

2.1 The world economy witnessed a truly global crisis since mid 2008. This crisis has tested the contours of the functioning of the global financial landscape, while the interlinkages between the financial and the real economy were magnified. The problems that surfaced in the US sub-prime market in August 2007 reached their peak during September 2008 when some of the prime Wall Street financial institutions collapsed, leading to a worldwide failure of confidence. Credit markets virtually froze with financial institutions almost unwilling to lend to each other. The loss of confidence set off a chain of deleveraging, declining asset and commodity prices, falling incomes, shrinking demand and trade and capital flows, and rising unemployment in the advanced economies in the early stages. Although advanced countries clearly remained the epicentre of the recent global crisis, emerging market economies (EMEs) have also been substantially affected by the crisis. The turmoil in the financial sector of the advanced countries traversed to the financial sector of the EMEs, including India, especially after the Lehman Brothers bankruptcy in mid-September 2008. The contagion spread to these economies through financial, trade and confidence channels, despite their relatively sound fundamentals. This promoted many to revisit the so-called 'decoupling theory' in an increasingly globalised world. Thus, what started off as a sub-prime crisis in the US housing market in August 2007 turned successively into a global banking crisis, a global financial crisis and then a global economic crisis.

2.2 The period prior to the unravelling of the crisis was generally characterised by relatively steady growth and low and stable inflation in advanced economies and rapid growth and development in EMEs, popularly known as the period of 'Great Moderation' (Bernanke, 2004). This

prolonged period of macroeconomic stability was attributed to free markets and successful globalisation. The 'Great Moderation' in economic performance, however, ignored the possibility of catastrophic failures in a market economy. What remained hidden within these overall signs of prosperity were the immensely complex financial systems that at times remained beyond the regulatory purview of policy authorities, and posed tremendous systemic risks. In addition, some structural imbalances had also developed in the world economy over the years in terms of mismatches between savings and investments and production and consumption across nations that were manifested in widening current account imbalances, misaligned exchange rates, and low interest rates and asset prices, which had to unwind at some point of time. All these factors manifested themselves in the form of the worst-ever global financial crisis.

2.3 The rapid speed with which the financial crisis spread from the United States to Europe and then to the rest of the world shocked the entire world. While crises have been part of the financial landscape for ages, it is now widely accepted that the nearest precedent to the recent crisis is the Great Depression of the 1930s in terms of its depth, geographical spread, intensity and duration. No country has been spared from its wrath, although the impact has varied across nations.

2.4 The recent financial crisis and the subsequent recession have re-opened two crucial debates – on the efficacy of the markets and the role of public policy, the so-called Keynesianism – and have posed new challenges for the discipline of economics. The recent crisis has again questioned the role of finance in leading to growth and brought into focus the role of non-economic motives in explaining market rise and fall. The recent crisis has also necessitated a revisit of the

current global regulatory and supervisory structures and perimeters against the backdrop of rapid financial innovations. Finally, it has re-invoked the debate on the adequacy and efficacy of the current international financial architecture to prevent and manage global crises of the kind recently seen.

2.5 The depth and breadth of the crisis has tested the limits of the conventional and unconventional policy options available to policymakers around the world. The initial estimate of actual and potential global write-downs held by banks and other financial institutions, which started at about US\$ 50 billion in mid-2007, increased to around US\$ 4.0 trillion by end-2008 and was scaled down to US\$ 2.3 trillion by the IMF in April 2010. As per IMF forecasts (April, 2010), world GDP growth after decelerating to 3.0 per cent in 2008 from 5.2 per cent in 2007 declined by 0.6 per cent in 2009. However, the global growth is projected to rise to 4.2 per cent in 2010 and 4.3 per cent in 2011. The advanced economies exhibited a negative growth of 3.2 per cent in 2009 (as against a positive growth of 0.5 per cent in 2008), while emerging and developing economies grew by 2.4 per cent in 2009 (compared with 6.1 per cent in 2008). The advanced economies and the emerging and developing economies are projected to grow by 2.3 per cent and 6.3 per cent, respectively, during 2010.

2.6 Against the above backdrop, this chapter will trace the genesis and nature of the crises affecting both the developed and developing world over the past century and a half when they often arrived with fierce force and departed with important lessons for policymakers. This will be covered under three broad sections. Section I will discuss in detail the causes of the recent financial crisis and simultaneously trace the evolving debate on the various contributing factors. The crisis in a historical perspective is covered in Section II. A comparison between the recent crisis and similar earlier episodes is presented in Section III. Section IV sets out the concluding observations.

I. CAUSES OF THE CRISIS

2.7 The causes of the crisis were many and intertwined as such a pervasive crisis cannot be triggered by a single or isolated cause. In trying to understand the various causes of the crisis, different viewpoints have emerged. One view believes that the current disruption of financial markets is the long-run consequence of the easy global money and credit conditions that existed, particularly from the start of the decade. While the immediate cause of the financial crisis is attributed to the problems persisting in the sub-prime mortgage sector of the United States, the root lies in the persistence of global imbalances since the start of the current decade (BIS, 2009; Mohan, 2008; Portes, 2009; Taylor, 2009). The global imbalances interacted with the flaws in financial markets and instruments to generate the specific features of the crisis.

2.8 Another view argues that if imbalances at the global level were the root cause, then why did the crisis originate in the United States and not in other countries which were also partners of global imbalances? The excesses in the US financial system are, in fact, at the core of the current crisis and all other factors contributed to further aggravate the crisis. Finance has been the proximate factor behind most crises of the past and the recent crisis is no different (Ferguson, 2009). Some are also of the opinion that one important cause of the crisis is the US Fed's very low interest rates that were maintained for a very long time leading to a housing and asset price bubble (ECB, 2007; Taylor, 2009; Skidelsky, 2009) and an equally important cause has been the lack of recognition of asset prices in policy formulation (Borio and Lowe, 2004; White 2008). According to some, the Basel Accord is also a cause of the recent banking crisis; banks' efforts to circumvent the capital adequacy requirements of Basel Accord caused the financial crisis (Acharya *et al.*, 2009; Plender, 2007). Leaders at the G-20 Summit in September 2009 blamed global imbalances, seeing them as more responsible for the crisis than the failure of global financial regulation.

2.9 The debate on the causes of the crisis has also revolved around whether the crisis was the result of market failure or of governance failure. The Great Moderation in economic performance over the previous decade and half ignored the possibility of catastrophic failures in the market economy. During the golden years, financial economists believed that free-market economies could never go astray, which is belied by the crisis (Krugman, 2009). The IMF too supported the market-oriented ideology.

2.10 In contrast, the recent crisis has also been considered to be a failure of governance. Central banks focused excessively on CPI inflation at the expense of financial vulnerability (IMF, 2009a). Since there was no formal mandate to maintain financial stability, the latter was inadvertently ignored in public policy. By accommodating lax credit conditions and rising debt, monetary policymakers in a way increased the risks of a bust. Besides, many central banks were persuaded to be very transparent and provided forward guidance to the financial markets on their policy stance, especially on the future course of monetary policy. Such forward guidance provided excessive comfort to the financial markets and aided the under-pricing of risks¹. The roles of international financial institutions like the IMF with the responsibility of surveillance, have also been questioned. It is lamented that the IMF failed in diagnosing and pointing out the vulnerabilities both at the global level and at the level of systemically important advanced economies.

2.11 A more balanced viewpoint is that the recent crisis reflects a collapse of the market as well as the State, since governance in both private and public sectors failed (Reddy, 2009c). This argument has been stretched further to interpret failure of governance at all levels as indicative of moral failure of the whole economic system or what some have described as a failure of capitalism (Krugman,

2009). Be that as it may, as the debate on the causes of the crisis still continues, it is worth distilling the variety of factors that contributed to the crisis.

Global Imbalances

2.12 From a historical perspective, many now argue that the US sub-prime mortgage crisis was only a proximate cause or simply a trigger for the recent crisis through the re-pricing of risks that spilled over to other parts of the world *via* securitised mortgage derivatives. At a more fundamental level, it can be traced to the persistence of large global imbalances of various systemically important economies over a period of time – large current account deficits in the US along with some other advanced economies such as the United Kingdom, Greece, Italy, Portugal and Spain mirrored by substantial surplus in Asia, particularly in China, oil-exporting countries in the Middle East and Russia – that posed risks to the global financial system of a disorderly unwinding. Global imbalances, in general, can be defined as “external positions of systemically important economies reflecting distortions or entailing risks for the global economy” (Bracke *et al.*, 2008).

2.13 The period following the bursting of the dot-com bubble in the US was marked by a highly accommodative monetary policy that boosted aggregate demand in the US as well as in other advanced countries. Lower interest rates along with financial innovations encouraged a housing boom and an increase in housing and other asset prices, providing further impetus to consumption and investment through wealth effects. While real activity in the US did provide a stimulus to activity in the rest of the world, it was accompanied by large and growing current account deficits (Table 2.1). In absolute terms, the current account deficit (CAD) of the US saw a seven-fold increase from US\$ 114 billion in 1995 to US\$ 804 billion in 2006

¹ Even if some central banks perceived that there were excessive risks in the system, they concluded that such risks were dispersed widely due to the emergence of new intermediaries, like hedge funds, and new instruments, like derivatives, with no impact on the financial system as a whole.

Table 2.1: Macro Parameters of the United States

(in per cent, annual average)

Period	GDP growth	CAD/GDP	General Government Fiscal Balance/GDP	Savings	Investments	Savings-Investment gap
1	2	3	4	5	6	7
1981-85	3.3	-1.3	-4.5	18.7	20.8	-2.1
1986-90	3.2	-2.4	-4.1	16.6	19.8	-3.2
1991-95	2.5	-1.1	-4.5	15.4	17.8	-2.4
1996-2000	4.3	-2.6	-0.02	18.1	20.1	-1.9
2001-2005	2.4	-4.8	-3.3	14.9	19.3	-4.4
2005-2008	1.8	-5.3	-3.6	14.4	19.4	-5.0

Source: World Economic Outlook, October 2009, International Monetary Fund.

(Table 2.2). As a percentage of GDP, the CAD of the US almost doubled every 5 years from the early 1990s (Table 2.3). During 2006, the CAD was close to 6 per cent of GDP, the highest-ever CAD for the US that amounted to about 1.5 per cent of global GDP. Although it has declined since then, it remains high by historic standards. A large increase in current account deficits was not confined to the US; in fact, since 1996 a number of other key industrial countries have also seen their current accounts turning to deficit, including France, Italy, Spain, Australia, and the United Kingdom. Most of these

have experienced substantial housing appreciation and increases in household wealth (Bernanke, 2005). For example, since 1996 wealth-to-income ratio has risen by 14 per cent in France, 12 per cent in Italy, and 27 per cent in the United Kingdom.

2.14 With large current account imbalances, capital flew from capital-poor emerging countries to capital-rich industrial economies, especially the US. Also, in response to the series of financial crises the EMEs experienced during the 1990s, they either chose or were forced into new strategies for managing international capital flows. In general, these strategies involved shifting from being net importers of financial capital to being net exporters, resulting in large current account surpluses (Chart II.1). This contradictory phenomenon was attributed to a significant rise in saving rates in emerging market economies (EMEs), especially in China, a dearth of investment opportunities, and the accumulation of large foreign exchange reserves by EMEs to check their currency appreciation and as self-insurance against a sudden reversal of capital flows. Many of these economies, particularly the East Asian countries, began to build up large amounts of foreign exchange reserves from the

Table 2.2: Current Account Balance

(US\$ billion)

	1990-94	1995-99	2000-04	2005	2006	2007	2008	2009
1	2	3	4	5	6	7	8	9
China	5.5	18.6	37.6	160.8	253.3	371.8	426.1	283.8
France	0.9	32.3	18.2	-9.1	-11.6	-25.9	-64.8	38.8
Germany	-10.2	-19.4	36.5	142.8	188.4	253.8	245.7	160.6
India	-3.8	-5.0	2.7	-10.3	-9.3	-11.3	-26.6	-25.9
Japan	97.4	101.5	125.7	165.7	170.4	211.0	157.1	141.7
Korea	-3.5	5.0	13.2	15.0	5.4	5.9	-5.8	42.7
Malaysia	-3.2	0.6	10.4	20.7	25.8	29.2	38.9	32.0
Philippines	-2.1	-2.3	-0.5	2.0	5.3	7.1	3.6	8.6
Russia	3.1	8.5	41.0	84.4	94.3	77.0	102.4	47.5
Saudi Arabia	-15.4	-3.4	23.2	90.1	99.1	93.5	132.5	20.5
South Africa	1.5	-1.9	-1.5	-8.6	-13.9	-20.1	-19.6	-11.4
Switzerland	14.3	24.9	32.5	52.2	59.5	43.5	11.9	43.1
Thailand	-6.9	-0.8	5.3	-7.6	2.3	15.7	1.6	20.3
Turkey	-2.2	-1.9	-5.7	-22.1	-31.9	-37.7	-41.3	-13.6
United Arab Emirates	2.9	2.3	8.0	22.6	36.2	19.5	22.2	-7.0
United Kingdom	-21.9	-13.3	-34.6	-59.8	-80.8	-75.5	-40.7	-28.8
United States	-66.5	-178.4	-485.5	-748.7	-803.5	-726.6	-706.1	-418.0

Note: (-) indicates deficit.

Source: World Economic Outlook database, International Monetary Fund.

Table 2.3: Current Account Balance

(Per cent to GDP)

Country	1990-94	1995-99	2000-04	2005	2006	2007	2008	2009
1	2	3	4	5	6	7	8	9
China	1.4	1.9	2.4	7.2	9.5	11.0	9.4	5.8
France	0.0	2.0	1.3	-0.4	-0.5	-1.0	-2.3	-1.5
Germany	-0.4	-0.8	1.4	5.1	6.5	7.6	6.7	4.8
India	-1.3	-1.3	0.5	-1.3	-1.1	-1.0	-2.2	-2.1
Japan	2.4	2.3	2.9	3.6	3.9	4.8	3.2	2.8
Korea	-1.0	1.9	2.1	1.8	0.6	0.6	-0.6	5.1
Malaysia	-5.2	1.8	9.8	15.0	16.4	15.7	17.5	16.7
Philippines	-4.0	-2.8	-0.7	2.0	4.5	4.9	2.2	5.3
Russia	0.9	3.5	11.2	11.0	9.5	6.0	6.2	3.9
Saudi Arabia	-11.7	-2.4	10.6	28.5	27.8	24.3	27.9	5.5
South Africa	1.2	-1.3	-0.7	-3.5	-5.3	-7.0	-7.1	-4.0
Switzerland	5.7	8.8	10.8	14.0	15.2	10.0	12.4	8.7
Thailand	-6.4	1.0	4.2	-4.3	1.1	6.3	-0.6	7.7
Turkey	-0.9	-0.8	-1.6	-4.6	-6.0	-5.8	-5.7	-2.3
United Arab Emirates	8.3	4.6	9.9	16.9	22.1	9.4	8.5	-3.1
United Kingdom	-2.1	-1.0	-2.0	-2.6	-3.3	-2.7	-1.5	-1.3
United States	-1.0	-2.1	-4.5	-5.9	-6.0	-5.2	-4.9	-2.9
<i>Memo:</i>								
Euro Area	n.a.	0.9	0.4	0.4	0.4	0.4	-0.8	-0.4

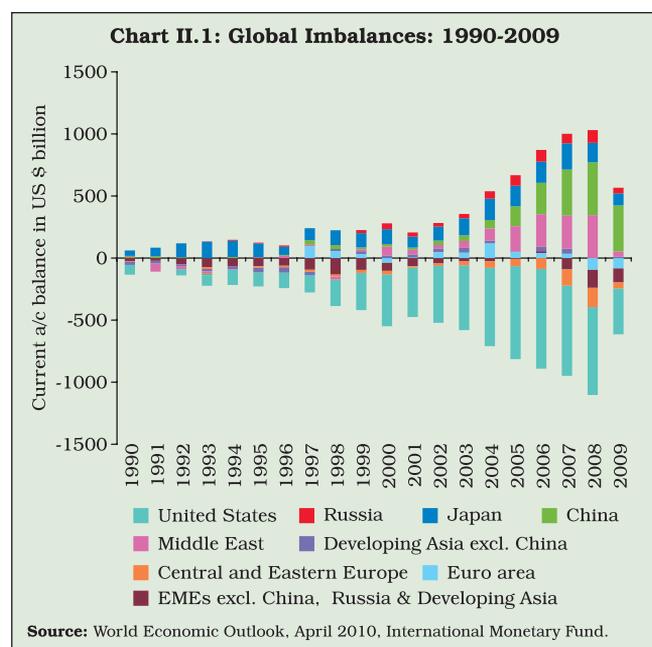
Note: (-) indicates deficit.
Source: World Economic Outlook Database, April 2010, International Monetary Fund.

beginning of the current decade. Emerging market countries saw these reserve stockpiles as welcome ‘war-chests’ to defend them from sudden capital flow reversals of the sort that had occurred during the Asian crisis.

Savings Glut Hypothesis

2.15 The large global current account imbalances also got reflected in the savings-investment behaviour in both emerging and advanced nations. This is why global imbalances are now universally ascribed to the ‘savings glut’ hypothesis, which states that the US current account deficit was driven by a savings glut in the rest of the world, especially in emerging market countries (Bernanke, 2005). While in the US the gap between savings and investment almost doubled from minus 2.7 per cent of GDP in 2001 to minus 5.6 per cent of GDP in 2008, the opposite was observed in the case of EMEs where excess savings led to significant current account surpluses.

2.16 There was a significant rise in global gross saving as a percentage of GDP, from about 21.4 per cent in 2001 to almost 24.2 per cent in 2007. Most of the increase reflected the relatively high saving rate of the EMEs in the post-Asian crisis period, where a more than three-fold rise in aggregate saving between 2001 and 2007 had lifted



the marginal propensity to save to 43 per cent (BIS, 2009). In gross terms, the share of EMEs in global saving rose from 25 per cent in 1992–96 to 30 per cent in 2003 and 37 per cent in 2007. In comparison, the EME share of world GDP did not rise quite so rapidly, moving from 21 per cent in 1992–96 to 31 per cent in 2007. Within emerging markets, the rise in average saving rates was significant for China and the Middle East. The US, in contrast, has observed a decline in savings since 2001 (Table 2.4).

2.17 The precautionary motive was the main reason behind the high savings in these economies. The absence of adequate safety nets and the consequent need for self-insurance coupled with financial market underdevelopments in emerging economies have led private agents in these economies to oversave, particularly in countries such as China (Francia, 2009). The one-child policy in China has also contributed to the rise in savings as children are substitutes for life-cycle savings (Modigliani and Cao, 2004). Besides, as per capita income increases at high rates, consumption usually does not keep pace with income and the savings rate tends to increase. Higher migration from rural to urban areas added to the rise in savings as the consumption habits of the migrants remained unchanged even though their income rose.

2.18 The saving-investment balances also differed across EME regions in the pre-crisis period. In China, gross saving exceeded gross investment by a large margin: the saving rate reached 59 per cent of GDP in 2008 even though China maintained one of the highest investment rates in the world of around 49 per cent of GDP. While India also saw a sharp rise in the saving rate, the savings-investment gap remained negative due to an equivalent increase in the investment rate. Other Asian emerging economies saw only a modest rise in saving and investment rates between 2003 and 2007, with both remaining below the levels preceding the Asian crisis.

2.19 Higher net savings by oil exporters are also believed to have contributed to the global savings glut. Consequent upon the sharp rise in oil prices, the current account surpluses of oil exporters, notably in the Middle East and also in countries such as Russia, Nigeria, and Venezuela, rose as oil revenues surged. The collective current account surplus of the Middle East and Africa rose by more than US\$ 115 billion between 1996 and 2004. As a percentage of GDP, the current account surplus of the Middle East rose from around 1.0 per cent in 2000 to about 18.5 per cent in 2005. Thus, changes in the collective current account position of the developing world resulted in many developing and emerging-market countries

Table 2.4: Savings and Investment

(as a percentage of GDP)

Countries	Savings				Investment			
	1995	2001	2007	2008	1995	2001	2007	2008
1	2	3	4	5	6	7	8	9
Advanced Economies	21.4	20.0	19.9	18.8	21.6	20.6	21	20.4
United States	16.0	16.4	14.2	11.9	18.6	19.1	18.8	17.5
Japan	30.5	26.9	28.9	26.7	28.4	24.8	24.1	23.5
Germany	21.1	19.5	25.8	25.7	22.2	19.5	18.3	19.3
United Kingdom	15.9	15.4	15.3	15.1	17.2	17.4	18.2	16.8
Others	21.4	22.5	22.5	21.9	20.1	21.2	23.5	23.2
Emerging Economies	26.8	26.6	35.4	36.6	27.6	25.1	30.2	31.8
China	42.1	37.6	57.6	59.0	41.9	36.3	46.6	49.0
India	24.4	23.4	37.7	36.3	26.0	23.1	38.7	39.1
Other Emerging Asia	33.3	28.9	30.9	30.4	33.9	24.6	25.1	26.3
Middle East	24.0	33.3	49.6	50.8	20.9	24.8	26.5	26.7

Source: World Economic Outlook, October 2009, International Monetary Fund .

becoming large net lenders to the rest of the world rather than net borrowers.

2.20 One view of the savings glut hypothesis is that there was an investment drought rather than a savings glut. The East Asian crisis has exerted permanent depressing effects on investment in these economies (Barro and Lee, 2003). While the savings rate in most East Asian EMEs, which has generally remained higher than in the industrialised countries, exhibited a modest decline, investment rates showed sharper declines, resulting in the widening of the savings-investment gap in the EMEs. A corroborative view is that the consumption glut in the advanced countries has exacerbated the current account disequilibrium across the world. Excess consumption combined with higher leveraging in a loosely regulated and unsupervised financial system fuelled the housing bubble (Francia, 2009).

Inadequate Exchange Rate Flexibility

2.21 Several emerging market economies as part of their export-led growth strategy were deliberately maintaining undervalued exchange rates. Between 2003 and mid-2008, many EMEs experienced rapid integration with the advanced economies and became substantially dependent on exports as an engine of growth. The share of exports of goods and services to GDP for China rose from about 23 per cent during 1992-95 to around 30 per cent during 2003 and further to around 43 per cent during 2007 before coming down to 35 per cent of GDP in 2008 (Table 2.5). For emerging Asia as a whole, exports rose from already high levels in the pre-Asian crisis period to about 75 per cent of GDP in 2007. Reserves were accumulated in the context of foreign exchange interventions intended to prevent any exchange-rate appreciation (Michael Dooley *et al.*, 2004). Countries typically pursued export-led growth because domestic demand was thought to be insufficient to fully employ domestic resources. Further, these surpluses were intended to build up precautionary reserves to deal with sudden stops in capital flows.

Table 2.5: Exports of Goods and Services

(Percentage of GDP)

Country	1992-95	2003	2005	2007	2008
1	2	3	4	5	6
China	23.3	29.6	37.4	42.5	35.0
France	21.8	25.6	26.1	26.5	..
Germany	23.4	35.6	40.9	46.7	..
India	10.0	14.8	19.9	21.2	24.0
Japan	9.3	12.0	14.3
Korea	27.1	35.4	39.3	41.9	52.9
Malaysia	84.5	106.9	117.5	110.2	..
Philippines	32.7	49.6	47.6	42.5	36.9
Russia	39.4	35.2	35.2	30.5	33.4
Saudi Arabia	36.4	46.1	60.9	65.0	69.9
South Africa	22.2	28.1	27.4	31.6	36.3
Switzerland	36.2	44.0	48.8
Thailand	38.9	65.7	77.2	76.0	..
Turkey	17.3	23.0	21.9	22.0	23.6
United Arab Emirates	71.4	79.0	92.6
United Kingdom	25.9	25.5	26.5	25.9	..
United States	10.0	10.0	11.0	11.9	12.9

.. : Not Available.

Source : World Development Indicators, World Bank Online Database.

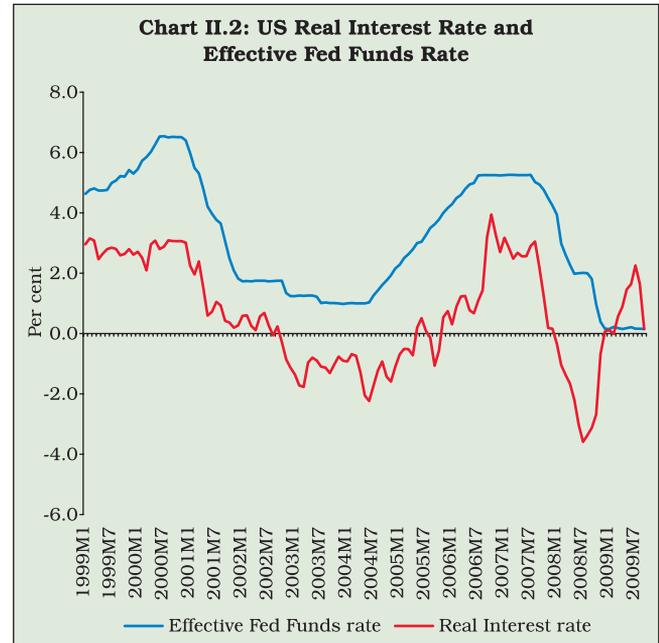
2.22 This argument, however, puts excessive emphasis on exchange rate policy. The existence of excess demand for an extended period in the developed economies was more influenced by their own macroeconomic and monetary policies, and may have continued even with more flexible exchange rate policies in EMEs. The argument is based on the premise that low-priced consumer goods and services from EMEs were available worldwide. Yet, other regions such as the Euro area as a whole did not exhibit large current account deficits throughout the current decade. In fact, it exhibited a surplus except for a minor deficit in 2008. Thus, even with flexible exchange rate policies in some of the EMEs the US current account deficit would have continued to remain large, though the source of imports for the US could have varied. The perceived lack of exchange rate flexibility in the Asian EMEs cannot, therefore, fully explain the large and growing current account deficits in the US (Mohan, 2009).

2.23 The current account surpluses of the emerging countries were used to purchase assets in economies with market-based financial systems,

such as the US. The depth of the US financial markets together with rapid innovation of new products for effective risk management has made the US an attractive destination for global investors' funds. Another factor is the special international status of the US dollar. Because the dollar is the leading international reserve currency, and because some emerging-market countries use the dollar as a numeraire when managing the values of their own currencies, the saving flowing out of the developing world has been directed relatively more into dollar-denominated assets, such as U.S. Treasury securities.

Monetary Policy Easing and Low Real Interest Rates

2.24 The global imbalances were accentuated by the excessively loose monetary policy in advanced economies, especially the US. To some extent the lack of adequate exchange rate flexibility in some EMEs, which gave rise to excess liquidity and low interest rates, exacerbated the problem. In fact, since the technology stocks meltdown in 2000, there has been significant monetary accommodation by the major economies such as the US, the Euro area and Japan, particularly during the first half of the decade. The US Fed funds rate remained at its lowest when compared with the previous two decades. The real interest rate² in the United States was consistently below 1 per cent from mid-2001 up to the end of 2005; indeed, for much of this period it was negative (Chart II.2). It was generally accepted that the Fed had followed an excessively loose monetary policy in 2002-2006 (Taylor, 2007). In response to sluggish growth in the Euro area, the ECB held short-term real interest rates below 1 per cent for most of the period between mid-2001 and 2005; in Japan, real interest rates hovered around 0 to 1 per cent for most of the past decade. The low interest rates were possible because of improved macroeconomic performance in terms of not only higher growth and low inflation, but also in terms of their reduced



volatility. The period since the early 1990s which witnessed substantial decline in macroeconomic volatility in the US economy was termed as 'Great Moderation'. Bernanke (2004) offered three explanations for this phenomenon, which include structural change (institutional reforms, globalisation and technological progress), improved macroeconomic policies (explicit focus on price stability) and good luck (smaller and infrequent shocks). Moreover, relatively cheaper goods and services from China and other EMEs helped keep measured inflation low in the advanced economies.

2.25 Along with a fall in short-term real interest rates, the long-term real interest rates also remained low during the first half of the current decade. There are two different views on this. First, given the global savings glut, one theory suggests that the real long-term interest rate must fall to establish global equilibrium at a higher level of investment (Bernanke, 2005). The other theory is that financial crises and high saving in emerging markets, combined with limited financial development, created a global shortage of low-risk assets, leading to lower long-term bond rates (Caballero *et al.*, 2008).

² The real interest rate is the US Fed Funds rate less consumer price inflation.

2.26 The low interest rate regime had a variety of effects. Low interest rates combined with ample liquidity provided the impetus for strong credit growth in a number of economies, and led to a build-up of domestic imbalances. For instance, credit in the United States and the United Kingdom rose annually by 7 per cent and 10 per cent, respectively, between 2003 and mid-2007. While cheap credit formed the basis for the housing boom and the dramatic rise in household revolving debt, the low interest rate also increased the present discounted value of the revenue streams arising from earning assets, thereby driving up asset prices and creating asset bubbles. Real housing prices in the United States, the United Kingdom and a number of European countries increased by more than 30 per cent between 2003 and 2007. Monetary policy, however, failed to respond to this asset price inflation, guided by the now notorious Greenspan orthodoxy, according to which, first, asset price bubbles are hard to identify on a real-time basis and the fundamental factors that drive asset prices are not directly observable. Second, monetary policy is too blunt an instrument to counteract asset price booms. And third, a central bank cannot presume to know more than the market because financial markets are all-efficient, rational and self-correcting. Thus, it was considered more cost-effective for monetary policy to wait for the bubble to burst and clean up afterwards rather than prick the bubble in advance (Subbarao, 2010).

2.27 Further, at unusually low levels of interest rates, financial institutions found it difficult to generate the returns promised in their generally long-term nature of contracts, which induced them to take on more risks in the hope of generating the returns needed to remain profitable. The credit boom, therefore, created grounds for rapid financial innovations and increased risk-taking behaviour. Even as financial imbalances were building up, however, macroeconomic stability was maintained (a reflection of Great Moderation), which encouraged under-pricing of risks. The immediate cause was the 'originate and distribute' mortgage model and structured finance products like asset-

backed securities (ABS) and collateralised debt obligations (CDOs), which facilitated a general increase in risk-taking. The housing boom, the surge in debt-financed consumer expenditure and the search for yield distorted the macroeconomic structure in many economies.

2.28 Thus, global imbalances accompanied by a 'savings glut' in the emerging economies and loose monetary policy in the US and other advanced economies led to an era of low real interest rates and rapid search for yield that resulted in many of the financial excesses. Both these factors were clear precursors of unsustainable bubbles, which were ignored in general because of the pre-crisis phase of high global growth with low inflation (Chakrabarty, 2009). Theoretically, the period after 2000 can be characterised as a period when both the IS and the LM curves shifted to the left, thus maintaining output at low interest rates (Portes, 2009). Concern had been expressed that the continued widening of global imbalances could have a disorderly unwinding with a sudden stop of capital flows from emerging markets to the US that would trigger a crisis in the US leading to substantial dollar depreciation (Obstfeld and Rogoff, 2005). However, the trigger for the crisis came not from the global imbalances but from the housing bubble in the US economy. Even as financial imbalances were building up, macroeconomic stability was maintained, which in turn, encouraged under-pricing of risks. Financial innovations, regulatory arbitrage, lending malpractices, excessive use of the originate-and-distribute model, together with securitisation of sub-prime loans and their bundling into AAA tranches without risk being adequately assessed culminated into excessive leverage of financial market entities in the United States.

Domestic Imbalances in the United States

2.29 While global imbalances represent the general macroeconomic or "macrofinancial" explanation for the current crisis, the immediate explanation, which in a sense complements the former, focuses on uneven functioning of the US

housing market and the shortcomings of specific types of financial products which recently gained prominence in the US.

Functioning of US Housing Market

2.30 Until the mid-1990s, the bulk of housing loans in the US mortgage market was given to prime borrowers. Since the late 1990s, the US home loan growth has been very high, registering even higher growth rates than the US GDP. A major part of this lending was essentially sub-prime lending. Within 12 years, their share in total mortgage origination jumped from 4.5 per cent in 1994 to more than 20 per cent in 2006 (Table 2.6). Sub-prime lending refers to the practice of making loans to borrowers who do not qualify for market interest rates because of their poor credit history or the inability to prove that they have adequate resources to support the monthly installments of the loan. Sub-prime loans or mortgages are risky for both creditors and debtors because of the combination of high interest rates, bad credit history and murky personal financial situations often associated with sub-prime applicants. Except during the recessionary years of 2001 and 2002, (following the bursting of the dot-com bubble) when the house price (Case-Shiller)

inflation showed some deceleration, sub-prime lending exhibited strong growth, particularly during the period 2003-06.

2.31 On the demand side, the low interest rates to make housing affordable for everyone increased housing prices. The combination of the 'originate-to-distribute' mortgage model and the securitisation of loans together with rapid innovation in financial products on the supply side resulted in a large increase in the availability of funds and made house loans attractive. While credit quantity increased, its quality got eroded. Most of these loans were with low margin money and with low teaser payments.

2.32 Under any conventional banking arrangement, when a bank provides a housing loan, it has to assume the credit risk (risk of borrower default), the market risk (risk of the interest rate changing over the tenure of the loan), and the liquidity risk (since long-term illiquid housing loans could be issued against liquid deposit liabilities). With the creation of a secondary market for mortgages, these risks, namely, credit risk, market risk, and liquidity risk could be shifted from the banks to the mortgage agencies. This system was functioning in the US from 1938 when the Federal

Table 2.6: Mortgage Originations

Year	Total Mortgage Originations (US\$ billion)	Sub-prime Originations (US\$ billion)	Prime and Alt-A Originations (US\$ billion)	Sub-prime Share in Total Originations (% of \$ value)	Sub-prime Mortgage-Backed Securities (US\$ billion)	Sub-prime Originations Securitised (% of \$ value)
1	2	3	4	5	6	7
1994	773	35	738	4.5	NA	NA
1995	636	65	571	10.2	NA	NA
1996	785	97	689	12.3	NA	NA
1997	839	125	734	14.5	NA	NA
1998	1,430	150	1,280	10.5	NA	NA
1999	1,275	160	1,115	12.5	NA	NA
2000	1,048	138	910	13.2	NA	NA
2001	2,215	190	2,025	8.6	95	50.4
2002	2,885	231	2,654	8.0	121	52.7
2003	3,945	335	3,610	8.5	202	60.5
2004	2,920	540	2,380	18.5	401	74.3
2005	3,120	625	2,495	20.0	507	81.2
2006	2,980	600	2,380	20.1	483	80.5

Source : The Subprime Lending Crisis - Report and Recommendations by the majority staff of the Joint Economic Committee, October 2007.

National Mortgage Association (FNMA), commonly known as Fannie Mae, was established. Fannie Mae began buying mortgages from banks and other originators, thereby supporting mortgage lending, especially for low- and middle-income families. In 1968, the activities of Fannie Mae were privatised and de-linked from the Federal budget, and the emphasis shifted to mortgage-backed securities (MBSs), which were intended to help Fannie Mae shift credit, market, and liquidity risk to the market by pooling mortgages, securitising them, and selling

them in the market. The MBSs derived their value from the cash flows associated with the pool of mortgages. In 1970, the Federal Home Loan Mortgage Corporation (FHLMC), commonly known as Freddie Mac, was set up to compete with the privatised Fannie Mae and also to further boost the MBSs market. As a result, with a large percentage of 'prime' home loans securitised and sold through these two institutions, the housing finance market had shifted from an 'originate-and-hold' basis to an 'originate-and-distribute' mode (Box II.1).

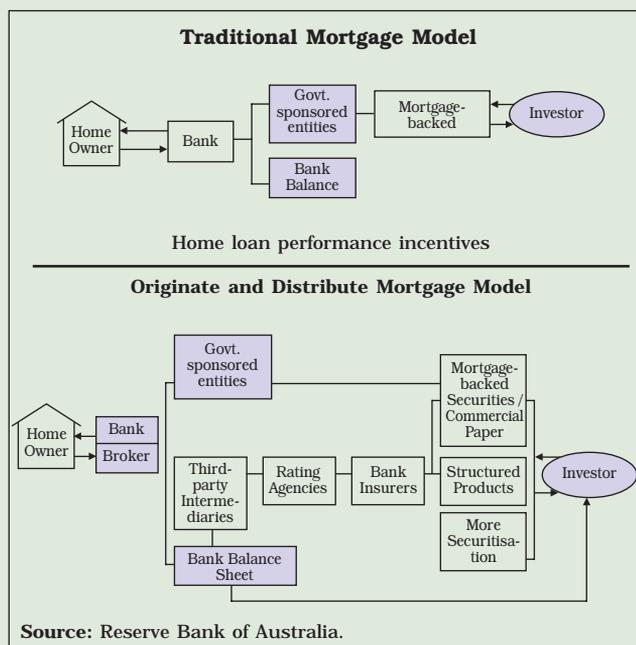
Box II.1

Originate-to-Distribute Model

The global banking system has seen a transformation in terms of lending practices. Bank credit has evolved from its traditional "relationship banking" model to the "transaction-oriented" model. Bank credit has been transformed from the "Originate-to-Hold (OTH)" model, where the borrower's loan remains on the balance sheet of the lender till the time the loan gets matured/written off, to an Originate-to-Distribute (OTD) model, where banks can originate loans, earn their fees, and then distribute them to other investors. The OTD model has emerged over the past two decades in response to the explosive growth in the secondary syndicated loan market³. The reliance on the OTD model has increased over the period because of the advantages associated with this model, such as diversification of risk, capital relief and lower cost of capital. Depending on the nature of a bank's private information about a loan, the uncertainty in a loan's potential payoff can be decomposed into two components: one for which the bank's informational advantage is relatively small and the other for which such advantage is relatively large. The bank can enter into a secondary syndicated loan market and use a credit-derivative contract to transfer the former risks to outsiders, while retaining the risks at the bank in the case of the latter. As the bank's informational advantage is unlikely to be constant over the life of the loan, there is scope to leverage upon the opportunity. Thus, the OTD Model has the capacity to distribute risk widely and efficiently.

It has been argued that the lack of transparency in the OTD model has been one reason for the crisis in the credit market. With the presence of secondary markets, lenders were able to bundle the loans into securities in order to

make money out of them, thus helping to spur the market boom that was at the heart of the financial crisis. Moreover, there was no incentive in *ex-post* monitoring of the loans issued by the originating banks as there was no direct link between the originator and the borrower of the loan. If a bank holds a loan, it has a greater incentive to monitor the loan (and thus increase its probability of repayment) than if it sells it. The breakdown of lending relationships is expected to have an adverse impact on the decision-making of borrowers as they might start



(Contd...)

³ From 1997 to 2007, the secondary syndicated loan market has grown from \$60 billion to \$342 billion in annual trading volume, fueled by securitisation and the tremendous growth in collateralised debt obligation (CDO) and collateralised loan obligation (CLO) funds.

(...Concl'd)

making sub-optimal investments and operating decisions. Thus, even good loans might end up with bad performance. Also, there were certain “unknown risks” originating from the structured products created in recent years bundled with traditional asset-backed securities and new products based on sub-prime mortgages. This created pervasive uncertainty about where the risks were concentrated and how sensitive they might be to the economic cycle. In this environment, everyone suddenly became suspect when things turned wrong as a result of the crisis situation in all segments of the economy. Empirical evidence also supports the fact that the OTD model has resulted in the origination of inferior quality mortgages and the underperformance of borrowers involved in the active secondary market (Brendt *et al.*, 2009; Purnanandam, 2009).

All this does not mean that OTD should be abandoned as the secondary syndicated loan market. There is no wisdom in throwing the baby out with the bath water. The OTD model has several advantages and it provides enhanced liquidity and leverage opportunities to financial agents. Therefore, steps need to be taken to make this model more resilient.

Measures to make OTD more resilient

1. Include additional disclosure requirements and make available to investors relevant information about the risks inherent in the securitisation structures.
2. Keep a certain proportion of loans on the balance sheet of the originators to limit the moral hazard and adverse selection problems.
3. Rebuild the risk management practices of banks so that there is an effective analysis of all potential risks involved in lending to a particular project. The turmoil showed that institutions using the originate-to-distribute model poorly managed the non-credit risks

associated with the securitisation business, such as market risk, liquidity risk, concentration risk and, of course, pipeline risk. This means that market participants need to have adequate controls over their exposures, including effective scenario analyses and stress-testing procedures.

4. Align the incentives of all participants – originators, arrangers, managers, distributors, credit rating agencies and investors – so that no participant has an unfair advantage.
5. Make the role played by the credit rating agencies more responsible as their information creates the basis for decision-making by various financial institutions.

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2.33 Thus, securitisation of loans was not something new. It was prevalent in the US market from the 1930s. However, only the prime loans sold on to agencies like Fannie Mae and Freddie Mac were being securitised until recently. Moreover, the loan portfolio bought by these agencies conformed to certain underwriting standards. However, what was new in the current decade was the extension of securitisation to sub-prime loans and dilution of the underwriting standards.

Use of Complex Derivatives and Structured Finance Products

2.34 The housing boom generated tremendous interest in the market for MBS, collateralised debt obligations (CDOs) and other complex derivative instruments. The ferocious search for yield led to the generation of new toxic financial instruments through the process of securitisation and creation of structured finance products.

2.35 The US housing market prior to the crisis saw securitisation getting expanded to include a gamut of new products ranging from standard MBSs or, more generally, asset-backed securities (ABS), to include a range of structured finance products, including structured MBS and ABS, CDOs, and asset-backed commercial paper (ABCP).

2.36 “Structured” finance normally entails aggregating multiple underlying risks (such as market and credit risks) by pooling instruments subject to those risks (*e.g.*, bonds, loans, or mortgage-backed securities) and then dividing the resulting cash flows into “tranches,” or slices paid to different holders (IMF, GFSR, 2008). Unlike a simple MBS (discussed earlier), complex MBS are structured or sliced into different risk tranches. In a simple three-tranche example, the structure for the security might include (in order of increasing risk) a ‘senior’, ‘mezzanine’ and an ‘equity’ tranche. Risk and returns are lowest for the senior tranche and accordingly have the highest credit rating. The ‘mezzanine tranche’ comes next, with much greater risk and return in relation to the senior tranche, and hence carry a below-investment grade rating. The ‘equity tranche’, the third and final layer from the slicing, is the most risky and generally carries no rating. Default on the underlying pool of MBSs would imply maximum loss to the equity tranche. In the absence of default, the return on the equity tranche would be the highest. It is basically the hedge funds which invested in the equity tranches to get the highest returns. Structured finance differs from securitisation in that the cash flows are not “tranching” and are instead provided to holders of securitised instruments on a *pro rata* basis. In fact, securitisation diversifies risks by pooling instruments.

2.37 Given the high risk of sub-prime mortgage-backed securities, sometimes it became difficult to entice investors to purchase such securities. In such circumstances, the MBS were bundled up again into CDOs with the support of a good rating. The CDO issuances saw a substantial surge during the period prior to the crisis (Table 2.7). High-rated debt was again created from seemingly low quality

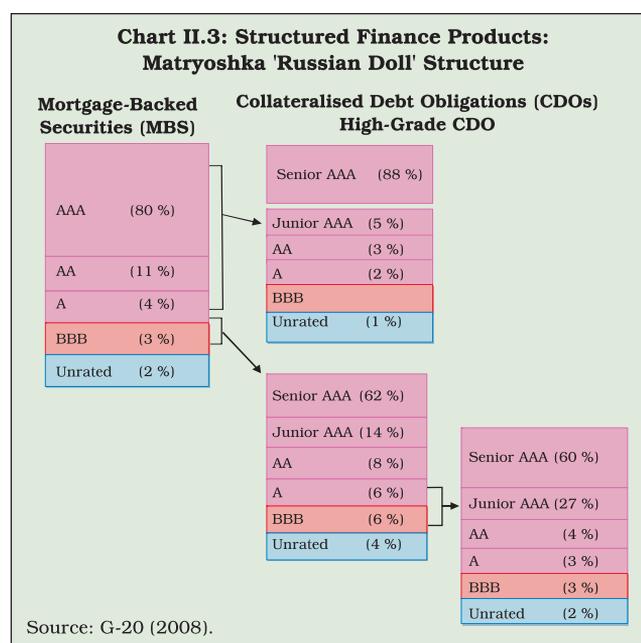
Table 2.7: Global Issuance of Credit Debt Obligations (CDOs)

(US\$ billion)

	2005	2006	2007	2008
1	2	3	4	5
Underlying Guarantees	271.8	520.6	481.6	56.1
High-Yield Loans	71.2	171.9	138.8	23.7
Investment Grade Bonds	4.0	24.9	78.6	14.7
High-Yield Bonds	3.1	0.9	2.1	-
Structured Finances	176.6	307.7	259.2	16.6
Mixed Guarantees	0.1	Neg.	-	-
Other Swaps	2.5	0.7	1.1	-
Others	4.3	14.4	1.7	1.0

Source: Securities Industry and Financial Markets Association, 2009.

collateral. The underlying asset exposures became more opaque and investors increasingly relied on credit ratings to assess credit quality. The asymmetric information (or Akerlof’s lemon) problem could be seen at its starkest in the case of CDOs, with buyers having no information about the underlying risk and blindly believing in the ratings, while the sellers took advantage of this lack of information to sell underlying assets with high risk as highly-rated assets with low risk (Pattnaik, 2009). This process of rebundling and restructuring was repeated multiple times to produce CDO squared, CDO cubed and even multiples. This created the so-called Matryoshka or ‘Russian Doll’ structure (Chart II.3). Thus, exposure to sub-prime risk was



created in an almost unlimited way (G-20 Study Group on Global Credit Market Disruptions).

2.38 In this context, concerns have been raised about the ratings given by the rating agencies, the models that they used as well as their role in

the overall sub-prime crisis (Box II.2). Over 80 per cent of these sub-prime structured products were rated with the highest ratings *i.e.*, AAA by the CRAs. Thus, the period prior to the crisis witnessed the highest form of financial sophistication that managed to turn lead into gold

Box II.2

Credit Rating Agencies (CRAs): Boon or Bane?

Need for Credit Rating Agencies

Credit Rating Agencies (CRAs) are mainly commercial institutions which earn revenue for the publication and evaluation of the creditworthiness of their clients. They have been playing an important role in the management of financial market risk, particularly in global securities and banking markets: they issue creditworthiness opinions that help to overcome the information asymmetry that exists between those issuing debt instruments and those investing in these instruments. CRAs originated in the USA at the turn of the 20th century and concentrated on rating of corporate bonds. Their activities subsequently increased in scope and scale. At present, no major type of security, issuer or geographic area is excluded. CRAs now define a truly global benchmark for credit risk. Since the Great Depression, the CRA's benchmark has also been used in the regulation of financial markets. For example, banks and certain other types of investors are only allowed to hold lower risk securities rated 'investment grade' as per the Basel norms. Over the past few decades these companies have engaged in providing ratings for a wide range of more complex financial instruments, known as structured finance products.

Under the 2004 Basel Committee on Banking Supervision (BCBS) new capital adequacy framework (Basel II), banks can use ratings assigned by a recognised CRA in determining credit risk weights for many of their institutional credit exposures. Policymakers have been giving increasing attention to CRAs over the past decade on a number of occasions, generally coinciding with the increase in stress in financial markets. Regulators worldwide turned their attention to the role of CRAs following their failure to weather the difficulties of East Asian economies in July 1997, the corporate collapses at the beginning of this century notably in the EU and the US (Enron, Dotcom, and Parmalat), and the recent financial crisis.

Role of Credit Rating Agencies in the Recent Financial Crisis

CRAs were close to the origin of the problems with sub-prime markets as they were giving favourable opinions on

instruments that were financially engineered to give high confidence to investors. The investors – relying on CRAs' expertise – often took little or no interest in the risk characteristics of these instruments, the performance of underlying assets and the general market outlook. The CRAs gave AAA ratings to numerous issues of sub-prime mortgage-backed securities, many of which were subsequently downgraded to junk status. Critics cite poor economic models, conflicts of interest, and lack of effective regulation as reasons for the rating agencies' failure. Another factor is the market's excessive reliance on ratings, which has been reinforced by numerous laws and regulations that use ratings as a criterion for permissible investments or as a factor in required capital levels.

CRAs helped to develop the Mortgage Based Securities (MBS) and Collateralised Debt Obligations (CDOs) that sparked the crisis. CRAs advised issuers on how to structure and prioritise the tranches of an MBS or a CDO. The goal was to help issuers squeeze the maximum profit from a CDO or an MBS by maximising the size of its highest rated tranches. The purpose of tranching was to create at least one class of assets with a higher credit rating than the average rating of a CDO or an MBS's underlying asset pool. CRAs rated each tranche based on the creditworthiness of the loans in that tranche and its priority. Tranches got higher credit ratings by "prioritisation": issuers guaranteed that the "senior" tranches would be paid before "junior" or "subordinated" tranches. At the height of the housing boom, almost all senior tranches got the highest rating possible, namely, AAA.

The CRAs failed to adequately assess the credit risks in MBSs and CDOs. The CRAs held an over-optimistic view of the housing market. Their rating model assumed that housing prices would continue to increase generally. CRAs underestimated the complexity of the MBSs and CDOs. The SEC found that the growth in the quantity and complexity of structured finance deals since 2002 proved too much for some CRAs.

In July 2008, the SEC concluded that the CRAs failed to manage conflicts of interest between MBS and CDO issuers

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and the CRAs. CRAs were supposed to serve investors, but conflicts of interest led some CRAs to cater to MBS and CDO issuers by inflating ratings. The causes of the conflicts of interest include: (i) Relationship conflicts: CRAs have had a close, ongoing working relationship with the largest MBS and CDO issuers; (ii) Issuer-paid ratings: 98 per cent of the ratings produced by the CRAs have been paid for by issuers, not investors. The pay incentive led some CRAs to try to inflate ratings of paying issuers in hopes of gaining repeat business from those issuers; and (iii) Advising-rating combination: CRAs advised issuers on how to structure MBSs and CDOs to get high ratings. Then CRAs “confirmed” that advice by issuing the “promised” ratings.

The furore over Enron, Dotcom and the recent sub-prime crisis has led to calls for regulatory changes in the rating industry. Regulatory issues are always extremely complex and interdependent. The IOSCO (International Organisation of Securities Commission) in its consultation paper of March 2008 laid down some important recommendations on the functioning of the CRAs. These include:

- A CRA should take steps to ensure that the decision-making process for reviewing and potentially downgrading the current rating of a structured finance product is conducted in an objective manner.
- CRAs should establish an independent function responsible for periodically reviewing both the methodologies and models and the changes to the methodologies and models used in the rating process.
- CRAs should adopt reasonable measures to ensure that the information they use is of sufficient quality to support a credible rating.

- Where a CRA rates a structured finance product, it should provide investors and/ or subscribers (depending on the CRA’s business model) with sufficient information about its loss and cash-flow analysis so that an investor allowed to invest in the product can understand the basis for the CRA’s rating.

Studies have also suggested moving towards a system where credit ratings are paid for by investors, and where arrangers and servicers disclose for free the complete data on the individual loans underlying the structured finance products. As a second-best policy, the current practice of issuers paying the CRAs may be continued. The payment, however, has to be made upfront (the so-called “Cuomo Plan”), irrespective of the rating issued, and credit shopping (and paid advice by rating agencies to issuers) should be banned (Pagano *et al*, 2009). The need to enhance transparency by determining the information that issuers and rating agencies must disseminate to the investing public has also been emphasised.

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(Ferguson, 2008). Credit rating agencies are now under scrutiny for giving investment-grade ratings to derivative instruments like mortgage-based CDOs. Rating agencies lowered the credit ratings on US\$ 1.9 trillion in MBSs between Q3 of 2007 to Q2 of 2008, another indicator that their initial ratings were not accurate.

Role of Hedge Funds

2.39 As a result of the slicing of risk and the support of credit ratings, the CDOs could be marketed to investors with different appetites for risk. Investors, particularly hedge funds, who wanted to maximise yield with higher risk exposure would buy the equity tranche of the CDOs. Hedge

funds further created leverage by borrowing against the assets they added to their investment portfolio (like CDOs and MBSs). For example, in the United States, two hedge funds of Bear Stearns had large leveraged exposure to CDOs. When the sub-prime default concerns gripped the market, the values of the CDOs were marked down, requiring the hedge funds to face margin calls from brokers (that is, demands for more assets to back the leverage). Investors in the hedge funds recognised the potential for losses and suddenly asked the funds to return their investments. For the hedge funds, the options were either to borrow more (which was difficult and costlier in the face of the credit squeeze) and repay the impatient investors or to go for a ‘fire sale’ (of CDOs at falling value) and

face the investors' call on their investment with them. The more extreme option was to default, meaning not to pay back the investors on demand. This is what Bear Stearns had to face when it closed down two of its hedge funds that were ultimately bailed out by the US Federal Reserve and taken over by JP Morgan. The agency-wise sub-prime exposures and losses in the US are given in Table 2.8.

Regulatory Weaknesses

2.40 The sub-prime crisis is also viewed as the best example of several weaknesses in the regulatory structure for financial institutions in terms of lax supervisory oversight and relaxation of normal standards of prudent lending. Several issues have been highlighted in this regard – lack of countercyclical regulation; inability to recognise systemic risks; the need for prudential regulation; non-recognition of off-balance-sheet items of banks; operation of non-banks beyond the regulatory purview; the complex and non-transparent nature of new financial instruments;

and regulatory oversight of systemically important financial institutions. Regulators in the financial sector did not have adequate skills to cope with rapid growth in the variety and complexity of innovations in financial products in the markets. Despite the prevalence of a well-established regulatory structure in terms of capital requirements and risk assessments, financial institutions found it relatively easy to move to activities outside the regulatory perimeter. While the regulatory capital requirement did limit the build-up of leverage on bank balance sheets, bank managers engaged in various off-balance sheet activities to increase risk and return without increasing the capital they were required to hold.

Role of Off-Balance Sheet Entities (OBSEs)

2.41 One of the major reasons for originators to leverage their loan portfolio was that soon after they originated the loan, the same was sold in the secondary market, which left them free of any financial responsibility. Banks failed to identify the risks involved in the complex securitisation process. Indirectly, banks' balance sheets remained exposed to developments in the sub-prime market through off-balance sheet entities (OBSEs) such as Structured Investment Vehicles (SIVs) that were investing in MBSs and CDOs by borrowing in the short-term commercial paper (CP) market. OBSEs, such as SIVs, are entities that allow financial institutions to transfer risk off their balance sheet and permit exposures to remain mostly undisclosed to regulators and investors; and achieve relief from regulatory capital requirements under Basel I. Although financial institutions were required to disclose the nature of the relationship between the parent and a subsidiary when the parent did not own, directly or indirectly through subsidiaries, more than half of the voting power (International Accounting Standards 27.40) of the OBSEs, such information was often in a footnote in a firm's report (GFSR, IMF, 2008). Banks with the objective of meeting Basel I norms were engaged in a process of continuous shifting of risk to the market through securitisation of loans and the use of credit default

Table 2.8: U.S. Sub-prime Exposures and Losses

	Exposure*			Losses		
	2005	2006	2007 ⁺	2005	2006	2007 ⁺
1	2	3	4	5	6	7
	Total amount (in billions of US dollars)					
Banks [#]	155	264	127	-9	-63	-29
Hedge Funds	70	98	78	-7	-27	-20
Insurance Companies	78	106	84	-2	-21	-15
Finance Companies	25	30	24	-1	-5	-4
Mutual Funds/ Pension Funds	15	18	14	-0	-3	-2
Total	343	516	326	-18	-118	-70
	As a per cent of total					
Banks [#]	45	51	39	49	53	41
Hedge Funds	20	19	24	37	23	29
Insurance Companies	23	20	26	9	18	22
Finance Companies	7	6	7	3	4	5
Mutual Funds/ Pension Funds	4	4	4	2	2	3
Total	100.0	100.0	100.0	100.0	100.0	100.0

* Par amounts for securities and notional amounts for derivatives.
⁺ As of Nov. 2007; [#] Including investment banks.
Source : Global Financial Stability Report, 2008.

swaps (CDS) to buy protection in the market, thus, freeing up capital for more lending. This created a 'shadow banking system', which remained almost completely unregulated (Box II.3).

2.42 Financial institutions transferred the mortgage claims to SIVs they had established and then the SIVs, by issuing and selling securitised products, transferred the risks and returns to

investors, earning commissions in the process. By doing so, financial institutions could maintain their own financial soundness and circumvent restrictions on capital adequacy ratios, while earning a steady flow of income. To generate greater profit from these commissions, each of which was small, it became necessary to expand the provision of mortgage loans and engage in securitisation on a large scale. This business model

Box II.3

The Concept of Shadow Banking

The shadow banking system or the shadow financial system consists of non-bank financial institutions which play an increasingly critical role in lending businesses the money necessary to operate. The term "shadow banking system" is attributed to Paul McCulley who coined it at the Jackson Hole Conference in 2007, where he defined it as "the whole alphabet soup of levered up non-bank investment conduits, vehicles, and structures", though the concept of credit growth by unregulated institutions (if not the terminology) dates back to 1935 by Friedrich Hayek (1935). By definition, shadow institutions do not accept deposits like a depository bank and, therefore, are not subject to the same regulations. Some complex legal entities comprising the system include hedge funds, SIVs, conduits, monolines, investment banks, and other non-bank financial institutions. Many "shadow bank"-like institutions and vehicles emerged in American and European markets, between the years 2000 and 2008, and played an important role in providing credit across the global financial system.

Operationally, shadow institutions, like investment banks, borrowed from investors in short-term, liquid markets (such as the money market and commercial paper markets), meaning that they would have to frequently repay and borrow again from these investors. At the same time, they used the funds to lend to corporations or to invest in longer-term, less liquid (*i.e.*, harder to sell) assets. In many cases, the long-term assets purchased were MBSs/CDOs. When the housing market began to deteriorate and the ability to obtain funds from investors through investments such as mortgage-backed securities declined, these investment banks were unable to fund themselves. Investor refusal or inability to provide funds via the short-term markets was a primary cause of the failure of Bear Stearns and Lehman Brothers during 2008.

Technically, these institutions are subject to market risk, credit risk and especially liquidity risk, since their liabilities are short-term while their assets are more long-term and illiquid. This creates a potential problem in that they are not depository institutions and do not have direct or indirect access to their central bank's lender-of-last-resort support.

Therefore, during periods of market illiquidity, they could go bankrupt if unable to refinance their short-term liabilities. They were also highly leveraged. This meant that disruptions in credit markets would make them subject to rapid deleveraging, meaning that they would have to pay off their debts by selling their long-term assets.

In early 2007, lending through the shadow banking system slightly exceeded lending via the traditional banking system based on outstanding balances. Analysts have placed significant blame for the freezing of credit markets on a "run" on the entities in the shadow banking system by their counterparties (Geithner, 2008). The run on the shadow banking system has been described as the "core of what happened" to cause the crisis (Krugman, 2009). It has also been stated that the so-called shadow banking system, including securitisation of loans, is likely to be smaller and subject to more regulatory oversight than before the financial crisis (Bernanke, 2009).

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seems to have led to a relaxation of lending standards and excessive mortgage lending. SIVs first came to light during the Enron scandal. Since then, their use has become widespread in the financial world. In the years leading up to the crisis, the top four U.S. depository banks moved off the balance sheet an estimated US\$ 5.2 trillion of assets and liabilities into special purpose vehicles or similar entities.

Role of Basel Norms

2.43 The Basel I minimum capital adequacy requirement has generally been instrumental in encouraging banks to shift risk from their balance sheets through securitisation or through shadow banking conduits in the way described above. Some believe that if Basel II had been in place in more countries, the recent stressful episode could have been less severe. Implementation of Basel II in more countries prior to the crisis would have helped in addressing certain, if not all, sub-prime-related problems. This could have happened by ensuring capital charges even for off-balance sheet exposures that were assumed through shadow banking conduits, more risk-sensitive treatment for securitisation-related exposures, greater risk differentiation while changing the exposure from prime to sub-prime loans or from corporate lending to leveraged lending, greater disclosures and more rigorous risk assessment frameworks within the banks. Under Basel I, capital charges were not required to be applied to supporting liquidity facilities that essentially represent loan assurances/guarantees of financial support to back an OBSE with less than a one-year commitment, while they were required for those with longer terms. For most banks in the US and Europe, the implications for the originating banks of these supporting facilities were not fully realised until difficulties arose in early August 2007⁴. Basel II requires banks to hold regulatory capital for various liquidity and other

support facilities, thus, enhancing the transparency to investors and regulators.

2.44 Although there are elements in Basel II that would have reduced some of the pressures, it is difficult to conclude that the event could have been avoided (GFSR, 2008). Considering that Basel II encourages the banks' hedging of risk exposures to lower risk weights on asset holdings, the use of credit default swaps (CDSs) would have expanded. While hedging credit risk through CDSs could be helpful, counterparty risk to those issuing such swaps is still present. Besides, while the enhanced disclosure and capital requirements of Basel II could discourage the originating banks from issuing below-investment-grade instruments as higher leverage and riskiness of exposures will be accounted for more clearly in the bank's capital requirements, it could not have prevented another crisis. Basel II's excessive emphasis on ratings and models for valuation and calculation of risks very often distorts the true picture. In a macroeconomic context, it has been argued that the implementation of Basel II capital requirements could have a procyclical effect on the business cycle. Specifically, in an economic downturn, anticipated losses would require banks to increase their capital (depending upon the sensitivity of rating models to economic conditions), putting further downward pressure on the provision of credit, and thereby accentuating the downturn. Incidentally, against this backdrop, Basel II provisions are being improvised to take into account some of these factors.

2.45 Besides, there have been a host of non-bank financial institutions such as insurance companies, hedge funds, pension funds, and mutual funds that were not directly affected by the disclosure requirements for OBSEs under Basel II, yet they remained potential channels for systemic risks. Hedge funds that were holding the riskiest tranches of structured products are *de facto* not subject to any disclosure requirements. While the

⁴ Using the standards of Basel I, Fitch Ratings estimated that, under a worst-case scenario, if liquidity lines were to be fully drawn down, declines in the Tier 1 capital ratio of European banks would peak at 50 per cent and for U.S. banks at almost 29 per cent (Fitch Ratings, 2007).

recent turmoil strengthens the case for mandatory disclosures by hedge funds⁵ before regulators, one cannot deny that there needs to be a balance between disclosure that provides market and regulatory confidence while not constraining hedge fund flexibility in contributing to the smooth functioning of the market.

2.46 Thus, regulatory arbitrage between banks and non-bank financial institutions and lack of co-ordination among regulatory structures could also have contributed to the crisis. Regulatory arbitrage across borders was also misused to the maximum. In a bid to attract financial services, regulators in international financial centres, such as London and New York, adopted a policy of relatively soft regulations or what has been described as light touch regulation. The eagerness to develop some centres as global financial centres resulted in a race to the bottom in regulation (Reddy, 2009b).

Risk Measurement, Accounting and Incentive Structure

Risk Measurement

2.47 Another microeconomic cause of the crisis is related to problems in risk measurement. Five issues are relevant in this context. First, the use of historical data was restricted to the very recent period (period of Great Moderation) for pricing new financial instruments, which yielded misleading results. Risk was reduced through (1) hedging, whereby two risks were thought to offset each other because their payoffs were negatively correlated; and (2) diversification, whereby risk was spread among assets whose returns were less than perfectly correlated. Though generally true, at times historical correlations may lead to misleading results. Thus, even very sophisticated statistical models failed to accurately measure and price risks, resulting in mismanagement of risks on many occasions. The limitations of historical correlation was one of the problems associated with securitising sub-prime mortgages in the United States, whereby large numbers of what were objectively low-quality loans

were pooled together out of which a mix of high-quality and low-quality securities backed by the pool were created (originate) and sold to an entirely new class of borrowers (distribute). The major flaw, however, was that originators generally retained little of the default risk and, as the boom developed, the quality of the loans progressively worsened. Before the crisis, the 'originate-and-distribute' model worked well as it provided diversification on the assumption that asset prices in various regions of the world would not move together. For example, before the crisis, investing globally was thought to reduce risk, as prices in various regions of the world would not move together. This assumption turned out to be false. When asset prices that previously moved independently (providing diversification) or in opposite directions (providing a hedge) started to move together, the risks rose instead of falling. When the bad times came, correlations became large and positive. What was risk reduction became risk concentration.

2.48 Second, it was difficult to assess the low probability of such large events. Measuring, pricing and managing risk require modern statistical tools based largely on historical experience. Given its simplicity, the natural assumption is that returns of many different assets are normally distributed (and so have thin tails). And, although tail events are infrequent, in reality they are more frequent than is predicted by a normal distribution. Even though the problem with assuming a normal distribution was well known, the assumption persisted with the not-so-surprising result that insurance against infrequent catastrophes was underpriced.

2.49 Third, apart from problems in measurement, there were also governance problems in risk management practices in financial institutions. The financial institutions found it relatively easy to move activities outside the regulatory perimeter through structured investment vehicles. More generally, the crisis showed that the enlarged financial sector – comprising both traditional banks and an increasingly important parallel financial system comprising non-bank intermediaries and off-

⁵ One needs to mention here the UK hedge fund industry initiative, which launched a working group backed by 14 of the largest UK hedge funds to develop a set of guidelines for the industry.

balance sheet entities – had become much riskier than in the past. The failure of governance is also evidenced by the failure of all relevant institutional defences against serious financial instability. Thus, the Board, the management, risk management practices and internal controls allowed excesses. The rating agencies, the advisors, the analysts and the auditors failed to give an alert on the build-up of risks, possibly due to relevant incentives or counterparty dealings. The financial regulators allowed these excesses to occur. Finally, the market discipline on which reliance has generally been placed and which may include media and public opinion did not prevent these excesses.

2.50 Fourth, more generally, the crisis showed that the enlarged financial sector – comprising both traditional banks and an increasingly important parallel financial system composed of non-bank intermediaries and off-balance sheet entities – had become much riskier than in the past. The absence of a national uniform regulatory authority resulted in oversight of the mortgage market and the scale of the financial sector's involvement in sub-prime mortgage products. Multiple regulators facilitated regulatory arbitrage by the market participants and thus exacerbated the risks. Despite the fact that financial markets had globalised, the framework for cross-border regulation was weak.

2.51 Fifth, there was a large disconnect between the risk officers and the top executives who are the decision-makers. With the former rarely having sufficient day-to-day contact with top decision-makers, they often could not communicate their assessments effectively. Besides, on certain occasions when what was happening was profitable, it was difficult to get managers and directors to listen (BIS, 2009).

Accounting Procedures

2.52 It is generally perceived that the accounting procedures that the market participants followed also contributed to the crisis. The accounting standards were pro-cyclical, especially due to the policy of mark-to-market rules of valuation of assets and liabilities. Mark-to-market (MTM) is an

accounting act of recording the price or value of a security or portfolio to reflect its current market value rather than its book value. However, considering that not all securities are liquid enough to have a tradable market price, they are marked at the fair value usually based on a model. The model is fed with inputs for which there are market prices (prices of similar securities, interest rates, etc.) or assumptions about the input values. The problem with MTM accounting is that it relies on the notion that the market is an asset's best arbiter of value. Most of the time, that is a fair assumption, but it breaks down in a market crisis. When investors are gripped by fear, panic selling can produce prices that are out of sync with underlying asset values. Worse, a market may stop trading altogether.

2.53 Given the large size of the market for structured finance products and related derivatives in the Over-the-Counter (OTC) markets prior to the crisis, it had become nearly impossible to determine their fair value. As is clear, in the recent crisis, fair value accounting was at fault not for the values chosen to represent various on-balance sheet positions, but for the various off-balance sheet extensions of commercial and investment banks to warehouse risks that, for reputational reasons, would have to be brought back onto the balance sheet if and when cumulative losses developed. Besides, at large and complex financial institutions, individual managers had strong incentives to discover and to exercise reporting options that overstate their capital and understate their exposure to loss. This expands their ability to extract implicit subsidies that risk-taking can generate from implicit safety-net support.

2.54 It is this potential for a complete reversal of fortunes for the best performing financial firms just because of mark-to-market accounting that has necessitated a review of international accounting norms. There is also a viewpoint that in creating and deepening the securitisation crisis, the role of fair value accounting is being overstated. In the US, a major purpose of adopting fair-value accounting was to require some of the developing losses at troubled financial firms to be recognised and

resolved more promptly than in the past. But in reality, under fair value accounting, portfolio positions were “marked to model” rather than to an actual transaction price, thus providing the opportunity to clever managers to adjust model outcomes until they produce pre-specified results (Caprio *et al.*, 2008). This had more to do with the incentive structure of the firm managers than with the accounting norms.

Incentive Structure

2.55 The crisis highlighted the faults in the incentive structure faced by investors and fund managers. First, with regard to investors, as income/ earning levels were growing, they failed to pay due attention to the balance sheets of the banks where they were doing business or of the finances of the firms in which they were invested through the purchase of equity or debt securities. Apart from lack of knowledge, the belief that someone else was watching – be it a trusted manager, an equity analyst, a credit rating agency or the regulator – made them assume that the system was sophisticated and that their investments were safe, while in reality the system was complex and opaque. The complexity of the financial system and the financial products was mistaken for sophistication of the system (BIS, 2009).

2.56 Second, managers of financial firms also were functioning under a distorted incentive structure. Compensation schemes based on the volume of business encouraged managers to go in for excessive risk-taking in financial firms. They saw a need to drive up returns on their equity to satisfy shareholders as well as to enhance their pay packages and sometimes also to retain their jobs in the race. Large annual bonuses running into several million dollars indirectly provided the incentive to take undue risk, innovate new financial instruments and market them to investors in search of higher yields, thus increasing leverage and creating fragile institutions and also an unstable financial system. Equity holders (because of limited liability) and asset managers (because of their compensation system) were

unduly rewarded for risk-taking. Greed became the accepted norm even if it meant giving up on the firm’s credentials in the short run. Here one needs to emphasise the role of animal spirits in encouraging people to take rash decisions, not to consider the future rationally in their decisions about savings and ultimately in encouraging corruption (Akerlof and Shiller, 2009). As a result, even if managers recognised a bubble in the price of some asset, they could not take advantage of that knowledge by selling short for fear that investors would withdraw funds. Such rewards were inconsistent with performance since governments invariably ended up providing funding support to prevent systemically important financial institutions from failing.

2.57 To sum up, while there is no single explanation in the realm of macroeconomic management that appears totally satisfactory, there is a common thread to most of the explanations, namely, serious underestimation of potential for market failures as it relates to macro-economy in general and the financial sector in particular (Reddy, 2009c). The linkage of the different causes, though not very obvious, seems to be as follows: As a consequence of the global imbalances, savings from Asia got invested in advanced countries, driving down their real interest rates. This led to massive expansion in credit quantity with erosion of quality because of the predatory search for yield. This, in turn, led to the generation of new toxic financial products through slicing, hedging and originating and distribution, all of which combined to brew the crisis to an explosive dimension (Subbarao, 2009). In light of the current global financial crisis, it would be worth exploring the history of financial crises in terms of their incidence, causes and effects.

II. FINANCIAL CRISES IN A HISTORICAL PERSPECTIVE

Definition and Categorisation

2.58 Financial panics or crises are as old as capitalism itself and can be traced at least to the Dutch tulip mania of 1636-37 and the South Sea

Bubble of 1719-20. The primary objective of the study of financial crises has been to better comprehend the underlying analytics of a crisis so that future occurrence may be predicted and minimised. Thus in the present context, an analysis of the financial crises witnessed by the global economy in the past is crucial in understanding and analysing the recent crisis.

2.59 One feature common to all financial crises has been that they have often arrived with fierce force and departed with important lessons for policy makers. Kindleberger (1978) has aptly called financial crisis a “hardy perennial”. Financial crises are admittedly difficult to define and often have no precise beginning or end. They may be defined as episodes of financial market volatility marked by significant problems of illiquidity and insolvency among financial market participants that require official intervention to contain such consequences. Financial crises may alternatively be defined as financial events that eliminate or impair a significant portion of the banking system’s capital.

2.60 Some economists have also defined financial crisis as a situation in which the supply of money is outpaced by the demand for money. This implies that liquidity evaporates quickly because available money is withdrawn from banks (called a run), forcing banks either to sell other investments to make up for the shortfall or to collapse. Another definition of financial crisis has been put forth by Mishkin (1991a) who defines a financial crisis as a disruption to financial markets in which adverse selection and moral hazard problems become much worse, so that financial markets are unable to efficiently channel funds to those who have the most productive investment opportunities. As a result, a financial crisis can drive the economy away from equilibrium with high output in which financial markets perform well to one in which output declines sharply.

2.61 The literature on financial crisis can be split into two schools of thought, one view expounded by the monetarists and the other more eclectic view put forth by Kindleberger and Minsky. Monetarists like Friedman and Schwartz (1963) have linked

financial crises with banking panics and concluded that banking panics result in monetary contractions which, in turn, lead to severe contractions in economic activity. Financial crisis events which did not result in banking panics were not classified as a financial crisis by the monetarists and they termed these events “pseudo- financial crises”. The opposite view of financial crises has been outlined by Kindleberger (1978) and Minsky (1972) whose definitions of financial crises are broader. In their view, financial crises either involve sharp declines in asset prices, failures of large financial and non-financial firms, deflations or disinflations, disruptions in foreign exchange markets, or some combination of all these. One may conclude from these definitions that financial crises indicate stress on the financial system, on banks and other financial intermediaries, usually resulting in failures of systemically important institutions and sharp contractions in the national economy.

2.62 The literature has, in general, categorised financial crises into the following: debt crises, banking crises, currency crises, and crises due to financial contagion. An economy may be affected by any of these crises or may simultaneously experience the occurrence of more than one variant of the economic crisis. Financial crises experienced in the past 150 years can be classified as one of these variants.

Debt Crises

2.63 Debt crises are the earliest known variant of financial crises and have been very frequent. A debt crisis occurs either when the borrower defaults or lenders perceive this as significant risk and therefore withhold new loans and try to liquidate existing loans. Debt crisis can apply to commercial (private) and/or sovereign (public) debt. If there is a perceived risk that the public sector will cease to honour its repayment obligations, this is likely to lead to a sharp curtailment of private capital inflows, in part because it casts doubt on the government’s commitment to allowing private sector debt repayment. By contrast, if (part of) the private sector is unable to discharge its external obligations, this

need not lead to a wider crisis; but in practice, if private sector default is on a significant scale, commercial debt often becomes sovereign debt through guarantees, bank bailouts, and so on. A government may fail to repay its sovereign debt. This often leads to a sudden decline in capital inflows and a spike in capital outflows.

Banking Crises

2.64 A banking crisis is triggered by a sudden withdrawal of bank deposits by several clients, a situation known as a 'bank run'. Banks may not have sufficient funds to simultaneously pay back numerous depositors, since they loan their funds. Thus, a banking crisis occurs when actual or potential bank runs or failures induce banks to suspend the internal convertibility of their liabilities or compel the government to intervene to prevent the collapse of the bank by extending assistance on a large scale. There can be a bank run as suggested by Radelet and Sachs (1998), *i.e.*, a self-fulfilling collapse *via* either literal bank runs – a view promulgated by Chang and Valesco (1998a, 1998b) – or some kind of balance sheet-driven financial contraction. Banking crises tend to be protracted and have severe effects on economic activity through their impact on financial intermediation, confidence, capital flight, currency substitution and public finances. A banking crisis generally results in the erosion of most or all of aggregate banking system capital. Banking crises were relatively rare during the Bretton Woods era, due to capital and financial controls, but have become increasingly common since the 1970s often in tandem with currency crises (Kaminsky and Reinhart, 1999).

Currency Crises

2.65 A currency crisis occurs when a speculative attack on the exchange rate results in a devaluation or sharp depreciation, or forces country authorities to defend the currency by expending large volumes of reserves or by significantly raising interest rates. A currency crisis is normally the result of a forced change in parity, abandonment of a pegged

exchange rate, or an international rescue (Bordo *et al.*, 2001). Currency crises can either be an 'old style' currency crisis where a cycle of overspending and real appreciation weakens the current account, often in the context of extensive capital controls, and ends in devaluation, or a 'new style' crisis where investor concerns about the credit worthiness of the balance sheet of a significant part of the economy (public and private) lead to a rapid build-up of pressure on the exchange rate in an environment of more liberal and integrated capital and financial markets (Dornbusch, 2001). There is no generally accepted definition of a currency crisis. The key element is a sort of circular logic, in which investors flee a currency because they fear that it might be devalued, and in which much (though not necessarily all) of the pressure for such a devaluation comes precisely from capital flight. Currency crises played a large role in the economic turmoil of the Inter-War era, in the break-up of Bretton Woods, in the early stages of the Latin American debt crisis of the 1980s and the Asian financial crisis in 1997.

Contagion

2.66 Considering the increasingly enhanced linkages in both trade and capital across nations, the issue of financial contagion, the process by which a shock in one part of the financial system spreads to other parts through a series of 'linkages', has also become important. The channels of contagion generally include flow of information and interbank claims. A fall in prices in one market may be interpreted as a negative signal about fundamentals. If these fundamentals are common to other markets, the expected returns and, hence, prices in those markets will also fall. Similarly, if one currency depreciates, other countries with common fundamentals may also experience a depreciation of their currency. Besides, considering that it is optimal for banks to hold deposits in banks in other regions or sectors in order to provide liquidity if demand is unusually high, when one region suffers a banking crisis, the other regions suffer a loss because their claims on banks in the

troubled region fall in value. If this spillover effect is strong enough, it causes a crisis in adjacent regions. The crisis gets stronger as it passes from region to region and becomes a contagion (Allen and Gale, 2000b; Kodres and Pritsker, 2002). The East Asian crisis is an example of how contagion can affect several economies in the region.

2.67 Many of the recent financial crises in emerging market economies, such as the Mexican crisis and the East Asian crisis, have been characterised by currency, debt and banking crises occurring at the same time or in rapid succession. An analysis of the financial crises suggests that in countries with capital controls, currency crises are more frequent while banking crises are less frequent. The relationship between banking crises and currency crises has also been explored empirically (Kaminsky and Reinhart, 1999). It has been observed that in the 1970s, when financial systems were highly regulated, currency crises did not coincide with banking crises. After the financial liberalisation of the 1980s, currency crises and banking crises have become more intertwined. Although banking crises typically precede currency crises, their common cause is usually a fall in asset values caused by a recession or weakness in the economy. Often, the crisis is part of a boom-bust cycle that follows financial liberalisation.

2.68 Indeed, as international capital and domestic financial markets have become increasingly integrated with increasing globalisation, the distinction between different types of financial crises has become blurred. Recent analyses focus on the linkages between the corporate, banking and public sectors during times of internal financing pressure. Attention is paid to crisis dynamics and spillover effects propagated through more traditional flow variables, such as the current account and fiscal deficits. Thus, creditors may lose confidence in a government's ability to service its debt, in the banking system's ability to finance deposit outflows or in the corporate sector's ability to service its loans. Problems in one sector are liable to spread to other sectors; for example, concerns about the government's balance sheet

could undermine confidence in banks that hold government debt and could spark a run on deposits; or banking sector problems could expose large contingent liabilities that could lead to difficulties for the government in servicing its debt and could even give rise to solvency concerns that could cause a run on the currency. Thus, increasingly the distinction between the different types of crises is getting blurred due to increased integration of markets within the shores as well as across borders.

Incidence of Financial Crises

2.69 The nature of financial crises has changed over the years with changes in the economic landscape. The earliest recorded episodes of financial crises generally took the shape of external default. During the period 1300-1799, Europe witnessed around 19 incidents of external default. The defaulting countries included Austria, England, France, Germany, Portugal and Spain. With the development of the banking sector in the eighteenth century, banking crises were witnessed by a number of developed countries as well as emerging markets. The earliest advanced economy banking crisis occurred in France in 1802; early crises in emerging markets befell China (several episodes during the 1860s-1870s) and Peru in 1873 (Reinhart and Rogoff, 2008).

2.70 Reinhart and Rogoff (2008) have given a wider view of the history of financial crises during the period 1800 to 2006. According to them, there were 239 episodes of sovereign default during the period 1800-2006, of which 126 episodes of sovereign default were witnessed in Latin America followed by 73 episodes of sovereign default in Europe, 26 in Africa and 14 in Asia. There were five pronounced peaks or default cycles during the period 1800-2006 when a high percentage of all countries were in a state of default or restructuring. The first spike took place during the Napoleonic war. The second took place during the 1820s-1840s when nearly half the countries in the world including all of Latin America were in default. The third episode is placed between the 1870s and the 1890s. The 1873 global financial crisis originated

in the German and Austrian stock market collapse. The fourth episode began in the Great Depression of the 1930s to 1950s when again nearly half of all countries stood in default. The most recent default cycle encompassed the emerging market debt crises of the 1980s and 1990s.

2.71 The history of financial crises during the period 1880-2000 has been examined in detail by Bordo *et al.* (2001) as well. Drawing from their analysis, the period between 1875 and 2007 can be broadly divided into four periods: Gold Standard Era: 1875-1913; Inter-War Years: 1919-1939; Bretton Woods Period: 1945-1971; and Recent Period: 1973-2007.

Gold Standard Era: 1875-1913

2.72 The Gold Standard Era has been relatively benign of the four periods even though capital

markets were globalised during this period. The occurrence of crises was low during the Gold Standard Era (1873-1913). During this period there were 35 episodes of sovereign default. The defaulting nations were largely Latin American with some European countries like Greece (1893), Portugal (1890), Russia (1885) and Spain (1882). Banking crises were relatively infrequent during this period; the most notable banking crisis was in the US which started in 1873. The US faced another major banking crisis in 1893 and once again in 1907.

Inter-War Years: 1919-1939

2.73 The Inter-War Years (1919-1939) were quite turbulent. This is not surprising as the Great Depression took place during this period (Box II.4). Banking crises and currency crises were widespread during the Inter-War years. There were

Box II.4 The Great Depression

The worldwide economic downturn which has come to be known as the Great Depression began in 1929 and lasted until about 1939. It has been the longest and the most severe depression witnessed by the industrialised western world. The Depression originated in the United States and its outcome was severe decline in output and employment, and acute deflation in almost the entire global economy (Romer, 2003).

Backdrop

The US economy had experienced rapid economic growth and financial excesses in the late 1920s and initially the economic downturn was seen as simply part of the boom-bust-boom cycle. There was over-production in agriculture, leading to falling prices and rising debt among farmers. During the mid-1920s Wall Street attracted a sizeable number of middle-class investors. Speculation was rising and in February 1929, the Federal Reserve issued statements to curb lending for speculative purposes by the banks. This led to a decline in stock prices. The stock markets bounced back again by March 1929; however, in September 1929, there was a sharp decline. At the same time there was a major banking crisis including the 'Wall Street Crash' in October 1929.

Causes

The fundamental cause of the Great Depression in the United States was the decline in aggregate demand which led to a decline in production and a pile-up of inventories. Several factors led to the contraction in aggregate demand which varied during the course of the Depression. The main factor depressing aggregate demand was a worldwide contraction in world money supplies. This monetary collapse itself was the result of a poorly

managed and technically flawed international monetary system (the gold standard as reconstituted after World War I). Monetary shocks played a major role in the Great Contraction and these shocks were transmitted around the world primarily through the working of the gold standard (Bernanke, 2000).

The fall in output in the United States which started in the summer of 1929 is widely attributed to the tight US monetary policy to stem the rise in stock market speculation. Stock prices in the US had risen more than four-fold between 1921 and 1929 when the stock prices peaked. The Federal Reserve raised interest rates between 1928 and 1929 with the aim of limiting stock market speculation. This hike in interest rates led to a decline in interest rate-sensitive spending in areas such as construction and automobile purchases which resulted in reduced production. By September 1929, the speculative bubble had built up in the US stock market and prices had reached levels that could not be justified by reasonable anticipations of future earnings. This bubble burst in October 1929. This was preceded by minor declines in stock prices which dented investor confidence leading to panic selling. Panic selling began on Black Thursday, *i.e.*, October 24, 1929. US stock prices spiralled downwards and fell by 33 per cent during September 1929 to November 1929. This stock market crash led to a sharp contraction in the aggregate demand in the US. The reduction in consumer and firm spending led to rapid declines in real output in late 1929 and 1930.

In addition to the reduction in aggregate demand due to the stock market crash, banking panics and the resultant monetary contraction led to a further decline in demand. The United States experienced widespread banking panics in the fall of 1930, spring

(Contd...)

(...Concl.)

of 1931, fall of 1931 and fall of 1932. Finally a National Bank Holiday was declared on March 6, 1933 which closed all banks, permitting them to reopen only after being deemed solvent by government inspectors. Default and bankruptcy plagued almost every class of borrower except the Federal Government.

During 1930-33, around 20 per cent of the banks in the US failed. These bank failures led to a dramatic rise in the demand for currency *vis-à-vis* bank deposits. Money supply contracted by 31 per cent between 1929 and 1933 due to the steep rise in the currency-to-deposit ratio. In September 1931, the Federal Reserve effected an interest rate hike leading to further contraction of money supply and a subsequent contractionary effect on output.

Friedman and Schwartz (1963) identified four main policy mistakes made by the Federal Reserve that led to a sharp and undesirable decline in the money supply :

- 1) Tightening monetary policy (resulting in increasing interest rates) beginning in the spring of 1928 and continuing until the stock market crash of October 1929.
- 2) Raising interest rates to defend the dollar in response to speculative attacks, ignoring domestic banking panics and failing to act as lender of last resort to domestic banks in September and October 1931.
- 3) Despite lowering interest rates early in 1932 with positive results, raising interest rates in late 1932.
- 4) Ongoing neglect of problems in the US banking sector throughout the early 1930s, and failing to create a stable domestic banking environment.

According to some economists, the Federal Reserve's decision to allow huge declines in the money supply in the US was to preserve the gold standard. Under the gold standard, imbalances in trade or asset flows gave rise to international gold flows. There have been other international linkages as well. US lending abroad fell in 1928 and 1929 as a result of high interest rates and the booming stock market in the United States. This reduction in foreign lending may have resulted in further credit contractions and declines in output in borrower countries like Germany, Argentina and Brazil (Romer, 2003).

The economic downturn was further compounded by the 1930 enactment of the Smoot-Hawley tariff in the United States and the worldwide rise in protectionist trade policies. In addition, the Revenue Act of 1932 increased tax rates in America in an attempt to balance the Federal Budget, which led to further contraction of the economy by discouraging spending.

Manifestation

The timing and severity of the Great Depression varied substantially across countries. In the United States, the downturn began in the summer of 1929 which became markedly worse in late 1929 and continued until early 1933. Real output and prices fell sharply and during this period, the United States witnessed a decline of 47 per cent in industrial production, 30 per cent in the real GDP and 33 per cent in the wholesale price index.

Virtually every industrialised country witnessed declines in wholesale prices of 30 per cent or more between 1929 and 1933. Commodity prices declined even more dramatically during this period.

Recovery

Recovery in the US economy set in from early 1933. Between 1933 and 1937, real GDP rose at an average rate of 9 per cent per year. US output finally returned to its long-run trend level in 1942. Recovery in other parts of the world varied greatly. Britain started recovering from the end of 1932. Early 1933 witnessed recovery in Canada and other smaller European countries. France could enter the recovery phase only around 1938.

The recovery was primarily led by currency devaluations and monetary expansion as monetary contraction and the gold standard had played a key role in the Great Depression. Worldwide monetary expansion resulted in lower interest rates and improved credit availability which, in turn, stimulated spending. Devaluations allowed countries to expand their money supplies without concern about gold movements and exchange rates.

Legacy

The impact of the Great Depression was steep declines in world output and employment. The Depression and the policy response also impacted the world economy. The Great Depression led to the demise of the international Gold Standard. In many countries it resulted in increased government regulation of the economy, particularly financial markets. It led to the establishment of the Securities and Exchange Commission in 1934 in the United States to regulate new stock issues and stock market trading practices. The Banking Act of 1933 (Glass-Steagall Act) established deposit insurance in the United States and prohibited banks from underwriting or dealing in securities. The Depression also played a crucial role in the development of macroeconomic policies intended to temper economic downturns and upturns. The Depression led to the development of Keynesian theory that underscored the importance of increases in government spending, tax cuts and monetary expansion in staving off downturns and depressions. This insight, combined with a growing consensus that government should try to stabilise employment, has led to a more activist policy since the 1930s.

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21 episodes of banking crises during this period and they spread across all continents including North America, Europe, Africa and Latin America. Asia was the only exception. Sovereign defaults were also common during this period with 30 episodes of external debt crisis.

Bretton Woods Period: 1945-1971

2.74 There was relative calm during the late 1940s to the early 1970s (Bretton Woods period). The first post-1945 global crisis was the breakdown of the Bretton Woods system of fixed exchange rates. This calm may be partly explained by booming world growth, repression of domestic financial markets (in varying degrees) and the use of capital controls that followed for many years after World War II. The financial markets were not very open till the end of the 1960s due to a combination of regulation, lack of capital mobility, diverse standards, and the limits of technology that created geographic barriers in the global economy. Banking regulation was made stringent and many banks were brought under state control. There was strict regulation of competition between banks and other types of financial institutions, and many countries used their financial systems to directly promote export industries and protect domestic producers and distributors. As a result, there were few banking crises during this period, with the exception of the twin crises in Brazil. However, currency crises were a regular feature of the financial landscape during the Bretton Woods Period as a fixed exchange rate was almost inconsistent with the macroeconomic policies followed during the period. The controls on capital flows in suppressing currency crises were less efficacious. During this period, 14 countries faced external debt/currency crises; the majority of the countries were in Latin America.

2.75 The situation changed dramatically after the breakdown of the Bretton Woods system of fixed exchange rates in 1971-72. After the collapse of the Bretton Woods System, developed countries in North America, Europe and Japan moved over to a floating exchange rate system. In addition, they also simultaneously embarked upon a programme

of liberalising their capital accounts and allowing cross-border financial investments. At the same time, they began deregulating their national financial institutions to allow more competition and new forms of financial activity. These developments paved the way for the steady growth of capital flows across borders including rapid growth of international banking credit during the 1970s and 1980s, but it was limited mainly to the industrialised economies.

Recent Period: 1973-2007

2.76 The post-Bretton Woods Period (1973-2007) has, however, been crisis-prone. An analysis of the data regarding the incidence of financial crisis reveals that the number of financial crises around the world has risen during this period, and even more sharply over the past thirty years. Since the early 1970s, with the liberalisation of capital account in the advanced countries, episodes of banking crises have increased. After a long hiatus, the number of countries facing banking difficulties first began to increase in the 1970s (Reinhart and Rogoff, 2008). The 1970s were characterised by the Latin American debt crisis and its impact on banks. Apart from the break-up of the Bretton Woods system of fixed exchange rates, sharp spikes in oil prices also catalysed a prolonged global recession, resulting in financial sector difficulties in a number of advanced economies as well. There were seven episodes of banking crises during the 1970s, viz., in Uruguay (1971), UK (1974), Chile (1976), Central African Republic (1976), Germany (1977), South Africa (1977) and Venezuela (1978).

2.77 In the early 1980s, the collapse of global commodity prices combined with high and volatile interest rates in the United States contributed to a spate of banking and sovereign debt crises in emerging economies, most famously in Latin America and then Africa. There were 40 episodes of banking crises during the decade of the 1980s compared with 73 episodes during the 1990s. The early 1980s witnessed crises in Chile and Morocco. The 1980s saw the United States experiencing the

'savings and loan associations' (S & L) crisis. In the 1990s, many economies including Nordic countries like Sweden, Finland, and Norway and most of the transitional socialist economies were hit by the crisis. The Nordic countries witnessed banking crises following a sharp surge in capital inflows and real estate prices. India faced a balance of payments crisis in 1991 in the wake of domestic imbalances, the Gulf War and the break-up of the USSR. Several countries including UK that formed

part of the European Exchange Rate Mechanism suffered crises in 1992-93 and were forced to devalue or withdraw from the mechanism. In 1994-95, it was the Tequila crisis that impacted Mexico followed by Brazil and Venezuela; in 1997, Thailand, Indonesia, Korea, and Malaysia faced crises popularly known as East Asian crisis (Box II.5). In 1998, Russia's default sent tremors that had an impact as far away as Brazil. Following the asset price bubble burst in the late 1980s and

Box II.5 East Asian Crisis

The East Asian financial crisis which impacted the fast-growing economies of South Korea, Malaysia, Thailand and Indonesia is remarkable in several ways. The crisis hit the most rapidly growing economies in the world, and prompted the largest financial bailouts in history. It was the least anticipated and sharpest financial crisis to hit the developing world since the 1982 debt crisis (Radelet and Sachs, 1998).

Backdrop

The fundamental aspects of macroeconomic management in the affected economies remained sound throughout the early 1990s. Government budgets regularly registered surpluses in each country and sovereign debt was at prudent levels. Inflation rates were below 10 per cent during the 1990s in the region. Domestic savings and investment rates were very high. Conditions prevalent in the global financial markets also did not portend a crisis as the world interest rates were unusually low and key commodity prices were relatively stable. The crisis was largely unanticipated by international lenders and most market observers and rating agencies also did not signal increased risk until after the onset of the crisis itself. Long-term sovereign debt ratings remained unchanged throughout 1996 and the first half of 1997 for each of the Asian countries except the Philippines, where the debt was actually upgraded in early 1997.

The only indication of growing concern was that stock prices witnessed a bearish trend, with prices in the Thai, Seoul and Malaysian stock markets witnessing a continuous downslide. In Indonesia, however, both stock market and bank lending showed continued confidence until mid-1997.

Other areas of concern were the growing current account deficits, overvalued exchange rates and the slowdown in exports. Other important indicators of growing financial

vulnerability were the rapid expansion of commercial bank credit and growing short-term foreign debt.

The financial sector exhibited signs of growing risk as financial institutions became increasingly fragile throughout the 1990s. Credit to the private sector expanded very rapidly with much of it financed by off-shore borrowing by the banking sector. The credit was utilised primarily for speculative investments.

Banks became increasingly vulnerable. Banks borrowed in foreign exchange and lent in local currencies and were, therefore, exposed to the risk of foreign exchange losses from depreciation. Moreover, banks borrowed off-shore in short term maturities and lent on-shore with longer pay-back periods. The financial fragility was further exacerbated by the fact that the countries' short-term debt exceeded available foreign exchange reserves.

With this background, bank failure in Thailand, corporate failures in Korea and political uncertainty in the region hastened credit withdrawals, leading to panic runs. This was further worsened by a contagion effect where the economic and political stability of the entire region was considered vulnerable by the creditors.

Causes

The Asian crisis was caused by a boom in international lending followed by a sudden withdrawal of funds. At the core of the Asian crisis were large-scale foreign capital inflows into financial systems that became vulnerable to panic (Radelet and Sachs, 1998).

According to estimates, the reversal of flows for the five East Asian countries hit hardest by the crisis (Indonesia, Korea, Malaysia, Philippines and Thailand) dropped from \$ 93 billion to -\$12.1 billion, a swing of \$ 105 billion on a combined pre-shock GDP of approximately \$ 935 billion

(Contd....)

(....Conclld.)

or a swing of 11 per cent of GDP. The sudden drop in bank lending followed a sustained period of large increases in cross-border bank loans.

Manifestation

The sudden and sharp withdrawal of foreign capital had several macroeconomic and microeconomic effects. First, the nominal as well as the real exchange rates depreciated dramatically after the initial defence of a pegged exchange rate in Thailand and the Philippines and a crawling peg in Indonesia, Malaysia and Korea. Domestic interest rates increased sharply due to the reversal of foreign inflows, resulting in a tightening of domestic credit conditions.

The combination of real exchange rate depreciation and high interest rates led to a surge in the level of non-performing loans (NPLs) in the banking sector, especially as real estate projects went into bankruptcy. The combination of sharply rising NPLs and direct balance sheet losses due to currency depreciation wiped out a substantial portion of the market value of bank capital in Indonesia, Thailand and Korea.

Impact

The sudden withdrawal of foreign financing had an enormous contractionary impact. The collapse of domestic bank capital further compounded the contraction by severely restricting bank lending. Banks cut back their own lending, both because the banks themselves were illiquid (as a result of the withdrawal of foreign credits and, in some cases, deposits) and because they were decapitalised. The decapitalised banks restricted their lending in order to move towards capital adequacy ratios required by bank supervisors and reinforced by the IMF.

early 1990s, Japan also experienced a banking crisis which started in 1992 and lasted for almost a decade. In the current decade, various emerging market economies, viz., Turkey (2001), Paraguay (2002), Uruguay (2002), Argentina (2001, 2002) and Moldova (2002) experienced financial crises. Notably, Argentina, Uruguay and the Dominican Republic faced triple crises. The US witnessed the dot-com meltdown in 2001 which impacted world demand severely.

2.78 The incidence of financial crisis has been the highest over the past three decades or so (Table 2.9). According to the database compiled

In December 1997, Moody’s downgraded the sovereign debt of Indonesia, Korea and Thailand, putting them below investment grade. As a result of creditor panic, bank runs, and the sovereign downgrades, Korea, Indonesia and Thailand were thrown into partial debt defaults. The economies in the affected countries experienced severe downturns. In Thailand, 97.7 per cent of GDP was the estimated output loss and GDP declined by 10.5 per cent. In Korea, output loss was 50.1 per cent and GDP declined by 6.9 per cent. In Malaysia, non-performing loans peaked between 25-35 per cent of banking system assets and fell to 10.8 per cent by March 2002. Output loss was 50.0 per cent of GDP and GDP declined by 7.4 per cent.

Legacy

The East Asian crisis brought into focus the vulnerability associated with short-term capital flows. It highlighted how balance sheet vulnerabilities can impact the financial stability of an economy. Post-crisis, the economies made a dramatic turnaround, turning the capital account deficit into surplus and built up huge foreign exchange reserves as an insurance against sharp capital reversals.

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by Laevan and Valencia (2008), there were 124 episodes of banking crisis, 211 episodes of currency crisis and 64 episodes of sovereign debt

Table 2.9: Incidence of Financial Crisis

Period	Number of Crises
1	2
1875-1913	58
1919-1939	51
1945-1971	17
1973-2007	399

Source : Laeven and Valencia (2008). Reinhart and Rogoff (2008).

crisis. Of these 42 were twin crises and 10 were triple crises (Table 2.10).

2.79 The incidence of crises has been frequent under different monetary and regulatory regimes. Financial crises have impacted both advanced as well as emerging market economies in varying degrees (Table 2.11). An analysis of the incidence of financial crisis over the past 150 years reveals that though crisis occurs without warning, the incidence can largely be explained in terms of the prevailing macroeconomic conditions, the financial regulatory regime, currency regime, fiscal discipline and global capital and trade flows.

Table 2.10: Frequency of Financial Crisis : 1973-2007

	Banking Crisis	Currency Crisis	Sovereign Debt Crisis	Twin Crisis	Triple Crisis
1	2	3	4	5	6
1970s	4	26	7	–	–
1980s	40	74	42	11	4
1990s	73	92	7	27	3
2000s	7	19	8	4	3

Note : Twin crisis indicates a banking crisis in Year t and a currency crisis in Year (t-1, t+1). Triple crisis indicates a banking crisis in Year (t-1, t+1) and a debt crisis in Year (t-1,t+1).

Source : Laeven and Valencia (2008).

Table 2.11: Major Financial Crises: 1873-2007

Name/Country/Year	Nature of the crisis	Impact of the crisis
1	2	3
German and Austrian Stock Market Collapse, May 1873	French war indemnity paid to Prussia in 1871 led to speculation in Germany and Austria. In early 1873, a speculative movement in the stock market led to tripling of stock prices in a few months. On May 9, 1873 two big banks failed in Austria. Following this, the German and Austrian stock market collapsed in 1873. The crises were connected due to the international capital markets. A large infusion of cash in the US railroad industry took place leading to the build-up of a speculative bubble. Capital flows to the US fell in the wake of the German crisis. Jay Cooke's investment banking firm failed in September 1873, setting off panic.	The recession which ensued after the crises in Germany, Austria and the US resulted in a dramatic fall in trade and capital flows. The failure of Jay Cooke Bank set off a chain reaction of bank failures. The New York Stock Exchange closed for 10 days starting September 20, 1873. A total of 18,000 business houses failed between 1873 and 1875. Unemployment reached 14 per cent by 1876. Real estate values fell and corporate profits declined sharply. The ensuing world recession (1873-1879) led to debt servicing problems in the other countries through reduced exports and tax revenues. Initial defaults in Central American nations in January 1873 led to a fall in bond prices. The crisis quickly spread to Italy, Holland and Belgium, England, France and Russia. By 1876, the Ottoman Empire, Egypt, Greece and 8 Latin American countries had defaulted.
Barings Crisis, 1890	It was triggered by central bank tightening in England, France and Germany. Argentina stopped dividend payments in April 1890, leading to a domestic bank run. The House of Baring, a major lender to Argentina, declared itself insolvent in November 1890. This crisis soon spread to other Latin American countries.	It impacted Britain as Argentina and Britain had strong economic links through trade and financial integration. The crisis impacted Uruguay which defaulted in 1891. This led to a series of sudden stops and current account reversals.
USA 1907	Rapid industrial and economic growth took place during 1897-1906, with lots of mergers and corporate consolidations. The San Francisco earthquake of April 1906 led to tightening of Eastern US and international financial markets. There was rapid expansion of trust companies, <i>i.e.</i> , lightly regulated banks. A speculative attempt to corner the market in a copper company's stock in October 1907 collapsed; some banks and trust companies were implicated. Runs on trust companies and banks in New York City set off the panic in the latter half of October 1907.	JP Morgan organised a co-operative arrangement of trust companies to pool \$ 10 million to support the banks and trust companies facing runs. In 1908, Congress passed the Aldrich-Vreeland Act. The crisis of 1907 occurred during a lengthy economic contraction lasting from May 1907 to June 1908. The interrelated contraction, bank panic and falling stock market resulted in significant economic disruption. Industrial production dropped, and 1907 saw many bankruptcies. Production fell by 11 per cent, and imports by 26 per cent, while unemployment rose to 8 per cent from under 3 per cent.
USA 1929	The 1920s experienced a major stock market boom associated with massive investment. It also saw major innovations in industrial organisations and corporate finance. The US stock market crashed in 1929 following	The recession began in 1930. It reduced output via wealth effects on consumption, reduced investment and reduced velocity. A series of banking panics erupted in 1930-33. The banking panics in turn impacted the real economy

Table 2.11: Major Financial Crises: 1873-2007 (Contd.)

Name/Country/Year	Nature of the crisis	Impact of the crisis
1	2	3
	<p>a tight Federal Reserve policy after a speculative build-up. The financial crisis began in the fall and winter of 1930-31, when large numbers of US banks failed, leading to a deflationary downward spiral and deepening recession. In May 1931, the Austrian Creditanstalt failed. The crisis then spread to Germany which defaulted on its large foreign debts and left the Gold Standard. Pressure then shifted to the US which saw a run on its gold.</p>	<p>through the collapse in money supply, which produced massive deflation and financial disintermediation. The deflation spread abroad through the fixed exchange rate links of classical gold standard. The year 1932 is considered to be the worst year in US economic history.</p>
Latin American Debt Crisis 1980s	<p>In the 1960s and 1970, many Latin American countries notably Brazil, Argentina and Mexico borrowed huge sums of money from international creditors for industrialisation, especially in infrastructure programmes. Between 1975 and 1982, Latin American debt to commercial banks increased at an annual cumulative rate of 20.4 per cent. Debt service grew even faster. When the world economy went into recession in the 1970s and 1980s, countries started facing a liquidity crunch. Interest rates increased in the US and Europe in 1979, making it harder for borrowing countries to pay back their debts. In August 1982, Mexico defaulted on its debt. In the wake of the Mexican default, commercial banks halted new lending to Latin American countries.</p>	<p>More than 70 institutions (accounting for 16 per cent of commercial bank assets and 35 per cent of finance company assets) were liquidated or subjected to intervention between 1980 and 1982. In March 1980 a number of financial institutions were forced to rely heavily on Central Bank financial assistance when faced with deposit withdrawals. Failed institutions included the largest investment bank and the second largest private commercial bank. Massive capital outflows took place, particularly to the US. The exchange rates of the affected countries depreciated sharply, thereby raising real interest rates. Real GDP growth for the region was only 2.3 per cent during 1980-85 but in per capita terms the affected countries experienced a negative growth of almost 9 per cent.</p>
Savings and Loan Crisis USA 1980	<p>The savings and loan crisis of the 1980s and 1990s was the failure of 745 savings and loan (S&L) associations in the US. In an effort to take advantage of the real estate boom and high interest rates of the late 1970s and early 1980s, many S&L associations lent far more money than was prudent, and lent to risky ventures. In 1982 a large number of customers' defaults and bankruptcies ensued. The US FSLIC had insured S&L accounts. From 1986 to 1989, FSLIC closed or otherwise resolved 296 institutions with total assets of \$ 125 billion. The failure of S&L associations resulted in many other bank failures.</p>	<p>The US government paid \$ 105 billion to resolve the crisis. There was a net loss to taxpayers of approximately \$ 124 billion. The concomitant slowdown in the finance industry and the real estate market may have been a contributing cause of the 1990-91 recession.</p>
World 1987	<p>Black Monday refers to Monday, October 19, 1987, when stock markets around the world crashed, shedding a huge value in a very short time. The crash began in Hong Kong, spread west through international time zones to Europe, hitting the United States after other markets had already declined by a significant margin. The Dow Jones Industrial Average (DJIA) dropped by 508 points to 1738.74 (22.6 per cent).</p>	<p>By the end of October, stock markets in Hong Kong had fallen 45.8 per cent, Australia 41.8 per cent, Spain 31 per cent, the United Kingdom 26.4 per cent, the United States 22.7 per cent, and Canada 22.5 per cent. New Zealand's market was hit especially hard, falling about 60 per cent from its 1987 peak, and taking several years to recover.</p>
UK 1991	<p>The first major crisis of the 1990s was the collapse of the European Exchange Rate Mechanism (ERM) in 1992. The British pound-under massive speculation from hedge funds-was withdrawn from the ERM and the Scandinavian banking system faced overnight interest rates of more than 100 per cent. In September 1992, the British government was forced to withdraw the pound from the European Exchange Rate Mechanism (ERM) after they were unable to keep the sterling above its agreed lower limit. From the beginning of the 1990s, high German interest rates set by the Bundesbank to counteract inflationary effects caused significant stress across the whole of the ERM. UK and Italy had additional difficulties as they had twin deficits,</p>	<p>The effect of high German interest rates and high domestic interest rates put the UK into recession and a large number of businesses failed. The housing market crashed. Other ERM countries whose currencies had breached their bands returned to the system with broadened bands.</p>

Table 2.11: Major Financial Crises: 1873-2007 (Contd.)

Name/Country/Year	Nature of the crisis	Impact of the crisis
1	2	3
Nordic Countries (Finland, Norway and Sweden) 1991	<p>while depreciation of the US dollar in which UK's exports were priced hurt it even more.</p> <p>The three Nordic countries, <i>i.e.</i>, Finland, Norway and Sweden, went through a financial liberalisation process that led to a lending boom. However, they suffered the adverse consequences of higher German interest rates.</p>	<p>Savings banks were badly affected; the government took control of three banks that together accounted for 31 per cent of system deposits. In Finland, output loss was placed at 59.1 per cent of GDP and GDP declined by 6.2 per cent. In Sweden, output loss was placed at 30.6 per cent of GDP and GDP declined by 1.2 per cent in the crisis year.</p>
Mexican Crisis 1994	<p>The following factors led to the financial fragility of the Mexican economy: (1) a semi-fixed exchange rate; (2) a sizeable current-account deficit resulting to a large extent from a huge credit expansion; (3) a substantial rise in U.S. interest rates; and (4) a trigger, consisting of the political tensions accumulated during 1994. The combination of the exchange-rate regime with a rapid expansion of credit, a substantial part of which was of poor quality, led to the crisis. The surge of bad credits was due to flimsy bank capitalisation and the failure to ensure that some bankers met the "fit and proper" criteria to own or manage the institutions. Thus, the original sin that led to the Mexican crisis was the expropriation of commercial banks that weakened them and rendered them a fragile conduit for privatisation and credit expansion. The crisis was the result of severe constraints on monetary policy that arose as the government wanted to maintain a fixed or quasi-pegged exchange rate. Hoping to avoid an economic slowdown, Mexico tried to limit the amount of monetary tightening during 1994 while maintaining its quasi-pegged exchange rate by engaging in massive sterilised intervention. Such a policy could not be sustained for long and resulted in a collapse of the exchange rate, soaring interest rates, and recession.</p>	<p>Of 34 commercial banks in 1994, 9 were intervened and 11 participated in the loan/ purchase recapitalisation programme. The nine intervened banks accounted for 19 per cent of financial system assets and were deemed insolvent. By 2000, 50 per cent of bank assets were held by foreign banks. The output loss amounted to 4.2 per cent of GDP and the real GDP growth declined by 6.2 per cent in the affected year.</p>
East Asian Crisis 1997	<p>Under the framework of a pegged exchange rate regime, Thailand had enjoyed a decade of robust growth performance, but by late-1996 pressures on the baht emerged. Pressure increased through the first half of 1997 amidst an unsustainable current account deficit, a significant appreciation of the real effective exchange rate, rising short-term foreign debt, a deteriorating fiscal balance, and increasingly visible financial sector weaknesses, including large exposure to the real estate sector, exchange rate risk and liquidity risk. Finance companies had disproportionately the largest exposure to the property sector and were the first institutions affected by the economic downturn. Following mounting exchange rate pressures and ineffective interventions to alleviate these pressures, the baht was floated on July 2, 1997. In light of weak supportive policies, the baht depreciated by 20 per cent against the U.S. dollar in July. The devaluation of the Thai baht in July 1997, the subsequent regional contagion, and the crash of the Hong Kong stock market sent shock waves to the Korean financial system. Korea's exchange rate remained broadly stable through October 1997. However, the high level of short-term debt and the low level of usable international reserves made the economy increasingly vulnerable to shifts in market sentiment. In Korea, while macroeconomic</p>	<p>By May 2002, the Bank of Thailand had closed 59 (of 91) financial companies that in total accounted for 13 per cent of financial system assets and 72 per cent of finance company assets. It closed 1 (out of 15) domestic bank and nationalised 4 banks. Non-performing loans peaked at 33 per cent of total loans and were reduced to 10.3 per cent of total loans in February 2002. 97.7 per cent of GDP was the estimated output loss and GDP declined by 10.5 per cent.</p> <p>In Korea, through May 2002, 5 banks were forced to exit the market through "purchase and assumption" and 303 financial institutions shut down (215 were credit unions); another 4 banks were nationalised. Output loss was 50.1 per cent and GDP declined by 6.9 per cent.</p> <p>In Malaysia, the finance company sector was restructured, and the number of finance companies was reduced from 39 to 10 through mergers. Two finance companies were taken over by the Central Bank, including the largest independent finance company. Non-performing loans peaked between 25-35 per cent of banking system assets and fell to</p>

Table 2.11: Major Financial Crises: 1873-2007 (Contd.)

Name/Country/Year	Nature of the crisis	Impact of the crisis
1	2	3
	<p>fundamentals continued to be favourable, the growing awareness of problems in the financial sector and in industrial groups (chaebols) increasingly led to difficulties for the banks in rolling over their short-term borrowing. In Malaysia the persistent pace of credit expansion at an annual rate of nearly 30 per cent to the private sector, in particular to the property sector and for the purchase of stocks and shares, exposed the financial system to potential risks from price declines in property and other assets that occurred in 1997. In the wake of market turbulence and contagion effects in the second half of 1997, concerns among market participants about the true condition and resilience of the financial system increasingly became a central issue, highlighted by known fragilities among finance companies.</p>	<p>10.8 per cent by March 2002. Output loss was 50.0 per cent of GDP and GDP declined by 7.4 per cent.</p>
Russia 1998	<p>From mid-1997 to April 1998, the Central Bank of Russia (CBR) was relatively successful in defending the fixed exchange rate policy through a significant tightening of credit. However, the situation became increasingly untenable when significant political turmoil in Russia - starting with the President's dismissal of the government of Prime Minister Chernomyrdin and prolonged by a stalemate over the formation of a new cabinet - cast increasing doubt on the political resolve to come to grips with Russia's fiscal problems. However, well before the crisis, there was widespread recognition that the banking system had a series of weaknesses. In particular, bank reporting and bank supervision were weak, there was excessive exposure to foreign exchange rate risk, connected lending, and poor management. From mid-July, when the Duma refused to pass key fiscal measures, the situation deteriorated rapidly, leading to a unilateral restructuring of ruble-denominated treasury bills and bonds on August 17, 1998. The ruble was allowed to float three days later despite previous announcements that it would not be devalued.</p>	<p>A large devaluation in real effective terms (over 300 per cent in nominal terms), loss of access to international capital markets, and massive losses to the banking system ensued. Two key measures implemented were a 90-day moratorium on foreign liabilities of banks and the transfer of a large fraction of deposits from insolvent banks to Sberbank. Nearly 720 banks, or half of those operating, were deemed insolvent. These banks accounted for 4 per cent of sector assets and 32 per cent of retail deposits. The GDP declined by 5.3 per cent in the crisis year. In 1998 inflation reached 84 per cent and welfare costs grew considerably. Other countries like the Baltic States, Belarus, Kazakhstan, Moldova, Ukraine and Uzbekistan were badly affected.</p>
Dot.com bubble 2000	<p>The "dot-com bubble" (or the "I.T. bubble") was a speculative bubble covering roughly 1998-2001 (with a climax on March 10, 2000 with the NASDAQ peaking at 5132.52) during which stock markets in Western nations saw their equity value rise rapidly from growth in the recent Internet sector and related fields. The period was marked by the founding (and, in many cases, spectacular failure) of a group of new Internet-based companies commonly referred to as dot-coms. A combination of rapidly increasing stock prices, market confidence that the companies would turn future profits, individual speculation in stocks, and widely available venture capital created an environment in which many investors were willing to overlook traditional metrics such as price-to-earnings ratios in favour of confidence in technological advancements. Over 1999 and early 2000, the Federal Reserve increased interest rates six times, and the economy was beginning to lose speed. The dot-com bubble burst, on March 10, 2000, when the technology-heavy NASDAQ Composite index peaked at 5,048.62 (intra-day peak 5,132.52), more than double its value just a year before. The massive initial batch of sell orders processed on Monday, March 13 triggered a chain</p>	<p>The financial Internet bubble finally burst in the spring of 2000. The Nasdaq plunge erased 62 per cent of the Nasdaq's value, which plummeted from a high of 4,260 to a low of 1,620 12 months later. Many dot-coms ran out of capital and were acquired or liquidated; Various supporting industries, such as advertising and shipping, scaled back their operations as demand for their services fell. Telecoms loan defaults totalled \$ 60 billion; there were redundancies in the thousands at investment banks; more than 300,000 jobs were destroyed in six months at telecoms equipment manufacturers and as many as 200,000 jobs in components suppliers and associated industries. The stock market value of all telecom operators and manufacturers fell by \$ 3800 billion since its peak of \$ 6300 billion in March 2000. In comparison, the combined cost of the crisis of the late 1990s was only \$ 813 billion.</p>

Table 2.11: Major Financial Crises: 1873-2007 (Concl.d.)

Name/Country/Year	Nature of the crisis	Impact of the crisis
1	2	3
Argentina 2001	<p>reaction of selling that fed on itself as investors, funds, and institutions liquidated positions. In just six days the NASDAQ lost nearly 9 per cent, falling from roughly 5,050 on March 10 to 4,580 on March 15.</p> <p>In March 2001, a bank run started due to increasing doubts about the sustainability of the currency board, strong opposition from the public to the new fiscal austerity package sent to the Congress, the resignation of president of the Central Bank, and the amendment to the convertibility law (change in parity from being pegged to the dollar to being pegged to a basket composed of the US dollar and Euro). During the second half of 2001, bank runs intensified. On December 3, 2001, as several banks were on the verge of collapse, partial withdrawal restrictions (corralito) were imposed on transactional accounts while fixed-term deposits (CDs) were reprogrammed (corralon) in order to stop outflows from banks. On February 4, 2002, bank assets were asymmetrically pacified, adversely affecting the solvency of the banking system.</p>	<p>In 2002, two voluntary swaps of deposits for government bonds were offered but received little interest from the public. In December 2002, the corralito was lifted. By August 2003, one bank had been closed, three banks nationalised, and many others had reduced their staff and branches. The output loss was 42.7 per cent of GDP and real GDP declined by 10.9 per cent in the crisis year.</p>

Causes of Financial Crises

2.80 In the literature, two broad approaches have been used to describe the causes of the crises. The first view, expounded by Kindleberger (1978), is that crises occur spontaneously as the result of mob psychology or panic. If everyone expects a crisis and acts as if one is about to occur, then the crisis becomes a self-fulfilling prophecy and *vice versa*. The second view asserts that crises are an intrinsic part of the business cycle and result from shocks to economic fundamentals (Mitchell, 1941). When the economy goes into a recession or depression, asset returns are expected to fall, borrowers have difficulty in repaying loans and depositors, anticipating an increase in defaults or non-performing loans, try to protect their wealth by withdrawing bank deposits. Banks are caught between the illiquidity of their assets and their relatively liquid liabilities and may become insolvent. This results in panic though the actual cause is different. Empirical evidence on the cause of crises is mixed. While some support the panic view (Friedman and Schwartz, 1963), many counter it and provide a wider range of evidence that crises are fundamental based rather than

panic based. (Calomiris and Gorton, 1991; Calomiris and Mason, 2003a). In the literature, several explanations for the causes of crises are given. In this section, some of these debates are captured under the following heads:

Financial and Panic Dimensions of Crises

2.81 A crisis normally has two fundamental dimensions – one is financial and the other is panic, which is often the trigger. First, shocks to bank liquidity, payments systems, and solvency are obvious characteristics of financial crises. Second, a panic strike – a sudden and dramatic loss of depositor and investor confidence – is often the precipitating event. When both financial and panic dimensions collide, they set off a chain reaction and a country begins to spiral downward, as panic and loss of confidence increase problems in the banking system as well as the real economy at the microeconomic level (Barton *et al.*, 2003). Contagion between countries occurs as well. Financial crises are largely attributed to rapid reversals in international capital flows and prompted chiefly by changes in international investment conditions. Flow reversals are likely to trigger sudden capital account adjustments and, subsequently, currency

and banking crises (Eichengreen and Rose, 1998; Frankel and Rose, 1996).

Imbalances in Domestic Economy

2.82 An analysis of the history of financial crises indicates that five elements contribute to a crisis: the real economy; the financial sector; the macro-economy; international money and capital flows; and asset pricing. When these elements are in balance, the economy generally runs well but when any of these elements run out of balance and affect other elements, the conditions become ripe for a financial crisis (Barton *et al*, 2003).

- (i) Imbalances can be caused by real sector under-performance, leading to a gradual erosion of the value of assets over time when companies fail to earn adequate return above their cost of capital.
- (ii) Imbalances can be caused by much needed but poorly executed market liberalisation, where aggressive reforms are introduced that outpace the economy's ability to absorb them.
- (iii) Unsustainable imbalances can also build up in the financial systems of countries with the uneven opening up of the market to foreign capital flows or deregulation in the financial sector. This was the case in most of the emerging market crises during the 1980s and 1990s and most notably the East Asian crisis.
- (iv) Imbalances can also arise as a result of unsustainable macroeconomic policies such as untenable fiscal deficits, overvalued currencies and too rapid credit growth in the economy fuelled either by foreign funding flows or unsustainable monetary policies.

2.83 Most of the debt crises can be attributed to these factors. All these factors acted as precursors to the Latin American debt crisis. The pattern over time starts with trouble in the real and banking sectors and then builds until either external shocks

(such as currency attacks) or internal shocks (such as bank runs by depositors) finally trigger a full-blown crisis.

Crisis Led by Financial and Technical Innovation

2.84 Historians, notably Charles Kindleberger, have pointed out that crises often follow soon after major financial or technical innovations that present investors with new types of financial opportunities, which he called "displacements" of investors' expectations. Unfamiliarity with technical and financial innovations may help explain how investors sometimes grossly overestimate asset values. Also, if the first investors in a new class of assets (for example, stock in dot-com companies) profit from rising asset values then, as other investors learn about the innovation, more people may follow their example, driving the price even higher as they rush to buy in hopes of similar profits. If such "herd behaviour" or "climbing onto the bandwagon" causes prices to spiral far above the true value of the assets, a crash becomes inevitable. If for any reason the price briefly falls so that investors realise that further gains are not assured, the spiral may go into reverse, with price decreases causing a rush of sales, reinforcing the decrease in prices. Early examples include the South Sea Bubble⁶ and Mississippi Bubble of 1720, which occurred when the notion of investment in shares of company stock was itself new and unfamiliar, and the crash of 1929, which followed the introduction of new electrical and transportation technologies. More recently, many financial crises followed changes in the investment environment brought about by financial deregulation; the crash of the dot-com bubble in 2001 began with "irrational exuberance" about Internet technology.

Adverse Selection and Moral Hazard in Financial Markets

2.85 Mishkin (1991b) examined episodes of financial crisis from 1857 to 1987. According to this

⁶ Incidentally, Isaac Newton who lost heavily in South Sea Bubble is reported to have said that he could calculate the movement of heavenly bodies but not the madness of the people.

analysis, five factors in the economic environment can lead to substantial worsening of adverse selection and moral hazard in financial markets, which then cause a financial crisis and shift the economy from equilibrium with high output to one with low output because the financial system is unable to channel funds to those with the best investment opportunities. The factors causing financial crises are increase in interest rates, stock market declines, increase in uncertainty, bank panics, and unanticipated declines in aggregate price level as elaborated below :

- (i) Increases in interest rates are generally the precursors of crises as individuals and firms who are willing to pay the highest interest rates are those with the riskiest investment projects. Generally, market interest rates experience a sudden spike driven up by increased demand for credit or a decline in the money supply. In this scenario, those with bad credit risks are still willing to borrow while those having good credit risks lose their appetite to borrow. The resultant adverse selection possibly leads to a steep decline in lending as lenders are not willing to extend credit which, in turn, leads to a substantial decline in investment and aggregate economic activity.
- (ii) As emphasised by Greenwald and Stiglitz (1988), Bernanke and Gertler (1990), and Calomiris and Hubbard (1989), a sharp decline in the stock market can increase adverse selection and moral hazard problems in financial markets because it leads to a large decline in the market value of the firms' net worth. This results in decline in lending, which in turn causes investment and aggregate output to decline. The Great Depression of the 1930s was preceded by a sharp decline in the stock market in October 1929.
- (iii) A dramatic increase in uncertainty in financial markets, due perhaps to the failure of a prominent financial or non-financial institution, a recession, or a stock market crash, makes it harder for lenders to screen good from bad

credit risks. It increases the severity of adverse selection problems in credit markets, while the decline in net worth stemming from the stock market crash also results in increased moral hazard problems. This makes them less willing to lend, leading to a decline in lending, investment and aggregate economic activity.

- (iv) Bank panics also result in financial crises as banks are important financial intermediaries. A financial crisis which results in a bank panic and the simultaneous failure of many banks, reduces the amount of financial intermediation undertaken by banks, and will thus lead to a decline in investment and aggregate economic activity (Bernanke, 1983).
- (v) Finally, an unanticipated decline in price levels causes a substantial decline in real net worth and an increase in adverse selection and moral hazard problems facing lenders. The resulting increase in adverse selection and agency problems causes a decline in investment and economic activity.

2.86 Most financial crises in the US have begun with a sharp rise in interest rates, a stock market crash and an increase in uncertainty resulting from a failure of major financial or non-financial firms (for example, the Ohio Life Insurance & Trust Co. in 1857, the Northern Pacific Railroad and Jay Cooke and Company in 1873, Grant & Ward in 1884, the National Cordage Company in 1893, the Knickerbocker Trust Company in 1907, and the Bank of United States in 1930). Based on this analysis, it can be concluded that stock prices decline and the spread between interest rates for low- and high-quality borrowers rises in the run-up to the panic. Second, most of the panics are preceded by substantial increases in interest rates. Third, most panics follow a major failure of a financial institution. This failure is often the result of financial difficulties experienced by a non-financial corporation. Financial panics generally occur after the onset of a recession and finally the rise in the interest rate spread associated with panic is soon followed by a decline. However, in several

cases, most notably after the 1873 panic, the 1907 panic, and the Great Depression, the interest rate spread rises again if there is deflation and a severe recession.

Free Capital Mobility and Banking Crisis

2.87 The economic literature has also found a striking correlation between freer capital mobility and the incidence of banking crises. Historically, periods of high international capital mobility have been followed by international banking crises. Another striking correlation has been between inflation and default. Recently, moral hazard-driven investment, which leads to an excessive build-up of external debt and collapse, bank runs and balance sheet implications of currency depreciation have emerged as major causes of financial crisis. In addition to these three explanations for currency crises, there are contagion effects. Moreover, devaluation by one country could lead its trading partners to devalue in order to avoid a loss of competitiveness. Other channels such as financial linkages can also serve to transmit contagion effects (Calvo and Reinhart, 1996; Eichengreen *et al.*, 1995). Financial crises have always had an international dimension as Morgenstern (1959), Kindleberger (1978) and Bordo (1986) have shown. Contagion spreads quickly through asset markets, through international banking and through monetary standards. Stock market crashes and banking panics have often occurred in many countries within a few months of the original shock.

Monetarist Dimension

2.88 The monetarist literature adds an additional channel for how financial crises that involve bank panics could lead to a severe downturn in the aggregate economy. Friedman and Schwartz (1963) document how bank panics in the United States led to a sharp contraction in the money supply as a result of depositors' movement out of deposits into currency and banks' movement out of loans into reserves. These contractions lead to substantial declines in economic activity and the price level. Most of the crises during the period 1876

to 1970 can be attributed to the reasons outlined above, including the crises of 1876, 1907 and the Great Depression.

First, Second and Third Generation Models

2.89 The first generation of currency crisis models, pioneered by Krugman (1979), explained the collapse of exchange rate regimes on the grounds that weak fundamentals lead foreign investors to pull resources out of the country, and as a result, the depletion of foreign reserves needed to sustain the currency leads to the collapse of the exchange rate regime. The first generation models attributed a central role to fiscal imbalances as a fundamental determinant of crises. But this first generation view could not explain the exchange rate crisis faced by the UK in 1991 and the East Asian crisis as in these crises the crucial fiscal disequilibria were absent.

2.90 The crises in Mexico, Asia, Russia and Brazil have underscored that a satisfactory explanation for financial crises in emerging markets remained elusive. The second generation models emphasised the possibility of self-fulfilling speculative attacks and multiple equilibria. Currency crises have sometimes occurred even though central banks had more than enough resources to prevent them (Obstfeld, 1994). Central banks may decide to abandon an exchange rate peg when the unemployment cost of defending it becomes too large. This new perspective implied that crises could be driven by self-fulfilling expectations, since the costs of defending the peg will be maintained. An example is the events in Europe in the early 1990s which could be largely explained by the second generation of models which suggest that currency crises may occur despite sound fundamentals, as in the case of self-fulfilling expectations (Obstfeld, 1996), speculative attacks, and changes in market sentiment (Flood and Marion, 1996; Frankel and Rose, 1996). In this case, *seigniorage* was not an issue; the governments involved retained access to capital markets throughout and monetary policy was dictated by macroeconomic policy

considerations and not budget needs. It was a matter of policy choice with macroeconomic tradeoffs and decisions. The Exchange Rate Mechanism (ERM) crisis was caused by a conflict between the austerity needed to defend a fixed exchange rate and the expansion needed to remove high unemployment, leading to Britain's forced exit from the ERM in 1992 (Eichengreen and Wyplosz, 1993).

2.91 The second generation crisis models emphasised not the mechanical exhaustion of foreign exchange but the problems of macroeconomic policy. In this case a currency crisis can develop because doubts about the government's willingness to defend the parity force it to raise interest rates, and the need to keep interest rates high, in turn, raises the cost of defending the parity to a level that the government finds unacceptable. Obstfeld argued that crises involve a strong element of self-fulfilling prophecy and exchange regimes that could have survived indefinitely nonetheless collapse if subjected to an essentially random speculative attack. But this explanation of mounting unemployment and domestic recession, while appropriate for the ERM 1992 crisis, was at odds with the facts in Mexico in 1994 and East Asia in 1997 (Chang and Velasco, 2001). During the East Asian crisis, there were implicit government guarantees which fuelled moral hazard-driven excess investment. Second, the government's limited willingness or ability to honour these guarantees implied that they may not be fully credible. In the initial build-up to the crisis, the government was able to honour these guarantees but with the level of debt rising, there were self-fulfilling expectations that the government would renege, resulting in a sudden collapse with a sharp fall in output and capital stock. This was the third generation currency crisis in which there was large currency depreciation which created havoc with balance sheets and the economy plunged into crisis equilibrium. The third generation model stressed how financial fragility can lead to a currency crisis.

Common Elements in Crises

2.92 There are, however, some elements that are common to the financial crises in emerging markets witnessed in recent years. Elements in common include a dramatic swing in the current account, a large real depreciation and a significant decline in real output. The pattern in all these crises and a number of historical crises appears to involve three broad elements.

2.93 First, after a period of substantial capital inflows, investors (both domestic and foreign) decided to reduce their stock of assets in the affected country in response to a change in its fundamentals. This could be attributed to reasons such as concerns about the viability of the exchange rate regime, as in most of these cases, concern about large fiscal deficits, as in Russia and Brazil, concern about large current account deficits, as in Thailand and Brazil; and the increasing salience of long-standing financial sector weaknesses, arising from some combination of insufficient capitalisation and supervision of banks and excessive leverage and guarantee (Summers, 2000).

2.94 Second, after this process continued for some time in these emerging market economies, investors shifted their focus from evaluating the situation in the country to evaluating the behaviour of other investors. The rate of withdrawal increased as a bank-run psychology took hold.

2.95 Third, the withdrawal of capital and the associated sharp swing in the exchange rate and reduced access to capital exacerbated fundamental weaknesses, in turn exacerbating the response of the financial market. The real depreciation of exchange rate reduced real incomes and spending. Extrapolative expectations regarding a falling exchange rate increased pressure for capital flight. And, most importantly, the increased domestic value of foreign currency liabilities and reduced credit worthiness of domestic borrowers further degraded an already ailing financial system, in turn causing further reductions in lending and worsening of fundamentals.

2.96 In nearly all recent crises, serious banking and financial sector weaknesses played an important role. Fixed exchange rates without the concomitant monetary policy commitments were present as antecedents to the crisis in all cases. Traditional macroeconomic fundamentals in the form of overly inflationary monetary policies, large fiscal deficits or even large current account deficits were present in all episodes. National balance sheet weaknesses, including large short-term liabilities either of the government or the private sector were important elements in each of the crises.

2.97 In short, among the many causes of financial crises the important ones are: a combination of unsustainable macroeconomic policies (including large current account deficits and unsustainable public debt), large capital inflows and balance sheet fragilities, and excessive credit booms, combined with policy paralysis due to a variety of political and economic constraints. In some financial crises, currency and maturity mismatches were a salient feature, while in others off-balance sheet operations of the banking sector are prominent. An analysis of the causes of the financial crises reveals that though the trigger points differ, some common threads run through the financial upheavals: first, an excessive use of credit; second, a discernible lowering of credit standards; and third, heavy reliance on leverage. Institutional weaknesses typically aggravate the crisis and complicate crisis resolution. Bankruptcy and restructuring frameworks are often deficient and disclosure and accounting rules for financial institutions and corporations are also weak. Many financial crises, especially those in countries with fixed exchange rates, turn out to be twin crises with currency depreciation exacerbating banking sector problems through foreign currency exposures of borrowers or banks themselves (Laeven and Valencia, 2008).

Effects of Crisis

2.98 Financial crises can be damaging and contagious and have often been followed by the

economies experiencing deep recessions and sharp current account reversals. Most macroeconomic and financial variables exhibited procyclical behaviour during recessions, except for two key policy-related variables – short-term interest rates and fiscal expenditures – which often behaved countercyclical during recessions. An analysis of the impact of financial crises which occurred in the past 150 years reveals that there are several channels through which the financial crisis, the associated increase in risk aversion and the ensuing recession have affected the macro economy. Financial and macroeconomic variables closely interacted through wealth and substitution effects, and through the impact that they had on the balance sheets of firms and households (Blanchard and Fischer, 1989; Obstfeld and Rogoff, 1999).

2.99 It was found that the recessions were often characterised by sharp declines in investment, industrial production, imports, and housing and equity prices, modest declines in consumption and exports, and some decrease in employment rates. After any financial crisis, most countries generally experienced an increase in both corporate and sovereign bond rates, indicating an increase in risk premiums. The resulting increase in the cost of borrowing affected investment activity. There was a general decrease in the availability of credit. Liquidity constraints affected not only the price of credit, but also the quantity available as financial institutions rationed credit, regardless of price. Banks became wary of extending loans. Moreover, the real effects of the economic slowdown and lower demand affected revenue cash flows which had knock-on effects for debt servicing capacity and overall profitability. Generally, countries experiencing financial crises witnessed unforeseen exchange rate movements. These movements also had an impact on the balance sheet and debt servicing capacity of the economic entities.

2.100 Some financial crises have had little effect outside the financial sector, like the Wall Street crash of 1987, but other crises have had a substantial adverse impact on growth in the rest of

the economy. Over the past 120 years, on average, crises have been followed by economic downturns lasting from two to three years and costing 5 to 10 per cent of GDP (Bordo *et al.*, 2001). Twin crises (both banking and currency) generally resulted in large output losses. Recessions that coincided with crises turned out to be more severe than recessions that did not coincide with crises. More often than not, the aftermath of severe financial crises shared three characteristics. First, asset market collapses were deep and prolonged. Real housing price declines averaged 35 per cent stretched out over six years, while equity price collapses averaged 55 per cent over a downturn of about three and a half years. Second, the aftermath of banking crises resulted in profound declines in output and employment. The unemployment rate rose by an average of 7 percentage points over the down phase of the cycle, which on an average lasted more than four years. Output fell (from peak to trough) by an average of over 9 per cent. The duration of the downturn, averaging roughly two years, was considerably shorter than for unemployment. Third, the real value of government debt rose sharply, rising by an average of 86 per cent in the major post-World War II episodes (Reinhart and Rogoff, 2008). The major drivers of debt increases were the inevitable collapse in tax revenues that governments suffered in the wake of deep and prolonged output contractions, as well as often ambitious countercyclical fiscal policies aimed at mitigating the downturn.

2.101 In the aftermath of a financial crisis, commercial banks, the most common source of credit, generally imposed more stringent credit standards and also increased interest rate spreads and fees. In addition, deteriorating financial positions in both the business and the household sectors reduced the creditworthiness of business enterprises and thereby constrained their access to credit. A financial crisis implies poor functioning of financial markets. The inadequate performance of financial markets led to the limited entry of new firms, low production in the firms, and greater financial constraints for business enterprises (Anna

and Robert, 2005). According to Milesi-Ferreti and Razin (1998), currency crises and the resultant currency crashes in emerging market economies have normally led to sharp declines in output. Bank runs have been a common feature of currency crises, with 62 per cent of crises experiencing momentary sharp reductions in total deposits. The result of a banking crisis associated with a currency crisis was large-scale capital flight, forcing official intervention to support the banking system and the imposition of capital controls to prevent the collapse of the currency. Severe bank runs have often been system-wide; however, a flight-to-quality effect within the system from unsound banks to sound banks has generally been witnessed. During the Indonesian crisis in 1997, private national banks lost 35 trillion rupiah in deposits between October and December 1997, while state-owned banks and foreign and joint venture banks gained 12 and 2 trillion rupiah, respectively (Batunanggar, 2002).

2.102 A financial crisis and the resultant recession quite often led to a drop in imports. The weakening or collapse of the financial system, in particular the banking system, weakens the country's export capability, affecting overall trade. During a currency crisis, the exchange rate scenario also becomes more uncertain. Due to sharp currency depreciation, consumers suffer wealth losses due to money holdings, forcing consumers to decrease their consumption. Furthermore, financial crises (including currency crises, banking crises or both) have also affected trade, besides the exchange rate. Reinhart (1999) pointed out that financial crises usually caused capital account reversal ("sudden stop") and triggered an economic recession. Mendoza (2001) showed that in an economy with imperfect credit markets these sudden stops could be an equilibrium outcome. The economic recession reduced not only domestic demand, but also total output. Several Latin American countries (*e.g.*, Mexico, Brazil and Venezuela) stopped repaying their foreign debt during debt crises in the 1980s.

2.103 In the early models, crises were thought of as monetary events with few real consequences.

However, an analysis of the history of financial crises reveals that most of the recessions have been caused for the most part by financial crises. One important example is the Great Depression, which was preceded in many countries by bank runs and stock market crashes. The most severe panic episodes were in 1857, 1873, 1893, 1907 and 1930-33, which resulted in the most severe economic contractions in 1857-58, 1873-79, 1893-94, 1907-08 and 1929-33.

2.104 To sum up, financial crises have been a part of the economic landscape since the beginning. The definition and categorisation of financial crises has evolved with time. The crisis chronologies suggest that financial crises have been chronic problems not only in the present era but in earlier periods as well. An analysis of the history of financial crises indicates that imbalance in the real economy combined with weakness in the financial sector, ebbs and flows in international money and capital, and asset mis-pricing generally contribute to a crisis. Financial crises have generally been followed by severe economic contractions.

III. HOW THE RECENT CRISIS DIFFERS FROM EARLIER CRISES

2.105 The recent global financial crisis that had turned into an economic crisis is the first major financial crisis of the 21st century and it is essential to understand how it differs from the crises of the 20th century. While there is still considerable debate on the appropriate policies to be adopted to set the world house in order, there are now ample indications and an almost unanimous view that the recent global crisis is the worst since the Great Depression of the 1930s in terms of geographical spread and intensity. With all the advanced economies in a synchronised recession, global GDP is estimated to have contracted for the first time since the Second World War. Though the recent crisis is being compared with the Great Depression, this crisis is different because it is the first truly global crisis. Amongst the crises that have originated in the United States or elsewhere,

this is the first crisis that has affected the whole world which even the Great Depression did not (Table 2.12). The United States and Europe, which had become dependent on the financial sector as their engine of growth, were at the epicentre of the crisis. Asia got affected because of the sharp decline in demand for their exports from the developed world, Eastern Europe was hit by the reversal of capital flows, and African and South American economies suffered through the huge drop in commodity prices and deterioration in their terms of trade. India was impacted both during Great Depression as well as during the recent financial crisis. However, India being a British colony, the nature of impact during the Great Depression was more complex (Box II.6).

2.106 Cross-crisis comparisons are usually based on the duration and depth of the crises (Bordo *et al.*, 2001; Cecchetti *et al.*, 2009). Duration is defined as the number of quarters it takes for output to recover to its pre-crisis level. Crisis depth is defined as the peak-to-trough percentage decline in GDP; in addition, crisis depth is proxied by the cumulative loss in GDP over the length of the crisis, taken as a fraction of its peak (pre-crisis) level. Estimates suggest that while the recent crisis is comparable with some of the previous crises in terms of crisis duration, the cost of the recent crisis in terms of cumulative GDP loss has undoubtedly been more severe than that of the Great Depression

Table 2.12: Global Crises Originating in the USA

1	Affected Countries	
	Advanced	Developing
2	3	
New York Panic of October 1907	US, Denmark, France, Italy, Japan, Sweden	Mexico
Great Depression of 1929	US, France, Italy, Belgium, Finland, Germany, Greece, Portugal, Spain, Sweden	Brazil, India, Mexico, Argentina, China
Global financial crisis of 2007	US, UK, Euro zone, Japan	Asia, Africa, Latin America and Eastern Europe

Box II.6**The Great Depression and India**

The Great Depression of 1929 had a very severe impact on India, which was then a colony of Britain. India was one of the earliest countries to have been hit by the Great Depression. The Depression started in India around the fourth quarter of 1929, just one quarter after the US. India was impacted through both direct and indirect channels. First, the US-originated Great Depression impacted India directly as the Indian economy was more open to trade and financial flows. Estimates indicate that pre-independent India's share in world trade was about 10 per cent unlike around 1 per cent in recent times. Second, India being a British colony was also impacted indirectly as the United Kingdom was hit by the Depression. The fact that the Indian economy functioned under the colonial aegis further added complexity to the whole issue. The agricultural sector and the railways were the most affected.

The international financial crisis combined with detrimental policies adopted by the Government of India resulted in the soaring prices of commodities. Farmers who were cultivating food crops had earlier moved over to cash crop cultivation in large numbers to meet the demands of the textile mills in the United Kingdom. Due to the high prices, farmers were unable to sell their products in India; nor could they export the commodities to the United Kingdom which adopted a protective policy prohibiting imports from India. Unlike food grains like rice and wheat, cash crops could not be used for private consumption. As there was little sale of indigenous manufactures and limited exports, commodities accumulated and the flow of cash was restricted.

During the period 1929–1937, exports and imports fell drastically, crippling seaborne international trade. Due to a decline in exports and imports, and, thereby, in the transportation of goods, railway revenues decreased exponentially. All the expenses for the years 1930–31 and 1931–32 were paid from the Railway Reserve Fund.

In British India, apart from existing imports and exports, there was also a particular amount of money which colonial India contributed towards administration, maintenance of the

army, war expenses, pensions to retired officers and other expenses accrued by Britain towards maintenance of her colony called 'Home charges'. Due to the drastic collapse of international trade and the very little revenues generated, India had to face a severe balance of payments crisis. India could only pay for her invisible imports through home charges by selling off her gold reserves. From 1931–32 to 1934–35, India exported Rs. 2,330 million worth of gold.

Like all agricultural countries, India also experienced deterioration in terms of trade. Export prices declined faster than import prices. Most agricultural countries such as Australia, New Zealand, Brazil and Denmark reacted by depreciating their exchange rates. However, the British Raj did not opt for this course of action. Another recommended policy action during this period could have been an increase in government expenditure. But the colonial Government did just the opposite, making the incidence of the Great Depression even more severe (Manikumar, 2003).

The policies of the Government of India during the Great Depression resulted in widespread protests all over the country. High prices along with the stringent taxes prevalent in British India increased the extent of discontent amongst farmers. The Salt Satyagraha of 1930 was one of the measures undertaken as a response to heavy taxation during the Great Depression. Furthermore, as the national struggle intensified, the Government of India conceded some of the economic demands of the nationalists, including the establishment of a central bank. Accordingly, the Reserve Bank of India Act was passed in 1934 and a central bank came into being on April 1, 1935 with Sir Osborne Smith as its first Governor.

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or any other crisis (Table 2.13). This is despite unprecedented monetary and fiscal measures and unprecedented international co-ordination.

Global Imbalances in the Past

2.107 While global imbalances have existed in the past, the unique feature of the recent situation

is that the emerging economies have been the creditor countries financing the deficit in advanced countries. In the past, the reverse scenario was observed when capital flowed from rich to poor nations. For example, during the gold standard era (until 1914), a large flow of capital took place from industrial countries (mostly the United Kingdom and

Table 2.13: Duration and Depth of Financial Crises

Period	Average Duration of Crisis in Years	Average Crisis Depth (in terms of cumulative GDP loss relative to peak in per cent)
1	2	3
1880-1913 (includes Baring crisis of 1890, New York panic of 1907)	2.4	9.8
1919-1939 (includes period of Great Depression)	2.4	13.4
1945-1971	1.8	5.2
1973-1997 (includes Latin American crisis of 1980s, ERM crisis of 1992 and Asian and Russian crisis of 1997-98)	2.5-2.6	7.8-8.3
2007-08 (Global Recession of 2008)	2.5	20

Source: Estimates from Bordo *et al.*, 2001; Cecchetti *et al.*, 2009.

France) to the (then) emerging markets, such as Canada or Australia with significant stability in exchange rates and no evidence of disorderly unwinding (Table 2.14). A similar nature of capital flow was observed during the 1990s when the advanced countries had invested in the EMEs in Asia, Latin America and Russia. Many of these EMEs, however, faced severe financial debt crises on account of the composition of their debt, marking a disorderly unwinding though the creditors did not suffer much. In addition, there were episodes where capital moved within emerging markets or among advanced economies. In the 1970s, a major terms of trade shock occurred in the world economy, implying a net transfer of resources from oil-importing countries (mostly in Latin America) to oil-exporting countries of the Gulf. The unwinding, however, was not

Table 2.14: Previous Episodes of Global Imbalances

Era	Region		Orderly Unwinding for	
	Creditor	Debtor	Creditors	Debtors
1	2	3	4	5
Gold Standard (<1914)	Advanced	Emerging	Yes	Yes
1970s	Emerging	Emerging	No	No
1980s	Advanced	Advanced	Some	Yes
1990s	Advanced	Emerging	Yes	No
2000s	Emerging	Advanced	?	?

Source: ECB Occasional Paper Series, January 2008.

smooth for either. On the contrary, the widening of the US deficits in the 1980s financed by surpluses in Japan, Germany and Netherlands saw a relatively orderly unwinding of the imbalances with the gradual depreciation of the US dollar (Bracke *et al.*, 2008).

2.108 No country in the world today – neither the advanced nor the emerging market economies – has been spared from the consequences, although the impact has varied across nations. The recent crisis, in fact, can be considered either as an ‘advanced country’ crisis, an ‘emerging market economies’ crisis, a truly ‘global crisis’ or combination of all. Hence, studies have mostly attempted to compare the recent crisis with previous advanced country crises, EME crises of the recent past, and the Great Depression of the 1930s.

Recent Crisis vs. Advanced Country Crises

2.109 Each financial crisis has certain distinctive characteristics. Yet a comparison reveals that most of them at times exhibit remarkable similarities. The majority of historical crises are preceded by financial liberalisation (Kaminsky and Reinhart, 1999). While financial liberalisation has been an inherent feature of the US economy for years, the run-up to the recent crisis has generally been marked by several financial excesses that went beyond the regulatory purview. In addition, the current crisis exhibits several similarities to the previous advanced country crises with regard to the behaviour of asset prices, credit expansion, debt accumulation and current account deficits, though the extent has varied.

2.110 Reinhart and Rogoff (2008) compared the recent US sub-prime crisis with 18 other bank-centred advanced country financial crises from the post-War period. These crisis episodes include the Big Five Crises of Spain (1978-79), Norway (1987-88), Finland (1990-93), Sweden (1990-93) and Japan (1992-93) that are protracted large-scale financial crises associated with major declines in economic performance (recessions) for an extended period. The list also includes 13 other

banking and financial crises in advanced countries that were relatively milder with limited impact; these include Australia (1989), Canada (1983), Denmark (1987), France (Credit Lyonnaise bail-out in 1994), Germany (1977), Greece (1991), Iceland (1985), Italy (1990), New Zealand (1987), the United Kingdom (1973, 1991, Barings Investment Bank crisis of 1995), and the United States (Savings and Loan crisis of 1984).

2.111 As regards the impact on real per capita GDP, the average growth decline has been around 5 percentage points for the Big Five crises and about 2-3 percentage points for the other banking

crises of the advanced countries. The cumulative output losses have varied amongst countries. The cumulative loss of GDP for the recent crisis is generally estimated to be greater than in some of the advanced country crises⁷, though in terms of duration the recent crisis is expected to be milder than other advanced country crisis (Table 2.15).

2.112 As regards the initial conditions among advanced economies, the imbalances in the build-up to most of these crises were minor when compared with the recent crisis. The average current account balances for banking crises in advanced countries rarely exceeded 3 per cent of

Table 2.15: Systemic Crises: Broad Indicators

(in per cent)

Crisis/Countries	Starting Date	Average Duration of the Crisis (No. of quarters)	Average Crisis Depth*	Cumulative Loss relative to Peak	Minimum Real GDP Growth Rate	Gross Fiscal Cost (as % of GDP)	Share of NPL at Peak
1	2	3	4	5	6	7	8
Latin American Crisis (1980s)							
Argentina	Mar 1980	28	14.1	-44.5	-5.7	55.1	9
Chile	November 1981	21	20.2	-60.1	-13.6	42.9	35.6
Columbia	July 1982	0	0.0	0.0	0.9	5	4.1
Latin American Crisis (1990s)							
Argentina	January 1995	7	6.1	-5.2	-2.8	2	17
Brazil	December 1994	7	2.5	-1.9	2.1	13.2	16
Mexico	December 1994	9	10.4	-10.7	-6.2	19.3	18.9
ERM Crisis							
Estonia	November 1992	33	27.3	-116.8	-21.6	1.9	7
Finland	September 1991	25	11.8	-40.7	-6.2	12.8	13
Norway	October 1991	3	1.5	-0.6	2.8	2.7	16.4
Sweden	September 1991	16	5.8	-11.0	-1.2	3.6	13
Banking Crisis of Spain	1977	20	-	-	0.2	5.6	-
Japanese Crisis of 1990s	November 1997	15	3.4	-6.7	-2	14	35
United States Savings and Loan Crisis	1988	-	-	-	-0.2	3.7	4.1
Asian Crisis							
Indonesia	November 1997	21	18.1	-50.7	-13.1	56.8	32.5
Thailand	July 1997	23	14.9	-33.2	-10.5	43.8	33
Malaysia	July 1997	9	11.2	-13.8	-7.4	16.4	30
Korea	August 1997	7	9.2	-9.3	-6.9	31.2	35
Philippines	July 1997	6	2.7	-2.2	-0.6	13.2	20
Current Global Crisis							
United States	August 2007	10	5	-20	-2.7	-	4.8
United Kingdom	August 2007	10	5	-20	-4.4	-	-

* : Peak-to-trough decline in GDP in per cent.

Source: Cecchetti *et al* (2009), Laeven and Valencia (2008) and IMF database.

⁷ The exceptions are Estonia and Finland in early 1990s.

GDP on the eve of crises, while US deficits reached over 6 per cent of GDP prior to the recent crisis (Table 2.16, also refer to Table 2.3). Most advanced country banking crises were associated with significant increases in housing prices in the period prior to the crisis though the increase has been much sharper in the United States during 2006 than in other episodes. Further, the public debt as a share of GDP has risen much more slowly in the United States in the years preceding the crisis than it did either in the run-up to the Big Five crises/ERM or other advanced country banking crisis. This is essentially because unlike other episodes, the recent crisis has seen a substantial build-up of private US debt.

2.113 Another similarity is the mechanism of recycling petro dollars during the 1970s *vis-à-vis*

the 2000s. During the 1970s, the US banking system stood as an intermediary between oil-exporting surplus countries and emerging market borrowers in Latin America and elsewhere that ultimately culminated in the 1980s' debt crises of the EMEs. In the recent crisis, a large volume of petro-dollars was again flowing into the United States; however, with many emerging markets running current account surpluses a large chunk of these petro-dollars got recycled to a developing economy that existed within the United States in the form of a "developing sub-prime mortgage economy" (Reinhart *et al.*, 2008). Thus, there were several qualitative, if not quantitative, parallels with the formative years of the previous post-war financial crises in industrialised countries.

Table 2.16: Cross-Country Crises: Initial Conditions

1	2	3	4	5	6	7	8	9	10
	Starting Date (t)	Currency Crisis (Y/N) (t-1, t+1)	Fiscal Balance/ GDP at t-1	Public Sector Debt/ GDP at t-1 (per cent)	Inflation at t-1	Net Foreign Assets / M2 at t-1	Current Account/ GDP at t-1	Significant bank runs (Y/N)	Credit Boom (Y/N)
Latin American Crisis (1980s)									
Argentina	March 1980	Y	-2.7	10.2	139.7	34.2	0.6	Y	Y
Chile	Nov 1981	Y	5.0	0.0	31.2	42.2	-6.4	Y	Y
Columbia	July 1982	N	-2.3	–	26.3	46.0	-4.1	N	N
Latin American Crisis (1990s)									
Argentina	Jan 1995	N	0.0	33.7	3.9	25.9	-2.8	Y	Y
Brazil	Dec 1994	Y	0.3	23.0	2477.2	22.7	-0.1	Y	N
Mexico	Dec 1994	Y	-2.5	27.3	8.0	18.1	-5.8	Y	Y
ERM Crisis									
Estonia	Nov 1992	Y	5.3	–	–	57.6	59.7	Y	–
Finland	Sept 1991	N	5.6	14.0	4.9	12.7	-4.9	N	N
Norway	Oct 1991	N	2.5	28.9	4.4	10.3	2.5	N	N
Sweden	Sept 1991	Y	3.4	–	10.9	4.8	-2.6	Y	–
Japanese Crisis of 1990s	Nov-1997	N	-5.1	100.5	0.6	1.6	1.4	N	N
Asian Crisis									
Indonesia	Nov 1997	Y	-1.1	26.4	6.0	21.6	-2.9	Y	N
Thailand	July 1997	N	2.4	14.2	4.8	25.1	-7.9	N	Y
Malaysia	July 1997	Y	2.0	35.2	3.3	23.2	-4.4	Y	N
Korea	August 1997	Y	0.2	8.8	4.9	15.6	-4.1	Y	N
Philippines	July 1997	Y	-0.2	–	7.1	19.0	-0.2	N	Y
Current Global Crisis									
United States	Aug-2007	N	-2.6	60.1	2.6	1.0	-6.2	N	N
UK	Aug-2007	N	-2.6	43.0	2.8	1.4	-3.6	N	N

Y : Yes. N: No
Source: Laeven and Valencia (2008) and IMF database.

2.114 In the case of advanced countries, studies show that recessions associated with financial crises have typically been more severe and protracted, whereas recoveries from recessions associated with financial crises have typically been slower, held back by weak private demand and credit. Highly synchronised recession episodes among advanced countries are generally longer and deeper than other recessions, and recoveries are very weak. Also, developments in the United States have generally played a pivotal role in both the severity and duration of these highly synchronised recessions (IMF, 2009b). The recent recession is also highly synchronised as is the case with some other previous episodes in 1907 and 1939. The rapid drop in consumption in the United States resulted in large declines in external demand in many other economies. Hence, recovery in the US has significant implications for advanced countries.

Recent Crisis vs. EME Crises

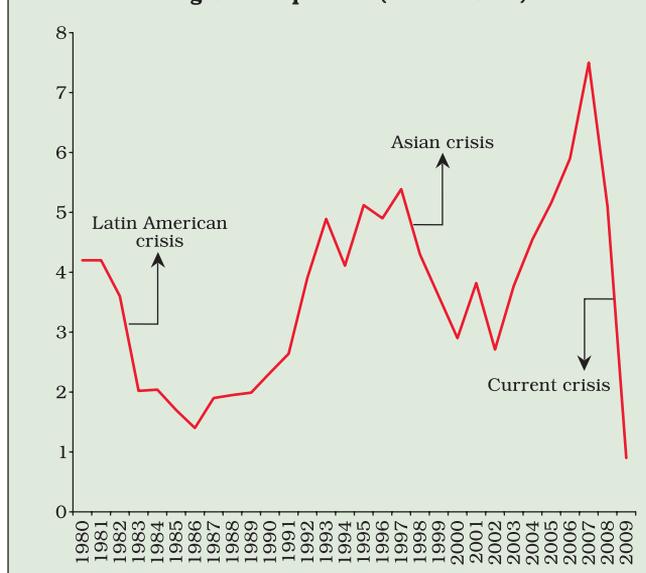
2.115 EMEs across the world have faced several crises that are either regional – the Latin American and Asian crises – or individual country crises as in Argentina, Russia and Turkey. At the macro level, these EMEs having learnt lessons from their own past currency and financial crises, built up reserves and strengthened their financial systems apart from consciously developing their financial markets. They have also been careful to ensure that their banks were not involved excessively in toxic assets or innovative transactions (Thorat, 2009). Even so, these countries have had to face the consequences of the recent crisis and the consequent fall in global trade and GDP, unemployment and slowing credit growth.

2.116 The recent crisis turned out to be more severe, affecting large parts of the world along with EMEs simultaneously and, hence, traditional coping mechanisms at national and sub-national levels became less effective than they were in the past. During previous EME crises that remained confined to individual countries or to a particular region, countries tended to rely on large exchange-rate

depreciations to adjust to macroeconomic shocks. During the 2009 global crisis, however, the scope for real exchange-rate depreciation was more limited, leaving less room for the developing economies to adjust to the rapidly changing economic conditions. Besides, most of the previous EME crises were essentially traditional retail banking and currency crises. During these crises, richer countries buffered the fall by bailing out the troubled regions. In contrast, the recent crisis hit at the very heart of global finance with no buffer to fall back on. In fact, the major factor that differentiates the recent crisis from those of the past is that developing countries have become more integrated, both financially and commercially, into the world economy than they were 20 years ago. As a consequence, they were more exposed to changes in the international market.

2.117 Although the recent financial crisis did not originate in the EMEs, it has impacted capital flows to EMEs more severely than in earlier crises that actually originated in the EMEs (for instance, the Latin American and Asian crises). Net capital flows to EMEs fell from 4.2 per cent of GDP in 1981 to 1.6 per cent of GDP in 1986. They fell from above 5 per cent of GDP in 1996-97 to a trough of around 3 per cent in 1998-99. The recent crisis has seen a much sharper fall in capital flows from a peak of about 7.5 per cent of GDP in 2007 to an estimated marginal inflow in 2009 (Chart II.4). This decline has taken place over a very short time-frame compared with previous EME crises. This reflects the impact of greater financial integration of EMEs with the global economy, the increasing role of capital flows in meeting the external financing requirements of these economies and the substantial deleveraging in the US and other advanced economies. The peak capital flow in 2007 was much higher than those in earlier episodes of capital flows to EMEs. Also, unlike the earlier episodes, the surge in capital flows to EMEs prior to the recent crisis has generally been associated with surpluses in the current account as discussed in the section on global imbalances. A region-wise comparison reveals that the flow of capital flows

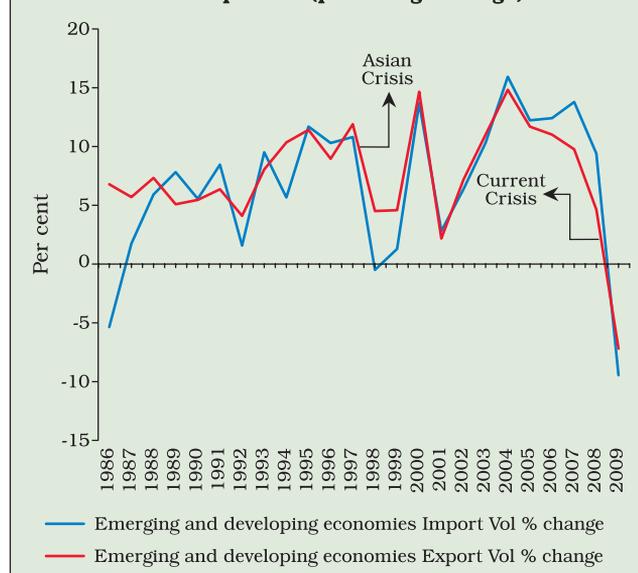
Chart II.4: Capital Flows to Developing Countries during Crisis Episodes (as % to GDP)



was the maximum to the Latin American region in the early 1980s and to the Asian region since the mid-1990s. During the period prior to the crisis, capital flows surged to all regions in 2007 before contracting sharply in all regions in 2008, though the contraction has been relatively sharper for 'Emerging Europe', amounting to more than 10 per cent of GDP.

2.118 While comparing the various financial variables of the EMEs between the recent crisis and the previous episodes of crises, in the previous episodes there were frequent currency crises which often translated into debt crises because of the impact of large-scale devaluations of the local currency of foreign debt (Table 2.16). In the recent crisis, currency depreciations, though prevalent, generally did not have an adverse impact except in Eastern European EMEs. This could be attributed to stronger external financial positions than in the earlier episodes with large foreign exchange reserves and relatively strong domestic financial institutions⁸. Nonetheless, the impact on growth via trade and capital flows has been quite severe in the recent crisis. The volume of trade of EMEs has seen a dip in the recent period that is much sharper

Chart II.5: Trends in EME Trade Volume during Crisis Episodes (percentage change)



than during the Asian crisis (Chart II.5). Weaknesses in the equity market and export markets have played a bigger role in the recent crisis than in crises that hit the emerging world in the recent past. While in the episodes of earlier crises domestic demand collapsed more than the external demand, it is the other way round in the recent crisis. China, the largest and the leading emerging market economy that had remained virtually unaffected in the previous episodes, has been affected in the recent crisis.

Recent crisis vis-à-vis The Great Depression

2.119 The closest parallel to the recent crisis has been the Great Depression. In both cases, the United States has been at the epicentre of the crisis. Second, both crises had a global impact. Third, both crises were preceded by asset and credit booms. Fourth, rapid credit expansion and financial innovations accompanied the boom in both crises. Fifth, liquidity and funding problems of banks and financial intermediaries have been at the core of both episodes. Sixth, both crises were essentially banking and financial sector crises that turned into economic recessions/depressions. The transmission

⁸ Korea is one exception to this where short term external bank liabilities posed some problems leading to large depreciations.

channel from the financial sector to the real sector that operated in both the episodes has been similar. Problems in the financial sector reduced the availability of funds for borrowers, led to a rise in the marginal cost of funds, and losses from falling asset prices reduced the net worth of borrowers. Seventh, large similarities exist between the paths and the levels of financial and economic variables such as loan ratios and stock prices during both crises (IMF, 2009b). Finally, both crises have changed the intellectual framework of managing economies and have revived the debate on the role of public policy in avoiding a crisis, the so-called Keynesianism.

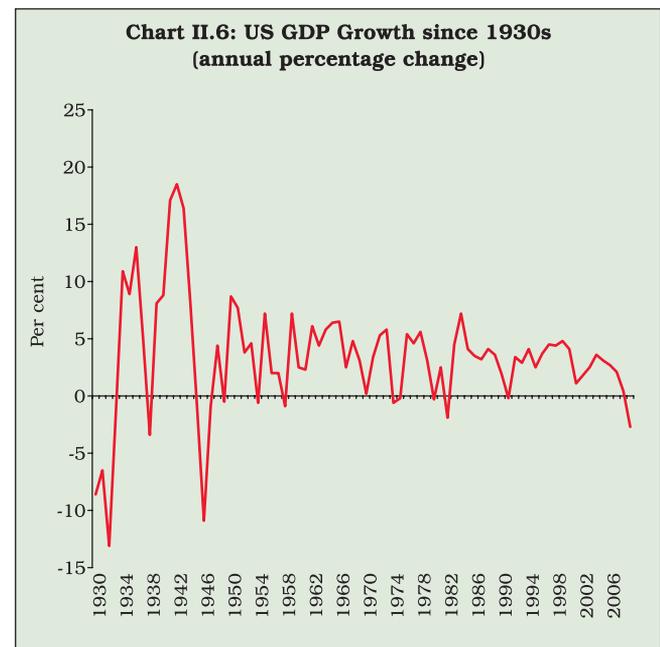
2.120 Despite these similarities, the recent crisis differs from the Great Depression in several aspects. First, although both have been global crises, the scale of impact in terms of the number of countries affected has been much larger for the recent crisis than for the Great Depression. This is attributed to the levels of financial and economic integration today that are much higher than in the period prior to Great Depression, thus leading to a larger and faster transmission of shocks from the US to the rest of the world. Second, macroeconomic conditions were more favourable in the recent crisis *vis-à-vis* the Great Depression. The recent crisis was preceded by a period of high growth and low inflation with macroeconomic stability. On the other hand, global economic conditions were weaker in mid-1929; Germany was already in recession and consumer prices had either stagnated or had already started falling in Germany, UK and the US before the start of the recession. Third, while the credit boom prior to the Great Depression was more US-specific, the boom prior to the recent crisis was more global with increased leverage and risk-taking prevalent in advanced countries and in many EMEs (IMF, 2009a). Fourth, the origins of the recent crisis were in wholesale banking (and, therefore, more difficult to contain) rather than in retail banking which was the case with the Great Depression. Fifth, unlike in the 1930s, there is no gold standard, which could serve to restrict how much the money supply can be expanded. Finally, counter-cyclical

Table 2.17: United States: Great Depression vs. Recent Crisis

		(Per cent)	
		Great Depression	Recent Crisis
1	2	3	3
Peak Real GDP Decline	13 in 1932		6
Unemployment Rate	3 in 1929 to 25 in 1933	4.6 per cent in 2007 to 9 in 2009; 10 projected in 2010	
Decline in Prices	24		4
Stock Price Decline	85		43
Increase in Fiscal Deficit	1.5		3.0

policy responses were absent in the early stages of the Great Depression. Policies were initiated only by 1933, after the Gold Standard was given up. In contrast, the recent downturn has seen strong and swift monetary and fiscal policy support, which was both global and well co-ordinated, to revive the world economy.

2.121 A comparison with the Great Depression solely on the basis of macroeconomic indicators for the US gives the impression that the recent crisis is not as bad as the Great Depression (Table 2.17). The decline in GDP in 2009 is the sharpest since the post-World War II period, yet the decline in GDP is less than that of the post-Great Depression and post-World War II periods (Chart II.6). However, a



comparison based on world indicators such as the world output, world stock market, world trade and aggregate money supply indicates that the recent crisis is worse than the Great Depression (Eichengreen and Rourke, 2008). The only factor that places the recent crisis better than the Great Depression is in terms of the length/ duration of the crisis. This is because of the swift, large, lasting and the co-ordinated way in which the central bankers and policymakers across the world have responded to the recent crisis, probably learning from the lessons of the Great Depression for economic recovery today (details on policy responses in Chapter 4). It is these measures that have prevented the recent recession from deteriorating into a depression. While a Depression has been avoided, the recent problems in Greece and euro area highlight the fact that the recovery is still fragile. It may be noted here that while

problems in Greek economy have been aggravated due to the recent financial crisis, the weaknesses in the Greek system are more structural (Box II.7).

2.122 To sum up, the recent crisis seems to be less adverse than the previous episodes of crises in terms of duration, although the extent of output loss for the recent crisis is estimated to be larger. The Great Depression seems to be the closest equivalent to the recent crisis. Though the US has been at the centre of both crises and both have been essentially financial and banking crises, the recent crisis has been more global due to the enhanced financial linkages that prevail today. While the Great Depression shifted the geopolitical and economic balance from the United Kingdom and Europe to North America, a similar shift is being talked about from America to Asia as a consequence of the recent crisis (Reddy, 2009b).

**Box II.7
Genesis of Crisis in Greece**

Greece faced a deep, structural and multifaceted crisis characterised by large fiscal deficit, enormous public debt and consistently eroding competitive position manifested in a gradually deteriorating current account balance. The economy faced a twin deficit - a general public deficit of around 13 per cent of GDP and public debt to GDP ratio at 115 per cent in 2009; and a current account deficit of 14.6 per cent of GDP in 2008 with a moderate decline to 11.2 per cent of GDP in 2009 (Table 1).

The country's heavy dependence on foreign borrowing amidst slowing growth and reduced global risk appetite had heightened concerns over long standing fiscal and external imbalances. The country's incapacity to correct the situation

Table 1: Select Macroeconomic Indicators of the Greek Economy

Indicators	2005	2006	2007	2008	2009	2010(P)
1	2	3	4	5	6	7
GDP Growth (%)	2.2	4.5	4.5	2.0	-2.0	-2.0
Inflation (%)	3.5	3.3	3.0	4.2	1.4	1.9
Unemployment (% of labor force)	9.9	8.9	8.3	7.6	9.4	12.0
Gross Fiscal Deficit (% of GDP)	-5.1	-3.1	-3.7	-7.8	-12.9	-8.7
Current Account Balance (% of GDP)	-7.5	-11.3	-14.4	-14.6	-11.2	-9.7
Exchange Rate (Euros/US\$)	0.80	0.80	0.73	0.68	0.72	0.74
Government Bond Yield (%)	3.6	4.1	4.5	4.8	5.2	6.2

P: Projection.

Source: International Monetary Fund, World Economic Outlook Database, April 2010.

through changes in the exchange rate coupled with no fiscal latitude has raised questions about Greece's ability to honour its outstanding debt obligations undermining global confidence in Greek economy. The large fiscal and current account deficits in other EU economies namely Portugal, Ireland, Italy and Spain have raised concerns since early this year (Table 2). The intensity of the problem in the Eurozone periphery may be gauged from the systemic concerns emanating from the large holdings of sovereign debt paper with European banks.

The problems of Greece are mostly structural and they existed even prior to the crisis. The global crisis only amplified the chronic weaknesses in the system and accelerated the downturn in the economy.

Fiscal Problem

- A large part of its fragile fiscal position is attributable to its low domestic saving rate. Domestic saving rate amounted to only 5.0 per cent of GDP in 2009 partly because of rapid rise in private consumption and largely due to high fiscal deficit.
- Expenditure on retirement benefits due to an ageing population, tax evasion coupled with steady depletion of growth promoting expenditure in education, research and infrastructure has resulted in a bloated public sector structure in Greece over the years.

(Contd...)

(...Concl.)

- Debt remains high not only due to annual deficits but also “deficit-debt” adjustments.¹ The frequent initiation of the ‘Excessive Deficit Procedure (EDP)’² also raises skepticism about the right size of the fiscal debt. For example, EDP was initiated in March 2009 whereby debt to GDP ratio was revised upwards to 115.1 per cent from erstwhile 95.4 per cent in 2008.
- The weighted average borrowing cost of the Greek government rose from 3.8 per cent in 2006 to 4.4 per cent in 2007 and 4.6 per cent in 2008 and then flared up to 5.0 per cent in First quarter of April 2010.

Current Account Deficit

- Due to low domestic saving rate, public debt has to be financed from foreign sources, resulting in wide current account deficit and a growing external debt. Thus the fiscal problem gets intertwined with the external deficit and debt problem and the twin deficits fed each other in self fulfilling cycle.
- This is directly traceable to a large trade deficit, an average 20 per cent between 2001-09, reflection of its continuously depleting price and product competitiveness in international markets.

- According to Bank of Greece Annual Report 2008-09, lower productivity is due to poor penetration of new technologies in most sub-sectors; low vocational on the job training and the inefficiency of public administration. Greece ranks 96th among 181 countries in terms of World Bank ‘Ease of Doing Business’. It is the last among OECD countries.

Greece slipped into the path of recession since 2009 as GDP contracted by 2 per cent and unemployment rate rose to 9.4 per cent. The debt crisis deepened in October 2009 and further in mid April 2010 when it became clear that budget deficit has blown up to unsustainably high levels. Assessing the situation, on April 22, 2010, Moody’s downgraded Greece’s sovereign rating to A3 followed by Standard & Poor’s which downgraded Greece’s and Portugal’s long-term debt to BB+ (junk) and A-, respectively sparking off a marked dip in confidence in global equity markets. Several Greek banks were also downgraded subsequently which delimited their access to international financial markets. The probability of losing access to their most important refinancing source, European Central Bank also rose exponentially. The possible loss of the ECB funding source pushed up CDS premia and yield spreads in Greek sovereign bonds.

Table 2: Current Account, Government Deficit and Public Debt in the Euro Area

Country	CAD/GDP (%)			GFD/GDP (%)			Public Debt (% of GDP)		
	2000	2005	2009	2000	2005	2009	2000	2005	2009
1	2	3	4	5	6	7	8	9	10
Austria	-0.7	2.0	1.4	-1.9	-1.7	-3.6	66.5	63.9	66.5
Belgium	4.0	2.6	-0.3	0.0	-2.7	-5.8	107.9	92.1	96.7
Cyprus	-5.3	-5.9	-9.3	-2.3	-2.4	-6.1	48.7	69.1	56.2
Finland	8.1	3.6	1.4	6.8	2.6	-2.4	43.8	41.8	44.0
France	1.6	-0.4	-1.5	-1.5	-3.0	-7.9	57.3	66.4	77.6
Germany	-1.7	5.1	4.8	1.3	-3.3	-3.3	59.7	68.0	73.2
Greece	-7.8	-7.5	-11.2	-3.7	-5.1	-12.9	103.4	100.0	115.1
Ireland	-0.4	-3.5	-2.9	4.8	1.6	-11.4	37.8	27.6	64.0
Italy	-0.5	-1.7	-3.4	-0.9	-4.4	-5.3	109.2	105.8	115.8
Luxembourg	13.2	11.0	5.7	6.0	0.0	-1.1	6.2	6.1	14.5
Malta	-12.5	-8.8	-3.9	-6.2	-2.9	-4.1	55.9	70.2	69.1
Netherlands	1.9	7.3	5.2	2.0	-0.3	-4.9	53.8	51.8	60.9
Portugal	-10.2	-9.5	-10.1	-3.0	-6.1	-9.3	50.5	63.6	76.8
Slovak Rep.	-3.5	-8.5	-3.2	-8.7	-2.8	-6.3	50.3	34.2	35.7
Slovenia	-3.2	-1.7	-0.3	-1.2	-1.0	-6.1	..	27.0	35.9
Spain	-4.0	-7.4	-5.1	-1.0	1.0	-11.4	59.3	43.0	53.2
<i>Memo</i>									
United Kingdom	-2.6	-2.6	-1.3	1.3	-3.3	-10.9	41.0	42.2	68.1

Source: World Economic Outlook Database, IMF.

¹ These are financial transactions of the Government which are not recorded in the deficit, but increase public debt.

² Excessive Deficit Procedure (EDP) is initiated by the Economic and Financial Council of European Union when a Euro zone country records government deficit in excess of the 3 per cent reference value.

IV. CONCLUDING OBSERVATIONS

2.123 The recent global financial crisis that finally engulfed almost all economies marked a painful adjustment of a variety of imbalances at the macro level coupled with micro-level distortions and incentives created by past policy actions. The analysis of the various causes of the crisis has initiated a whole new debate on the relevance of various economic tenets and has challenged the economic doctrine that assumed the self-correcting mechanism of the markets. At the fulcrum of the crisis was excessive leverage. This was combined with inadequate regulation and flawed credit ratings. The low interest rate regime, which was the result of accommodative monetary policy, led to the debt levels acquiring unsustainable proportions. The global savings glut combined with aggressive marketing by the housing finance institutions and under-pricing of risks fuelled the build-up of sub-prime mortgages.

2.124 Thus, the crisis had its roots in macroeconomic causes that fed into the functioning of the financial markets as both investors and the financial institutions were induced to take excessive risks in their search for higher yields. Easy credit combined with under-pricing of risks, both by households as well as financial intermediaries, created speculative bubbles in real estate, energy and other sectors. However, in many cases domestic macroeconomic policies could not take into account the build-up of systemic risks in the financial system or domestic economic imbalances and asset price bubbles, thereby contributing to the crisis. This is because many central banks either focused or were mandated to focus exclusively on price-stability, through inflation-targeting regimes. In other cases, although central banks perceived that there were excessive risks in the system, they believed that risks were dispersed widely, especially among those who could afford to bear them, through the emergence of new intermediaries like hedge funds and new instruments like derivatives, and therefore sensed no major risks to the financial system as a whole, and hence, did not act appropriately. Regulatory bodies could not

anticipate that the rapid innovation in financial instruments had not resulted in risk mitigation; on the contrary, it had concentrated and magnified risk. No public institution had a formal mandate to maintain financial stability and, hence, such stability in public policy was neglected. Moreover, the shadow banking sector remained beyond the purview of effective regulation. Furthermore, multilateral institutions like the International Monetary Fund (IMF) who were charged with the responsibility of surveillance failed to diagnose or bring out the vulnerabilities both at the global level and at the level of systemically important advanced economies (Reddy, 2009c).

2.125 The final trigger for the crisis came from the decline in U.S. home prices by mid-2006 and a gradual rise in the Fed Funds target rate that led to massive losses and foreclosures in the sub-prime mortgage market. The consequent crisis in global financial markets, the extreme level of risk aversion, the mounting losses of banks and financial institutions and the sharp correction in a range of asset prices, led to a sharp slowdown in growth momentum in the major advanced economies, especially from the second half of 2008. Globalisation rendered the international financial markets vulnerable especially in terms of syndication of debt and global supply chains, resulting in rapid transmission of the downturn. Highly integrated global financial markets were instrumental in the rapid spread of this turmoil to other emerging markets and countries.

2.126 The recent crisis has rekindled interest in the history of financial crises. An analysis of the history of the global economy reveals that financial crises are not a recent phenomenon and economic history is replete with several such episodes. Several definitions of financial crises have been put forth, but the common thread is severe stress on the financial markets/intermediaries. Financial crises have generally been categorised as a banking/currency/debt crisis and contagion, depending upon the underlying causes and the manifestation of the crisis. These have differed across a range of features, *i.e.*, the role of

fundamentals, exchange rate regimes and history, underlying structure and dynamics and the relative importance of bank/securitised debt or private/sovereign debt. Financial crises have been a regular occurrence. However, their incidence has been highly erratic and has varied depending on the prevailing macroeconomic conditions, regulatory regime, financial structure, exchange rate regime and global capital flows. The causation of crisis has always been quite complex. There is no uni-causal theory and, in each crisis, the nature of the interaction among the underlying causes has been unique. These have generally been caused by a combination of unsustainable macroeconomic policies, balance sheet fragilities, heavy reliance on leverage, credit booms and asset price bubbles. Financial crises have generally been followed by severe economic contractions. Most of the economic parameters exhibit pro-cyclical behaviour during the crisis. The macroeconomy has generally been affected by the financial crisis through several channels. Increase in risk aversion and deleveraging results in reduced availability of credit and investment activity which, in turn, reduces the aggregate demand and culminates in the downturn of the economy. The recessions have often been characterised by sharp declines in investment activity, industrial output, trade specially imports, and asset prices, modest declines in consumption and exports, and aggregate employment.

2.127 There is now a consensus that the recent crisis is the worst-ever since the Great Depression of the 1930s in terms of its depth and extent. The recent crisis might be characterised as an example of the well-known boom-and-bust pattern that has been repeated many times in the course of economic history. Some resemblance can be found between the recent crisis and past episodes when one analyses the underlying causes. As in the past, the main causes of the recent crisis are linked to systemic fragilities and imbalances that contributed to the inadequate functioning of the global economy. Major underlying factors in the recent situation include inconsistent and insufficiently co-ordinated macroeconomic policies. These factors were made acute by major failures in financial regulation,

supervision and monitoring of the financial sector, and inadequate surveillance and early warning. These regulatory failures, compounded by over-reliance on market self-regulation, overall lack of transparency, financial integrity and irresponsible behaviour, led to excessive risk-taking, unsustainable high asset prices, irresponsible leveraging and high levels of consumption which were fuelled by easy credit and inflated asset prices.

2.128 There are, nevertheless, some aspects that make the recent crisis different from its predecessors. The recent financial and economic crisis is different in nature and magnitude from those experienced earlier. First, the crisis originated in the US and the preceding boom was fed – at least to a large part – by the savings in the emerging market economies. Earlier episodes of global imbalances were largely confined to advanced economies in the role of creditor in contrast to the recent crisis with the US as the debtor nation. Second, the recent crisis has been more global in terms of reach; it has rapidly impacted the world economy as a whole due both to its unusual scale and to the existence of large diffusion channels related to globalisation. The global dimension of the recent crisis is due to increased linkages between the financial system both within and across economies which resulted in rapid transmission of the crisis from the epicentre to the periphery. The estimates of output loss place the recent crisis above most of the episodes in the past, with the majority of the advanced and emerging market economies facing a ‘globalised synchronised slowdown’. The recent crisis has been more ‘global’ and more ‘rapid’ when compared with the Great Depression, yet one cannot deny that the better initial conditions together with swift policy responses may succeed in preventing the recent recessionary phase from turning into a depression as in the 1930s. The immediate impact of the crisis on advanced countries and EMEs seems to have been worse than that of the previous ‘advanced country crises’ and ‘EMEs crises’. However, a detailed assessment of the impact of the crisis in terms of individual economic parameters is critical to understand the overall nature of the crisis.