained in the 2-3 per cent range because inflation expectations were anchored at those levels by advanced economy central banks (IMF, 2013)[19]. More generally, over the last few decades the role of output gaps *vis-à-vis* inflation expectations in influencing inflation dynamics is observed to be secularly falling.

II.33.   A similar dynamic, *albeit* undesirable, may be currently playing out in India. Even as the Indian economy has experienced negative output gaps in 2013, CPI inflation excluding food and fuel has remained sticky at an elevated level, averaging above 8 per cent, and playing a growing role in determining wage and price behavior in India. The crucial question, therefore, is: what is driving household inflation expectations in India? An examination of the quantitative inflation expectations of households in the RBI's survey shows that inflation expectations tended to follow WPI inflation during 2008-09. Post-2011, however, they seem to be following CPI inflation. Panel data analysis based on the RBI's urban households' inflation expectations survey shows that both three-month ahead and one-year ahead expectations are significantly influenced by food as well as fuel inflation measured from CPI-IW (Annex

2). This indicates the need to target headline CPI and not CPI excluding food and fuel to anchor inflation expectations. Empirical evidence also suggests that: (a) changes in CPI-headline as well as CPI-food and fuel inflation drive changes in inflation expectations, and (b) increases in policy rates respond to rising inflation expectations (details in Chapter-IV).

II.34.   Modeling inflation as a function of its lag and forward-looking inflation expectations along with the output gap in a Bayesian Vector Auto Regression (VAR) framework – to account for the dynamic properties of each variable and the simultaneity properties – shows that shocks to food and fuel inflation within the CPI basket have the largest and most persistent impact on overall inflation expectations. Specifically, a 100 basis points (bps) shock to food inflation immediately affects one-year forward expectations by as much as 50 bps and persists for 8 quarters. The persistence of the food inflation shock on expectations reveals that either households perceive food shocks to be sustained and/or they expect food shocks will inevitably translate into a more generalized inflation with a lag. Shocks to fuel inflation also result in large changes in expectations but are less persistent, impacting one-year-ahead expectations up to four quarters. Interestingly, shocks to inflation excluding food and fuel have a far more muted quantitative impact on expectations and persist for only two-three quarters. Shocks to WPI inflation have no statistically significant impact on inflation expectations, indicating that targeting the WPI would do little to anchor inflation expectations. This analysis is robust to different estimations of output gaps and to the use of both three-month and one-year-ahead inflation expectations (Box II.3).

II.35.   The results are intuitive because households experience food and fuel price changes on a daily basis but other prices change infrequently. The role of inflation expectations cannot be ignored in the price formation process and, in fact, may have assumed greater importance than before. In particular,

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[19] IMF (2013): "The Dog that Didn't Bark: Has Inflation been Muzzled or was it Just Sleeping?", Chapter 3, *World Economic Outlook*, April.

Box II.3: Impulse Responses to Inflation Shocks
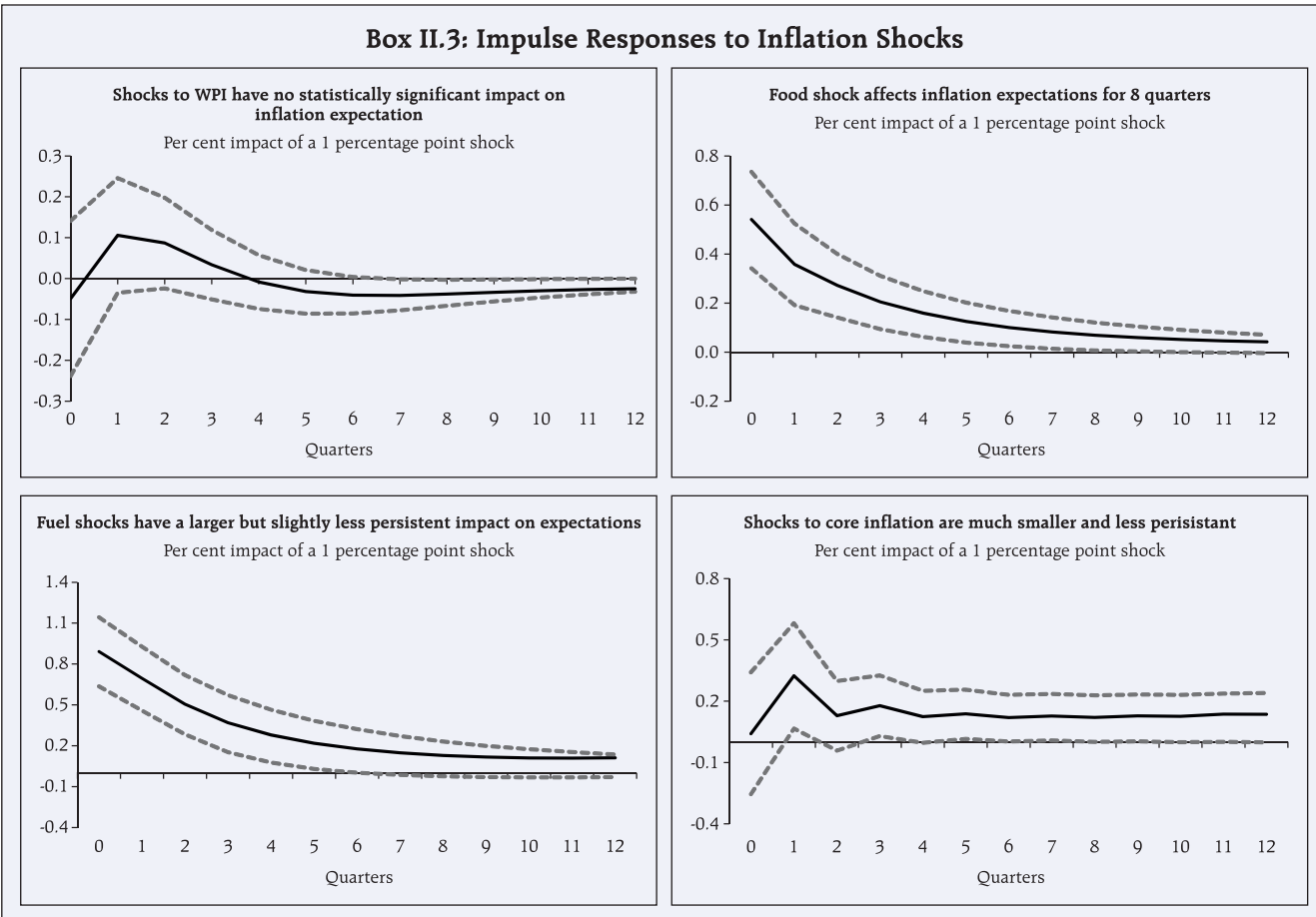
the elevated and entrenched nature of expectations in India – as measured by the RBI's households' surveys – is likely a key reason why elevated inflation currently co-exists with negative output gaps. Consequently, the choice of the inflation metric cannot ignore food and fuel shocks and must, in fact, react to them to avoid a more generalized inflation spiral that influences household expectations lastingly. Not a single EME inflation-targeting central bank targets core CPI – other than Thailand – all of them target headline CPI. It is often argued that India

is unique, with food and fuel inflation constituting 57.1 per cent of the CPI basket and therefore outside the direct control of the RBI. In this context, however, it needs to be recognized that there are other EMEs that also have a relatively significant fraction of food and fuel in the CPI basket (close to 40 per cent in the case of Indonesia and Brazil) but still choose to target headline CPI[20]. Accordingly, the Committee is of the view that in the current context, targeting headline CPI would be a critical prerequisite for reducing and then anchoring inflation expectations.

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[20] The experience of both AEs and EMEs, in particular the UK, Israel, Brazil, Korea, and Indonesia suggests that food inflation often deviates from the headline inflation over a sustained period before converging to headline inflation. Cross-country assessment suggests that food price shocks tend to have larger effects on headline inflation in EMEs than in AEs. Moreover, since inflation expectations are weakly anchored in EMEs, food price shocks have larger effects on inflation expectations also. A striking finding is that EMEs operating with IT often exhibit better performance in managing medium-term inflation expectations in response to food price shocks, almost mirroring the performance of AEs operating with IT, whereas EMEs that do not have IT seem to experience inflation expectations five years ahead rising in response to an adverse food price shock (IMF, WEO September 2011).

Recommendation

II.36.   *The Committee recommends that the RBI should adopt the new CPI (combined) as the measure of the nominal anchor for policy communication. The nominal anchor should be defined in terms of headline CPI inflation, which closely reflects the cost of living and influences inflation expectations relative to other available metrics.*

5. Numerical Target and Precision

II.37.   A numerical inflation target reflects, explicitly or implicitly, the meaning of price stability in a country specific context. An explicit interpretation of inflation as an objective of monetary policy is exemplified by the ECB which defines price stability as "...a year-on-year increase in the Harmonised Index of Consumer Prices (HICP) for the euro area of below 2 per cent". An illustration of an implicit inflation goal is that of China: "Government announced to hold CPI inflation in 2013 at 3.5 per cent, 0.5 percentage point lower than the target of last year". The cross country experience suggests that the numerical target should be a low but non-zero positive number.

II.38.   What should be the non-zero positive number for India? Estimates using multivariate methods on quarterly data indicate that the level of CPI-Combined inflation (all India back-casted using the CPI-IW) above which it is inimically harmful to growth is 6.2 per cent (Annex 3). Alternative methods of estimating the output gap (univariate and multivariate) suggest that the output gap was fairly close to zero during the period from Q3 of 2003-04 and Q1 of 2006-07 (Annex 4). During the same period, average CPI inflation was

at around 4 per cent. Admittedly, these estimates may not hold for a future regime that is centered around a clear nominal anchor (in other words, the past may not be a robust guide to the future – a form of Lucas critique at play). Notwithstanding the limitations, these estimates provide, as a possible starting point, empirical support to a range of 4 to 6 per cent for the inflation target.

II.39.   The choice of the exact numerical range or target for a country is also informed by inflation in comparator EMEs and trading partners, consistent with its broader integration with the global economy. Country practices suggest that the target should be either less than or equal to the level of inflation that may be consistent with minimum attainable non-inflationary rate of unemployment or maximum non-inflationary rate of growth[21]. In the literature, there is a convergence of views that an inflation rate of 1 to 3 per cent corresponds to price stability in AEs (since the Balassa-Samuelson effect would suggest higher inflation in emerging markets), while in transition economies inflation in the range of 4 to 5 per cent would correspond to price stability[22] (Appendix Table II.4A and B). Thus, the 1 to 3 per cent AE inflation range sets a lower bound, while an inflation rate for India at around 6 per cent[23] can be regarded as an upper bound. The key advantage of a range/band is that it allows monetary policy to do best what it can do, *i.e.*, it remains sensitive to short run trade-offs between inflation and growth, but pursues the inflation target on average over the course of a business cycle. Data limitations (ranging from

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[21] "...For policy makers, our main message is that holding inflation below 2 per cent or above 3.5 per cent likely entails significant permanent losses in employment in either country (US and Canada) and that permanent unemployment will probably be minimized at some inflation rate in the 2 to 3.5 per cent range. ...Taking into account the usual statistical uncertainty, we conclude that monetary policy can have a major lasting impact on prosperity, not by achieving full price stability, but by searching for the unemployment-minimizing inflation rate in the range of 2 to 3.5 per cent.(Fortin, P., Akerlof, G. A., Dickens, W. T. and G. L. Perry (2002): "Inflation and Unemployment in the U.S. and Canada: A Common Framework", *Brookings Institution UQAM Working Paper*, 20/16, July).

[22] Jonas, J. and F. S. Mishkin (2003): "Inflation targeting in transition countries: Experience and prospects", *NBER Working Papers*, w9667, http://www.nber.org/papers/w9667.

[23] The estimate of 6 per cent inflation as an upper bound is subject to the Lucas critique; under an IT regime inflation expectations can well be anchored at a lower level.

large revisions to low quality of final revised data), projection errors, and short run developments having a large impact on the near-term inflation path – such as failure of agricultural crops, high commodity prices, sharp depreciation in the exchange rate, higher taxes – also warrant flexibility through adoption of ranges/bands. A band also provides lead information on maximum tolerance levels of monetary policy to accommodate unanticipated shocks, which enhances transparency and predictability.

5.1. Time Horizon for Attaining Price Stability

II.40.   Speed of disinflation is important for arriving at the appropriate time horizon over which the inflation target may have to be attained, but particularly important for a country aiming at adoption of flexible inflation targeting from a very high and persistent level of CPI inflation. Speed also has to take into account the fact that prolonged high inflation itself imposes costs – in the recent experience in India, these costs have entailed appreciating real effective exchange rate (REER), high CAD, financial disintermediation (into gold), and resultant decline in financial saving and investment that may have contributed to low growth.

II.41.   It is difficult to identify the optimal speed of disinflation. The time horizon should ideally reflect the trade off long and variable lags (which may justify two to three years) *versus* credibility of the target (which may demand a shorter time horizon of about one year, since large deviations in the short run, despite the best communication, may not help in anchoring inflation expectations)[24] (Appendix Table II.5). While the Committee recognises that setting a relatively short time horizon can pose controllability problems (*i.e.*, ability of a central bank to achieve the targets without large costs) and lead to loss of credibility if the target is missed, a time horizon of

two years for achieving the inflation target is necessitated by the initial conditions in India and the serious macroeconomic consequences that they have entailed. A two-year time horizon should enable the performance of monetary policy to be easily verified by the public, enhancing credibility. Recognising, however, that large output variations in a short time horizon should generally be avoided by monetary policy, it is pragmatic, on balance, to set multi-year targets that provide a lower medium-term target along with somewhat higher targets for the intermediate years (Box II.4).

Recommendations

II.42.   *The Committee recommends that the nominal anchor or target should be set at 4 per cent with a band of +/- 2 per cent around it (a) in view of the vulnerability of the Indian economy to supply/external shocks and the relatively large weight of food in the CPI; and (b) the need to avoid a deflation bias in the conduct of monetary policy. This target should be set in the frame of a two-year horizon that is consistent with the need to balance the output costs of disinflation against the speed of entrenchment of credibility in policy commitment.*
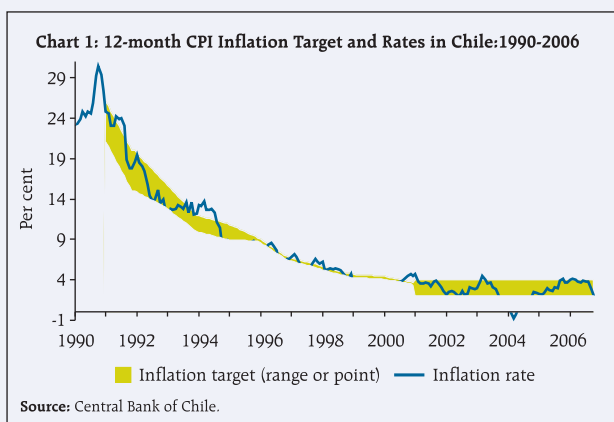
II.43.   *In view of the elevated level of current CPI inflation and hardened inflation expectations, supply constraints and weak output performance, the transition path to the target zone should be graduated to bringing down inflation from the current level of 10 per cent to 8 per cent over a period not exceeding the next 12 months and 6 per cent over a period not exceeding the next 24 month period before formally adopting the recommended target of 4 per cent inflation with a band of +/- 2 per cent. The Committee is also of the view that this transition path should be clearly communicated to the public.*

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[24]   The control of inflation is also imperfect because it is affected by unobservable shocks. Some deviation of inflation from the target is unavoidable and does not mean that the price stability objective has been disregarded.

Box II.4: Glide Path for Inflation Targets: Case Studies of Chile and Czech Republic

Since India's CPI inflation has persisted at a high level over successive years, the experience of countries such as Chile and Czechoslovakia could be particularly useful.
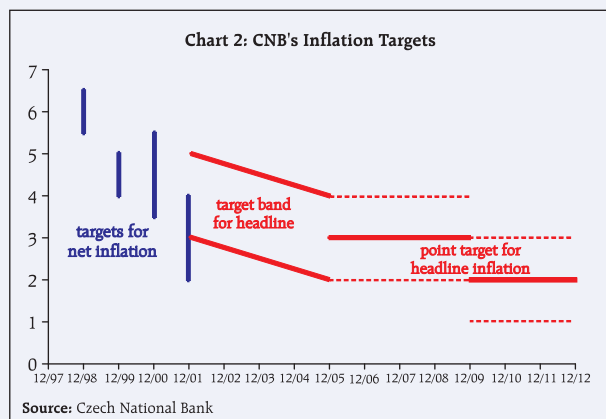
The Central Bank of Chile adopted inflation targeting in September 1990 when the country's level of inflation was over 25 per cent. It announced its first annual inflation target in a range of 15-20 per cent for 1991. The inflation target for each successive year was set at a somewhat lower level than in the previous year. For example, the inflation target range was revised down to 13-16 per cent for 1992. In 1995, however, it adopted a point target. The point target was also gradually lowered from 8 per cent in 1995 to 3.5 per cent in 2000. After reaching a reasonably steady-state inflation rate in 1999, the Central Bank of Chile announced its inflation target as 2 per cent with a tolerance band of 1 per cent point in either direction, to be achieved over the time horizon of 2 years. Chart 1 shows the cautious and gradual approach to adoption of a low inflation target; almost one decade of transition to explicit inflation targeting.

Chart 1: 12-month CPI Inflation Target and Rates in Chile:1990-2006

Inflation target (range or point) — Inflation rate

Source: Central Bank of Chile.

Chart 2: CNB's Inflation Targets

targets for net inflation

target band for headline

point target for headline inflation

Source: Czech National Bank

The approach of CNB (Czech National Bank) is a classic example of how all range of options could be tried by a single country over time, recognising the challenge of adopting inflation targeting from a high level of inflation (Chart 2). The CNB switched to inflation targeting in December 1997, by announcing a medium-term inflation target for end-2000 (of 3.5 - 5.5 per cent), but with higher targets of 5.5-6.5 per cent for end-1998, and 4-5 per cent for end-1999. In April 1999, it announced a long-term objective of 1-3 per cent range for end-2005. A band was announced, starting in January 2002, at 3-5 per cent and ending in December 2005 at 2-4 per cent. An inflation target of 3 per cent with a tolerance band of one percentage point in either direction was announced for the period from January 2006. In March 2007, a new inflation target of 2 per cent was announced (to become effective from January 2010). Currently the CNB strives to ensure that actual inflation does not differ from the target by more than one percentage point on either side.

II.44   *Since food and fuel account for more than 57 per cent of the CPI on which the direct influence of monetary policy is limited, the commitment to the nominal anchor would need to be demonstrated by timely monetary policy response to risks from second round effects and inflation expectations in response to shocks to food and fuel.*

5.2. Institutional Requirements

II.45.   While inflation is clearly a monetary phenomenon in the medium run, several non-monetary factors – both domestic and external; supply side and demand side – can lead to significant deviations from the target in the short run, which may also impact the medium-term path through persistence and unanchored inflation expectations. It is necessary, therefore, that the adoption of flexible inflation targeting is based on reasonably clear identification of the pre-conditions. In India, building on the reputational bonus from adherence to fiscal targets in 2012-13, the Government must commit on a priority basis to a re-invigoration of the medium-term fiscal consolidation, as was pursued under the Fiscal Responsibility and Budget Management

(FRRBM) Act, 2003[25]. The Committee is of the view that the goal of reducing the central government deficit to 3 per cent of GDP by 2016-17 is necessary and achievable. Towards this objective, the Government must set a path of fiscal consolidation with zero or few escape clauses; ideally this should be legislated and publicly communicated. The Report of the Committee on Roadmap for Fiscal Consolidation, 2012 (Chairman: Vijay L. Kelkar) already provides a path for the period up to 2014-15[26]. Furthermore, it may be important to identify and address other fiscal/administrative sources of pressure on inflation/drivers of inflation persistence. For instance, the design of programmes like Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) provide a sustained upward push to nominal wages unrelated to productivity growth, and the National Food Security Act which could increase demand for foodgrains without corresponding efforts to augment supply. A policy induced wage-price/cost-price spiral can be damaging for the credibility of an inflation targeting framework. The burden on monetary policy to compensate for these sources of inflation pressure is correspondingly higher.

II.46.   The Committee recognises that excessive emphasis on pre-conditions may delay the adoption of flexible inflation targeting, and in fact, very few inflation targeting countries achieved all the pre-conditions before formal adoption of the framework. Many inflation targeting countries got instrument independence, achieved more transparency in terms of publication of inflation target/reports, and continued to manage the exchange rate after the switch over to inflation targeting. Fiscal discipline generally turned out to be the biggest immediate advantage of formal adoption of inflation targeting (Table II.4).

Table II.4: Fiscal Balances of Countries in the Year of Adopting Inflation Targeting and in 2007

Country	Year of Adopting Inflation Targeting	Fiscal Balance in the Year of Adopting Inflation Targeting (Per cent of GDP)	Fiscal Balance in 2007 (Per cent of GDP)
Chile	1990	3.5	8.4
Israel	1990	-4.4	-0.2
Australia	1993	-3.9	1.5
Canada	1990	-4.9	1.6
Finland	1992	-8.1	5.2
New Zealand	1990	-1.7	2.5
Spain	1994	-4.9	1.9
Sweden	1992	-9.8	3.7
UK	1992	-7.2	-2.7
Brazil	1999	-6.9	-2.6
Czech Republic	1998	-1.6	-0.7
Poland	1999	-5.0	-1.9
South Africa	2000	-2.7	1.2
Thailand	2000	-2.2	0.2

Source: 1. IMF (2001) "The Decline of Inflation in Emerging Markets: Can it be Maintained?", *World Economic Outlook*, Chapter 4, Table 4.5, May.
2. IMF (2010) "Fiscal Exit: From Strategy to Implementation", Fiscal Monitor, Statistical Table 1, November.

Recommendations

II.47.   *Consistent with the Fiscal Responsibility and Budget Management (Amendment) Rules, 2013, the Central Government needs to ensure that its fiscal deficit as a ratio to GDP is brought down to 3.0 per cent by 2016-17.*

II.48.   *Administered setting of prices, wages and interest rates are significant impediments to monetary policy transmission and achievement of the price stability objective, requiring a commitment from the Government towards their elimination .*

II.49.   Finally, communication and transparency is important for any monetary policy framework, but more so for flexible inflation targeting (Appendix

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[25] The Parliament, in August 2003, voted for the FRBM Act (the bill was first introduced in Parliament in December 2000). The Act was amended in July 2004, with the terminal date for achieving the numerical targets pertaining to fiscal indicators extended by one year to 2008-09; the annual targets for fiscal correction were specified by Rules formed under the Act.

[26] Report of the Committee on Roadmap for Fiscal Consolidation, 2012 (Chairman: Vijay L. Kelkar), Ministry of Finance, Government of India, September.

Tables II.6A and B). There are several factors that demand clearer communication on monetary policy. First, every democratic society requires public institutions that are accountable. The central bank must explain how it uses its monopoly power over money to attain the goals assigned to it by the elected government. Secondly, in a market economy, a central bank has to rely on financial markets for transmission of its policies. It must, therefore, provide frequent assessments on macro-financial conditions (credible information for the markets) and clarify the intent of the policy stance. This is necessary for enhancing policy effectiveness and containing destabilising expectations. Frameworks with inflation as a nominal anchor emphasise transparency in the form of public release of inflation reports, monetary policy committee minutes, projected inflation path with fan charts and open letters to explain deviations from the inflation target[27]. These aspects are addressed in Chapter III.

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[27] Cavoli, T., and Rajan, R. S. (2008): "Open Economy Inflation Targeting Arrangements and Monetary Policy Rules: Application to India", *Indian Growth and Development Review*, 1(2), 237-251.