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History of Monetary Policy in India Since Independence



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Chapter 2

Policy Actions and Outcomes

Abstract The SIIO paradigm is developed further showing how the structure, ideas, and institutions analyzed in Chap. 1 affected Indian monetary policy outcomes. An aggregate demand–supply framework derived from forward-looking optimization subject to Indian structural constraints is able to explain growth and inflation outcomes given policy actions. Exogenous supply shocks are used to identify policy shocks and isolate their effects. It turns out policy was often procyclical and sometimes excessively tight when the common understanding is there was a large monetary overhang. But the three factors that cause a loss of monetary autonomy—governments, markets, and openness—are moderating each other. Open markets moderate fiscal profligacy and dominance. Global crises moderate markets and openness as they encourage greater caution. More congruence between ideas and structure is improving institutions and contributing to India’s better performance.

Keywords Aggregate demand–supply framework • Policy shocks • Growth and inflation outcomes • Openness • Markets • Fiscal dominance • Monetary autonomy

2.1 The Historical Trajectory

Early monetary policy was geared to support planned expenditures and government deficits.¹ During an agricultural shock, monetary policy would initially support drought relief and then tighten just as the lagged demand effects of an agricultural

¹ The analysis in this section draws on RBI publications including monetary policy statements, speeches by RBI governors and data available on the RBI’s website www.rbi.org.in and is updated from some of my earlier publications.

slowdown were hitting industry. Administered oil and food prices were normally raised with a lag after monetary tightening brought inflation rates down. Macropolicy was thus procyclical, but pervasive administered prices limited volatility.

Severe drought and terms of trade shocks over 1965–1967 led to a fiscal tightening, with a cut in deficits and in public investment. Monetary policy following a credit-targeting approach was non-accommodating but not severe. Fiscal–monetary policies were closely linked, as the budget deficit was automatically financed. Severe monetary and fiscal measures followed the oil price plus agricultural supply shock over 1973–1975. In both cases, there was an unnecessary loss of output. A focus on sustaining supply would have been more effective. After the 1979–1980 oil shock, the cut in public investment and sharp monetary tightening was avoided. Recovery was rapid, but deficits and supply-side inadequacies were accumulating.

The relatively closed, import substitution and public investment-driven model of development followed and allowed macropolicy to be geared toward domestic requirements. As growth slowed, successful lobbying for subsidies could have led to increasing reliance on seignorage, since inflation is an easy-to-collect tax. But where more than half the population was below the poverty line and an even larger percentage had no social security or other protection against inflation, governments concerned with re-election could not afford high inflation. Thus, even though there was some positive seignorage revenue and automatic monetization of the deficit, commercial banks' ability to multiply the reserve base and create broad money was partially countered through draconian compulsory reserve and statutory liquidity requirements. This, together with administered prices, restrained inflation to politically acceptable levels.

Thus, political business cycles in India largely took the form of a cut in long-term development expenditures and interventions that distorted allocative efficiency, not of increased money creation. The future was sacrificed to satisfy populism in the present (Goyal 1999). These choices kept Indian inflation low by developing country standards, but it was chronic and higher than world inflation rates—and lowered feasible growth rates.

Since the 1970s, dominant development ideas changed to favor openness. In India, also the ill effects of controls were becoming obvious. Some liberalization started in the mid-1980s, but a major thrust for external openness came from the mid-1991 balance of payment crisis when foreign exchange reserves were down to 11 days of imports. The crisis, and a series of domestic scams, helped bring home the lesson that excessive interest controls and credit rationing were deleterious to growth and stability (Thorat 2010). It made possible the implementation of a number of pending committee reports.

Current account and partial capital account liberalization, and a gradual move to more flexible exchange rates followed. Sequencing was well thought out. While controls continued on domestic portfolios, individual investments and debt inflows and institutional equity inflows were liberalized. Equity shares risks, while short-term debt flows create a heavy repayment burden in adverse times. On foreign debt, the sequence of relaxation favored commercial credit and longer-term debt

(Rangarajan 2002, 2004).² Major reforms were undertaken toward development of equity, forex money, and government security markets. These choices also reflected India's perceived comparative advantage in developing financial services. In comparison, China liberalized FDI much more than financial flows. India, however, had more domestic industry that wanted protection.

Accumulation of large public debt made the fiscal–monetary combination followed in the past unsustainable. The automatic monetization of the government deficit was stopped and auction-based market borrowing adopted for meeting the fiscal deficits. The repressed financial regime was dismantled, interest rates became more market determined, and the government began to borrow at market rates.

Bank liquidity funded speculative buying of stocks through repurchase transactions in government securities and bonds. These stock market scams led to further action to remove weaknesses such as lack of transparency in the market infrastructure for government securities, excess liquidity with public sector undertakings, inadequate internal controls due to low levels of computerization, and reliance on manual processing, which made the nexus between banks and brokers feasible. All administered interest rates were deregulated except the savings bank deposit rate. RBI initiated a delivery versus payment mechanism for netting and settlement of trades in government securities, leading to establishment of the Clearing Corporation of India (CCIL), a central counterparty to undertake guaranteed settlement for Gsecs, repos in Gsecs, and forex market trades.

As the bank regulator, RBI was an early pioneer in countercyclical prudential regulations that are being adopted worldwide after the GFC. Provisioning for bank housing and commercial real estate loans was raised as a countercyclical measure when Indian real estate prices rose after 2005. Accounting standards did not permit recognition of unrealized gains in equity or the profit and loss account, but unrealized losses had to be accounted. The relative conservativeness, without full marking-to-market requirements, reduced procyclical incentives. Banks were required to mark-to-market only investments held in trading categories. Exposures had conservative capital adequacy requirements under 2006 guidelines on securitization. Any profits on sale of assets to a special purpose vehicle were to be recognized only over the life of the pass-through certificates issued, not immediately on sale (Goyal 2009). These types of prudential regulations affect behavior while minimizing high transaction costs imposed by discretionary credit controls. They give a powerful additional weapon to prevent asset price bubbles, allowing the policy rate to focus on the real sector. In a more complex economy, credit controls become difficult for the regulator to operate, apart from the distortions they cause. By 1994, selective credit control operations had been largely phased out.

² In 2011, for example, an FII could invest up to 10 % of the total issued capital of an Indian company. The cap on aggregate debt flows from all FIIs together was 1.55 billion USD. This was increased to 30 billion to facilitate financing of the CAD. A given percentage of GDP implies very different absolute levels of inflows by the end of a period of rapid GDP growth—the absorptive capacity of the economy also rises. Inflows could only come through FIIs—individuals could not invest directly.

The basic objectives of monetary policy remained to be price stability and development, but in line with the recommendations of the Chakravarty Committee (RBI 1985), over the mid-1980s till 1997–1998, the intermediate target shifted from credit controls toward flexible monetary targeting with “feedback” from inflation and growth. While M3 growth served as a nominal anchor, the operating target was reserve money. The cash reserve ratio (CRR) was the principal operating instrument, along with continued use of some selective credit controls.

But deregulation and liberalization of the financial markets combined with the increasing openness of the economy in the 1990s made money demand more unstable and money supply more endogenous. There were repeated wide deviations from the money supply targets set. The RBI itself noted monetary policy based on demand function of money, as the latter became unstable, could be expected to lack precision (Reddy 2002).

Flexible nominal money supply targeting proved inadequate under these changes, and interest rates were volatile in the 1990s. After the adverse impact of the 1990s’ peak in interest rates, the Reserve Bank moved toward an interest rate-based operating procedure, basing its actions on a number of indicators of monetary conditions, including forward-looking expectation surveys (Jalan 2001). It formally adopted a “multiple-indicator approach” in April 1998, following informal changes in practice from the mid-1990s.³

There was no formal inflation targeting, but policy statements gave both inflation control and facilitated growth as key objectives. The multiple indicators were the variables affecting future growth and inflation. A specific value of 5 % was given as the desirable rate of inflation, with the aim of bringing it even lower in the long term. Another objective was to reduce reliance on reserve requirements, particularly the CRR, shifting liquidity management toward OMOs in the form of outright purchases/sales of Gsecs and repo and reverse repo operations to affect interest rates. Operating procedures changed as well, with the policy rate becoming the operating instrument and the CMR the operating target. Table 2.1 summarizes these changes. The multiple-indicator approach was criticized as list based. For India, inflation forecast targeting is a natural progression that converts the multiple indicators from an omnibus list to action based on the determinants of inflation, even while retaining vital flexibilities coming from considering a range of information.

³ A vector autoregression model following Christiano et al. (1999) showed the growth of reserve money better indicates the stance of monetary policy for 1985 M1 to 1995 M12 and call money rate for 1996 M1 to 2005 M3. This supports the changing operating procedure of monetary policy in India from quantity to rate variables. The results of forecast error variance decomposition for the later sub period show shocks to exchange rate as major components of unexplained variance of inflation, movements of credit and money supply growth. These findings highlighted the growing importance of the exchange rate channel. While agricultural shocks were the main driving factor of domestic inflation from mid-1980s to mid-1990s, their explanatory power went down substantially post-reform, with international factors becoming the main inflation drivers (Agrawal 2008).

Table 2.1 Monetary policy procedures

Monetary policy	1950s to end 1980s	Early 1990s to 1998–1999	1998–1999 to present
Objectives	(1) Stability (2) Development	(1) Inflation (2) Credit supply for growth	(1) Inflation (2) Growth
Intermediate target	Priority sector credit targeting	Monetary targeting with annual growth in broad money (M_3) as intermediate target	Multiple-indicator approach (rates, credit, external, fiscal variables, and expectation surveys used for growth and inflation projections)
Operating procedure (instruments)	Direct instruments (interest rate regulations, selective credit control, SLR, CRR)	Gradual interest rate deregulation CMR; direct instruments (selective credit control, SLR, CRR)	Direct (CRR, SLR) and indirect instruments (repo operations under LAF and OMOs)

2.2 Excess Demand or Cost Shocks?

The official understanding of monetary policy in India is that huge monetary overhang built up due to financing of large fiscal deficits created excess demand that had to be sharply reduced during periods of high inflation. But Mohanty (2010) in his Table 1.2 shows that every period of double-digit inflation in India was associated with a supply shock. The relative share of cost shocks and excess demand in Indian inflation is an unsettled question.

Was monetary growth excessive? Chart 2.1 shows growth of reserve money (RM), broad money (M), and real GDP since the 1950s. Chart 2.2 shows WPI inflation. RM shows large fluctuations from the 1970s, demonstrating the limited control left with the RBI. The fluctuations reduce in the 1990s after the removal of automatic monetization. But large inflows push it up again in the 2000s. The fluctuations in broad money are much lower, however, demonstrating greater control through use of the CRR and SLR. The large early fluctuations in output growth and inflation occur during periods of supply shocks, and both moderate from the mid-1990s.

Table 2.2 helps to further understand these stylized facts and to decide whether growth of money was excessive. Since the table normalizes a measure of monetary

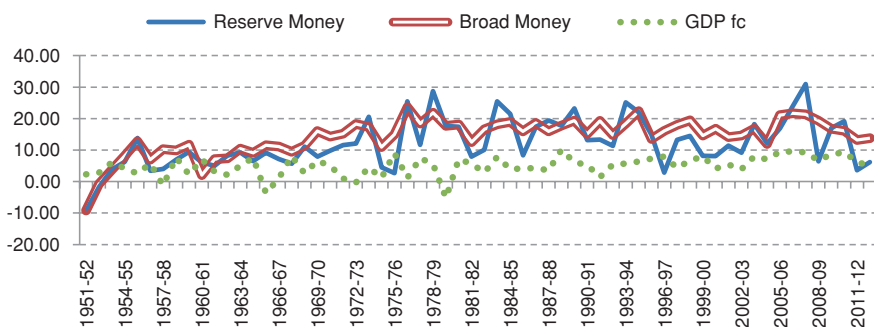


Chart 2.1 Growth rates

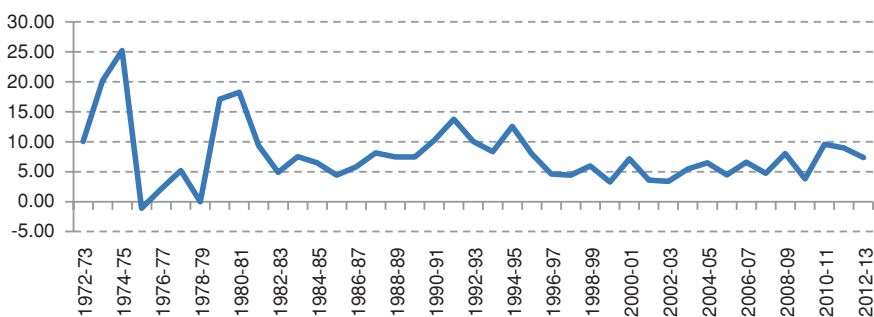


Chart 2.2 Inflation: WPI (AC)

Table 2.2 Policy and outcomes in high inflation and other years

Years	Demand shock	Demand shock without CAD	Monetary policy shock	Fiscal shock	Policy shock	Credit shock	Real GDP growth	WPI inflation
1953–1956	0.5	0.6	0.84	0.59	1.4	0.68	0.2	–2.47
1956–1957	–1.8	0.6	–2	–0.22	–2.22	–2.49	2.4	13.96
1957–1963	–0.5	–0.6	–0.06	0.6	0.5	0.27	–0.4	3.56
1963–1968	0.4	0.5	–0.6	0.65	0.1	–0.37	1	10.05
1968–1972	1.8	1.5	0.25	0.06	0.3	–0.03	1.2	3.39
1972–1975	0.3	0.4	–0.4	–0.4	–0.8	–0.6	1.8	18.5
1975–1979	0.6	0.3	0.7	1	1.8	0.8	5.8	1.6
1979–1981	–3.7	–3.1	0.4	–0.6	–0.3	–1.3	1	17.7
1981–1990	–0.7	–0.6	0.3	0.4	0.7	0.67	5.4	8
1990–1993	–1.1	–1.3	–0.4	–0.9	–1.3	–0.6	4	11.4
1993–1994	1.6	0.3	1.3	0.1	1.4	–0.5	5.7	8.4
1994–1995	1.2	1.8	0.6	–0.6	0.1	1.8	6.4	12.6
1995–2008	0.6	0.66	–0.14	–0.1	–0.3	2.04	7	5.2
2008–2009	–3.05	–2.05	0.50	1.4	1.9	2.79	6.7	8.1 (9.02)
2009–2010	–0.05	0.46	0.00	0.2	0.2	0.97	8.6	3.8 (12.41)
2010–2013	–1.78	–1.11	–1	–0.4	–1.4	0.57	6.8	8.6 (11.72)

Note Figure in bold indicates the years in which inflation was in double digits. Figures in brackets in the last column indicate CPI (IW) inflation CAD current account deficit; WPI wholesale price index; GDP gross domestic price; CPI (IW) consumer price inflation, industrial workers

and fiscal policy by GDP, it is possible to assess whether policy changes were excessive in relation to GDP. Moreover, growth was not excessive over the period as a whole since the negative and positive values largely cancel out. But large negative and positive values in a period imply over-reaction in that period. Policy was not smoothed enough.

The table also captures the monetary and fiscal response to supply shocks added up in the “policy” variable. The bold figures indicate periods of inflation above 8 %. These were all periods of adverse supply shocks. A negative value implies policy contraction exceeding that in GDP. Measuring the policy response to an exogenous shock helps to cut through the endogeneity plaguing macro-economic systems. Policy reacts to the shocks and affects the outcomes in such episodes.

The fiscal shock is calculated as the rate of change of Central Government revenue, and capital expenditure each as a percentage of GDP. That is, period t gives the total of the three variables each minus their respective values in period $t-1$. This is then averaged to get per-annum rates. The monetary policy shock is calculated as the change in reserve money growth before 2004 and the change in the policy repo rate after 2004. The table shows policy contraction (negative entries) in most years when the GDP growth rate fell due to a supply shock. Thus, policy amplified shocks since the contractionary impulse exceeded the fall in output.

The “credit” variable does a similar calculation for broad money M3, bank credit to the commercial sector, and total bank credit, capturing outcomes of policy tightening. This was more severe in the earlier shocks. The availability of more financial substitutes and of external finance reduced the impact of policy tightening on credit variables, although its rate of growth fell after the GFC. In the later years, policy was acting more through prices (interest rate changes) than quantities.

Finally, the “demand” variable is the sum of changes in private final consumption expenditure (PFCE), government expenditure (G), Gross Domestic Capital Formation (GDCF), and current account deficit (CAD) as a percentage of GDP. It is also given without the CAD.⁴

Monetary and fiscal policy both tended to be procyclical.⁵ The only shock period in which both were countercyclical together was 2008–2009 when the GFC constituted a large negative external demand shock. International pressures and

⁴ A CAD implies domestic resources are less than domestic requirements and part of domestic demand is leaking abroad since it is met by imports. Including it reduces demand even more as the CAD tends to widen during downswings in India. Goyal (2011b) does a similar analysis for the individual years of external shocks.

⁵ Dash and Goyal (2000) found monetary policy broadly succeeded in preventing an explosive growth in money supply and reined in inflationary expectations. But by targeting manufacturing prices it harmed real output. Their estimations implied it would be more efficient to target agricultural prices for inflation control. A monetary contraction should be completed earlier than in the past, and should coincide with a rise in food prices. Information available in the systematic structural features was not exploited in designing monetary policy. Policy would then be countercyclical. Reserve Bank monetary control had intensified shocks to real output, while being unable to prevent the expansion of credit in response to a profit motive.

examples perhaps explain this departure from traditional Indian policy. The stimulus helped a quick recovery, but was sustained too long. The fiscal correction that had started in the early 1990s, after which government expenditures largely grew at or below GDP, was reversed. Monetary policy and fiscal expenditure were also correctly countercyclical over 1995–2008 when demand shocks were positive. They contracted together only in four of the eight high-inflation episodes.

In general, Table 2.2 shows that each shock, plus the policy response, imparted a considerable negative impulse to aggregate demand, even as the supply shock pushed up costs. Demand remained positive through the first oil shock years, but fell steeply in 1979–1981. It was consistently negative through the 1980s, which were the years of largest fiscal deficits and Reserve Bank of India accommodation when the so-called monetary overhang was developed. Since the table measures final demand categories, it maybe large government transfers were siphoned away,⁶ perhaps abroad, without reaching beneficiaries to create demand, or they raised prices of inelastically supplied non-traded goods. Rates of inflation and the output sacrifice were lower under recent shocks, although policy reactions remained as severe, suggesting greater resilience and diversity due to a larger share of the private sector.

Although demand shocks remained positive after the mid-1990s, they became highly negative in 2011–2013, as policy contracted too severely to compensate for a too large and extended post-GFC stimulus. Also CPI inflation (in brackets) was much higher than WPI inflation in this period, suggesting bottlenecks in agriculture. Food demand had diversified, but restrictions in agriculture prevented it responding to the changed structure of supply, although there was growth in agricultural productivity.

2.3 Openness, Inflows, and Policy

The other major change with greater openness was the higher level and volatility of foreign inflows. Although capital account convertibility was gradual and sequenced, it still led to large fluctuations in foreign portfolio investment (FPI). The RBI's acquisition of foreign assets was now driving reserve money growth as RBI credit to the government contracted. Reserves of foreign currency accumulated and were sterilized by a contraction of RBI credit to the government partly through OMOs. The latter became possible by the mid-1990s because of the financial liberalization of the previous decade; the debt market was deepening, and government debt could be traded at market-determined rates. The CRR ratios that were being brought down in line with the committee recommendations had to be raised again in a burden-sharing arrangement whereby the costs of sterilization were to be shared by the government, RBI, and banks.

⁶ GFI (Global Financial Integrity) (2010) estimated that tax evasion, crime, and corruption removed gross illicit assets from India worth USD 462 billion since independence.

OMOs remained minor for fear of their impact on the cost of government borrowing. Market rates were expected to discipline such borrowing but as real interest rates rose and growth rates fluctuated, government debt burden increased.

Tables 2.3, 2.4 show the changes in India's openness across the decades. Reserves⁷ as a ratio of GDP went from a low of 1.35 in the early years to a high of 15.45. Exports plus imports jumped from a stagnant 8–11 % of GDP in the first 40 years after independence to above 30 %. The dependence on oil imports increased, especially from the 2000s as rising oil prices made oil imports more expensive. The rate of growth of imports was especially high in periods of large oil price shocks. While the current account of the balance of payments remained negative, the capital account jumped to about 3 % of GDP. Exchange rate depreciation was particularly large in the first reform decade. There were sharp depreciations during episodes of sudden capital outflows in the post-GFC period, but they were normally reversed.

Post-reform macrostabilization included a cut in public investment, monetary tightening partly to sterilize capital inflows and an artificial agricultural supply shock as procurement prices for food grains were raised. A benchmark real effective exchange rate was set after two-stage devaluation in the early 1990s, in order to maintain a competitive real exchange rate and encourage exports to aid absorption of excess labor. It was largely maintained. The nominal rate was kept stable for long periods of time, and reserves accumulated under inflows. Growth revived in 1993–1994, and monetary policy was accommodating, but exchange rate volatility in 1995 led to a monetary squeeze that precipitated a slowdown. The monetary stance was relaxed, but reversed again at the first sign of exchange rate volatility. Periodic bursts of volatility, sometimes induced by fluctuations in foreign capital inflows, for example from mid-May to early August 2000, were suppressed. But the sharp jump in interest rates triggered an industrial recession and sustained it over 1997–2001. Goyal (2005) shows in this slowdown period, foreign financial inflows measured as the surplus on the capital account rose, but their volatility fell. The volatility of the CAD, however, rose, suggesting it was policy that was creating volatility in the absorption of inflows. The CAD, which is the difference between investment and domestic savings, is affected by general macroeconomic policy.

Chart 2.3, which graphs components of the BOP as a percentage of GDP, shows the change in reserves to be a mirror image of the capital account—peak capital flows were largely absorbed in reserves, since they much exceeded the CAD. Chart 2.4 shows the fluctuations in FPI came in through foreign institution investors (FIIs) or their subaccounts registered with the regulator and the steadier increase in foreign direct investment (FDI). Fluctuations in nonresident Indian

⁷ FX reserves rose to over 300 billion USD in 2011, compared to a paltry 5 billion in 1990–1991. 30 billion dollars were accumulated in just 18 months over January 2002 to August 2003. Other years of large inflows were 2007 and 2010. Outflows occurred after the global crisis in 2008, were soon reversed, but occurred again whenever global risk aversion rose. Arbitrage occurred at the short end when Indian short real rates were kept higher than US rates.

Table 2.3 External sector indicators (average annual growth rates)

	Reserves	Exports (f.o.b)	Import (c.i.f)	Growth of oil imports	Growth of non-oil imports	Exchange rate depreciation/appreciation
1950–1951 to 1959–1960	–9.13	0.36	7.17	–	–	0
1960–1961 to 1969–1970	10.79	8.87	6.63	–	–	5.15
1970–1971 to 1979–1980	25.26	16.76	20.88	53.47	19.17	0.9
1980–1981 to 1989–1990	1.79	16.62	15.67	12.14	16.45	7.27
1990–1991 to 1999–2000	43.12	19.46	20.01	24.48	17.91	10.66
2000–2001 to 2009–2010	23.36	18.54	20.18	23.57	20.2	1.11
2010–2011 to 2012–2013	8.06	24.97	24.8	31.7	22.98	4.93

Table 2.4 External sector indicators (ratio to GDPmp)

	Reserves	Exports (f.o.b)	Import (c.i.f)	Current account	Capital account	Oil imports	Non-oil imports
1950–1951 to 1959–1960	6.56	5.14	6.79	–0.82	0.28	–	–
1960–1961 to 1969–1970	1.35	3.11	5.01	–1.62	1.57	–	–
1970–1971 to 1979–1980	2.30	3.77	4.61	–0.10	0.59	1.31	4.09
1980–1981 to 1989–1990	2.46	4.02	6.85	–1.44	1.23	2.01	5.15
1990–1991 to 1999–2000	4.75	6.72	9.08	–1.22	1.98	2.11	7.12
2000–2001 to 2009–2010	14.61	10.13	14.32	–0.31	2.82	4.85	11.56
2010–2011 to 2012–2013	15.45	12.95	20.51	–2.84	3.11	7.88	16.92

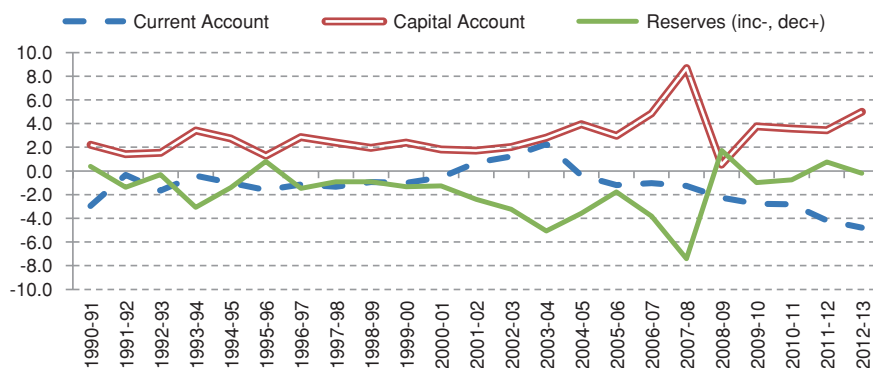


Chart 2.3 India's balance of payments (as a % to GDP)

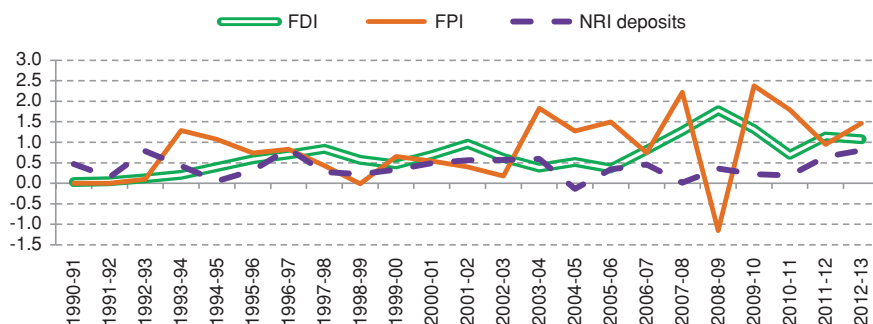


Chart 2.4 Capital inflows to India (as a % to GDP)

deposits reflect interest rate arbitrage limited by shifting policy caps on interest rates.

Overtime capital flows affect international debt or, as it is known in India, the country's International Investment Position (Table 2.5). India's strategic choices in capital account convertibility imply liabilities comprise mostly FDI and foreigner's equity holdings. Assets largely reflect the rise in foreign exchange (FX) reserves, and some outward FDI. The reserves are sufficient to cover short-term outflows particularly since equity outflows would reduce in value during a concerted exit. Even so, the short-term debt component has risen above 40 %, in residual maturity terms, which is unhealthy.

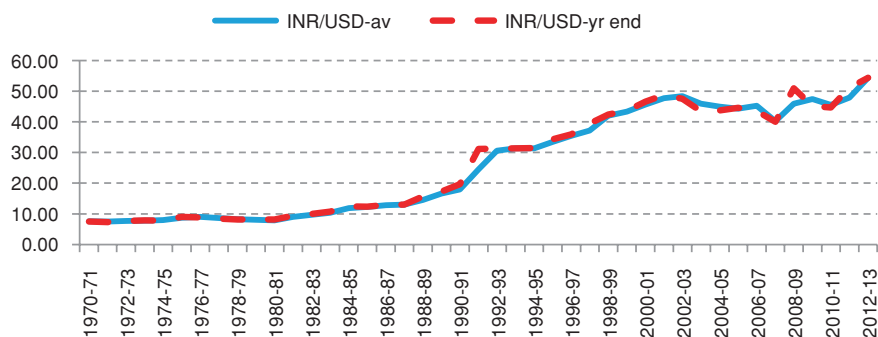
Although the exchange rate was said to be market determined, massive RBI intervention continued in order to absorb foreign portfolio inflows. Trend depreciation was facilitated through the 1990s to cover the inflation differential. There was some appreciation due to the weakening of the dollar from 2002. From 2004, there was mild two-way movement of the nominal exchange rate (Chart 2.5). Foreign exchange reserves accelerated in this period. The nominal exchange rate was now a managed float. There was occasional excess volatility, but a crisis was

Table 2.5 Overall international investment position of India (USD billion)

	Sep 2009	Sep 2010	Sep 2011	Sep 2012	Sep 2013 (PR)
<i>Assets</i>	375.9	406.9	434.7	441.9	436.7
of which					
Direct investment	76.5	91.5	109.1	115.9	120.1
Reserve assets	281.3	292.9	311.5	294.8	277.2
<i>Liabilities</i>	482.5	611.9	659.6	713.4	736.2
of which					
Direct investment	159.3	197.8	212.9	229.9	218.1
Portfolio investment	106	163.8	161.5	164.6	171.6
Equity securities	85.1	130.5	128	125.7	124.3
Debt securities	20.9	33.3	33.5	39	47.3
Other investment	217.1	250.4	285.2	318.9	346.5
Trade credits	41.9	56.6	66.7	76.9	89.6
Loans	120.7	134.8	158	164.8	168.7
Currency and deposits	46.7	50.5	52.4	67.2	75.2
Other liabilities	7.9	8.5	8.1	10	13.1

Note PR partially revised

Source Extracted from various RBI IIP press releases, see RBI (2014)

**Chart 2.5** Exchange rate

avoided. Even contagion from the East Asian crisis was averted. Over 2003–2007, some agricultural liberalization and falling world food prices did reduce the political pressures that had raised food support prices and inflation. Exchange rate policy was not systematically used to moderate the effect of the typical EM supply shocks: oil price shocks and failure of rains.

Growth rates, moreover, were lower than potential. Monetary tightening in the presence of supply shocks sustained slowdowns. Steady softening of nominal interest rates occurred only after February 2001, as world interest rates fell. A new RBI Governor, Bimal Jalan, demonstrated, through staggered placement of government debt, that it was possible for interest rates to come down despite

high fiscal deficits and committed to a soft interest rate regime even while preventing excess volatility of the rupee. There were reversals, however, during periods of exchange rate volatility. In 1998–1999, the decision not to tighten monetary policy when inflation peaked with certain food prices turned out to be correct as inflation fell. Similarly, inflation fell again as the oil shock wore out, without a sharp tightening in monetary policy, both in 2000–2001 and in early 2003–2004.

Sharp defensive rise in interest rates were, however, often implemented given policy makers' perception that interest elasticities continued to be low.⁸ Interest rates had been only recently freed; the impact of reforms on elasticities, in particular the impact of the interest rate on consumer spending, was not yet fully understood. In addition, political pressures made the weight given to inflation control high. The RBI had greater autonomy after the reforms, but was not fully independent. The fiscal deficit was thought to be large. There were doubts about the durability of capital inflows and fears of a possible reversal, which would have implied a shock to the risk premium. Finally, risk aversion explained the strong use of the interest rate defense.

Inflation fell in the late 1990s, with improvements in productivity, and the influence of low global inflation in a more open economy, but industrial growth did not revive until 2003, when Indian interest rates followed falling global rates and public expenditure on infrastructure rose. The lowering occurred not from a conscious policy decision but because international interest rates were falling. Even with higher growth and an extended period of high global oil prices, inflation remained low.

2.4 Money Markets and Interest Rates

Throughout this period, gradual financial reforms deepened markets. As most interest rates stopped being administered, the short policy rates became more effective policy instruments. The liquidity adjustment facility (LAF) implemented around that time helped fine-tune domestic liquidity and short-term interest rates drifted downward. The absence of a rate reversal after 2000 contributed to an upswing in activity. Benign market expectations strengthened. Bursts of high volatility in exchange rates were absent during this period. Indian FX markets had

⁸ Monetary policy shocks were identified using a short-run vector autoregression model. The identification assumption on contemporaneous causality used to isolate the policy shocks was exogenous shocks (foreign oil price inflation and interest rates), and domestic variables (inflation, IIP growth and exchange rate changes) affect the policy instrument variable (call money rates, or treasury bill rates) contemporaneously, but the policy variables affect them only with a lag. All these variables go on to affect gross bank credit and the broad monetary aggregate (M). Domestic variables do not enter the lag structure of the foreign variables since the Indian economy is too small to affect international prices. The RBI's reaction function or feedback rule to changes in the foreign shocks and non-policy variables determines the setting of the policy instrument variable. The policy shock is the residual from this estimated "reaction" of the RBI. It is orthogonal to the variables in the RBI's feedback rule. The residuals of the 'monetary policy instrument' equation give an estimate of the large monetary policy shocks in this period (Goyal 2008).

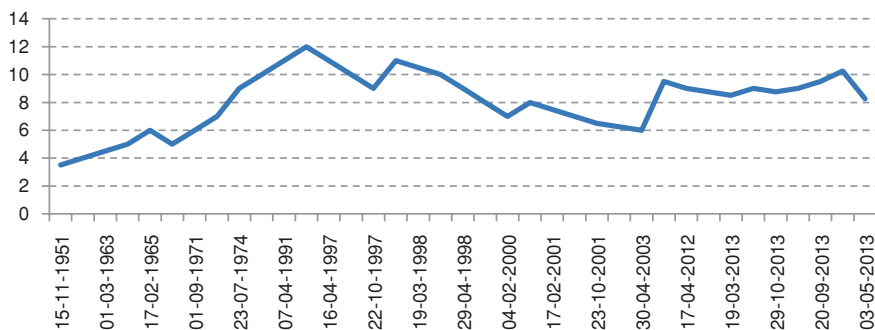


Chart 2.6 Bank rate

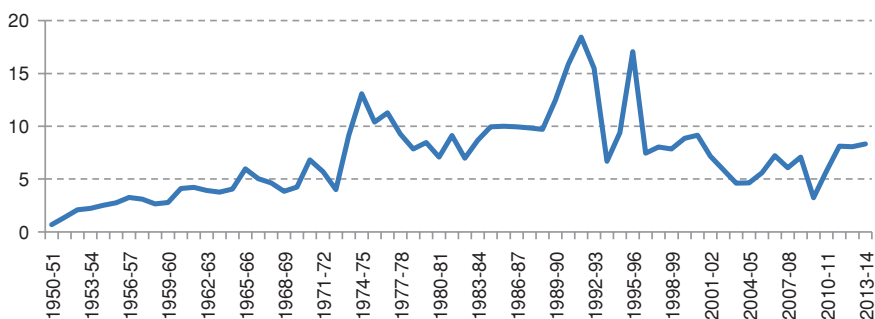


Chart 2.7 Call money rate

the highest growth rates in the world. The fiscal deficit fell after a long time, with higher growth and lower interest rates, when the opposite policy of periodic rise in interest rates had not succeeded in doing this over 1997–2002.

The repo and reverse repo rates began to be changed frequently and smoothly, and the call money rate largely stayed within the band determined by them. Charts 2.6, 2.7, 2.8, 2.9, 2.10, and 2.11 show the changes in the interest rate regime, the increasing sophistication of markets, and market determination of rates. The RBI's general refinance rate, the bank rate, peaked in the early 1990s and fell after that, but was not changed very frequently (Chart 2.6). Volatility in the call money rate (CMR) was much lower after the mid-1990s. Although liberalization initially increased the volatility of rates in a thin market, it eventually brought down volatility, as markets deepened, to levels prevailing when rates were tightly administered. But now, rates came through a complex market process (Chart 2.7).

Chart 2.8 shows the SLR and CRR rates peaking (at, respectively, 37.25 and 14.75) in the early 1990s and then coming down as the repressed financial regime was dismantled. The RBI absorbed liquidity at the reverse repo and injected it at the repo. Charts 2.7 and 2.8 show the bands created by the repo and reverse repo rates as the LAF matured and was actively used after 2004. By this time, most of the sector refinance facilities had been wound up. Chart 2.9 gives the daily

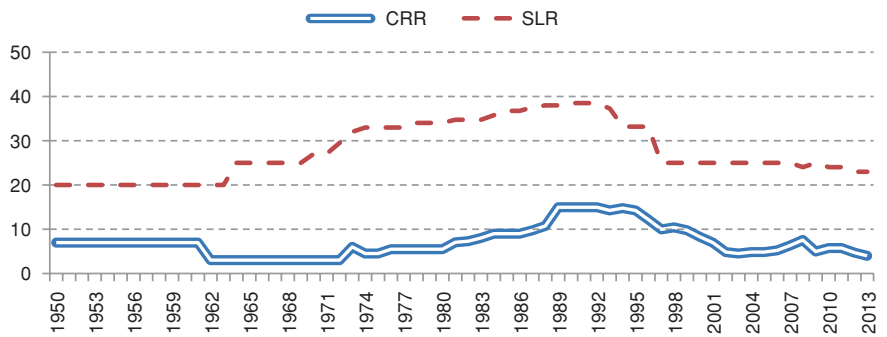


Chart 2.8 Reserve and liquidity ratios: Annual averages

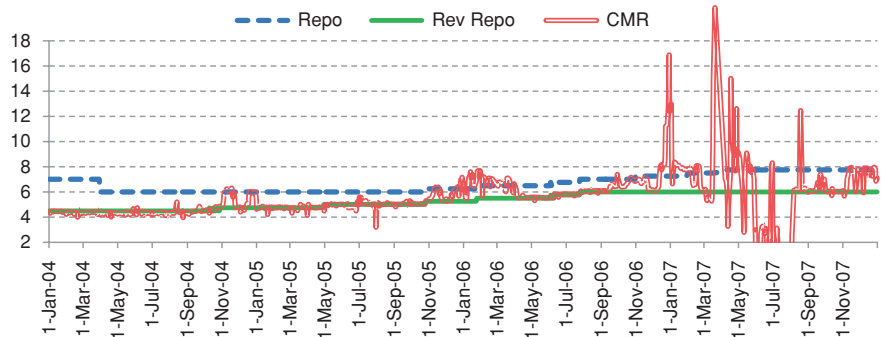


Chart 2.9 Daily policy rates: 2004–2007

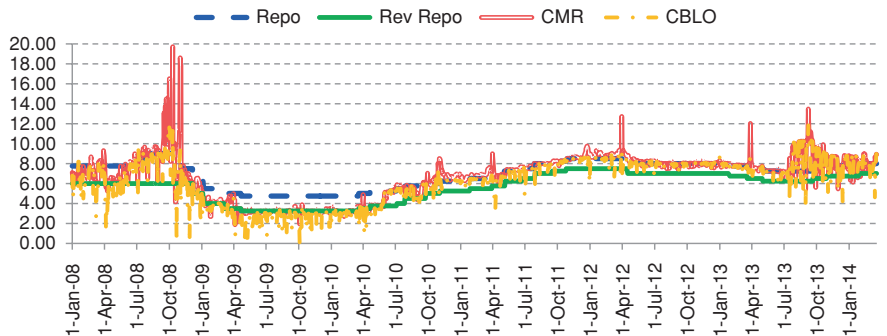


Chart 2.10 Daily policy rates: 2008–2014

CMR. This peaked briefly in 2007 when the RBI limited borrowing in the LAF to encourage the development of the interbank market.

The collateralized borrowing and lending market was developed and rapidly grew to be the largest because of prudential limits on bank borrowing in the call

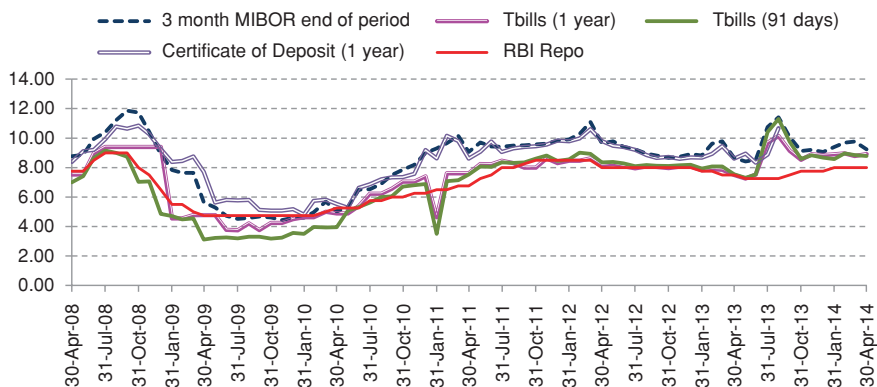


Chart 2.11 Transmission of RBI repo rates

money market. The latter was made a pure interbank market. The CBLO rates are also shown in Chart 2.10. Since lending was based on collateral, market rates could be above the upper band during periods of tight liquidity when collateralizable securities were exhausted as in 2010–2011. But for much of the period, rates hugged the lower band as the RBI used the LAF to absorb excess liquidity generated by large foreign inflows. So the volatility of call money rates, although reduced, was still appreciable since they could jump from one edge of the band to the other. Truly liquidity-constrained banks had to borrow in the overnight or call money market so the CMR was the first to reflect monetary tightening.

Chart 2.11⁹ shows how the short policy rates influenced longer maturity rates through the term structure, demonstrating one leg of active monetary transmission through rates. Policy was working now with both price and quantity variables. There were large autonomous changes in liquidity due to forex inflows, variations in government cash balances held with the RBI, and banks' behavior. Continued use of CRR changes also added to jumps in liquidity. The RBI was not able to forecast and fine-tune liquidity sufficiently to keep the CMR in the middle of the band. This was also insufficient appreciation that now policy had to act through the cost of funds or a shifting of the band, rather than a liquidity squeeze. The latter was not compatible with keeping interest rates within the band.

Following the recommendations in RBI (2011), these issues were sought to be addressed by making the repo rate the signal of the policy stance with a marginal standing facility (MSF) at 100 basis points above and absorption at 100 basis points below the repo rate. The MSF would make liquidity available up to one percentage of the SLR. Steps were also taken to improve liquidity forecasting and reduce transaction costs in accessing liquidity from the RBI, so as to allow finer-tuning of liquidity requirements and smoother adjustment of market rates.

Chart 2.12 suggests these were inadequate. This shows the TED spread, the difference between the 3-month US T-bill and the 3-month London Eurodollar Deposit Rate, and the Indian equivalent of the TED spread, the Indian 91 day

⁹ This chart was part of the background papers prepared for RBI (2011).

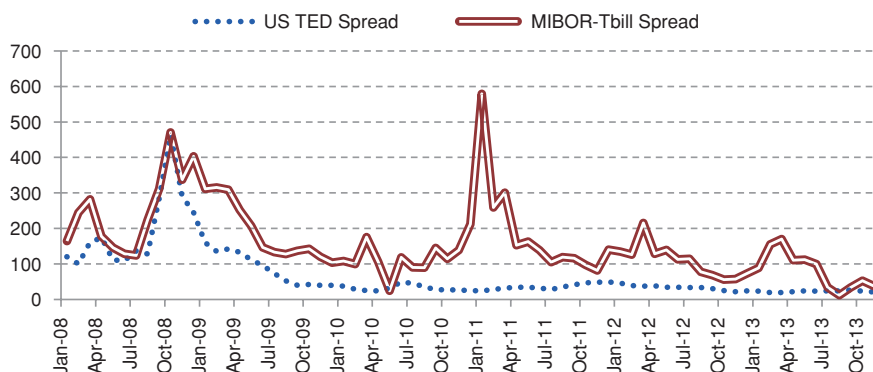


Chart 2.12 The USA and India risk spreads in basis points compared

T-bill yield minus the 3 month Mumbai Interbank offered rate (MIBOR). The difference between the interest rates on interbank loans and on risk-free, short-term government debt (T-bills) is an indicator of rising counterparty risk, or of tightening liquidity in the interbank market. The US TED spread remains generally within the range of 10 and 50 bps (0.1 and 0.5 %), except in times of financial crisis. A rising TED spread often precedes a downturn in the US stock market.

In India, however, these spreads are large even in non-crisis times and peak sharply during periods when markets are squeezed. That they narrowed during the years of large inflows in the mid-2000s suggests that spreads are partly due to tight liquidity or the inability to fine-tune liquidity in response to shocks in government cash balances and in foreign capital flows. If a market is thin, there is such a large impact of a demand or a supply shock.

Curdia and Woodford (2010) argue that, in advanced economies (AEs), a change in spreads has implications for optimal monetary policy. A larger, persistent spread in EMs indicates a requirement for structural reform, but the changes in the spread due to liquidity shocks have to be reduced or compensated for through lower rates, together with vigilant prudential policy to prevent bubbles in thin specific markets. Liquidity tightening and use of the interest rate defense also have a larger impact on EMs to the extent large spreads raise the average level of lending rates.

RBI moved in 2014 to shift markets to term repo by restricting borrowing in the LAF repo. This should contribute to preventing a widening of TED spreads as the term repo market develops and helps smooth liquidity with less dependence on the RBI (Chart 2.12).

2.5 The Global Crisis, Response, and Revelation of Structure

Inflation rose after the severe international food price and oil shocks over 2007–2008 prompted a steep monetary tightening despite slowing industrial output. The global crisis worsened the crash in industrial output. International credit froze,

trade fell, domestic liquidity dried up due to outflows, and fear stalled consumption and investment plans. The global push for concerted macroeconomic stimulus allowed Indian macroeconomic policy, despite high government debt, to be countercyclical for the first time during an external shock. Fiscal stimulus amounted to about 3 % of GDP. RBI made available potential primary liquidity of about 7 % of GDP. Just after the crisis, India was regarded as a high-risk country with low fiscal capacity, but the rapid monetary–fiscal response helped give it a V-shaped recovery with one of the highest world growth rates (6.7 %) during the crisis year with growth rising to 8.6 % the next year. The financial system remained sound. The potential of countercyclical macroeconomic policy was demonstrated.

Shocks hitting the economy can serve as experiments helping to reveal its structure. Consider the summer of 2008. The economy was thought to be overheating after a sustained period of about 9 % growth. International food and oil spikes had contributed to high inflation. The sharp monetary tightening raising short rates above 9 % in the summer of 2008, and the fall of Lehman in September, which froze exports, was a large demand shock. Industrial output fell sharply in the last quarter, but WPI-based inflation only fell with oil prices in the end of the year, and CPI inflation remained high. Demand shocks with a near-vertical supply curve should affect inflation more than output. But the reverse happened. Output growth fell much more than inflation (Table 2.6).

Such outcomes are possible only if inflation is supply determined, but demand determines output. This is the precise sense in which the economy is supply constrained. Components of demand such as consumer-durable spending, housing, etc., are interest sensitive. During the crisis, the lag from policy rates to industry was only 2–3 quarters for a fall and one quarter for a sharp rise. Policy rates have impacted output growth since 1996, while supply constraints affect inflation.¹⁰

The V-shaped recovery also indicated a reduction in demand rather than a leftward shift of a vertical supply curve. A destruction of capacity would be more intractable; recovery would take longer. Since labor supply ultimately determines potential output for the aggregate economy, the region has a large growth potential.

The crisis response was fast, but the resurgence of inflation before recovery was firmly established led to policy dilemmas regarding exit. The sharp rise of WPI inflation by Q3 of 2009 was regarded as surprising since industry had barely recovered. But it should have been expected given the impact of sustained high CPI inflation on wages. Because of the latter, the manufacturing price index fell only for a few months and had risen to its November 2008 value of 203 by April 2009. Arguments that the economy was overheating were probably incorrect because of the sharp rebound in investment after the four-quarter slump, while growth in private consumption and bank credit remained low. Growth in government consumption also slowed.

But not enough was done to anchor inflationary expectations and to reduce constraints in agricultural markets. A poor monsoon in 2009 and protracted rains

¹⁰ Parts of these arguments have also been made in Goyal (2011b, 2012a).

Table 2.6 Growth, inflation, and policy rates

	2008–2009: Q1–Q4				2009–2010: Q1–Q4				2010–2011: Q1–Q4				2011–2012: Q1–Q4			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
<i>Growth (Y-o-Y) (%) (constant 2004–2005 prices)</i>																
GDP at factor cost	7.9	7.7	5.8	5.9	6.3	8.6	7.3	9.4	8.5	7.6	8.2	9.2	8.0	6.7	6.1	5.3
Manufacturing	7.0	6.6	2.6	1.3	2.0	6.1	11.4	15.2	9.1	6.1	7.8	7.3	7.3	2.9	0.6	−0.3
GFCF/GDP ^a	33.0	34.8	31.5	32.7	30.4	31.9	30.9	34.5	32.2	34.0	32.3	31.4	33.9	33.4	30.3	30.9
<i>Inflation (Y-o-Y) (%)</i>																
WPI	9.6	12.5	8.6	3.2	0.5	−0.1	5.0	10.2	11.0	9.3	8.9	9.3	9.4	9.7	8.9	7.0
CPI-IW	7.8	9.0	10.2	9.5	8.9	11.6	13.2	15.1	13.6	10.5	9.3	9.0	8.9	9.2	8.4	7.2
<i>Policy rate</i>																
RBI repo	8.0	9.0	7.3	5.3	4.8	4.8	4.8	4.8	5.3	5.8	6.2	6.6	7.2	8.1	8.5	8.5

Source CSO press release and Reserve Bank of India and revised from Goyal (2012a, b)

Note ^aThis row is a ratio not a growth rate

in 2010 aggravated food price inflation. Nominal and real wage inflation rose in response. CPI inflation finally began to fall with a bumper harvest in 2011. But then, the Euro debt crisis, global risk-off outflows due to rising risk aversion, and a sharp INR depreciation hit inflation again.

The response to early signs of industrial inflation was delayed, given the very large cut in interest rates that had to be reversed. The delay led to too fast a pace of increase in interest rates¹¹ and to quantitative tightening. The latter contributed to volatility in interest rates and in industrial output. Table 2.6 again shows industrial output crashing when policy rates peaked over Q3–Q4 2011, while inflation remained high. Monetary policy affected growth much more than inflation.

Government expenditure pumped into the informal sector increased demand for food. Demand for currency actually increased, and financial disintermediation occurred in response to inflation. Financing for firms was coming from abroad as domestic credit growth remained slow. Firming oil prices added to wage pressures from food inflation, and costs rose. Liquidity remained tight, and demand contracted. Growth in industrial production softened and that in investment also fell sharply in Q1 of 2011.

The events bring out frequent supply shocks and also show a large impact of demand on output, and of supply shocks on inflation, suggesting the AD AS analysis of Sect. 1.3.4 is applicable. It becomes more so as higher growth paths became well established during catchup growth. The longer-run aggregate supply is elastic given youthful populations in transition to more productive occupations, but it is subject to frequent negative supply shocks (Fig. 1.1).

If policy is better based on this structure and shocks, it could more successfully smooth cycles and maintain growth. With a primary food or oil price supply shock, the aggregate supply curve in the figure shifts upward and propagation mechanisms sustain higher inflation. If in response, a demand contraction shifts the aggregate demand curve downward, this reduces inflation only marginally and at a high cost in terms of output lost. Policy should instead restrict demand just sufficiently to prevent inflationary wage and price expectations shifting up the supply curve through second round effects, while encouraging supply-side improvements that can shift down the AS curve. As elasticities increase and systems become more complex, blunt instruments can be phased out and policies designed to reduce sharp changes. The relative elasticities of AS and AD curves suggest that although pricing power of firms does rise when demand is high, they tend to pass on cost shocks even if demand is low because of the rise in intramarginal costs. Fixed costs can be absorbed more easily when output is growing.

It is difficult to come across unemployment estimates, but numbers unemployed are large. In the developed countries, output was regarded as below potential because the crisis left 22 million unemployed. In India, the over 300 million below the poverty line are not meaningfully employed. Given the youthful

¹¹ The operative rate went from the reverse repo at 3.25 in March 2010 to the repo at 8.5 by October 2011.

demographic profile, 10–12 million are expected to enter the labor force every year. The Planning Commission estimates it will take growth at 10 % per annum together with an employment elasticity of 0.25 to absorb them. Since peak levels of domestic savings plus inflows had reached 40 % of GDP, with an incremental capital output ratio of 4, this gives 10 % rate of growth. This could be regarded as the potential output. The RBI, however, defines full capacity as the potential output of the manufacturing sector, even though in India, for example, this accounts for only 20 % of the output and 5 % of the employment. The economy is considered to be supply constrained.

Figure 1.1 helps understand how exactly the economy is supply constrained and better captures the macroeconomic structure of an economy in transition. The economy is supply constrained in the sense inefficiencies on the supply-side perpetuate inflation although output is largely demand determined. Demand contractions amplify shocks, but are not major independent sources of shocks. Goyal and Arora (2013) argue, in such circumstances, the economy should be regarded as having reached potential growth if second round pass-through is causing supply shocks to plateau above a threshold level. They find, however, that the post-GFC period was characterized by multiple supply shocks rather than sustained propagation.

Political and institutional features also result in fiscal–monetary combinations such that the economy remains on an elastic stretch of the aggregate supply curve. Fiscal populism pushes monetary authorities toward conservatism in order to reduce inflationary expectations. But since populism raises inefficiencies and therefore costs, it shifts up the supply curve, while monetary tightening reduces demand, resulting in a large negative effect on output for little reduction in inflation. For the RBI to be accommodating, restraint on revenue deficits and wasteful expenditure is necessary.

2.5.1 *Post-Crisis CAD and Exchange Rates*

After the GFC, there were many external shocks¹² from commodity prices and fluctuations in foreign capital flows. Inelastic oil and inflation-driven demand for gold contributed to a widening of the CAD, and its financing became an issue. But capital flows fluctuated following global risk-on–risk-off cycles unrelated to domestic needs and drove sharp changes in the exchange rate. Just talk of quantitative easing (QE) withdrawal (known as the taper on) led to steep depreciation and loss of EM asset values in May 2013. By March 2014, sentiment had reversed. But a surge of capital normally ends in a sudden stop. The worst case for India, of oil shocks and global risk-off occurring together, happened in late 2011 with the Euro debt crisis.

¹² This section draws on material from Goyal (2014a).

2.5.1.1 Causes of CAD Widening

The CAD (Chart 2.3) was relatively stable in the post-reform period, varying between -3 and $+2.3$ as a ratio of GDP, until after the GFC when it first fell below -3 , regarded as the sustainable limit. It even reached -6.5% in Q3 2012–2013.

Post-GFC increments in reserves were small since inflows about equaled the CAD. But in Q3 2011–2012, inflows fell far short of the CAD. Despite some sale of reserves, the rupee slumped to 55.¹³ Inflows revived somewhat in Q4, and the rupee came back toward 50. Many macrovariables adjust to achieve the balance of payments (BOP) tautology that the capital plus the current account must equal the change in reserves. So widening the CAD may not have been responsible for the depreciation of the INR. The post-GFC suggests the following:

1. Although India required a higher level of inflows to finance a widening CAD, it was the fall in inflows, not the CAD, that was primarily responsible for rupee depreciation. When inflows were plentiful, CADs were financed without depreciation.
2. External risk-off caused outflows more than the CAD. Major risk-off periods when there were outflows from most EMs back to AE safe havens included the European debt crisis, the US taper-on announcement, and January 2014 due to problems in Argentina and Turkey.
3. So the CAD itself was partly due to external shocks, even as global risk-off aggravated financing issues. But during risk-off periods, countries with higher CADs did experience more outflows. And depreciation itself worsened the CAD.

That there were twin deficits, a FD as well as a CAD, points to generalized excess demand that policy could have contained. However, even as the CAD widened in 2011–2012, India's GDP growth rate fell to 6.5% , compared to 8.4% in the previous year. Further widening of the CAD in the next year accompanied even lower growth of 5% . Growth in aggregate demand categories like consumption and fixed investment also fell. Table 2.2 shows a large negative demand shock over 2010–2013. As against this, the CAD was only 1.3% in 2007–2008, a year of high consumption and investment when output grew at above 9% . So supply shocks rather than excess demand widened the CAD.

Analysis of cycles also supports the supply shocks explanation. The trade surplus (net exports, NX) is procyclical in India rather than countercyclical as it would be if it was driven by domestic demand. Correlation of NX normalized by output and output (NX/Y with Y) is positive. NX/Y tends to fall in periods of low growth, associated with low external demand, rather than falling when rising growth and domestic demand raise imports (Goyal 2011b).

¹³ For the year as a whole the CAD was 4.2% compared to capital inflows at 3.7% . The RBI's draw-down of reserves, amounting to 12.8 billion USD, made up the difference. In 2012–2013 the CAD peaked at 4.8% , before coming down the next year.

Such an inverse relationship between the CAD and growth can occur if as exports rise they raise growth and NX. On the other hand, a sudden collapse of export markets, due to a global shock, reduces growth and decreases NX. If oil shocks raise costs, and set in a contraction, NX would again fall along with falling growth as imports rise. The period after the financial crisis saw both a collapse in export markets and a rapid resumption in oil price hikes. These external shocks drove the trade deficit.

As incomes fall (especially as firm profits and government revenues fall), so do savings. The CAD must equal $I-S$ by definition. Investment falls in slowdowns, but if savings fall even more, the CAD widens. Financial savings finance investment that requires traded goods imports, while physical savings, such as in real estate, are invested more in non-traded goods. So a fall in financial savings widens the trade and current account deficits more. Financial disintermediation due to the absence of inflation hedges raises the demand for gold, thus reducing financial savings as well as directly increasing imports.

The FD widened due to the coordinated global stimulus pushed by the G-20. The fiscal stimulus was kept in place too long because of the uncertain global recovery. As the Government, concerned about rating downgrades, made a serious effort to reduce the FD in the last quarter of 2012, fall in government consumption reduced growth in services but not the CAD, suggesting government expenditure largely created demand for non-tradable goods, and for a varied food basket. Excess demand was a problem only in agriculture, where supply rigidities prevent expansion to keep up with demand for food variety (Goyal 2012b), while a depreciating INR prevented imports from offering a low-cost solution.

2.5.1.2 Policy Errors

Even if supply shocks, and the consequent expensive imports, and higher inflation were largely responsible for the widening CAD, there was aggravation from policy mistakes. Domestic supply bottlenecks raised coal imports, just as a faltering world demand reduced export growth. The administered pricing regime reduced substitution away from expensive oil imports. A paucity of inflation protected savings instruments reduced financial savings and increased the demand for gold. No action was taken on constraints in agricultural marketing that boosted food inflation.

Although crude oil dominates the import basket, a structural rise in imports does occur with higher growth. Ultimately, exports have to rise to finance these. Policy that relies on depreciation to stimulate exports, without building export capacity and lowering costs, is inadequate. For example, India's per-container trade costs were more than twice the East Asia's average. Bureaucratic delays and hurdles prevented it becoming part of Asian export supply chains.

Caps on foreign investment in government debt had been raised to USD 30 billion in 2013 (overall limit 81 billion including corporate bonds). Negative debt flows occurred after Bernanke's May 2013 taper-on statement because of an

expected strengthening of US bond yields. Indian market positions were largely long in government debt as interest rates were in a downward phase. But yields rose with the policy response to debt outflows that raised short rates by 300 basis points (Table 2.7). There were large domestic market losses as bond values fell.

But even in September 2013, the share of debt securities at 36 % of equity securities and 6 % of total liabilities was still small. So unnecessary policy tightening, not debt outflows, drove the rise in yields in the Indian context.¹⁴ Policy did not utilize degrees of freedom from the careful sequencing of capital account convertibility. Research at the IMF (2014) showing bond mutual funds, especially retail funds, which are twice as sensitive as equity mutual funds to global sentiment, underlines the wisdom of the sequencing.¹⁵

The other policy mistake was in not taking adequate steps to reverse the exit of domestic households from capital markets. As a result, FPI-driven volatility dominated domestic markets. Volatility could have been reduced by raising the share of household financial savings by offering more instruments suiting household needs, and by liberalizing market participation of domestic pension funds.

The rising debt and share of FIs played a role in convincing authorities that markets were too large and reserves too small for the RBI to intervene. But this was not true since reserves were still large compared to the volatile component of foreign liabilities, debt, and equity securities (Table 2.5). Indian reserves satisfied various criteria of reserve adequacy used such as comparing them to the sum of short-term external debt plus CAD, or CAD minus FDI inflows. Leaving the rupee wholly to markets over 2009–2011 without preemptive action against sharp depreciations was therefore another major policy mistake.

2.5.1.3 Managing the Exchange Rate

EMs face capital flows that respond to global, not to domestic conditions, thin markets, and more volatile risk premiums. All these aggravate the tendency for exchange rates to overshoot fundamental values, so the value of the currency cannot be left to markets alone. The post-GFC capital flows in response to external events created perverse movements in the exchange rate showing a full float is not yet viable. The academic literature also has shifted away from advocating corner regimes of a full float or tight fix for EMs toward middling regimes. China managed successful catchupgrowth with a fixed nominal exchange rate. India chose to develop markets earlier because of its advantage in financial services, so it has to

¹⁴ Debt outflows over May 22–August 26th were 868 USD million for Indonesia, where foreign funding of domestic currency sovereign bonds had been liberalized considerably, compared to 35 USD million for India. So Indonesia had to raise policy rates 175 basis points post taper-on. IMF (2013) in a regression of domestic on US yields finds a significant coefficient (1.1) for Indonesia compared to insignificant (−0.3) for India.

¹⁵ In a sensible application of this logic, the RBI in 2014 disallowed FPI investments in Gsecs of less than one year maturity, in anticipation of possible future taper-related volatility.

Table 2.7 The policy measures taken over 2010–2013

Date	Change in INR/USD (week before)	Change in INR/USD (week after)	Policy action
December 28, 2010	−0.21	0.03	RBI issues guidelines for OTC FX derivatives and overseas hedging
February 1, 2011	0.11	−0.48	Derivatives guidelines applied
September 15, 2011	1.82	1.83	Exchange earners foreign currency account and residents foreign currency accounts liberalization
November 15, 2011	1.19	1.54	Increase in ceiling rate on banks' export credit in foreign currency by 150 basis points
December 5, 2011	−0.77	2.18	Speech reinforcing RBI's hands-off policy
December 15, 2011	2.79	−1.51	Bank net open position limits (NOPL) reduced 75 %; free cancellation and rebooking of FX forward contracts disallowed
May 21, 2012	1.04	0.90	Netting of positions in currency futures/options with OTC positions disallowed; position limits of banks for currency futures and options reduced
September 11, 2012	0.07	−1.18	ECB policy eased
May 13, 2013	0.96	0.12	RBI restricts banks' gold imports
May 22, 2013	0.89	0.58	Bernanke says Fed may taper QE
June 20, 2013	1.43	−0.001	Foreign banks open positions in USD/INR reduced to almost zero
July 9, 2013	0.93	−0.71	Any proprietary activity by banks in currency futures banned
July 10, 2013	0.72	−0.42	Public sector oil companies directed to buy FX only from one bank (SBI)
July 23, 2013	−0.36	1.43	Monetary tightening measures started from July 9; reduced LAF limit to 0.5 % of a bank's own NDTL; banks to maintain a daily minimum CRR balance of 99 %; MSF rate raised to 10.25, and CMR moved up to it from repo of 7.25
August 28, 2013	4.63	−2.32	FX swap window for oil companies (closed end November)
September 4, 2013	1.36	−3.24	Window for the banks to swap the fresh FCNR(B) deposits with RBI and increase in Banks' overseas borrowing limit with option of swap with RBI
September 18, 2013	−1.07	−0.92	Fed refrains from QE taper, keeps bond buying at USD 85 billion
November 11, 2013	1.89	−0.74	Participation by SEBI registered FIIs, QFI long-term investors in credit enhanced bonds

allow a more flexible market-determined exchange rate. The float, however, has to be managed as argued in Sect. 1.3.4.

In the absence of management, does a sharp depreciation help exports? Or should policy try to maintain an undervalued real exchange rate? A fall in export growth and a widening CAD accompanied depreciation from INR/USD 45 in early 2011 to 67 in September 2013, when depreciation is supposed to improve both CAD and exports. While depreciation corrects for inflation differentials, it itself contributes to inflation, as imports and import substitutes become costly, leading to a vicious cycle of higher inflation requiring more depreciation. Repeated bouts of sharp depreciation contributed to sticky Indian inflation and hardened inflation expectations. Post-2011 growth fell, while inflation remained high and sticky. A sharp depreciation and high volatility also does not help exporters, especially since appreciation followed the depreciation as inflows returned. Pass-through to import prices of commodities is faster, while that to exports is incomplete and delayed.

The global cycle also matters. In a period of low global demand, depreciation cannot increase exports but adds to import costs. In EMs, sustained depreciation tends to raise country risk leading not to expected appreciation back toward fundamentals but to fears of further weakening. So taking a sharp INR depreciation need not even facilitate lower interest rates from uncovered interest parity (UIP) (see footnote 17).

Over the longer term, an undervalued real exchange rate does increase exports, as the Chinese experience demonstrates. But to be sustained, it requires a disciplined labor market, where real wages do not rise. Chinese wages rose after many years of high growth, but Indian wages began to rise much earlier in their catchup cycle. The rise in real wages India experienced over 2007–2013 years requires real appreciation, which will occur through inflation if there is nominal depreciation. Inflation intensified after the sharp 2011 depreciation that reversed earlier real appreciation, since wages continued to rise. For India, a steady competitive REER may be feasible, not an undervalued one. Such a REER may be adequate to maintain healthy export growth, with complementary supply-side measures. The only years of mild real appreciation were 2010–2011 and 2011–2012 which, therefore, cannot be blamed for the export slowdown and CAD widening. In October 2013, the INR recovered to 62, and exports began to grow as global growth revived.

But unfortunately, just in the post-GFC period, although the stated position remained the RBI would act to prevent excess volatility, policy became increasingly hands off. Markets were allowed to determine INR level and volatility subject to what remained of capital controls that continued to be reduced. Intervention was temporarily suspended in 2007 at a time of strong inflows that made sterilization difficult, but resumed to accumulate inflows from October as the market stabilization bonds were negotiated for cost sharing with the government. The INR had to depreciate during post-Lehman equity outflows in order for them to take a write-down in asset values and share risk even as the RBI sold some reserves. Inflows resumed quickly, however, and up to end 2011 were just adequate to finance the CAD (Chart 2.3). So there was hardly any intervention in this period.

This led to the market misperception that the RBI was unable to intervene in FX markets, aided by statements from the RBI about the large size of India's FX liabilities and potential capital movements relative to reserves. As a result, the rupee went into a free fall in end 2011. An environment of low growth and a rising CAD added to the fragility of FX markets.

The RBI did begin to sell reserves in November 2011 as the INR spiraled downward. It also restricted FX markets. Retrospective taxation in budget 2012, and the Fed's taper announcement in May 2013, also led to outflows requiring RBI action.¹⁶ Some of many feasible policy actions, including administrative measures such as controls, market restrictions, intervention or buying and selling in FX markets, signaling, and monetary policy measures such as the classic interest rate defense, were used, and it is possible to assess their effectiveness.

Table 2.7, which lists the policy measures taken over 2010–2013, attempts this by estimating their impact on the exchange rate; that is, did a measure reverse or add to existing market movements? The table gives the basis points change in the INR/USD rate in the week before and the week after a measure. A negative entry implies an appreciation of the INR and a positive entry the reverse.

The table suggests the most effective measure was the FX swap window announced for oil-marketing companies in end August 2013. Not only did the INR strengthen substantially, but it reversed an existing depreciation, and the rupee continued to gain after that, as other measures were added to the swap window that remained open till end November. Measures that made more FX available, such as the swap window and subsidy for bank foreign borrowing or easier ECB, also appreciated the INR; restrictions on markets such as reducing position limits worked only sometimes. The use of the interest rate defense in July 2013 was a total failure. Signals that the RBI was unable to intervene and the INR should be left to the markets had a large impact but were also counterproductive. Well-designed signals could, therefore, have the desired effect. Global shocks such as Fed announcements also impacted the INR.

The lessons from this experience are the importance of designing policy in line with the current state of capital account convertibility and evolution of markets. Given India's growth prospects and relatively greater reliance on growth-driven equity flows, the use of the interest rate defense for the exchange rate was counterproductive and should be avoided at the current juncture, even as restraints continue on debt flows. Equity investors' assets lose value with a sharp depreciation, but an ineffective interest rate defense does not help existing equity investors, even as reduced growth harms new entrants.

The interest rate works by raising the return to holding domestic currency over that to holding international currencies. If expected depreciation is large, the

¹⁶ After zero intervention from January, monthly net purchases in USD million were 10678 over 2007:10 to 2008:10. This switched to net sales of 1505 over 2008:11 to 2009:4 as outflows intensified under the GFC. Average intervention was near zero at monthly net purchases of 285 over 2009:05 to 2011:10. But 2011:10 to 2013:07 saw heavy monthly net sales of 8580.

required rise in short-term interest rates can be very high.¹⁷ To effectively impact the cost of domestic borrowing for speculation, the increase in short-term interest rates also has to be large. The July 300 basis point rise was not large enough to cover expected depreciation yet raised both Indian short- and long-interest rates and intensified the industrial slump. Although Indian interest rates were much higher than the USA's, this could not prevent debt outflows since these tend to be driven by global factors. To the extent capital mobility is not perfect and there is some exchange rate flexibility, the impossible trinity does not hold—there is some freedom in setting policy rates, and these should target the domestic cycle, not the exchange rate.

So in the current stage of capital account convertibility, where interest-sensitive inflows are still a small share of total inflows, it is better if the exchange rate does not directly enter the policy reaction function. The policy rate should respond to the indirect effect of the exchange rate on inflation. Intervention, smoothing net demand, and signaling can all be used to reverse deviations of the exchange rate from equilibrium, or prevent excessive depreciation, thus reducing the pressure to raise interest rates.

The RBI's stated position of preventing current and future excess volatility is the correct one, but it needs to be more actively implemented, with an informal 10 % medium-term band for exchange rate movements as discussed in the ideas Sect. (1.3.4). Since under large outflows, the CB comes in after markets bottom out, to make portfolio investors share currency risk, the band may occasionally be breached but should soon revert.

Under adverse expectation-driven outflows, the market demand and supply for FX will not determine an exchange rate based on fundamentals. Smoothing lumpy foreign currency demand in a thin and fragile FX market is useful. Direct provision of FX to oil-marketing companies was first used in the mid-1990s.¹⁸ It is a good way of providing FX reserves to a fragile market without supporting departing capital flows. So there are innovative ways of using reserves, which can be built up again during periods of excessive inflows. Although swaps add exchange rate risk to the RBI's balance sheet, it need not materialize over the short life of the swap if markets are successfully calmed. They also encourage domestic entities to hedge. It is only if these policies are not used effectively that restricting markets may become necessary,¹⁹ despite adverse side effects.

¹⁷ The basic underlying principle is that of UIP, which equalizes the expected returns to holding assets such as bonds in any currency. Since currencies can easily depreciate by 10–40 % in a crisis, short-term interest rates have to rise by as much. On 28th January 2014, even as the policy repo rate was hiked by 25 basis points there were outflows, mostly debt, due to global risk-off from the crash of Argentina's currency and fears of Chinese credit overstretch.

¹⁸ I thank Dr. Y. V. Reddy for this point.

¹⁹ Thus in December 2011, the INR remained under pressure despite a reduction in global risk-on due to ECB announcement of support to bank lending and money market activity (see http://www.ecb.europa.eu/press/pr/date/2011/html/pr111208_1.en.html) due to the RBI's then hands-off policy and reluctance to use reserves, thus necessitating severe market restrictions on December 15th. These brought the INR back from 55 to 50. Adverse tax measures for MNCs in the March 2012 budget triggered outflows and the INR again reached 55, leading to further market restrictions in May 2012.

Various market-restrictive measures reduced market turnover sharply in the currency derivative markets in exchanges, while total turnover including the dominant over-the-counter (OTC) FX trading in banks also fell (Goyal 2014a). This suggests the two types of markets are complements rather than substitutes. Exchanges are thought to be dominated by short-term position taking since no real underlying is required unlike in the RBI-regulated OTC markets. But in FX markets, worldwide portfolio-rebalancing types of transactions between market makers are normally much larger than those based on real exposures. These allow banks as well as small firms that may not get a good deal at banks to lay off risks in futures markets. But expectations are especially important in such markets and can lead to one-way positions.

Under freer capital flows, restricting domestic markets encourages transactions to migrate abroad. Although difficult to measure precisely, the non-deliverable forward (NDF) market may be above 50 % of the onshore market²⁰ in 2014. It had risen in the period of market restrictions. This is against the objective of developing and deepening domestic markets. Moreover, domestic regulators are unable to influence offshore markets. Therefore, it is better if policy reduces incentives for risk taking in markets rather than forbids transactions.²¹ Actions appropriate to the Indian context and reform path were the most effective. Following such a restraint also reduces regulatory discretion that in a complex environment can lead to over- or underkill.

The Global Financial Architecture (GFA) is supposed to smooth turbulence and help countries deal with it. But international financial crises have occurred with unfailing regularity. While they normally were restricted to EMs, the GFC originated in AEs.

2.5.1.4 Emerging Markets and the Global Financial Architecture

India's opening out unfortunately happened at a time of many international crises. The GFA, supposed to ensure international financial stability, was shown to be inadequate and in need of reforms. Even as Indian policy makers were responding to external shocks, they had to play a more active role in the GFA. The G-20 was a new institution created after the GFC, due to the recognition that better coordination was required in a more interconnected globe. Although the G-20 lacked the comprehensive legal charter required for a formal international institution, it

²⁰ There are indications offshore markets rise with restrictions on domestic markets. According to BIS data net turnover from reporting dealers abroad rose from 5.4 USD billion to 6.1, while that from reporting local dealers rose from 11.5 to 12.5 over the 3 years. OTC FX turnover outside the country rose from 50 (20.8 USD billion) to 59 % (36.3 USD billion) of the total (Goyal 2014b).

²¹ International, FX markets survived the GFC relatively well partly since boards imposed limits on capital available to traders and they had some liability for losses.

gave a voice to major EMs in global dialogue, potentially reducing the dominance of G-7 countries. It did produce comprehensive reform lists. EMs also got greater representation in some of the international institutions that comprise the GFA, such as the Bank of International Settlement (BIS), and the Financial Stability Board (FSB). But the governance structures of the International Monetary Fund (IMF) and World Bank (WB)—which monitor the policies decided on in the G-20—did not change. For example, representation in the IMF’s executive board remains incommensurate with EMs growing economic power. Quotas, votes, and voice of EMs all have to change suitably. Insufficient diversity encourages the “groupthink” that the Independent Evaluation Office of the IMF identified as a cause of the lack of action against financial risks that built up before the GFC.

But EMs also did not use their new voice effectively. For example, they brought in a development agenda into the G-20, thus diffusing the required focus on financial reforms. The G-7 perspective continued to dominate and so financial risks continue to build up and the GFA remains fragile. The financial reforms proposed were flawed because of an excessive focus on building capital buffers in banks. Leverage caps have been imposed but are too lax, still allowing bank balance sheets to multiply up to 33 times their equity.

These proposals do not suit EMs, whose financial sectors tend to be bank dominated, but more closely supervised, with broad-pattern regulation that directly reduces leverage. This has better incentive properties, while also reducing regulatory discretion (Goyal 2014b). Bank-based reforms may drive transactions into shadow banks to escape regulation. Since it was difficult to build up capital buffers when banks were weak, these were also delayed. Moreover, buffers have more of a loss-absorbing or shock-insulating rather than a risk-mitigating effect. Reform alternatives such as transaction-based prudential requirements including margins, low taxes, and position limits have the advantage of being naturally countercyclical and reduce excessive risk taking. But they need to be universally adopted in order to prevent arbitrage in favor of a lenient jurisdiction or excluded asset.

Endogenous expansion of leverage, with QE adding to it, was responsible for fluctuations in capital flows to EMs. The search for yield drove up asset prices, including commodity prices, which also impacted EMs even as financial risks built up again. AEs deliberately pumped up global asset prices to help their recovery, ignoring global spillovers from these actions.

The debate over currency adjustments in the G-20 also illustrates how short-term AE interests were able to prevail, against their own long-term interests and the global recovery. In the 2012 G-20 meeting, finance ministers agreed not to manipulate exchange rates for competitive advantage in the post-GFC slowdown. But interest rate- or liquidity-boosting policy in response to domestic needs, which AEs typically use, and which also affects exchange rates, was not to be regarded as manipulation. In fairness, measures such as intervention and controls that EMs with less developed markets are forced to use should also not be regarded as manipulation. But the premise that all intervention is manipulation and all controls are market distorting tends to force EMs to follow exchange rate regimes appropriate to AEs although EMs may not yet be ready for them.

AEs also use other types of policies to affect exchange rates. For example, Mr. Abe's campaign promise to aid export-dependent manufacturers by bringing down the value of the yen became self-fulfilling since traders acting in advance of expected action depreciated the yen 15 % against the dollar after November 2012. It is a stretch to fit these in interest rate- or liquidity-boosting policy, but G-20 interpreted it as a response to domestic needs. It follows domestic needs of EMs should also be recognized.

The AEs tend to take a view that whatever is good for AEs growth will eventually be good for EMs. That is true, but even so action should be taken to moderate costs imposed on EMs, since slower EM growth in turn reduces recovery in AEs. What is good for EMs can also be good for AEs. AEs are answerable largely to their domestic constituencies—the Fed stimulus did help the USA make the best post-crisis recovery. But the G-20 and the IMF now have ways to pressurize AEs on external spillovers.

In 2012, the IMF introduced Financial Sector Assessment Programmes for all systemically important countries. A new Integrated Surveillance Decision aims to make surveillance more effective. Member countries' obligations under the IMF's Articles of Agreement cannot be changed, but it does enhance the existing legal framework by making Article IV consultations a vehicle for multilateral as well as bilateral surveillance, to also cover spillovers from member countries' policies that may impact global stability. Even without legal commitments, this can bring peer pressure to bear on countries whose imbalances create spillovers on others. A Pilot External Sector Report assesses, in addition to exchange rates, current accounts, balance sheet positions, reserves adequacy, capital flows, and capital account policies.

It seeks to go beyond cyclical factors to identify the impact of policy distortions and other structural and country-specific factors on a country's current account. It asks whether the home country's policies need to change or whether other economies should change course.²² A IMF staff discussion paper takes the position that while a country can give greater weight to domestic concerns over international spillovers, where the latter impose costs on other countries, there is a case for multilateral coordination that can either ask for a reduction in capital controls or ask lenders to partially internalize the risks of volatile capital flows (Ostry et al. 2012). But it admits the latter is "much thornier"!

It will be a major step toward symmetry if the onus for capital flow volatility is put on source countries also instead of the current system where the entire burden of adjustment is borne by recipient countries. But for adjustment to actually be symmetric, deeper changes moderating asymmetric power in the GFA are required. After the East Asian crisis, EMs reformed, but AEs did not. Nor was the GFA modified. AEs take the position that asset bubbles are not due to QE but due to EM demand, again putting all the onus on EMs. While EMs, including China, are allowing currency appreciation and stimulating domestic demand to correct global imbalances, deficit reduction in AEs has been indefinitely postponed. India allowed its currency to appreciate over 2009–2011 despite a large CAD.

²² See <http://www.imf.org/external/pubs/ft/survey/so/2012/POL071912A.htm>.

In return, AEs committed in the 2010 Toronto G-20 meet to “at least halve deficits by 2013 and stabilize or reduce government debt-to-GDP ratios by 2016.” But at the 2012 summit in Mexico City, it was admitted this target would not be achieved. Moreover, it was said to be not advisable to reduce deficits given continued global uncertainties. Instead, AEs only committed to “ensure that the pace of fiscal consolidation is appropriate to support the recovery” (Thomson 2012). The argument that in a balance sheet recession when the private sector is deleveraging, and there is a possibility of a debt deflation trap, the government must spend has some validity. Reducing debt and deficits is easier when growth is higher. But if feasible future growth is overestimated, the stimulus given today can be excessive and recreate conditions that led to the GFC. At the very least simple uniform types of financial regulation to moderate spillovers from AE policies in the shape of risky capital flows and commodity price bubbles could be adopted.

AEs pumped up global asset prices to help their recovery, ignoring global spillovers from these actions. The stimulus the Fed undertook did help the USA make the best post-crisis recovery and AEs are answerable largely to their domestic constituencies. But the G-20 and the IMF now have ways to pressurize them on external spillovers. It was hoped, after the May 2013 turbulence, the US taper on would be more sensitive to EM concerns. Taper on is being more carefully designed, with a focus on keeping interest rate expectations well anchored. The reduction of USD 10 billion in December did not affect markets. But in January 2014, the reduction occurred despite trouble in Argentina and Turkey and enhanced these troubles. There were calls for greater global policy coordination, to which the Indian RBI governor rightly contributed. EMs can push for measures that reduce capital flow volatility.

But the ultimate defense against global volatility is in reducing vulnerability to outflows through deepening domestic markets and other structural reforms, even as in the short term a reduced CAD and larger reserves reduce the skittishness of capital flows. In the absence of meaningful reform in the GFA and given dangers from volatile and poorly regulated capital flows, EMs have to continue with costly self-insurance. The low effect on India of the January taper reflected the success of the short-term measures the government and the RBI had taken, such as restricting gold imports. But longer-term measures continued to be necessary.

Although IMF funds are now inadequate to deal with potential outflows, Fed swaps are available only to a few, largely G-7 countries, with strong mutual interests. Participation in regional initiatives can help achieve a better balance of power and lead to more symmetric adjustment. Then, the financial reforms necessary to reduce leverage and strengthen the GFA may be implemented, and EMs gain more freedom to follow context-specific macroeconomic policies.

Table 2.8 Trends in money

	Reserve money	Narrow money	Broad money	Demand deposits	Time deposits
<i>Average annual growth rate</i>					
1950–1951 to 1959–1960	4.11	3.56	5.95	3.22	15.62
1960–1961 to 1969–1970	7.61	9.19	9.57	12.63	10.61
1970–1971 to 1979–1980	14.49	12.18	17.28	13.55	24.71
1980–1981 to 1989–1990	16.84	15.1	17.22	15.83	18.6
1990–1991 to 1999–2000	13.87	15.63	17.18	16.32	17.99
2000–2001 to 2009–2010	15.43	15.99	17.47	17.49	18.12
2010–2011 to 2012–2013	9.65	8.38	14.38	1.37	16.41
<i>Average Ratio to GDPmp</i>					
1951–1952 to 1959–1960	13.2	17.48	22.03	5.12	4.55
1960–1961 to 1969–1970	11.46	15.76	21.85	4.98	6.09
1970–1971 to 1979–1980	10.99	16.2	29.24	7.02	13.04
1980–1981 to 1989–1990	13.84	15.74	41.99	6.58	26.24
1990–1991 to 1999–2000	15.28	17.48	51.33	7.71	33.86
2000–2001 to 2009–2010	15.94	20.81	73.51	9.64	52.7
2010–2011 to 2012–2013	16.17	19.69	82.73	8.19	63.04

2.6 Trends in Money and Credit

The trends in money and credit²³ over the decades also demonstrate the policy issues surveyed. Table 2.8 shows much more fluctuations in the rate of growth of RM compared to other types of money. Rates of growth for all types increased substantially after the first two decades, demonstrating the increasing monetization of the economy. This was especially rapid from the 1980s as the jump in time deposit to GDP ratio, and of broad money, of which it is a component, indicates. The jump in time deposit ratios reflects the rise in savings ratios in the 1980s to above 20 % (Table 1.4). The expansion in bank branches partly caused this rise. In the post-GFC period, broad money compensated somewhat for a slower growth of reserve money, showing the limits to control of monetary aggregates in a more developed financial system.

²³ RBI definitions of reserve money from the components side are: Currency in circulation + Banker's deposits with the RBI + other deposits with the RBI, and from the sources side: RBI's domestic credit + Government's currency liabilities to the Public + Net FX assets of RBI other items. The definitions of broad money from the components side are: Currency with the public + Aggregate deposits with banks, and from the sources side are: Net bank credit to government (Net RBI credit to central and state governments + other banks' credit to government) + Bank credit to commercial sector (RBI + other banks) + Net forex assets of banking sector (RBI + other banks) + Government's currency liabilities to the public—banking sector's net non-monetary liabilities. These were followed in deriving the series given in the tables.

Table 2.9 Decadal averages

	D/R	D/C	Money multiplier	M3/RM	GDP/ M3
1953–1954 to 1959–1960	21.61	0.79	1.73	1.69	4.7
1960–1961 to 1969–1970	28.09	1.09	2.01	1.93	4.83
1970–1971 to 1979–1980	19.5	2.12	2.72	2.66	3.77
1980–1981 to 1989–1990	8.07	3.45	3.09	3.12	2.58
1990–1991 to 1999–2000	8.29	4.18	3.43	3.37	2.11
2000–2001 to 2009–2010	14.8	5.42	4.67	4.73	1.46
2010–2011 to 2012–2013	17.85	5.97	5.18	5.14	1.29

Table 2.9 presents select monetary ratios: the money multiplier and its determinants; the aggregate deposits-to-bank reserves ratio (D/R); and aggregate deposits-to-currency ratio (D/C). Currency and reserves are the quantity variables that can be affected by the CB. For example, the CB can increase currency by printing more money, although currency held does depend on the demand for it. It can also increase reserves by requiring a higher percentage of deposits to be stored in the CB.

The steady rise in D/C reflects monetization of the economy. It demonstrates confidence in the financial system, and the absence of inflation high enough to induce a flight from money. The fall in D/R from the 1970s was a consequence of the sharp rise in CRR. This was unable to prevent a rise in M/RM, but it did slow down its increase in the 1980s and 1990s compared to the last decade. The last column GDP/M is a measure of velocity. The latter fell through all the decades, showing a well-managed financial expansion, and a positive income elasticity of money demand.²⁴ Income elasticity was rising because of expansion of bank branches, but lack of other financial instruments probably tended to decrease it. GDP/M did rise for a few years in the inflationary 1970s, as did the GDP/C ratio. The GDP of the nation rose as it became a trillion dollar plus economy. But the stock of money, essential for lubricating commerce, rose even faster. The money multiplier continued to grow in the post-GFC period despite some rise in currency held because of higher inflation.

Table 2.10 shows the creation of credit, on which monetary policy was explicitly focused for much of the period. The steepest rise in credit/GDP ratios came, however, after liberalization. India's credit/GDP ratio is low by world standards and must rise. But a sudden sharp rise often leads to a financial crisis. Rates of growth of credit were, however, always moderate. Also noteworthy, in Table 2.10, is the sharp fall in RBI's credit to the government, following the termination of

²⁴ In the US, for example, velocity fell until 1948, the period of expansion of banks, and rose after that.

Table 2.10 Trends in credit

	Net RBI credit to central government	Net RBI credit to state government	Net RBI credit to government	Other bank investment in government securities	Net bank credit to government	RBI credit to commercial sector	Other bank's credit to commercial sector	Total bank credit to commercial sector	Total bank credit
<i>Average annual growth rate</i>									
1960–1961 to 1969–1970	-	-	7.12	8.9	7.5	30.42	16.15	15.45	10.94
1970–1971 to 1979–1980	14.19	27.02	13.93	20.34	15.58	38.47	18.7	19.13	17.54
1980–1981 to 1989–1990	19.9	29.47	19.69	19.18	19.41	15.81	17.31	17.21	18.09
1990–1991 to 1999–2000	7.12	18.41	7.49	21.15	14.22	10.63	14.76	14.56	14.37
2000–2001 to 2009–2010	-580.8	0.42	-510.58	17.71	14.81	42.75	19.98	19.68	17.56
2010–2011 to 2012–2013	44.12	18,381.03	44.25	13.34	17.57	41.06	17.53	17.54	17.55
<i>Average Ratio to GDPmp</i>									
1960–1961 to 1969–1970	-	-	10.02	3.02	13.04	0.14	9.55	9.69	22.74
1970–1971 to 1979–1980	8.39	0.66	8.96	4.51	13.57	0.81	17.77	18.57	32.14
1980–1981 to 1989–1990	12.79	0.55	13.34	7.3	20.65	1.14	27.26	28.39	49.05
1990–1991 to 1999–2000	10.6	0.28	10.88	11.77	22.65	0.75	27.98	28.73	51.39
2000–2001 to 2009–2010	2.08	0.17	2.24	21.32	23.5	0.15	43.45	43.6	67.17
2010–2011 to 2012–2013	5.63	0.02	5.65	20.65	26.30	0.03	55.34	55.38	81.67

Note Net RBI credit to state governments was INR 181 in 2008–2009 and INR 4.55 crore in 2009–2010

ad hoc treasury bills, and the imperatives of sterilization of large inflows. Other bank credit to the government rose. Banks often voluntarily held Gsecs in excess of lowered SLR requirements, as rates and returns became attractive. As capital inflows slowed, post-GFC RBI credit to the government rose since it could no longer meet its required balance sheet expansion through accumulation of foreign exchange reserves. As a result, other banks lent more to the commercial sector.

Although the size of the retail Gsecs market had seen a large rise, the fear of adversely affecting rates and increasing the cost of government borrowing restrained the RBI's use of OMOs. Complicated restraints on Gsecs and split between capital and interest with mark to market only for the part not held to maturity continued to make Gsecs attractive to banks and to prevent them from selling when they could make capital gains. The need for such restraints will reduce as a smaller share of held to maturity category and more interest rate volatility forces banks to hedge interest rate risks. Apart from OTC derivatives, there were also attempts to develop markets for interest rate futures.

Creating retail depth in the holding of Gsecs, and reducing the relative size of government borrowing from the domestic financial sector, will help the RBI to move more fully toward interest rate rather than money supply or credit variables as instruments. A push for change will come from the new Basel III prudential norms, which are unlikely to accept a forced statutory holding of even A class securities as providing a liquidity buffer. The new IFRS accounting norms will also require marking holdings of Gsecs to market.

In AEs, as debt shares declined, independent debt management offices were created. It was thought separating monetary policy from the management of the Government debt would reduce conflicts of interest. India was set to also follow this reform path. But as post-crisis debt levels in these countries rose sharply, CB market tactics became important in maintaining the confidence of market participants and smooth functioning of debt markets (Goodhart 2010). Given the relatively high levels of Government debt, the RBI had long been using such tactics to manage government borrowing requirements. Other countries seem to be converging to India's current practices even as India tries to converge to earlier norms. This underlines again that market development cannot mean blindly aping practices elsewhere. Adapting to local needs and structure is important.

Table 2.11 shows the rising share of Gsecs in the commercial banks portfolio and the consequent fall in share of commercial credit. The contribution of net domestic assets (NDA) to RM became negative as largenet foreign assets (NFA) displaced them in the RBI's balance sheet. Additions to foreign exchange reserves, driven by capital flows, exceeded the current account by a large margin. All these effects moderated in the post-GFC period as capital inflows reduced. Since reserves responded to volatile inflows on the capital account, while the current account was in deficit, they were a valid precautionary measure.

Table 2.11 Effects of reserve accumulation

Decades	Ratio of Net domestic assets to reserve money (RM)	Ratio of net foreign assets of the RBI to RM	Share of G securities in other bank credit	Share of commercial credit in other bank credit	Change in forex reserves as a ratio of current account of BOP (+, increase)
	%	%			
1960–1961 to 1969–1970	-	5.45	24.17	75.83	0.098
1970–1971 to 1979–1980	80.35	19.65	20.13	79.87	0.641
1980–1981 to 1989–1990	89.33	12.66	21.04	78.96	-0.069
1990–1991 to 1999–2000	62.13	37.87	29.5	70.5	1.69
2000–2001 to 2009–2010	-9.67	108.56	33.37	66.63	1.42
2010–2011 to 2012–2013	-0.95	100.85	27.17	72.83	0.36

2.7 Conclusion

Money and monetary policy are slippery concepts, and reality is often not what it seems on a surface reading. But careful fact-based analysis, using an appropriate analytical framework, yields interesting insights. There is two-way causality between money and nominal income. But during large supply shocks, policy shocks can be treated as exogenous. Such shocks are used in this study to understand the structure of the economy. The results validate the framework used. These suggest that policy was sometimes exceedingly tight when the fear and the common understanding were opposite: of a large monetary overhang. In focusing on financing the Government, rather than on domestic cycles, policy was procyclical—too accommodative in good times and tight in bad times.

Fiscal dominance pushed monetary policy to be too tight or too loose to compensate. An intellectual climate that encouraged government intervention and advocated a big push for development favored the dominance of fiscal policy. These ideas became embedded in institutions and created path dependence—it was difficult to break out on a new path. The balance of payments crisis and the change in intellectual ideas provided the opportunity. The initial swing was too much in favor of markets, but a series of international currency and financial crisis have helped to moderate orthodoxy. It has become possible to devise a middling through path that suits Indian democracy and structure. The global crisis evoked a refreshing and apt policy stance that helped the economy retain high growth. But the stimulus was continued too long and, together with multiple supply shocks, made inflation persistent. Improvements are still required in inflation management.

When the dominant ideas of the time supported closed capital-intensive import-substituting growth, Vakil and Brahmananda (1956) pointed out the importance of the wage goods constraint. Relieving the latter required more attention on increasing agricultural productivity and on openness. But the closing of the economy that condemned India to many years of stagnation happened because intellectual opinion was too susceptible to external ideas and neglected more robust ideas based on a close understanding of own context.

The currently dominant ideas, favoring gradual liberalization, should aid India in its catchup period of high growth and beyond, providing high-productivity employment for its billion plus people. But that tailoring to context continues to be required. A non-ideological middling through approach makes a pragmatic adaptation to context possible. For monetary policy, the three factors that cause a loss of autonomy—governments, markets, and openness—are conveniently moderating each other. Thus, markets are moderating fiscal profligacy; crises are moderating markets and openness. And institutions are slowly strengthening in adapting to the new ideas.²⁵

The many changes recorded in this history demonstrate the dynamism displayed by the economy, its institutions, and policy, countering the argument that

²⁵ A threatened downgrade by credit rating agencies forced a reduction in the fiscal deficit in 2013.

democracies are doomed to stagnation. An example of change is the behavior of interest rates. Although liberalization initially increased the volatility of rates in a thin market, it eventually brought down the volatility to levels prevailing when rates were tightly administered, as markets deepened. But now, the rates came through a robust interaction between markets, institutions, and policy.

In the mid-1990s, in thin markets and with greater monetary autonomy combined with unhealthy government finances, there were sharp peaks in policy and market rates that hurt growth. But immediately after the GFC, when fiscal responsibility legislation, higher growth, and better tax administration had improved government finances, monetary–fiscal coordination improved and India came through in better shape. In hindsight, the post-GFC stimulus was too large and continued too long, while exchange rates were left too much to volatile capital flows, although alternative policies were available. So learning must continue. But even so, the future will see these years as transformative for India and its institutions. Sometimes, the best haste is made slowly.

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