

9

Some Apparent Puzzles for Contemporary Monetary Policy

RAKESH MOHAN*

I feel very honored to have been invited to deliver this dinner address to this distinguished audience. We have had a long day of intensive discussions centered on issues related to the Indian and Chinese economies. I thought that, given the timing of this address and the fact that we have experts present here on both these economies, it would be more advisable to talk about some general issues that are engaging economic and monetary policymakers today all over the world. This is perhaps safer since there are no clear answers and hence one is free to speculate!

We are living in interesting times. Oil prices have been rising at a fast pace over the past two years. The IMF, in September 2004, had used an implicit projection of oil prices at US\$37.25 per barrel in 2004. Now, however, the forecast for international crude prices—which could pose the biggest risk to global growth—has been revised upward by 20.5 percent from the April 2005 projections, and the projection for growth in world

*Keynote address by the Deputy Governor, Reserve Bank of India, at the conference, “China’s and India’s Changing Economic Structures: Domestic and Regional Implications,” organized by the IMF, the China Society of Finance and Banking, and the Stanford Center for International Development, in Beijing, October 27–28, 2005. The assistance of M.D. Patra, Sanjay Hansda, and Partha Ray in the preparation of this paper is gratefully acknowledged. The author also wishes to thank, without implicating, T.N. Srinivasan, Raghuram Rajan, and Ashoka Mody for their comments on an earlier version of the paper.

trade has been cut by half a percent. Unlike earlier forecasts, when the oil price rise was expected to be relatively temporary, international opinion now is that it is more permanent than temporary. Yet the IMF's September 2005 *World Economic Outlook* (WEO) has retained the global output growth forecast at 4.3 percent, a level higher than average world output growth through the 1990s and until 2004, though it admits that risks are still slanted to the downside. In our own two countries there is, as yet, no sign of a slowdown; in fact, just earlier this week, we at the Reserve Bank of India revised our growth forecast for 2005–06 (that is, April 2005–March 2006) for policy purposes from “around 7 percent” in April 2005 to “7.0 percent–7.5 percent” now. And we are among the countries that are said to be more energy inefficient and dependent on oil imports.

One also sees little impact of the current oil price episode on global financial markets. Undisturbed by the somewhat slowing global growth scenario, financial markets have remained generally benign, with low interest rates and healthy stock markets. Moreover, corporate balance sheets in most countries have been exhibiting continuous improvement with no pause in the determined efforts observed toward restructuring and productivity-promoting cost-cutting activities. This is certainly true in India and presumably in China as well. In fact, this financial strengthening of the real corporate sector is perhaps underpinning the continued health of the financial system and is emerging as a cushion against medium-term risks and uncertainties. I am saying all this against the backdrop of the difficulties that we all went through in the previous oil price shock episodes of 1973–74, 1979–80, and 1989–90.

Besides, the macroeconomic imbalances—a key risk to global growth—have actually increased, with the current account deficit of the United States poised to cross 6 percent of GDP and its fiscal deficit 3.7 percent of GDP in 2005; surpluses are correspondingly set to rise in Japan, China, oil exporters in the Middle East, emerging Asia (excluding India, where current account deficits have returned), and the Commonwealth of Independent States countries. Yet financial conditions have enabled a smooth financing of these imbalances, with growth and interest rate differentials continuing to fuel investors' appetite for the United States markets.

At the same time, the same favorable financial developments have caused large imbalances to grow inward, particularly in the form of household debt and increases in housing prices, and this is seen as heightening risks for the future. Low bond yields and flat yield curves have triggered an ever-widening search for yields, aided by the compression of credit risk spreads. This has, perhaps, increased the risks embedded in the financial system, and financial markets could become vulnerable to corrections.

Questions regarding the sustainability of current global growth, overall credit quality, and the state of the household sector's finances have begun to arise. The same set of factors, however, have improved the access of emerging market economies to financial markets, with the low spreads of their bond yields enabling the financing of strong growth with moderate inflation, strengthening of fiscal and balance of payments positions, and the accumulation of foreign exchange reserves.

Perhaps the greatest puzzle in current global developments is the coexistence of abundant liquidity and low consumer inflation.¹ Despite the prolonged period over which monetary policy all over the world has remained accommodative, inflation has been unusually benign, relatively impervious to soaring crude prices and the elevated levels of prices of nonfuel commodities. This phenomenon is unique in recent history.

These are not out-of-this-world paradoxes, and many explanations have been offered. Indeed, they may be characterized as puzzles only because they are in conflict with conventional wisdom, or because the traditional models that calibrated our thinking are no longer valid. It is in this context that I shall focus on some of these apparent puzzles and their explanations in the present lecture. I am particularly concerned with possible erosion of the efficacy of traditional price-related policy measures, that is, the exchange rate and interest rate mechanisms, in restoring macroeconomic balances.

Some Apparent Puzzles

From the various puzzles that monetary policymakers routinely face, let me focus on six issues, namely, (1) the dollar's appreciation despite increasing U.S. twin deficits, (2) soaring oil prices accompanied by strong global growth, (3) long-term bond yields falling in the presence of Federal Fund rate hikes, (4) low consumer inflation in the presence of abundant liquidity and increasing asset prices, (5) strong global growth accompanied by a slowdown in global saving and investment rates, and (6) the phenomenon of low inflation despite currency depreciation.

¹As per McKinsey's Global Survey of Business Executives for the quarter ending December 2005, "Nearly half of the surveyed executives around the world expect the inflation rate in their countries to rise by at least one percentage point over the next year, while more than half say they won't be able to raise prices" (McKinsey & Company, 2005).

Increasing U.S. Twin Deficits and the Appreciating Dollar

Over the past two decades, the United States has transformed itself from the world's largest creditor into the world's largest debtor nation. At the end of 2004, U.S. debt to the rest of the world exceeded its assets by about US\$2.5 trillion, that is, 21 percent of its GDP. Driving this massive mismatch is the quantum jump in the current account deficit during 2000–04 from the level during 1995–99, largely resulting from the mounting fiscal deficit and falling private savings. The U.S. macro imbalances are set to increase following the disaster brought by Hurricanes Katrina and Rita. The IMF's September 2005 *WEO* projects the U.S. current account deficit will rise to over 6 percent of GDP in 2005, driven by higher oil prices and strong domestic demand (Table 9.1).

What is the solution to these persistent and mounting imbalances? Conventional wisdom would suggest that the existence of these twin deficits and little expectation of improvement at present would have led to a sizable market-led adjustment of the dollar against other major currencies. The dollar, which did encounter depreciation in terms of the nominal effective exchange rate in the first half of the 1990s, appreciated in the second half of that decade and did so even in terms of the real effective exchange rate during 2000–04. The process has also continued during the first eight months of 2005 despite the sustained rise in the U.S. current account deficit, offset primarily by depreciation of the euro, pound sterling, and yen. The weakening of the euro against the dollar in recent months possibly reflects the increasingly unfavorable short-term interest rate differentials and growing political uncertainties in Europe following the rejection of the European Union's (EU's) constitution in France and the Netherlands, and post-election problems in Germany. Except in the ASEAN-4, the trade-weighted exchange rates of the U.S. have generally appreciated in emerging markets, particularly in Latin America.² Following the Chinese exchange rate reform on July 21, 2005—including a 2.1 percent revaluation, the adoption of a reference basket of currencies, and a 0.3 percent daily fluctuation range against the dollar—the renminbi has remained broadly unchanged against the dollar. Clearly, the steady/appreciating dollar despite the rising current account deficit constitutes a daunting paradox of the day.

²ASEAN-4 (Association of Southeast Asian Nations—Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam).

Table 9.1. U.S. Twin Deficits, NEER, and REER

	Current Account Balance/GDP (Percent per annum)	General Government Fiscal Balance/GDP (Percent per annum)	NEER (2000 = 100)	REER (2000 = 100)
1990–94	–1.00	–4.88	85.80	87.80
1995–99	–2.06	–1.24	89.78	86.33
2000–04	–4.63	–2.39	97.13	98.09
2005	–6.0 ¹	–3.7 ¹	83.13 ²	87.73 ²

Sources: IMF, *World Economic Outlook (WEO)*, and *International Financial Statistics (IFS)*; and World Bank, World Development Indicators Online.

¹WEO's projection.

²Pertains to August 2005.

Strong Global Growth Despite Soaring Oil Prices

After the oil shocks of the 1970s, the first half of the 1990s witnessed deflationary pressures in terms of real oil prices. However, the lull in oil prices turned out to be short-lived. Soaring oil prices have since characterized the 2000–04 period. While the IMF's real oil price index at 277 in 2005 so far remains below the peak of 452 witnessed in 1980, oil prices are scaling new heights every day, driven mainly by growing or unchanged demand, low inventories, lack of spare capacity, and geopolitical tensions and uncertainties. Although the accommodating global monetary conditions have placed oil futures in the class of sought-after financial assets, the persisting high levels of oil prices increasingly indicate that a large part of the oil price hike has become permanent (Table 9.2).

The worrisome news on oil continues to project the image of a world besieged with higher oil prices, bringing painful memories of the oil shocks of the 1970s to the fore. Yet global growth remains remarkably on track. Indeed, the growth momentum has only improved from the second half of the 1990s to the first half of this decade. The growth in world trade volume (goods and services) has also recovered after some slowdown in 2001 and 2002. The September 2005 *WEO* has, thus, retained its April estimate for 2005 global growth at 4.30 percent. What is all the more surprising is the increasing business confidence (for example, in the United States) coupled with high corporate profit growth during 2002–05, much higher than in the roaring 1990s.

Falling Long-Term Bond Yields in the Presence of Fed Fund Rate Hikes

With the economic expansion continuing strongly and risks shifting toward possible inflationary pressures, the U.S. Federal Reserve

Table 9.2. Global Growth, Business Confidence, Corporate Profit Growth, and Oil Price Inflation

	World Economic Growth (Percent per annum)	Growth in World Trade Volume (Goods and services) (Percent per annum)	U.S. Business Confidence Index	U.S. Corporate Profit Growth (Percent per annum)	WTI Oil Prices (US\$ per barrel)
1990–94	2.62	5.57	—	7.15	20.44 (–1.86)
1995–99	3.69	7.46	54.63 ¹	7.57	18.95 (4.67)
2000–04	3.84	6.34	60.50 ¹	6.88	30.97 (19.36)
2000	4.71	12.44	51.66	–3.91	30.32 (58.17)
2001	2.44	0.08	43.91	–6.19	25.87 (–14.67)
2002	2.95	3.41	52.37	15.49	26.12 (0.95)
2003	3.97	5.44	53.31	16.42	31.10 (19.07)
2004	5.13	10.33	60.50	12.57	41.45 (33.29)
2005	4.30 ²	7.00 ²	54.45 ³	16.00 ⁴	56.01 (35.14) ²

Sources: IMF, *WEO*, and *IFS*, IMF; U.S. Federal Reserve; and Bureau of Economic Analysis, U.S.

Notes: The overall U.S. Business Confidence Index, referred to as the U.S. Business Conditions Index, ranges between 0 and 100. An index greater than 50 indicates an expansionary economy over the course of the next three to six months. (Taken from *WEO*, originally compiled by the Institute for Supply Management, U.S.) Figures in parentheses are annual percentage changes.

¹Pertains to the year 1999 and 2004, respectively.

²*WEO*'s projection for 2005 over 2004.

³August 2005.

⁴2005-Q2, year-on-year.

Board (Fed) has started reducing the degree of policy accommodation and raised the policy rate 11 times since June 2004 by a “measured” 25 basis points each time, with indications of further such hikes. While the prime lending rate of banks in the United States has responded to every hike in the target federal fund rate, the long-term interest rates that are set by financial markets continue to remain unusually low—what former Federal Reserve Chairman Alan Greenspan has referred to as a “conundrum.” The best way to summarize this issue is to quote from Greenspan:

In this environment, long-term interest rates have trended lower in recent months even as the Federal Reserve has raised the level of the target federal funds rate by 150 basis points. This development contrasts with most experience, which suggests that, other things being equal, increasing short-term interest rates are normally accompanied by a rise in longer-term yields. For the moment, the broadly unanticipated behavior of world bond markets remains a conundrum. Bond price movements may be a short-term aberration, but it will be some time before we are able to better judge the forces underlying recent experience. (Greenspan, 2005b)

Table 9.3. Federal Funds Rate, Private Lending Rates (PLR), and U.S. Government Securities (GSec) Yield*(In percent)*

		Federal Funds Rate	U.S. PLR	10-Yr. GSec Yield
2004	May	1.00	4.00	4.72
	Jun	1.03	4.01	4.73
	Jul	1.26	4.25	4.50
	Aug	1.43	4.43	4.28
	Sep	1.61	4.58	4.13
	Oct	1.76	4.75	4.10
	Nov	1.93	4.93	4.19
	Dec	2.16	5.15	4.23
2005	Jan	2.28	5.25	4.22
	Feb	2.50	5.49	4.17
	Mar	2.63	5.58	4.50
	Apr	2.79	5.75	4.34
	May	3.00	5.98	4.14
	Jun	3.04	6.01	4.00
	Jul	3.26	6.25	4.18
	Aug	3.50	6.44	4.26
	Sep	3.62	6.59	4.20

Source: U.S. Federal Reserve.

Note: U.S. PLR is the rate posted by a majority of top 25 (by assets in domestic offices) insured U.S.-chartered commercial banks. It is one of several base rates used by banks to price short-term business loans.

Given the understanding that the long-term yield tracks the behavior of current and expected inflation (Fama, 1986) along with expected growth performance of the economy in terms of productivity of capital (Mishkin, 1991), the current behavior of yield defies conventional wisdom (Table 9.3).

A host of hypotheses have been put forward as an explanation for the conundrum, among other things: easy liquidity conditions; a glut in global savings over investment (Bernanke, 2005); the foreign exchange reserves buildup in the Asian economies; the gradual expected pace of U.S. tightening made possible by a high level of monetary credibility; the fact that markets may have become deeper, thereby improving their risk-bearing capacity; and low expected inflation, low term/risk premiums, and a flight to quality after the dot-com crash in 2000. Meanwhile, the low bond yields and flat yield curves have triggered an ever-widening search for yields, aided by the compression of credit risk spreads. The behavior of long-term rates to the short-term policy rates is, thus, posing a threat to the traditional transmission channels of monetary policy, looming large on the efficacy of monetary management worldwide.

Low Consumer Inflation in the Presence of Abundant Liquidity and Increasing Asset Prices

The global economy is currently awash with liquidity. Exactly seven years ago, the U.S. Fed responded to the “low probability but highly adverse events” (Blinder and Reis, 2005) leading up to the Russian debt default and the Long-Term Capital Management collapse with an emergency cut in interest rates in September, October, and November 1998. Even though the reduction was just 25 basis points each month, it shifted the monetary policy stance to accommodation. Once again, prompted by a deflation scare, the federal funds rate was cut over a 42-month stretch from December 2000 to June 2003, to a 45-year low of 1 percent, taking the real federal funds rate into negative territory. Thus, real policy rates were effectively zero or negative until very recently in the United States and remain below the “Wicksellian” long-term neutral rate. Real policy rates in the United Kingdom and euro area are also generally hovering around zero. Coupled with benign policy rates, money supply growth, which increased in the second half of the 1990s in the United Kingdom, continued at the elevated level during 2000–04. Similarly, money supply growth went up in the euro area in 2000–04, from a lower level in 1995–99. Even in the United States, where money supply has lost much of its charm as an information variable, there has been accelerated money supply growth during 1995–99, which has largely been sustained during 2000–04 (Table 9.4).

The policy accommodation pursued until recently by the United States has had a global impact, flooding the rest of the world with an abundance of liquidity (Table 9.5). Low interest rates in the United States have encouraged capital to flow into emerging market economies. For the countries that prefer some form of managed parity against the dollar, this inflow of capital has resulted in a large buildup of foreign exchange reserves and excessive domestic liquidity, amplifying the Fed’s policy stance. Yet, the global supply of dollars reflected in the so-called super money (that is, the sum of cash and banks’ reserve holdings at the Fed plus foreign reserves held by central banks around the world) is estimated to have grown by about 25 percent a year in the past couple of years.

The global glut of liquidity has facilitated highly leveraged positions, debt-financed consumption, and booming credit growth, raising financial stability concerns. Although equity prices shot up in the second half of the 1990s, they came down subsequently in the wake of the dot-com crash. Facilitated by the policy accommodation in the United States and the subsequent easing in the rest of the world, housing prices have now witnessed a boom during 2000–04 all over the world.

Table 9.4. Policy Rates and Growth in Money Supply, Credit, Asset Prices, Consumer Prices, and Producer Prices*(In percent)*

	Variable	1990–94	1995–99	2000–04
United States	Policy rate	4.9	5.4	2.8
	Money supply	1.4	8.5	7.6
	Reserve money	7.8	8.6	3.7
	Credit	3.0	7.5	7.0
	Equity prices (Dow Jones)	7.2	24.7	–0.3
	Housing prices	–1.9	1.9	5.8
	Producer prices	1.4	0.8	3.2
	Consumer prices	3.6	2.4	2.6
United Kingdom	Policy rate	9.1	6.3	4.6
	Money supply	5.9	7.6	7.6
	Reserve money	4.1	4.6	5.3
	Credit	5.7	7.4	10.3
	Equity prices (FTSE 100)	5.8	17.8	–5.9
	Housing prices	–1.8	4.3	15.3
	Producer prices	4.2	1.6	1.1
	Consumer prices	4.6	2.8	2.4
Euro area	Policy rate		2.8 (1999)	3.0
	Money supply	7.1	4.7	6.9
	Credit		7.9 (1998–99)	5.9
	Equity prices (Xetra DAX)	12.6 (1991–94)	27.8	–5.4
	Housing prices	4.0 (1991–95)	3.5 (1996–2000)	6.8 (2001–04)
	Producer prices	2.3 (1991–95)	1.1 (1996–2000)	1.4 (2001–04)
	Consumer prices	3.2 (1991–95)	1.6 (1996–2000)	2.2 (2001–04)
World	Consumer prices	22.3	8.3	3.8
	Consumer prices— advanced countries	3.8	2.0	1.9
	Consumer prices— emerging markets	12.9	7.6	4.3
	Non-oil commodity prices	–6.1	–4.0	1.9

Sources: IMF, *WEO*, and *IFS*; and relevant central banks' websites.

Note: Policy rates are in percent, and growth rates are annual average growth (in percent).

Perhaps the greatest puzzle in current global developments is the coexistence of abundant liquidity and low consumer inflation.³ Despite the prolonged period over which monetary policy worldwide has remained accommodative, inflation has been unusually benign, impervious to

³Yet another puzzle that remains to be resolved is why liquidity is chasing financial assets rather than consumption.

Table 9.5. Policy Rates, Money Supply Growth, and Producer and Consumer Inflation in Select Emerging Asian Countries*(In percent per annum)*

		1990–94	1995–99	2000–04
China	Bank rate	8.5	7.2	3.0
	Money supply	27.6	19.1	16.2
	Reserve money	28.8	15.5	12.4
	Consumer prices	10.4	5.2	1.0
	Credit	26.5	20.0	16.5
India	Policy rate	11.4	10.6	5.9
	Money supply	18.0	13.3	14.0
	Reserve money	16.9	11.4	11.5
	Producer prices	10.5	5.5	5.2
	Consumer prices	10.2	8.9	3.9
	Credit	13.3	14.9	14.3
Thailand	Discount rate	10.5	10.0	3.5
	Money supply	20.4	9.1	4.6
	Reserve money	16.1	20.4	8.1
	Producer prices	2.8	4.5	3.8
	Consumer prices	4.8	5.1	1.7
	Credit	24.2	8.5	0.8
Malaysia	Money market rate	6.5	6.4	2.7
	Money supply	17.9	14.6	7.3
	Reserve money	21.9	10.9	2.1
	Producer prices	2.5	3.6	3.5
	Consumer prices	3.8	3.5	1.5
	Credit	12.7	16.4	5.9
		(1993–94)		
Korea	Discount rate	6.2	4.2	2.5
	Money supply	18.2	7.2	9.2
	Reserve money	14.7	4.2	6.7
	Producer prices	3.1	4.4	1.9
	Consumer prices	7.0	4.4	3.2
	Credit	18.1	17.3	12.0
Philippines	Discount rate	12.0	11.5	8.0
	Money supply	14.6	20.3	7.8
	Reserve money	13.8	15.5	1.6
	Producer prices	4.1	6.0	9.6
		(1994)		
	Consumer prices	11.1	7.0	4.6
Indonesia	Credit	40.2	19.8	6.5
	Discount rate	14.4	19.6	12.2
	Money supply	16.0	22.5	17.0
	Reserve money	16.9	41.7	15.3
	Producer prices	5.9	28.1	8.0
	Consumer prices	8.6	20.5	8.0
	Credit	27.4	29.0	10.6

Source: IMF, *IFS*.

Note: Policy rates are in percent, and growth rates are annual average growth (in percent).

soaring oil prices and the elevated prices of nonfuel commodities, particularly ferrous and nonferrous metals. Whereas the industrial countries have maintained inflation pressures at low and stable levels during both 1995–99 and 2000–04, there has been a noticeable decline in inflation during 2000–04 in emerging market economies. Such low levels of inflation have not been witnessed since the pre-war period when the discipline of fixed exchange rates under the gold standard ensured that prices were roughly stable and episodes of deflation were not uncommon. The current phenomenon is unique in recent history, prompting some to visualize the death of inflation, though there have been some signs of its resurrection in the current year.

Slowdown in Global Saving and Investment Versus Strong Global Growth

Global saving and investment rates have declined in recent years. Global saving increased by a fraction in 1995–99, from its 1990–94 level, before declining in 2000–04 (Table 9.6). Although saving as a percentage of GDP declined in the United States, United Kingdom, and European Monetary Union (EMU) in 2000–04, from the 1995–99 level, it increased in China and India. The decline of savings in the industrial countries could have its demographic roots in an aging population weighted against higher saving (Mohan, 2004c).

Meanwhile, the world investment rate declined steadily during the period, ignoring the signals of softening interest rates. Investment in the United States, United Kingdom, and EMU fell during 2000–04 with increasing risk aversion on the part of the corporates in the wake of the dot-com and other financial crises in 1990s. The investment rate improved in China during 2000–04, whereas it declined in India during 2000–03.

Notwithstanding the declining saving and investment rates, global growth has continued its surge from period to period. Although consumption has arguably played a critical role in the industrial countries' growth momentum, exports might have played a similar role in the emerging markets. The sustenance of consumption as opposed to investment-led growth has thus given rise to new controversies on present versus future allocation of resources and also on the relevance of overlapping generation outlooks.

Low Inflation Despite Currency Depreciations

Traditionally, the degree of exchange rate pass-through, that is, the speed and extent of transmission of exchange rate movements into domes-

Table 9.6. Global Savings and Investment

	1990–94	1995–99	2000–04
GDP growth (percent)			
World	2.6	3.7	3.8
European Monetary Union (EMU)	1.9	2.4	1.7
United States	2.4	3.9	2.8
United Kingdom	1.3	3.0	2.6
India	4.9	6.5	5.7
China	10.7	8.8	8.5
Savings (as percent of GDP)			
World	22.0	22.3	21.4
EMU	22.5	22.8	22.5
			(up to 2003)
United States	16.2	17.6	15.2
			(up to 2002)
United Kingdom	15.8	16.6	14.2
			(up to 2003)
India	22.4	21.7	22.2
China	39.7	42.1	43.6
Investment (as percent of GDP)			
World	23.0	22.7	21.6
EMU	22.0	20.8	20.7
			(up to 2003)
United States	17.1	19.3	19.1
			(up to 2002)
United Kingdom	17.1	17.3	16.9
			(up to 2003)
India	22.9	23.2	22.7
			(up to 2003)
China	38.0	38.8	40.8

Sources: IMF, WEO; and World Bank, World Development Indicators Online.

tic prices, used to be an important consideration for the conduct of monetary policy, leading to the alleged “fear of floating” on the part of the emerging economies (Calvo and Reinhart, 2002). However, there is now increasing evidence that exchange rate pass-through to domestic inflation has tended to decline since the 1990s across a number of countries. For example, inflation turned out to be largely immune and insensitive—barring the sole exception of Indonesia—to the wild volatility and currency depreciation witnessed in Korea, Thailand, the Philippines, and Malaysia in the aftermath of the Asian financial crisis (Table 9.7).

Similarly, the dollar’s substantial depreciation against the euro during 2002–04 has not led to inflationary pressures in the United States. With inflation standing rock steady even in the face of exchange rate volatility, the traditional channels of current account adjustment have failed to work toward restoring the external balances in a sustainable manner. Further,

Table 9.7. Exchange Rates and Consumer Price Inflation—Select Asian Countries During the Crisis

	Year	1996	1997	1998	1999	2000
Korea	Exchange rate	805 (4.3)	951 (18.3)	1,401 (47.3)	1,189 (-15.2)	1,131 (-4.9)
	CPI inflation	4.98	4.40	7.54	0.83	2.25
Thailand	Exchange rate	25 (1.7)	31 (23.8)	41 (31.9)	38 (-8.6)	40 (6.1)
	CPI inflation	5.83	5.60	8.07	0.30	1.57
Philippines	Exchange rate	26 (1.9)	29 (12.4)	41 (38.8)	39 (-4.4)	44 (13.1)
	CPI inflation	7.51	5.59	9.27	5.95	3.95
Malaysia	Exchange rate	2.52 (0.5)	2.81 (11.8)	3.92 (39.5)	3.80 (-3.2)	3.80 (0.0)
	CPI inflation	3.49	2.66	5.27	2.75	1.54
Indonesia	Exchange rate	2,342 (4.2)	2,909 (24.2)	10,014 (244.2)	7,855 (-21.6)	8,422 (7.2)
	CPI inflation	7.97	6.23	58.39	20.49	3.72

Sources: IMF, *WEO* and *IFS*.

Notes: Exchange rates are national currencies per U.S. dollar. Figures in parentheses are the percentage changes over the previous year. CPI inflation rates are annual percentage changes.

the weakening of the dollar against the euro has not brought about substantial changes in the trade pattern between the United States and the euro area. On the contrary, U.S. imports from the euro area surged ahead during the phase of the dollar's depreciation against the euro while U.S. exports to the euro area did not increase, at least initially (Table 9.8).

Possible Explanations

What factors explain these seeming puzzles and counterintuitive relationships across a large set of variables? What really explains the divergence between the producer price index (PPI) and consumer price index (CPI) and the imperviousness of consumer prices to liquidity conditions? Is the received wisdom on the relationship between money, output, and prices undergoing yet another paradigm shift? Has the inflation process changed at its core? Country experiences present a wide diversity of circumstances, producing a variety of outcomes. This makes generalizations difficult and even adventurous. Central bankers are not known to be adventurous, but this opportunity of delivering a dinner speech has emboldened me.

Table 9.8. Exchange Rate, Trade, and Consumer Price Inflation—Recent Trends in the United States

Year	2000	2001	2002	2003	2004
NEER (2000 = 100)	100	105.94	104.28	91.46	83.97
REER (2000 = 100)	100	103.61	105.18	95.56	86.1
Exchange rate (US\$ per euro)	0.924 (-13.4)	0.896 (-3.0)	0.944 (5.4)	1.131 (19.8)	1.243 (9.9)
CPI inflation (percent)	3.38	2.83	1.59	2.27	2.68
Imports from euro area (US\$ million)	226,901 (13.42)	226,568 (-0.15)	232,313 (2.54)	253,042 (8.92)	281,959 (11.43)
Exports to euro area (US\$ million)	168,181 (8.63)	161,931 (-3.72)	146,621 (-9.45)	155,170 (5.83)	172,622 (11.25)

Sources: IMF, *WEO* and *IFS*; and U.S. Census Bureau.

Note: Figures in parentheses are the percentage changes over the previous year.

As a central banker, I would like to subscribe to the objective of low and stable inflation in the conduct of monetary policy. Reforms in the manner in which monetary policy is set currently, and the institutional changes that have occurred in the 1990s, have undoubtedly enhanced the reputation of monetary authorities in terms of delivering price stability. The current trend of increasingly independent central banks, enhanced transparency, and greater accountability has, in fact, improved public credibility in these institutions. The institutional strengthening of central banks has coincided with the worldwide thrust on fiscal consolidation and structural reforms in the labor and product markets, which have also worked toward attaining price stability. Specified fiscal rules such as those under the Maastricht Treaty and the Stability and Growth Pact in the euro area have been emulated the world over, charting out explicit road maps for fiscal consolidation. Thus, fiscal deficits in emerging market economies are now less than half of their levels in the 1970s and 1980s. It has been estimated that inflation could have declined by 5–15 percentage points on account of lower fiscal deficits in emerging market economies (IMF, 2002). So there are some broad structural fiscal reasons for the worldwide decline in inflation.

Globalization has arguably unleashed the most significant anti-inflationary forces. Lower trade barriers, increased deregulation, innovation, and competition all over the world have led to exponential growth

in cross-border trade, with world trade racing ahead of output. With the rapid expansion in tradables, domestic economies are, therefore, increasingly exposed to the rigors of international competition and comparative advantage, reducing unwarranted price markups (Greenspan, 2004a). The competition among nations to attract and retain factors of production has also induced governments to reduce entry barriers for new productive activities. Intensified competition in the domestic economy, which has now become part of the global marketplace, has rendered prices more flexible, containing the impact of unanticipated inflation on output. This has reduced the incentive for monetary authorities to raise output above the potential (Rogoff, 2003). Increasingly, a firm or country that can produce for global markets, with the greatest cost efficiency, sets global prices. Currently, China is perhaps in such a position but other competitors are not far behind. It needs to be recognized, however, that globalization may not continue to maintain its tempo indefinitely into the future.⁴

An important contributor to low inflation has also been the productivity growth in a number of sectors, partly owing to information technology (IT) investments combined with restructuring. Even the services sector, which was otherwise believed to lag in productivity vis-à-vis industry in view of its “cost disease” syndrome (*à la* Baumol), has witnessed impressive productivity growth with increased penetration of IT in most services activities. Productivity growth has been particularly discernible in the United States from the mid-1990s, with continuing signs of sustenance in the next decade (Oliner and Sichel, 2002). Although productivity growth in the euro area may not have been as high as in the United States, the disinflationary effects of productivity growth in one region get transmitted across borders through increased competition in a globalized world (Table 9.9).

The impact of cross-country integration is also at work in the labor market. An economy that is open to migrant labor exhibits a different inflationary process from one that is not. An increase in spending raises the pressure of demand on supply and leads to upward pressure on wages and prices. But if the increased demand for labor generates its own supply in the form of immigrant labor, then the link between demand and prices is broken, or at least altered. Indeed, in an economy that can call

⁴It is instructive to turn to former Chairman Greenspan, who said, “We have not experienced a sufficient number of economic turning points to judge the causal linkages among increased globalization, improved monetary policy, significant disinflation and greater economic stability” (Greenspan, 2004a).

Table 9.9. Productivity in Manufacturing*(Annual percentage change)*

	1987–96	1997–99	2000–04
Advanced economies	3.1	3.37	3.76
United States	2.8	3.97	4.96
United Kingdom	3.4	3.47	4.42
Euro area	...	4.13	2.88
Japan	2.7	1.57	3.62

Source: IMF, *WEO*.

Note: Productivity in manufacturing refers to labor productivity, measured as the ratio of hourly compensation to unit labor costs.

on unlimited supplies of migrant labor or can outsource, the concept of output gap may not be that meaningful (King, 2005). The inflow of immigrant labor in both the United States and the United Kingdom has arguably led to a diminution of inflationary pressure in the labor market in these countries (Table 9.10).

The expanding canvas of knowledge has also had its impact in the form of low and stable inflation. The technological advances in architecture and engineering as well as the development of lighter but stronger materials have resulted in “downsized” output, evident in the huge expansion of the money value of output and trade but not in tonnage. As a consequence, material intensity of production has declined, reflecting “the substitution, in effect, of ideas for physical matter in the creation of economic value” (Greenspan, 1998). This has contributed to the secular decline in commodity prices, notwithstanding short spells of spikes in these prices. The increasing commodity price volatility around the declining trend has, however, engaged monetary policy attention in the short run (Mohan, 2004a). The declining share of commodity prices in final goods prices has been an important factor, leading to a divergence between PPI and CPI. Thus even substantial increases in input prices no longer lead to corresponding increases in output prices and are further muted by the forces of global competition.

Thus the persistence of low and stable inflation worldwide despite considerable monetary accommodation in recent years can be explained by invoking these new economic developments in the real economy. The role of central banks in the recent containment of inflation can, at best, be seen to have limited applicability.

For industrial countries, the exchange rate pass-through to consumer price inflation has been found to have almost halved in the 1990s compared to the pre-1990s period (McCarthy, 2000; and Gagnon and Ihrig,

Table 9.10. Net Immigration to the United States and the United Kingdom

	1985–90	1990–95	1995–2000
United States	3,775,000	5,200,000	6,200,000
United Kingdom	104,310	380,840	574,470

Source: World Bank, World Development Indicators Online.

Note: Net immigration is the number of immigrants less the number of emigrants, including both citizens and noncitizens.

2001).⁵ Furthermore, the pass-through has reportedly declined more in developing countries in the 1990s than in the advanced economies (Frankel, Parsley, and Wei, 2005). Financial innovations such as the availability of hedging products have also lowered the degree of pass-through by enabling exporters and importers to ignore temporary shocks and set stable product prices despite large currency fluctuations—witness the lack of price change in BMWs, Mercedes, and Porsches in the United States despite substantial dollar depreciation with respect to the euro. The import composition of the industrial countries is found to have shifted in favor of sectors with low pass-through, such as the manufacturing sector. There is also a view that, in some cases, the low observed pass-through might be due to the disappearance of expensive goods from consumption and their replacement by inferior local substitutes (Burstein, Eichenbaum, and Rebelo, 2003)—that is, no more Mercedes and BMWs!

The increasing share of nontradables in GDP has also worked toward containing the exchange rate pass-through. Nontradables generally approximated by services have increased their share in all major industrial countries, as well as in China and India. As populations age, demand moves more in favor of services than for goods. Thus, the aging population in industrial countries has provided much of the growth impetus for services. With the shift in demand composition in favor of services, it is no wonder the extent of exchange rate pass-through, which works primarily through tradables, has been limited (Table 9.11).

The role of exchange rate movements or policy-induced adjustments in influencing the behavior of economic agents through the domestic price

⁵Banik and Biswas (2006) have estimated that for a 100 percent appreciation of the Japanese yen against the U.S. dollar, Japanese exporters increase their local currency price by about 13 percent for small automobiles, and around 39 percent for medium-size automobiles, whereas Korean exporters increase their price approximately by 30.37 percent for medium-size automobiles in response to 100 percent appreciation of Korean currency against the U.S. dollar.

Table 9.11. Share of Services in GDP*(In percent)*

Country	1990–94	1995–99	2000–04
United States	71.71	72.89	74.65 ¹
United Kingdom	65.55	67.91	71.62 ²
Japan	60.26	64.92	67.45 ³
Euro area	64.25	67.24	69.21 ²
China	32.74	31.36	33.72
India	42.16	45.14	50.44

Source: World Bank, World Development Indicators Online.

¹Up to 2001.²Up to 2003.³Up to 2002.

mechanism appears to have been significantly truncated. If an exchange rate depreciation (appreciation) does not appreciably increase (decrease) domestic prices of imported goods, there would be little reason to expect a reduction (increase) in demand for imported products. Hence, small exchange rate changes can scarcely be expected to help significantly in effecting changes in the current account.

There has been reduced volatility of GDP growth in most G-7 countries over the past three decades, coinciding with growing integration and synchronization of business cycles (Mohan, 2004a). The standard deviation of U.S. GDP growth during 1984–2002 was two-thirds of that during 1960–83. This could have also contributed to lowering inflation (Stock and Watson, 2003). The growing share of services (a sector less susceptible to volatility), better inventory management, and easy access to credit with financial deepening have also brought down the volatility of GDP growth and, therefore, expectations of future inflation.

The global financial landscape has undergone a sea change over the past couple of decades, characterized by increasing liberalization and growing completeness of markets and institutions. The pursuit of flexible exchange rates for the major currencies since the 1970s has made the spot and forward foreign exchange markets strikingly efficient in tracking the expectations of economic agents. Also, the broadening and deepening of the secondary and derivatives markets for government and other fixed income securities has added to the flows of market information. With the onset of demystification and decomposition of risks, there has been a deluge of new financial products, enabling economic agents to manage, hedge, or lay off risks. Simultaneously, there has been discernible improvement in the institutional infrastructure—legal or informational—providing a durable basis for efficient functioning of

the financial markets. With the arrival of options pricing in the early 1970s, more and more complex financial products are hitting the market every day. Financial markets—at least in the industrial countries—have, thus, transformed themselves into super-efficient vehicles for allocating resources and spreading risks across sectors, time, and space. The lower costs of financial intermediation, the greater scope for risk spreading, and the reduced reliance on any individual institution or market channel for the intermediation of savings and investment have spurred financial activities undertaken by households, businesses, and governments. Thus, the global financial system appears to be more robust and resilient to financial shocks emanating from individual countries. Certainly, the increasing confidence of the financial system has its reflection in the sustained global growth and taming of inflation all over world (Blinder and Reis, 2005). The growing sophistication of financial markets has therefore, paradoxically, reduced the power of the price mechanism in bringing about changes in a desired policy direction.

It is, therefore, possible that such developments in financial markets have had the effect of reducing risks across the board, both spatially and temporally. Such developments have received further support from the increased focus of central banks on inflation containment and stability, along with overall financial stability. The accompanying institutional changes, mainly the increased acceptance of central bank autonomy, have probably contributed to enhancement of their credibility. Thus there could be a secular decline in risk perception and in medium- and long-term inflationary expectations, thereby reducing the neutral real interest rate. If these conjectures have some element of validity, the effect of changes in short-term policy rates on long-term yields would be muted, as seems to have happened in the United States. Paradoxically then, the central banks' own success could have blunted the efficacy of their most powerful policy instrument: the short-term interest rate.

As regards the muted impact of soaring oil prices on the general price level and economic activities, it needs to be recognized that, unlike in the past when oil price surges were driven by supply shocks, the current bull market in oil is mainly the result of a perceived secular increase in demand emanating from accelerated growth in our countries, which, moreover, is expected to continue in the foreseeable future. The sharp rise in oil prices is perceived to have been triggered by sustained global growth (particularly in the United States) among developed countries, and by increasing contributions from the emerging market economies that tend to demand relatively more oil than the developed world for a similar expansion in output. The higher oil prices of the 1970s brought to an abrupt end the

extraordinary period of growth in U.S. oil consumption. Between 1945 and 1973, consumption of petroleum products in the United States rose at a startling 4.5 percent average annual rate, well in excess of real GDP growth. However, between 1973 and 2004, oil consumption in the United States grew, on an average, only 0.5 percent a year, far short of the rise in real GDP (Greenspan, 2005a). The mandated fuel-efficiency standards for cars and light trucks coupled with the imports of small, fuel-efficient Japanese cars and the increasing share of the services sector in GDP induced slower growth of gasoline demand in the United States. Thus, while the oil intensity of output has fallen in the industrial countries—for example, from the peak of 0.19 kg per real dollar in the United States in 1970 to 0.09 kg per real dollar in 2000—the relatively slower decline for developing countries such as China and India has been neutralized by the pace of the rise in incomes (Table 9.12).

Unlike the oil shocks of the 1970s, when the oil surplus with the oil-exporting countries mainly found its way out into conspicuous consumption, this time around, the oil-exporting countries seem to be doing a much better job of recycling the oil surpluses into the global economy. For example, the OPEC countries are running only a marginal trade surplus with China because they are importing a range of goods from China, which is using more oil to manufacture those goods. Oil-exporting countries have also been active in the international investment arena, using their export revenue to buy stocks and bonds in various countries, thereby keeping the global cost of capital low.

Furthermore, the self-equilibrating demand-supply mechanism in the face of rising oil prices has been kept in abeyance in a number of countries. Although the current oil cycle has witnessed a doubling in the price of oil over the past three years, on average only a third of the price increase has been passed on to end users. While Europe and Japan have cut down high taxes on oil consumption to cushion the impact of higher oil prices, governments in many developing countries are subsidizing oil prices in recognition of the lower resilience of low-income people to sudden price shocks. Greenspan (2005a) notes, “But if history is any guide, should higher prices persist, energy use will over time continue to decline, relative to GDP. Long-term demand elasticities have proved noticeably higher than those that are evident in the short term.” Nevertheless, since oil use is only two-thirds as important an input into world GDP as it was three decades ago, the effect of the current surge in oil prices, though noticeable, is likely to prove significantly less than in 1970s.

The entry into the world economy of the erstwhile centrally planned economies, in general, and China, in particular, has arguably constituted

Table 9.12. Oil Intensity in Select Countries (Using Constant US\$ GDP)
(In kilograms of oil per real US\$)

	1970	1980	1990	2000	2003
World	0.18	0.17	0.13	0.11	0.11
United States	0.19	0.15	0.11	0.09	0.09
United Kingdom	0.14	0.09	0.07	0.05	0.05
Japan	0.11	0.09	0.06	0.05	0.05
France	0.15	0.13	0.08	0.07	0.07
Germany	0.15	0.12	0.08	0.07	0.07
India	0.17	0.21	0.22	0.23	0.21
China	0.30	0.52	0.27	0.21	0.19
Malaysia	0.24	0.32	0.29	0.23	0.22
Indonesia	0.27	0.37	0.30	0.33	0.32
Philippines	0.27	0.23	0.20	0.22	0.18
Korea	0.14	0.20	0.17	0.20	0.18
Thailand	0.27	0.31	0.25	0.28	0.28
Brazil	0.14	0.14	0.13	0.14	0.13
Mexico	0.11	0.14	0.16	0.15	0.14

Sources: British Petroleum, *Statistical Review of World Energy*; and World Bank, World Development Indicators Online.

a massive positive supply shock, raising the world's potential growth, holding down inflation, and triggering changes in the relative prices of labor, capital, goods, and assets (BIS, 2005). In this context, the desirability of positive inflation rates has been questioned in certain circles. In other words, are central banks targeting too high a rate of inflation now that China has joined the global market economy?

During the era of rapid globalization in the late nineteenth century, falling average prices were quite common. This "good deflation," which was accompanied by robust growth, was very different from the bad deflation experienced in the 1930s depression. Today, we could have been in yet another phase of "good deflation," but central banks have favored low but positive interest rates while setting and meeting their inflation targets. Furthermore, China's entry into the global economy has raised the worldwide return on capital. That, in turn, should imply an increase in the equilibrium level of real interest rates. However, central banks are holding real rates at historically low levels and one finds scenarios of excessive credit growth, mortgage borrowing, and housing investment. In this context, however, some estimates suggest that the impact of Chinese exports on global inflation has been fairly modest. China's exports could have reduced (1) global inflation by 30 basis points a year, (2) U.S. import price inflation by 80 basis points (but in view of the United States being a relatively closed economy, the impact on producer and consumer prices

has likely been quite small), and (3) import unit values inflation by 10–25 basis points in the Organization for Economic Cooperation and Development countries (Kamin, Marazzi, and Schindler, 2004). These estimates should be treated as upper bounds, because they ignore the fact that China's rapid export growth has also been associated with equally rapid import growth and China is, therefore, contributing not only to global supply but also global demand. This is also reflected in the sharp rise in global commodity prices beginning in early 2003.

The Way Ahead

Measured by the growth in global credit or property prices, some parts of the world are currently experiencing strong asset price inflation. As with traditional inflation, the surging asset prices distort relative prices and cause a misallocation of resources. For instance, because households think they are wealthier, they spend more and save and invest less. The risk is that as interest rates rise, the fragility of the economic recovery would be exposed and decisions based on cheap credit would look less than wise.

Whereas there is no question about the desirability of maintaining financial stability, monetary policy is often considered to be too blunt an instrument to achieve financial stability, especially to counter threats from asset price misalignments. Indeed, it is often difficult to judge *ex ante* whether asset price misalignments are bubbles or not. Second, even if the bubble is identified on a real time basis, the typical monetary tightening measures such as an increase in interest rates may not be effective in deflating asset price bubbles.

In view of such limitations of monetary policy actions and also the fact that inflationary pressures take more than the usual time to surface in conditions of low inflation, central banks need to be cognizant of emerging financial imbalances by lengthening their monetary policy horizons beyond the usual two-year framework. More important, in view of the possibility of the role of prices becoming muted as an equilibrating mechanism, whether in terms of changes in exchange rates, interest rates, or commodity prices, central banks will have to contribute to financial stability more through prudential regulation and supervision to address the emergence of financial sector excesses or imbalances arising from excess liquidity or other economic imbalances. Indeed, greater transparency and cooperation between monetary policy and supervision is being increasingly recognized, and many central banks are exploring alternatives to traditional monetary policy instruments.

Given the fact that the defining characteristic of the monetary policy landscape is “uncertainty,” no *simple* rule could possibly describe the policy action to be taken in every contingency (Greenspan, 2004b). As a consequence, the conduct of monetary policy has come to involve, at its core, crucial elements of risk management. This conceptual framework emphasizes understanding as much as possible the many sources of risk and uncertainty that policymakers face, quantifying those risks when possible, and assessing the costs associated with each of the risks.

Under these conditions, the separation of the function of financial regulation and supervision from central banking has come up for critical reappraisal. Even though a formal separation of functions may have become more common than in the past, there remains a question of whether that change would make much difference to the practical realities (Goodhart, 1995).⁶ In their quest for financial stability, central banks worldwide have exhibited a variety of responses. Several central banks have been given an explicit mandate to promote financial stability. Another broad category of response has been the constitution of independent departments to oversee financial stability. Illustratively, at the Reserve Bank of New Zealand, the banking supervision department and financial markets department were merged into a Financial Stability Department, headed by a Deputy Governor. In the Netherlands, the newly established Financial Stability Division concentrates experienced staff members from monetary policy, supervision, financial markets, oversight, and research departments. At the European Central Bank, the area concerned with financial stability matters (Prudential Supervision Division) was upgraded to a Directorate (Financial Stability and Supervision), which reports to a member of the Executive Board, and plays a coordination role for euro area/EU financial stability monitoring. Finally, the Bank of England has recently constituted a dedicated Financial Stability Department for oversight of financial stability matters. The transfer of supervisory responsibilities outside the central bank in several countries has also led central banks to focus their attention on systemic issues as reflected in a reorientation of organizational arrangements.

The traditional signals, such as inflation, interest rates, and exchange rates, are today overly anchored whereas the global economy is on a long leash supported by easy finance. However, the increasing potential for

⁶Although the central bank as the lender of last resort needs to play a critical role in avoiding a meltdown in the wake of unexpected “catastrophic” events, there is no consensus on the role of the central bank in dealing with the state of the financial sector and ensuring its efficient and prudent performance.

sharp corrections in the medium term needs to be contained by following a twofold strategy: consumption needs to give way smoothly to investment, with the withdrawal of policy accommodation in industrial countries, and the locus of domestic demand needs to shift from countries running deficits to ones with surpluses so as to reduce the current account imbalances. Obviously, coordinated policy initiatives have to be high on the agenda of the global community for ensuring a smooth transition.

If it is indeed true that the efficacy of price-based indirect monetary policy instruments has become blunted because of central banks' own success in containing inflation and muting expectations, along with the increasing sophistication of financial markets, what alternatives do we now have to address the emerging global imbalances? Ironically, the answer perhaps is that we may need to return to more quantity-based instruments, through either micro actions by central banks or structural actions by the fiscal authorities. Central banks would perhaps have to again resort to activating more detailed prudential, regulatory, and supervisory roles aimed at disciplining different segments of the financial markets. Similarly, if external imbalances are perceived to arise because of fiscal imbalances, they will have to be attacked directly, rather than through increasingly ineffective exchange rate signals.

This finally gives me an opportunity to provide some illustrations from recent monetary management actions in China and India.

The People's Bank of China (PBC) has been trying to contain the possible downside risks by way of a range of direct and indirect instruments. Required reserve ratios have been lifted several times, within the context of a newly differentiated reserve requirement system aimed at better aligning the degree of restraint with the degree of excess credit expansion, institution by institution. Moral suasion has been used with "window guidance" and "credit policy advice" in relation to credit allocation, including warnings on the riskiness of increasing exposures to certain overheated sectors. Benchmark interest rates were increased by about 0.3 percentage points in October 2004. At the same time, the upper limit on interest rates charged by commercial banks was abolished, and the limits for urban and rural cooperatives were increased to 2.3 times the benchmark rate. The interest rates that the PBC charges for providing short-term liquidity support were increased by between 0.3 and 0.6 percentage points, and the PBC was given additional room to adjust these rates according to economic and financial conditions. PBC has also continued its sterilization operations by way of changes in reserve ratios, open market operations, and issuance of central bank bills in the wake of strong foreign exchange inflows. China has also revalued its currency and the renminbi now floats against a bas-

ket of currencies. This policy of having greater flexibility in the exchange rate would allow monetary authorities to guard against the risk of any further increase in inflation in both product and asset markets. Thus, as I understand it, China has used a judicious mix of traditional monetary instruments, along with a selection of detailed prudential and regulatory instruments, to deal with the possibility of overheating in the economy.

In India, monetary management has had to contend with testing challenges on several fronts—an increase in domestic prices in the first half of 2004 driven largely by a sustained increase in international commodity prices including fuel, a large overhang of domestic liquidity generated by capital inflows, and the upturn in the international interest rate cycle. The Reserve Bank of India (RBI) has, therefore, had to strike a fine balance between reining in inflationary expectations, encouraging the impulses of growth, and ensuring financial stability. In early 2004, it was recognized that the finite stock of government paper with the RBI could potentially circumscribe the scope of outright open market operations for sterilizing capital flows that were last carried out in January 2004. The RBI cannot issue its own paper under the extant provisions of the Reserve Bank of India Act, 1934, and such an option has generally not been favored in India. Central bank bills/bonds would impose the entire cost of sterilization on the RBI's balance sheet. Besides, the existence of two sets of risk-free paper—gilts and central bank securities—tends to fragment the market. Accordingly, the liquidity adjustment facility, which operates through repurchases of government paper to create a corridor for overnight interest rates and thereby functions as an instrument of day-to-day liquidity management, had to be relied upon for sterilization as well. Under these circumstances, the Market Stabilization Scheme (MSS) was introduced in April 2004 to provide the monetary authority an additional instrument of liquidity management and sterilization. Under the MSS, the government issues treasury bills and dated government securities to mop up domestic liquidity and parks the proceeds in a ring-fenced deposit account with the RBI. The funds can be appropriated only for redemption and/or buyback of paper issued under the MSS. In addition to an increase in the MSS ceiling; raising of the cash reserve ratio (CRR); lowering of the rate of remuneration on the eligible CRR balances; and hikes in the reverse repurchase rate by 25 basis points each in October 2004, April 2005, and October 2005, several measures were also initiated to maintain asset quality of the banking system at a time of rapid credit growth.

The runaway oil prices riding on the back of growing demand in a cyclical upturn are currently looming large on the pace and pattern of the growth performance in both the economies. Although the economies

have so far absorbed the oil shocks in stride and with surprising resilience, continuing uncertainties on the oil front pose a question mark on their sustained performance. Paradoxically, the reserves buildup with the Asian central banks, with its attendant cost implications, has started slowing down of late with soaring oil prices, cutting into the oil importers' trade and current account surpluses. However, the growing transfer on account of oil portends yet another risk in terms of the sustenance of current accounts. Besides, foreign direct investment and portfolio inflows are also showing signs of fatigue in several Asian countries with the hardening of the rates in the United States. With sudden reversals of expectations, the Asian economies thus run the risk of disruption in their financial and real markets.

Several countries in Asia have followed a relatively flexible exchange rate policy to ensure smooth adjustment along with corrections in the world economy. Such flexibility has served these countries well. However, the world has to guard against any new risks arising out of any large corrections in the exchange rates of the world's major currencies accompanied by rising inflation and interest rates (Mohan, 2004c). First, protectionist tendencies need to be curbed in keeping with the multilateral spirit of trade negotiations. Second, we need to work collectively toward developing a sound international financial architecture, the lack of which, it may be recalled, has led to excessive caution on the part of developing countries in building large reserves. Third, given the need for financial stability alongside monetary stability, central banks need to be cautious before joining the recent trend of separating the monetary and supervisory authorities, particularly in view of the muted responses to the pricing channels of monetary policy. In the recent past, faced with an unprecedented rise in housing credit, the Reserve Bank of India has raised the risk weight of housing loans as a countercyclical action for maintaining the capital-to-risk assets ratio. It is felt that availability of prudential instruments at the disposal of a central bank facilitates its twin tasks of monetary and financial stability.

Bibliography

- Banik, N., and B. Biswas, 2006, "Exchange Rate Pass-Through in the U.S. Automobile Market: A Cointegration Approach," *International Review of Economics and Finance* (forthcoming).
- Bank for International Settlements (BIS), 2005, *Annual Report, 2004–05* (Basel, Switzerland).

- Bernanke, Ben S., 2005, "The Global Saving Glut and the U.S. Current Account Deficit," Sandridge Lecture, Virginia Association of Economics, Richmond, Virginia, March 10.
- Blinder, Alan S., and Ricardo Reis, 2005, "Understanding the Greenspan Standard," paper prepared for the Federal Reserve Bank of Kansas City symposium, Jackson Hole, Wyoming, August 25–27.
- Burstein, Ariel, Martin Eichenbaum, and Sérgio Rebelo, 2003, "Why Is Inflation So Low After Large Devaluations?" Discussion Paper 2003/8 (Budapest: Institute of Economics, Hungarian Academy of Sciences).
- Calvo, Guillermo A., and Carmen M. Reinhart, 2002, "Fear of Floating," *Quarterly Journal of Economics*, Vol. 117 (May), pp. 379–408.
- Fama, E.F., 1986, "Term-Structure Forecasts of Interest Rates, Inflation and Real Returns," *Journal of Monetary Economics*, Vol. 25, No. 1, pp. 59–76.
- Faruquee, Hamid, 2004, "Exchange Rate Pass-Through in the Euro Area: The Role of Asymmetric Pricing Behavior," IMF Working Paper 04/14 (Washington: International Monetary Fund).
- Frankel, Jeffrey, David Parsley, and Shang-Jin Wei, 2005, "Slow Pass-Through Around the World: A New Import for Developing Countries?" NBER Working Paper No. 11199 (Cambridge, Massachusetts: National Bureau of Economic Research).
- Gagnon, J.E., and J. Ihrig, 2001, "Monetary Policy and Exchange Rate Pass-Through," International Finance Discussion Paper No. 704 (Washington: Board of Governors of the Federal Reserve System, July).
- Goodhart, C., 1995, *The Central Bank and the Financial System* (Cambridge, Massachusetts: MIT Press).
- Greenspan, Alan, 1998, "The Implications of Technological Changes," remarks before the Charlotte Chamber of Commerce, Charlotte, North Carolina, July 10.
- , 2004a, "Current Account," remarks before the Economic Club of New York, New York, January 13.
- , 2004b, "Risk and Uncertainty in Monetary Policy," remarks at the Meetings of the American Economic Association, San Diego, California, January 3.
- , 2005a, "Energy," remarks before the Japanese Business Federation, the Japan Chamber of Commerce and Industry, and the Japan Association of Corporate Executives, Tokyo, October 17.
- , 2005b, Testimony before the Committee on Banking, Housing, and Urban Affairs, United States Senate, Washington, February 16.
- International Monetary Fund, 2002, *World Economic Outlook*, World Economic and Financial Surveys (Washington).
- , 2005, *World Economic Outlook*, World Economic and Financial Surveys (Washington).
- Kamin, Steven B., Mario Marazzi, and John W. Schindler, 2004, "Is China 'Exporting Deflation'?" International Finance Discussion Paper No. 791 (Washington: Board of Governors of the Federal Reserve System).

- King, Mervyn, 2005, "The Governor's Speech Salt Mills, Bradford," *Bank of England Quarterly Bulletin* (Autumn).
- McCarthy, Jonathan, 2000, "Pass-Through of Exchange Rates and Import Prices to Domestic Inflation in Some Industrialized Economies," Staff Report No. 111 (New York: Federal Reserve Bank of New York).
- McKinsey & Company, 2005, "Global Survey of Business Executives: Inflation and Pricing," *McKinsey Quarterly* (December).
- Mishkin, F.S., 1991, "A Multi-Country Study of the Information in the Shorter Maturity Term Structure About Future Inflation," *Journal of International Money and Finance*, Vol. 10 (March), pp. 2–22.
- Mohan, Rakesh, 2004a, "Challenges to Monetary Policy in a Globalizing Context," *RBI Bulletin* (January).
- , 2004b, "Fiscal Challenges of Population Aging: The Asian Experience," paper delivered at the Federal Reserve Bank of Kansas City symposium, Jackson Hole, Wyoming, August 26–28.
- , 2004c, "Orderly Global Economic Recovery: Are Exchange Rate Adjustments Effective Any More?" speech at the G-20 Deputies Meeting, Leipzig, Germany, March 3–4, *RBI Bulletin* (April 16).
- Oliner, S., and D. Sichel, 2002, "Information Technology and Productivity: Where Are We Now and Where Are We Going?" Federal Reserve Bank of Atlanta *Economic Review*, Vol. 87 (Summer), pp. 15–44.
- Rogoff, Kenneth, 2003, "Globalization and Global Disinflation," Federal Reserve Bank of Kansas City *Economic Review* (Fourth Quarter), pp. 45–78.
- Stock, James H., and Mark W. Watson, 2003, "Has the Business Cycle Changed?" paper presented at the Federal Reserve Bank of Kansas City symposium, Jackson Hole, Wyoming, August 28–30.
- The Economist*, September 30, 2004.