Lecture Three

Capital Market Innovations: Challenges and Opportunities

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It is a great honour to be invited to deliver the third L.K. Jha Memorial Lecture – especially to follow in such distinguished footsteps as those of Robin Leigh-Pemberton, former Governor of the Bank of England, and Jacob Frenkel, Governor of the Bank of Israel. Having served under both gentlemen at earlier stages of my professional career, I will have to be particularly careful in what I say this evening!

Unlike my two predecessors, I had the privilege of making L.K. Jha's acquaintance, albeit briefly, when I was a junior official at the IMF in the early 1970s. I had just taken up the position of Personal Assistant to the Managing Director (then Piene-Paul Schweitzer). One of the earliest visitors to his office that I had the pleasure of meeting was L.K. Jha, Ambassador of India. The date was July 1972, and the occasion was to issue an invitation to participate in a volume of tributes marking modern India's 25th anniversary as an independent state.

In the nature of these things, I was asked by the Managing Director to supply a first draft of the IMF's contribution. So I got out to discover more about L.K. Jha and the remarkable country whose ambassador he was. I discovered a man of penetrating intelligence and deep conviction. He was a servant of India in the best sense of the word. He understood the country's traditions and he had a clear vision of how to blend them with the demands of the modern world. He presented India's case, politically and economically, in war and peace, with skill and sensitivity. And I know he transmitted the view of the outside world to Bombay and Delhi, with equal sensitivity. It is an honour to pay tribute to his memory.

1972 was an occasion to reflect on India's achievements during 25 years of independence. The record was not without setbacks, of course, but was on balance strongly positive. Nobody could fail to appreciate the magnitude of the social transformation that the Indian Government and people were bringing about, while maintaining their unique cultural traditions and democratic institutions.

Now, almost another quarter of a century later, economic and financial transformation is being added to the list of achievement. L.K. Jha would probably not have foreseen the developments of the past few years. But as a reformer and a pragmatist, he would, I am sure, have applauded what you, Mr. Governor, and your colleagues in the Reserve Bank and in the Government are doing. India has the good wishes of all her many friends as she pursues the path of liberalisation and reform.

Economic and financial transformation leads naturally into the subject of my lecture this evening: the opportunities and challenges of innovation in capital markets.

I. Introduction

The past twenty-five years have witnessed a process of accelerating change in the world's financial markets. Driven by an interacting process of liberalisation and innovation, regulations have been removed, new products have emerged and old boundaries between financial intermediaries have been blurred. Innovation has brought many advantages. The menu of financial assets and liabilities available to end-users has been greatly enlarged. The costs of financial intermediation have fallen. Risk management tools have become increasingly sophisticated. And developing countries have found new ways to mobilise domestic and international savings.

At the same time, however, the growth of capital markets has posed new challenges to economic and financial stability. At the micro-economic level, individual institutions have become more vulnerable to the consequences of misjudgements of misfortune. Systemic risk has grown as institutions and markets have become more interdependent. And at the macro-economic level, capital market liberalisation has been associated with continued, or even increased instability in asset prices. The recent events surrounding the Mexican peso and other emerging market currencies amply demonstrate the capacity of markets to react sharply when confronted with unexpected changes in economic conditions.

Seizing the opportunities provided by capital market innovation, while avoiding the risk of instability, is one of the greatest challenges facing central banks and supervisory authorities in both the developed and developing world. It is this that will be my theme this evening.

I will begin by reviewing what has been driving financial innovation over the past two or three decades, and what are the key features of the new financial landscape that is emerging. Then I will look in more detail at the benefits that flow from a broadening range of financial instruments, the greater availability of risk management products and the growing geographical integration of capital markets.

After that, I want to examine the challenges that the new environment presents to financial and economic stability. What do governments and central banks need to do to ensure that these challenges are met?

Finally, what does all this mean for India? What lessons can be learned from the experience of others that will enable you to benefit from the opportunities that new techniques offer, while avoiding the all-too-real dangers of micro or macro-instability?

II. The Process of Financial Innovation

Let me begin, then, by reviewing some of the key developments in financial markets and the driving forces behind them. Foremost among these driving forces has been **deregulation.** Deregulation has sometimes been a conscious choice by the authorities and sometimes a recognition that financial innovation has made existing regulations ineffective. Some of the restrictions that have been removed have been domestic in character, such as those that limited banks' freedom to offer market clearing interest rates on deposits or loans, or prevented different kinds of intermediary from competing in each other's traditional fields of business. Other restrictions have been external, such as exchange controls designed to limit international flows of capital. Whatever the nature of the initial restrictions, however, deregulation has enabled financial institutions to compete more freely with each other and to broaden the range of services they offer to customers, both domestic and international.

Another important influence on financial market developments has been **uncertainty** – the growing awareness that interest rates and exchange rates can move in unexpected ways that increase the risks associated with economic activity. The 1970s saw the break-down of the Bretton Woods exchange rate system and the beginning of a period of floating exchange rates among the major industrial countries. The 1970s also saw the beginning of a period of fiscal indiscipline and high inflation during which domestic interest rates became much more difficult to predict. As a result, asset values became more volatile than they had been in the 1950s and 1960s. Individuals and commercial firms sought to protect themselves against the consequence of volatile asset prices, and this spurred financial institutions to develop products to meet the new demand to hedge risk.

Financial innovation was also greatly assisted by the enormous **increase in data-processing power** resulting from the computer revolution. This has had two effects. Firstly, it has reduced the costs of financial transactions and made possible a large increase in financial intermediation relative to final output. Secondly, it has spawned the growth of products, especially derivative products, whose value would be impossible to calculate on a continuous basis without advanced mathematical techniques and the computing power to apply them.

Before finishing the list of factors making for financial innovation, let me mention briefly **globalisation** and **securitisation.** It is a truism to say that the world economy is becoming increasingly integrated. More international trade and investment give rise to the demand for cross-border financial services and access to international capital markets. The emergence of banks and securities houses with global reach has further tied markets together. Securitisation results from the trend to design financial assets that can be made liquid, for example, through packaging loans and selling them in markets. Securitisation has given rise to a need to manage the new assets that are created, to price them on a continuous basis, and to trade them in response to variations in their risk-return characteristics.

All these trends that I have been describing have had the common effect of sensitising financial intermediaries and end-users of financial services to the need to identify and manage risk. It is now no exaggeration to say that leading institutions in London and New York increasingly consider their central function to be not so much managing *assets* as managing *risks*.

The effect of these various forces on the size and nature of financial market activity has been dramatic. Let me just give a few examples. The volume of foreign exchange transactions undertaken in the major financial centres was estimated to be some $900 billion a day at the time of the last BIS survey in April 1992. By now the figure must be well in excess of a trillion dollars a day. The notional value of outstanding contracts on derivative instruments is probably in the range of 15-20 trillion dollars (although their market value, which is a more relevant figure, is much less than this). And the volume of cross-border securities transactions has grown dramatically. For United States residents, it was the equivalent of 3 percent of GNP in 1970 and was around 100 percent in 1990.

These are truly amazing numbers. It is clearly important to assess their implications for the stability of domestic financial systems, and for the international economy at large. Let me mention just one implication that is of particular significance for a country such as India. It concerns the balance of payments. The growth of international capital flows has had a major effect on the way in which balance-of-payments constraints affect countries. Twenty years ago it was rare for developing countries to receive capital inflows beyond long-term direct investment and aid receipts. Now, the situation is quite different. Last year, for example, the current-account deficit of Mexico was some 8 per cent of GNP, and some other countries had deficits almost as large. Large capital inflows provide welcome resources for development purposes. At the same time, however, they can add to inflationary pressures, and pose obvious problems when an unexpected shock to confidence provokes their reversal.

III. The Benefits of Capital Market Innovation

I will come to some of these challenges later on, in my lecture. Firstly, however, I want to take a moment to consider the benefits that flow from the integration and sophistication of capital markets. These are of two kinds, macro-economic and micro-economic.

At the macro-economic level, capital market innovation enlarges the menu of assets available to savers and borrowers. By designing savings vehicles in a more attractive way and extending the reach of financial intermediation, saving is encouraged, and the utility of a given volume of savings to the holders of financial assets in enhanced. Similarly on the borrowing side: the introduction of new borrowing instruments facilitates capital formation and, perhaps even more important, helps improve its quality. If secure and liquid financial assets are readily available, yielding competitive real rates of interest, savings are less likely to be retained by firms for low-productivity investments, or diverted into inflation hedges.

Another macro-economic benefit springs from closer international links among capital markets and financial institutions. The integration of capital markets across borders makes it easier for savings arising in mature economies to be used to finance higher-yielding investment opportunities in economies with higher growth potential. This promotes economic growth in two ways: by improving the efficiency of investment; and by strengthening the discipline on governments and central banks to pursue sound policies. (As I will discuss later, however, managing cross-border capital flows presents challenges which can sometimes be difficult to meet.)

At the micro-economic level, the development of new financial instruments improves the capacity of financial intermediaries and end-users of financial markets to manage risks. Better risk management, in turn, leads to the improved allocation of resources, in particular capital.

Any discussion of risk management leads directly to consideration of the role of derivatives. Derivatives are, above all, a means of "unbundling" risks into various elemental components, such as credit risk, interest rates risk, exchange rates risk and so on. This enables the various risk components to be more clearly identified and priced, and if necessary traded. Derivatives therefore facilitate the adjustment of risk exposures for speculative or hedging purposes. This helps to redistribute risks in the economic system to those most willing, and presumably most able, to bear and manage them.

Derivatives can be tailored to the particular risk management needs of customers. They thereby allow the creation of pay-off characteristics – or heading possibilities – at a lower cost than would result from the acquisition of underlying assets. This is particularly valuable for those who manage large portfolios such as insurance companies and pension funds, as well as for multinational companies that have streams of payments and receipts subject to the multiple uncertainties of commodity price, exchange rate and interest rate fluctuations.

Another benefit from derivatives markets is the improvement they bring to the mechanism for pricing risks. By enabling composite risks to be broken down into their elemental components, they improve pricing efficiency, and thus the allocation of scarce capital that is needed to cushion risk.

Lastly, derivatives facilitate investment and arbitrage strategies that straddle market segments. They increase asset substitutability, both domestically and internationally. This improves liquidity in individual markets and, it is to be hoped, allows disturbances to be diffused, thus making the overall system more resilient.

In all of these ways, capital market innovations move us towards what are technically known as "complete markets". In this way, they allow market participants to insure themselves against "state of the world" that might adversely affect their business. This is a tremendous advantage. All economic activity involves risk. But if we can allow business and individual to focus on those risks they know and understand, while hedging those risks that are incidental to their main business activity, then efficiency will be improved and long-term investment will be more attractive. To take a simple example: an oil company is more likely to undertake an investment if it can confine its uncertainty to exploration and drilling risk, while buying protection against exchange rate and interest rate risk from financial intermediaries. Financial creativity can improve the risk-return frontier facing individual participants in the real sector of the economy.

IV. Challenges Facing Monetary Authorities

But there are costs to all this creativity as well. As a series of events, from the global stock market crash in 1987 to the Mexican peso crisis of the past few weeks have shown, the capacity of capital markets to generate and propagate shocks has grown. Moreover, the risk that ignorance or lack ofsophistication will enable individual players to run up large losses before senior managers become aware of the situation has also increased.

In the next part of my remarks, I want to distinguish three kinds of challenges we face in assuring stability. These are micro-prudential, macro-prudential and macro-economic. Let me explain in a little more detail what I mean by these terms. Micro-prudential concerns are those related to the behaviour of individual institutions. They arise from the increased risk that mismanagement will lead to illiquidity or insolvency. Macro-prudential concerns are those related to the propagation of disturbances through the financial system – systemic risk, in other words. And macro-economic concerns are those related to the implications of new instruments for the stability of national economies or the international monetary system. I will deal with each of these challenges in turn.

Micro-prudential risks have grown in size and complexity with the development of new financial instruments, especially those that are actively traded and whose value can fluctuate by a multiple of that of the underlying asset. In addition to credit (or counterparty) risk, with which banks have long been familiar, other risks have now also assumed major importance: market risk, liquidity risk, operational risk, legal risk and so on. Moreover, many derivative instruments, such as options, have non-linear properties that make it difficult to assess their vulnerability to changing market conditions without using sophisticated mathematical tools.

Properly used, these new and complex financial instruments enable risk to be effectively and cheaply hedged. Misused, they can quickly lead to large losses. The answer, in my view, does not lie in blanket restrictions, which would anyway be of limited effectiveness. The defense against unpleasant surprises lies in ensuring that individual institutions are adequately equipped to accept and manage the risks that new instruments bring. This involves a particular focus in two areas; rigorous internal controls, and an adequate capital cushion. It is the task of those responsible for the health of the financial system to ensure that these requirements are met.

Internal controls involve such safeguards as: the close involvement of senior management in the setting and monitoring of trading strategies; the separation, within an individual institution, of the risk-taking from the risk monitoring function; daily revaluation of portfolios on the basis of market prices; rigorous monitoring of individual trades for compliance with position limits and other controls, and periodic "stress tests" to verify that the institution is resilient to large adverse shocks. These practices have been spelt out in greater detail in papers prepared by international supervisory groups; such as the Basel Committee on Banking Supervision and the International Organisation of Securities Commissions (IOSCO). They have been accepted by financial institutions and national supervisory authorities in the major financial centres, although more still needs to be done to put them fully into effect. It is not too early for the responsible authorities in emerging markets, such as India, to ensure that comparable practices become the standard for their own financial institutions.

Even when risks are well understood and controlled, losses will occur. This is natural. In a competitive financial system, the discipline of loss should be allowed to operate without calling into question the stability of the system at large. This means ensuring that institutions are properly equipped to meet the losses that arise in the course of their normal business.

Capital is of course the ultimate defense against loss. Capital should be adequate to assure counterparties that the institution concerned has the strength to weather even extreme disturbances. Considerable effort has been expended by banking supervisors in recent years to develop internationally comparable standards of capital requirements against credit risk. These standards are now being extended to market risks, reflecting bank's greater involvement in trading, and the resultant vulnerability of their portfolios to interest rate and market risk.

Bank supervisors have the responsibility for ensuring that institutions they supervise have both the capital and the internal control systems to meet the highest standards. They also have an increasing responsibility to cooperate with other supervisors, whether in different market segments or geographical areas, to ensure that "gaps" in supervision are not allowed to emerge, and to maintain a reasonably level competitive playing-field.

I come now to the second challenge, which concerns macro-prudential, or systemic risk. Systemic risk refers to the danger that a failure in an individual institution will be propagated more widely, leading to the severe impairment of one or more key functions of the financial system: the allocation of credit, the pricing of assets, and the settlement of claims. A given financial disturbance may grow into a systemic crisis at one point in time but not another, depending on the financial and economic circumstances prevailing when the shock occurs.

An important protection against the propagation of systemic stress is to ensure that individual institutions are themselves strong enough to withstand the failure of a counterparty. This will help to limit contagion from an individual failure. Systemic risk can also arise from deficiencies in clearing and settlement systems. The modernisation of these systems has often lagged behind the development of new financial instruments. It is vital that weaknesses in payment and settlement systems be dealt with speedily, and that other elements of market structure, such as the legal environment, be clear and robust.

Last, but by no means least, a major safeguard against systemic risk can be provided by transparency. The growing interrelationships between markets, and the increased complexity of many of the new instruments has made it more difficult to judge from conventional balance-sheet presentations the risks that are being run by market participants. If financial institutions were to disclose promptly and accurately the nature of their portfolio, including some picture of their risk-management strategy, prudential disciplines would be strengthened and counterparties will be enabled to take more informed decisions.
The third type of challenge is that presented by the **macro-economic implications** of financial market innovation. Many recent examples show that greater freedom in capital markets has not succeeded in limiting the volatility of asset prices. In the eyes of some observers, it may even have increased it. As a result, some have wondered whether greater mobility of capital has not rendered the task of stabilising the economy more difficult.

Are these fears justified? And if so what can be done about them?

In fact, it is far from clear that financial market innovation has, on balance, had a destabilising effect on asset prices. A careful study that was conducted under the aegis of the G-10 central banks and has just been released, finds that in normal circumstances, the existence of derivative markets adds to liquidity in the underlying cash markets and speeds up the process by which prices adjust in the face of exogenous disturbances. The study finds that the ability of monetary authorities to “steer” the economy is not seriously impaired by the development of new instruments, even though there may have been some changes in the transmission mechanism of monetary policy.

This comforting conclusion needs to be qualified in two important respects, however. Firstly, the influence of capital markets may not be so benign when there are severe disturbances. In the extreme case, when all market participants want to adjust their positions in the same direction, liquidity could dry up, and the common pursuit of the same hedging strategy may produce extrapolative price movements. Secondly, even without such disruptive influences, experience suggests the markets have the capacity to over-react to news, both good and bad. In the recent case of Mexico, it can be argued that market participants continued to extend loans to Mexico even after the need for adjustment should have been apparent; and when the needed policy action was eventually undertaken, the markets’ exaggerated response made an orderly adjustment impossible.

What can be done to minimise the possibility of macro-economic disturbances resulting from the response of capital markets? I would suggest two broad approaches. Firstly, we must recognise that the growing power of market forces increases the rewards of consistent, stability-oriented policies. Correspondingly, it increases the potential harm that will flow from unstable or unsustainable policies. Governments and international organisations must continuously ask themselves whether the orientation of fiscal and monetary polices, and the resultant value of the exchange rate, can be sustained over time.

Secondly, we must work to ensure that the stabilising properties of financial markets predominate over the destabilising ones. This is more likely to be the case when markets are fully transparent, and market participants have the necessary information to set prices on the basis of fundamental economic forces, not simply in extrapolation of recent trends.

V. The Relevance for India

I want to spend the last part of my time this evening talking about the relevance of all this to India. Doubtless, when seeing some of the difficulties created in derivatives markets in Europe and North America, not to mention the crisis that has just affected Mexico, you are tempted to say that capital market innovations are more trouble than they are worth. That would be an understandable reaction but, in my view, a mistaken one.

India is already gaining much by increased integration in world financial markets, and Indian business and finance will benefit greatly from applying the most up-to-date risk management techniques. The trick is to do so in a way that avoids creating fragility in the domestic financial system and that does not expose the economy to wide fluctuations in its access to capital flows as a result of sudden swings in confidence.

It would be presumptuous of me to offer detailed recommendations on these matters to an audience such as this. But perhaps I may be allowed to make two sets of general observations, based on the experience of other countries that have reformed and liberalised their financial systems. The first set of observations concerns the process of domestic deregulation, the second the management of external capital flows.

As regards domestic financial deregulation, effective supervision is of central importance. When markets are liberalised, new participants are attracted who may lack experience and even, in some cases, respect for the law. In the initial phases of reform, expected profits are often high, which attracts even less qualified players, and induces supervisors and market participants alike to lower their guard. Liberalisation often causes established institutions to fear a loss of market share, which in turn leads to a relaxation of credit standards and a reduction in lending spreads. When an external disturbance then occurs to jolt confidence, the value of loan portfolios is revealed to be impaired, and profitability to be inadequate. Something like this has happened in a number of episodes of liberalisation, from Chile to Spain to the Nordic countries, not to mention the savings and loan debacle in the United States.

To prevent this sequence of events requires a supervisory authority that is prepared to enforce rigorous standards with respect both to internal controls and capital support. If a commercial bank or other financial institution cannot mobilise the skilled personnel, the back-office support and the control systems to manage new functions and a complex portfolio, then the supervisory authorities must be prepared to say “no” irrespective of the apparent profitability of the business. And whatever the calibre of management, they must insist that business expansion follows adequate capitalisation and does not precede it.

Likewise with payment and settlement systems. These are the highways along which the payments traffic moves. If they are inadequate to handle the (increasing) traffic, then blockages and accidents are likely to arise. Bombay has had its own problems with fraudulent operators. No system can be entirely proofed against fraud. But the more robust the market infrastructure, the less the scope for fraud of the kind from which Bombay has suffered. The upgrading and enlargement of clearing and settlement systems has to be a central priority for any country contemplating a major liberalisation in its capital markets.

Let me now turn to my second set of observations, which concern macroeconomic stability. Even if the underlying soundness of financial institutions and markets is safeguarded, how can a country such as India protect itself from the risk that sudden fluctuations in capital flows will undermine its strategy for controlling inflation and promoting exchange rate stability? This is the question that has been thrown into sharp relief by recent events in Mexico. A natural response, but one which I believe would be mistaken, would be to raise further the barriers to inflows and outflows of funds. It would be mistaken both because it would be ineffective and because, in the end, it would be undesirable. Like it or not, world markets are becoming integrated, and financial markets within each economy are becoming increasingly sophisticated. A lesson which European countries have learned in the last decade is that markets will eventually find a way round exchange controls. One will then be left with the inefficiencies of regulation without the protection.

But even if controls could be made watertight, it would not, I submit, be in India’s interest to resort to them on a continuous basis. When capital is flowing in, it is a mark of confidence in domestic economic policies and an opportunity to enlarge the volume of real resources that the foreign sector provides for the development effort. When capital flows reverse, it is a useful signal that the sustainability of government policies is being questioned. This may be less pleasant, but it is just as necessary for the timely adjustment of policy.

If governments are to expose themselves to the rigours of capital market discipline, how can they make sure that they get the benefits while minimising potential disruptive consequences? Let me try to offer a few general guidelines.

First and foremost is the need to follow macro-economic policies that are clearly directed towards medium-term stability. This means that a budget deficit well within the limit that can be financed on an ongoing basis, and a monetary policy that is credibly directed to price stability. In both areas, industrial countries have come to realise that the institutional setting of macro-economic policy, as well as its conjunctural stance, is important.

Secondly, it is important to take steps to raise the level of domestic savings on an ongoing basis. This can be achieved both through structural measures favouring private saving, and by fiscal action aimed at curbing public dissaving through the budget deficit. A higher level of national saving reduces the need to rely on potentially volatile sources of funding from abroad.

Thirdly, policy-makers must carefully look at the sustainability of policy outcomes. Over valuation of the exchange rate, as evinced by a large current-account deficit, is a danger signal, regardless of whether the rate is determined by government action or market forces. The danger signal requires particular attention if the current-account deficit is not the counterpart of high domestic capital formation and if it is financed by short-term borrowing.

Fourthly, a prudent attitude should be taken towards capital inflows. I said a moment ago that it was neither possible nor desirable to restrict tightly capital flows. But liberalisation should nevertheless be undertaken in a careful and prudent manner. There is certainly no need, and indeed considerable risk, in artificially stimulating capital inflows by providing special incentives of creating new vehicles for the public sector to borrow abroad.

Fifthly and last, it is very important to maintain a “cushion” of usable foreign exchange reserves as a protection against unexpected developments or changing sentiment. Reserves should not be thought of as a means of delaying or avoiding adjustment, but as a way to enable timely policy adjustments to take effect over time, without requiring disorderly changes in real economic conditions.

I can well imagine that by now inquisitive journalists are asking themselves how I would grade India against these standards. If they are of a mischievous turn of mind, they may hope that I will fund points of criticism that will make newsworthy copy !

In fact, I will have to disappoint our friends from the fourth estate in this respect. The record of the Reserve Bank is a very good one. The prudent management of the financial system, together with the ongoing reform programme has contributed to growing confidence and a strengthening of capital inflows although this has fuelled monetary growth. Meanwhile, the current-account deficit has remained within manageable bounds, and the authorities’ commitment to monetary stability and fiscal restraint has been renewed following the budgetary slippage of last year. The reserve position is strong, giving cause for confidence that India can weather whatever turbulence lies ahead.

Mr. Governor, you would not expect a fellow central banker to end without a note of caution. The world is a dangerous place, especially for those concerned with monetary management in a developing country. The challenges posed by financial liberalisation are difficult and complex. India’s progress has been good, but I know you would like it to be even better. It behoves all of us, in national and international organisations alike, to be constantly vigilant against the many threats to stability that beset the world economy.

With good judgment, firm resolve, and co-operative efforts, I am confident that the opportunities can be seized and the challenges overcome.