Risk Management in an Open Market Economy

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Peter L. Bernstein in his celebrated book *Against the Gods* writes, "The revolutionary idea that defines the boundary between modern times and the past is the mastery of risk: the notion that the future is more than a whim of the Gods and that men and women are not passive before nature. Until human beings discovered a way across that boundary, the future was a mirror of the past or the murky domain of oracles and soothsayers who held monopoly over knowledge of anticipated events" (Bernstein, 1996).

Whereas risk management characterizes many of our activities in different spheres, from standard technological risk management embedded in almost all industrial goods and machinery, to worrying about climate change and global warming, it is in the world of finance that risk management is at the core of all its activities. With the generalized opening of trade and of capital movement across the world over the past decade and a half, risk management has become all pervasive across the whole financial sector. In a closed economy with administered prices, fixed or predictable exchange rates and interest rates, the micro perception of risk was relatively benign. In those conditions, in effect, it was the sovereign that undertook to do the risk management for the economy. As a consequence of the rigidity embedded in these systems, economic adjustments did not take place on a day-to-day gradual basis and risks effectively accumulated until discontinuous macroeconomic adjustments were forced on the system. Such discontinuous adjustments involved non-marginal adjustments in the exchange rate, interest rates, administered prices of basic goods, or in fiscal expenditures, and the like. The impact on individuals and market participants alike was usually relatively traumatic, and consequent economic and financial crises were common. Moreover, such systems were likely to suffer from misallocation of resources, bouts of price instability and consequential low and uncertain economic growth.

The notion that individual economic agents are ill-equipped to be exposed to exchange rate, interest rate and price risks, and that the sovereign alone should bear these risks is no longer regarded as tenable. It is now recognized that a system that allows for daily market adjustment of such prices operates more smoothly and that wider dispersion of risks among economic agents is more conducive to the maintenance of economic and financial stability. However, the issue of how economic risks are to be dispersed among the sovereign, financial intermediaries, large corporations, small businesses, farmers and households and other categories of economic agents is still a live one. It is generally acknowledged in this regard that there has to be some correspondence between the incidence of risk and different agents' capacity to bear it.

Lacklustre macroeconomic performance of command economies in the 1970s and in the following decades resulted in a shift in the thinking on risk, leading to the realization that it is far more efficient to allow individual economic agents to face, transfer and manage risks through a market mechanism. The collapse of the Bretton Woods System in 1971 ushered in an era of `generalized floating' of the exchange rates of major currencies. The gradual deregulation, relaxation/abolition of capital controls and globalization that followed the collapse of the Soviet system provided the backdrop as also the incentive for the risk management concepts and practices to emerge and evolve.

The distinguishing feature of the new paradigm is that it does not mean that all risks should be eliminated by way of insurance-like products that have been known to mankind for a long time. The key is pricing of risks in markets for risk products. Development of deep and liquid markets in risk products – both cash as well derivatives - which were boosted by phenomenal progress in quantitative finance made it possible for risk management as a discipline and profession to come of age. However, this way of looking at risk management does not mean at all that there is no role for the sovereign or for regulators in financial markets.

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Profound changes have also taken place in the economic and financial landscape in India over the last two decades or so, marked by wide-ranging reforms in both the real and financial sectors. Adoption of a unified and market-determined exchange rate for the rupee in early 1993, followed by current account convertibility in 1994, enactment of a new foreign exchange law in 1999, and significant though gradual capital account liberalization over the last decade have led to a manifold increase in the volumes of both current and capital account transactions between India and the rest of the world. At the same time, deregulation of interest rates, greater use of indirect instruments for monetary policy, reduction in statutory preemption on the resources of banks have paved the way for emergence of liquid markets for short- and long-term interest rates in India.

The upshot of all these developments is that while resource allocation & use have become more efficient leading to higher growth impulses, with economic agents now having more choices to make and competition to face, there are more risks to contend with as well on a daily basis. In other words, increased opportunities for economic agents are now accompanied by new types of risks to be managed as well.

The broad trends marking the present and the foreseeable future are clear. Economic and financial engagement with the rest of the world will further expand in several dimensions. Viewed from this perspective, economic agents in India should be able to walk in step with their counterparts and competitors elsewhere. One essential requirement in this regard is that risk management systems and procedures as well as the market for risk management products in India should be world class.

As we introduce new risk management systems, upgrade existing ones and develop new markets for risk management products, it is very important for us to keep in mind the objective conditions that exist in India. We will need to continually keep in view the differential risk-bearing capacities among different economic agents in the country. Even among different financial intermediaries, let alone households and farmers, we have the coexistence of small and widely dispersed entities, such as primary agriculture credit societies (PACSs), rural and urban cooperative banks, public sector banks, new private sector banks, and foreign banks, with each having different degrees of sophistication related to risk management. Hence, our approach to the introduction of modern risk management instruments and systems in the country has, per force, to be cognizant of our own requirements and capacity.

Risk Management in Financial Intermediaries and Real Sector Entities

The broad principles governing risk management are the same for entities in both the real and financial sectors. However, risk management in banks and other financial intermediaries acquires added importance because of their three distinguishing characteristics: (i) they are much more leveraged; (ii) they hold public money; and (iii) payments systems operate through banks.

In general, banks are exposed to much more credit and interest rate risk, while the real sector entities, particularly those which are engaged in international trade and commodity manufacturing, processing or trade are more exposed to exchange rate and commodity price risks. But the commodity price risk that borrowers are exposed to gets translated into credit risk for their lenders.

Risk management for banks and financial institutions is critically important because they are ‘risk engines’; they take risks, they transform them and they embed them in their products and services. There are powerful motives for banks to implement risk-based practices; to provide a balanced view of risk and return from a management point of view, to develop competitive advantages and to comply with regulatory requirements.

As is the case globally, banks in India have a very special role to play in promoting better risk management standards and practices. Being the chief repositories of credit risk, the quality of their loan assets depends critically on how effective the risk management policies, processes and procedures of their borrowers are. Among their borrowing clients themselves, there would be differentiated risk-bearing expertise and hence banks are expected to provide professional advice to their clients on risk

management. Thus, banks have good business reasons for acquiring specialization and professional expertise in risk management. This would, however, be possible only if banks themselves are good managers of their own risks.

There is another related issue, albeit a slightly deeper one. In contrast to the capital market, banks are privy to much more wide and rich information in respect of their clients. While the comparative advantage of banks in intermediating financial resources hinges on their being able to enjoy economies of scale and scope in acquiring and processing information in the first place, a relevant issue in this context is whether this information is being put to optimal use for managing risks, both at the level of individual banks and also at the aggregate level. Although it is early days to assess the effectiveness of the institutional mechanism provided by credit information bureaus for the pooling of critical borrower information for common use within certain important safeguards, the importance of more intensive and extensive use of information hardly needs to be overemphasized.

Further, as the economy grows and new types of activities and enterprises appear on the scene, it would be an imperative for banks to be able to assess the risks associated with such activities and enterprises. As is the case elsewhere, this will also critically depend on collection and analysis of all relevant information.

Business Approach to Risk Management

Risk management is an integral part of the overall business planning and management and not something on the fringes or 'add on'. When RBI introduced the Asset Liability Management (ALM) framework in 1999, it was viewed by some banks initially as an exercise for finding out maturity mismatches or re-pricing mismatches. It was only when banks began compiling ALM statements that they realized the benefits of pursuing pro-active asset liability management themselves. In the context of transition to Basel II framework in India and elsewhere, where the focus is significantly on risk management, there is a perception among some banks that this is merely adding to their compliance costs: hence, they tend to view it as a compliance issue. Basel II attempts to promote more advanced risk management systems, align regulatory capital closer to economic capital and thus promote greater efficiency in the use of capital. It is evident from the experience of the last few years, which have witnessed gyrations in exchange rate and interest rates that banks with better risk management policies and systems are more resilient to shocks and volatilities, thereby creating value for their various stakeholders. Basel II offers an opportunity to banks to become more efficient, which fact should be accorded more importance than the regulatory *requirement.*

Whether risk management is at the centrestage or on the sidelines of business operations of banks is revealed in the pricing of various types of risks. Currently, the interest rate charged by banks in India on various types of loans and advances varies within an unusually wide range, say, between 6 per cent and 16 per cent, and even higher in some cases. Visiting bankers tell me that such a range is much wider than is observed in other markets. If this is true, is it the case that variance in risk is much higher among Indian borrowers relative to those in other countries? Or is it that our banks' risk appraisal techniques are faulty and that they end up magnifying the true variance in risk? Or is it the case that the pricing of credit is not scientifically linked to risk, leading to anomalies, such as cross subsidization in the credit market? It could also be that the proportionate cost of credit appraisal varies inversely with the size of loan, and banks substitute a high credit price for the cost of credit appraisal. In this context, the introduction of credit information bureaus, referred to earlier may be expected to make a material difference in credit appraisal practices. Mis-pricing of credit risk is an issue, which apart from introducing systemic vulnerability, has welfare implications for small borrowers. Banks have access to all relevant credit information on the borrowers/ potential borrowers and they are well positioned to use this to their advantage while discriminating between various grades of risk. Moreover, banks are well equipped today to re-orient their rating processes to assess the line of activity of the counterparty, in addition to the conventional assessment of the counterparty.

It needs to be emphasized in the context of Basel II that no amount of capital can make a financial institution absolutely secure. The key issue is proper pricing of risks. If a purely compliance attitude is taken in respect of risk management and capital adequacy, there is a danger that it may lead

to ‘seat belt law’ banking. As the experience showed in many countries with mandatory use of seat belts, it became apparent soon that drivers were prepared to take more risks, believing themselves to be safer. Proper management of risks is the key. Risk management should be integrated with the activity of risk taking – one need to structure one’s position according to the risks understood by him or her. Risks that are not understood well should be avoided.

Stress Testing

The corollary to increased risk related to the expectation of greater fluctuation in prices, exchange rates, and interest rates, is the need for developing regular systems for stress testing. In fact, the antidote to excessive complacency resulting from greater risk-related capital adequacy is the use and consciousness of regular stress testing.

Globally, stress testing is becoming an integral part of banks’ risk management systems and is used to evaluate their potential vulnerability to certain unlikely but plausible events or movements in financial variables. In the above background, the need for banks in India to adopt ‘stress tests’ as a risk management tool has been emphasised in the Annual Policy Statement announced by the Governor in April 2006. The draft guidelines that were issued in this regard are now being given a final shape on the basis of the feedback that has been received from market participants. An efficient stress test framework is necessary to incorporate a forward looking element in banks’ business strategies. Banks would do well to approach stress testing not merely as a regulatory requirement but as an integral part of their risk management processes and Basel II implementation. The stress test results need to be suitably integrated into the risk management processes, business strategies and capital planning.

Just as stress testing is important at the enterprise level, we need to upgrade our stress testing procedures at the systemic level as well. In the aftermath of the Asian financial crisis, and in the context of the increased discussion on global financial architecture, the World Bank and the IMF introduced a new procedure for "Financial System Assessment Programmes" (FSAPs). India was one of the first countries to volunteer for this programme in 1999. We are now engaged in an update of that exercise, which we are doing ourselves so that such assessment programmes get internalized within the system. Such a programme also helps in coordinating approaches and thinking between the government and all the financial sector regulators.

Operational Risk Management

Operational risk is assumed during the normal course of business along with other major risks viz. credit risk or market risk, and is not normally assumed independently on a risk-return basis. Operational risk management is particularly relevant to banks, because although they are able to either transfer or hedge a portion of their other major risks viz. credit and market risk exposures, operational risk cannot be hedged or transferred. Further, banks are increasingly undertaking transaction processing, asset management services, cash management services, and sale of sophisticated financial products which are generating a fair amount of revenue. Banks have also begun using models for managing their credit and market risks and this exposes them to model risks. Banks increasingly use computers and IT for a larger segment of their operations, including certain critical operations, and this exposes them to a significant degree of operational risk. Further, banks are exposed to reputational risk to a considerable extent which has not yet been formally taken on board and addressed as a risk element in many banks. Since operational risk has changed its complexion due to the above factors, banks need to take a comprehensive view in this regard to have a wholesome picture of their exposure to operational risk.

Traditionally, some aspects of operational risks have been sought be minimized through internal inspection and audit. However, there is a need to recast and modernize this function so as to transform it into a mechanism designed to operate on the whole suite of operational risk events.

The issue of operational risk has assumed higher importance worldwide in recent years with the increased prevalence of outsourcing, particularly overseas. With India being a major recipient of such outsourcing, this issue assumes even greater importance for us. Banks and other financial intermediaries have to understand that operational risk management in their outsourced operations is their own responsibility. This issue has also given rise to a good deal of discussion among financial regulators: to what extent should they be examining risk management procedures in outsourced entities or how can they assess the risk management procedures in the regulated entities as they relate to their service providers?

Risk Management and the use of Financial Derivatives

The implication of the huge expansion in the use of financial derivatives that has taken place over the past five years is attracting increasing discussion among financial sector regulators. How do we assess their impact on financial stability and systemic risk? The most succinct and lucid discussion of this general issue that I have come across is in a brief speech given just 2 weeks back by my US counterpart, Donald Kohn of the Federal Reserve Bank. As he puts it very eloquently, "….. (t)he securitization of mortgages and other assets has been transforming regulated depository institutions from holders of interest rate risk and credit risk to originators and distributors of such risk" (Kohn, 2007)

What is the situation in India in respect of financial derivatives?

Use of Financial Derivatives in India

A liquid market for forward foreign exchange contracts has existed in India for several decades now. This product is still the main instrument for hedging foreign exchange risk in India, although foreign currency options are also getting increasingly popular. Over the last 10 years or so, several other types of derivatives have begun trading in India. As you are aware, efforts are on for introduction of credit derivatives in India. Feasibility probes for foreign exchange futures have begun. Efforts are also on for an appropriate design for interest rate futures. In the recent years, the regulatory ecosystem for financial derivatives has been sought to be made more effective and straightforward. Insertion of a new Chapter IIID to the RBI Act, 1934 by way of an amendment in 2006 has been a milestone in this regard, since this has provided legal clarity as regards OTC derivatives and has also defined regulatory domain and scope. Accounting treatment of financial derivatives in banks is also being streamlined so as to be broadly in tune with international standards.

What are the issues that we need to be concerned about as the use of financial derivatives increases in India? We need to understand that, as reflected Donald Kohn's remark that I have just quoted, we will witness a significant change in the function of financial sector intermediaries over time, as the use of financial derivatives gathers force. We will need to prepare ourselves for these changes from the regulatory point of view as will the financial intermediaries themselves in their internal risk operations. As has been the case in some developed markets, with growth in securitization and expansion of credit derivatives, if banks which are now the storehouse of credit risks are to significantly abandon this space, what implication could this have for financial stability.

With more distribution of risk we will need to address the issue of where will the risks rest. We will also need to assess the capability of market participants who will ultimately bear the risks. Will they be such that regulators do not need to regulate them? Will financial regulators even need to know where the risks are distributed? One view is that as long as the participants in this market are large institutional investors, or high net worth individuals, they will need no protection. Let the risks be distributed among those who wish to take such risk, and let it be distributed according to their capacity as determined by the market itself. Hence, there is no need for any safety net like the one that is implicitly embedded in the lender of last resort role of central banks. What will be important in such markets is the availability of adequate market liquidity at all times for them to operate efficiently, enabling market participants to take and liquidate positions as necessary. The job for regulators would then be to ensure that there is adequate depth in the markets, that clearing and settlement systems are efficient and safe, that there are no dominant market players who can move markets, and that the

players are themselves large and sophisticated. In times of market stress, the only issue would be the availability of adequate liquidity.

Given that the extraordinary growth of credit and other financial derivatives is still a relatively new phenomenon, and that this has happened in the context of accommodative monetary policies in G3 countries in recent years, it is too early to assess how such markets will work in times of stress and what the overall regulatory approach should then be.

One positive side of this assessment is that, unlike the 1980s and 1990s, when financial crises were frequent in developing and developed countries alike, the past decade has been remarkably free of such crises, worldwide. High oil prices, large business failures, large stock market fluctuations that have been witnessed in this period have not resulted in financial crises, or disruptive effects on financial intermediaries. This is attributed to the wider dispersion of risk by some, whereas others point to the overall benign macroeconomic and healthy global growth conditions that have prevailed over this period.

What is my take on these international developments and their implications for India? I don't have a clear answer. We need to embrace these financial developments in such a way that we continue to ensure financial stability, and that we enable domestic market participants, both financial and non-financial, to increasingly deal with the kind of risks that are emerging with greater market liberalization both at home and abroad.

As a monetary authority and financial sector regulator, we will need to enhance our own risk management capacity, both for our internal purposes, but also as evaluators of the risk management capacity of regulated entities. We will continuously endeavour to enhance the risk management skills and capabilities of market participants and improve the micro-infrastructure of markets so that financial stability is maintained. Meanwhile, we will need to keep in mind the very varied nature of our economy that I had alluded to earlier.

The key to our approach to the development of financial derivatives in India has to be a proactive stance for the adoption of robust risk management systems within the relevant financial intermediaries and, from our point of view, particularly in banks. We have to ensure that the introduction of new risk instruments actually increases the risk management capabilities of the system as a whole, and not the other way round because of inadequate preparation.

Reflections on Risk Management at RBI

The Reserve Bank of India**,** like all other central banks is also a financial institution that is exposed to a variety of risks. Over the last several years, there has been a structural transformation of the risk exposure of the RBI in that as against pre-dominantly rupee-denominated assets figuring on its balance sheet, it now has an overwhelming proportion of assets denominated in major foreign currencies. This transformation means more volatility in its asset valuation in rupee terms as also in the current earnings in rupee terms. It needs to be emphasized that while a bank or a corporate in any country can choose to eliminate foreign currency risk, a central bank like the RBI, which does not have any liability in foreign exchange, cannot hedge exchange rate risk beyond a very modest extent. The approach followed by the RBI in this regard for a very long time has been to have a diversified portfolio of reserves, both in terms of currencies and instruments and a strong level of capitalization. The RBI has also been very transparent in disclosing its risk management policies in annual reports and also in half-yearly reports of reserves management since January 2005.

In addition to the issues related to market risk management of our assets and, hence, the integrity of our balance sheet, which is so essential for the financial system as a whole, we have to deal increasingly with the issues of operational risk that I had outlined earlier. As the institution responsible for the payment and settlement system we are giving increased attention to all our own IT systems, back up, alternative sites, and the like.

Limits of Risk Management

Adoption of risk management policies and practices by economic entities in the sense that they assume risk by choice and not by chance is value enhancing. However, hedging through market instruments results in a redistribution of risks. Ideally, if this redistribution is done on the basis of a scientific appraisal of the optimal level and combination of risks for each entity it may result in an overall reduction of risks at the macro level. But the economy as a whole would still be exposed to risks. Also, for proper functioning of hedging products it is essential that expectations about the risk variable should be heterogeneous. If price movements are unidirectional for a long time, protection sellers demand large premium from protection buyers.

Apart from the above, there are more subtle issues concerning risk management. It is well-known that markets flagrantly violate some of the postulates and assumptions of traditional mathematical finance. The volatility of financial prices and the tendency of this volatility to occur sometimes in episodes generally unrelated to any clearly exogenous news about fundamentals has been a subject of research for a long time in behavioural finance.

The behavioral dimensions of risk management and hedging have attracted much attention in the recent years among academics and researchers. Among other things, hedging decisions of any entity are influenced by two important factors: (a) stance of the competitors in this regard; and (b) anomalies of human behaviour. The latter-mentioned aspect is significant: most often entities do not always have the intellectual or emotional impulse to take on risks and deal with them before they impinge on performance and it is too late. Many do not feel the same way when they buy a luxury car and when they buy insurance for the same car. When we are educated to risk management possibilities, we become aware of the rich potential that finance has for improving human welfare, but we do not find it emotionally easy always to take advantage of this potential. Experienced traders know it too well how difficult it is at times to quit a loss-making position. The field of risk management needs to design its methods to minimize the human weakness in risk management.

Finally, have adoption of risk management and use of risk mitigation products made the financial markets a safer place than before? It is a tough call to take. In a recent interview, Professor Robert Merton, who along with Myron Scholes and Fischer Black invented the famous option pricing formula in the early 1970s, reportedly said, ‘The real story is not what happened to LTCM in 1998 but what happened to Amaranth later – or rather what did not happen….institutions have adjusted and we have learnt to deal with some of these crises which are not crises any more’ (Tett, 2007).

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