

Derivatives are contracts whose price depends on price movements of an underlying asset. They can be used for hedging, arbitraging and speculating. The derivatives market has been growing rapidly. International bodies have been developing standards for their prudent use, which form the basis of HKMA's guidelines.

Introduction

I am delighted to be here to address the Hong Kong Economic Association on the subject of derivatives.

Derivatives are currently one of the main focuses of attention in financial circles. Hardly a day passes without the topic appearing in the business news. We have seen reports of heavy losses incurred by Orange County in the US and major corporates such as Procter & Gamble. There is also an abundance of litigation between investment bankers and customers over obligations arising from derivatives.

These events have fuelled mounting concern about the risks associated with derivative instruments. But I have to say that not all of this concern is well-informed. Derivatives are actually used quite prudently and widely for hedging against, and therefore minimising, risks of price fluctuations in certain assets. Where this is not the case and losses have been incurred, we have to realise that the involvement in derivatives is not the only way, or indeed the principal way, that financial institutions and their customers can come to grief. For example, the Orange County problems appear to be mainly the result of excessive leverage rather than over-indulgence in derivatives trading. It is therefore necessary to maintain a sense of proportion. Having said that, the Monetary Authority, being responsible for ensuring the stability of the monetary and financial systems of Hong Kong, naturally has a keen interest in ensuring that authorised institutions under our supervision manage prudently the risks posed by the rapid growth in derivatives activities. I will therefore focus my talk on two aspects: how the market in derivatives has developed and the supervisory response to this, both internationally and in Hong Kong.

Market Development

The Products

On market development, let me start by explaining briefly what derivatives are. This is in fact not easy. I have examined various definitions, including those in dictionaries. None describe derivatives in succinct layman terms. The *Economist* came close to this in an article entitled "the beauty in the beast" in the 14 May 1994 issue. I would like to quote it:

"Derivatives are contracts which give one party a claim on an underlying asset (or the cash value of an underlying asset) at some point in the future, and bind a counterparty to meet a corresponding liability. The contract might describe an amount of currency, or a security, or a physical commodity, or a stream of payments, or a market index. It might bind both parties equally, or offer one party an option to exercise it or not. It might provide for assets or obligations to be swapped. It might be a bespoke derivative combining several elements. Some derivatives can be traded on exchanges; their market price will depend in part on the movement of the price of the underlying asset since the contract was created."

This is the best definition I have read. It gives a good basis for identifying the activities and the participants involved in this market. Obviously, when one is holding substantial amounts of assets the prices of which could move sharply, derivatives offer a means of protection or hedging against such sharp movements. They are, therefore, instruments for minimising risks for some participants, and not for the taking of risks. There is scope, for example,

* This is the text of a speech given by Joseph Yam, JP, Chief Executive of the Hong Kong Monetary Authority to the Hong Kong Economic Association on 13 January 1995.

in the very conservative investment strategy that we adopt in managing the Exchange Fund to make use of derivatives to hedge against market risks. Only two days ago the Financial Secretary presented the Exchange Fund (Amendment) Bill in Legislative Council which, if enacted, will give authority, amongst other things, for us to use derivatives prudently to minimise risks in Exchange Fund investments.

For others (and the Exchange Fund does **not** belong to this category), derivatives are also an investment vehicle, albeit a rather speculative one, particularly when they do not hold the underlying assets. There are also arbitrage opportunities for taking advantage of anomalies between the prices of the underlying assets and the derivatives. This has become quite popular not only amongst investment bankers and fund managers but also a favourite pastime of mathematicians and rocket scientists. And there are of course financial institutions facilitating all this activity by making a market in derivatives, in established exchanges or “over the counter” (OTC).

As you are aware, exchange rates, interest rates and equity prices have been particularly volatile during the past twenty-odd years. For some market participants there has therefore been a great incentive to find means of hedging the various components of the market risk inherent in their assets and liabilities. For others, including the speculators, volatility (not stability) brings prosperity. And they look for cost effective ways of exploiting the volatility. These led to substantial market demand for derivatives.

Furthermore, over those twenty-odd years, there have been major advances in financial theory and information technology, which have enabled the prices of derivatives to be “derived” from the prices of the underlying assets a lot more precisely. This has in turn facilitated the development of highly sophisticated derivative products by financial institutions who can pay astronomical salaries to mathematics Ph.Ds. Many of these products are customised to suit the demands of market participants. So, demand and technological advance led the market for derivatives to grow dramatically, particularly in more recent years.

Market Trends

As late as 1986 the notional principal amount of certain key derivatives products reported to the Bank for International Settlement by a group of banks was equivalent to around one-quarter of the international claims of these banks; by the end of 1993 the corresponding figure had risen to over 200%. The General Accounting Office in the US estimated that the notional value of derivatives activity in the US reached over US\$12 trillion in 1992.

In Hong Kong the derivatives market seems still to be small compared with those in other major financial centres such as New York, London and Tokyo. But it has all the signs of catching on. Unfortunately, it is difficult at this stage to make direct comparisons except for exchange-traded derivatives because there are no comprehensive statistics for the OTC market here and in other active financial centres. This problem will hopefully be relieved by a survey of derivatives markets to be conducted later this year by central banks around the world. Hong Kong will be participating in this.

Notwithstanding the present lack of comprehensive information, it does appear from our discussions with market participants that the derivatives markets have grown rapidly in Hong Kong in recent years. Some banks have quoted to us rates of growth of 25-30% a year and an institution recently told us that its business had doubled in 1994. Most of the activity seems to take place in the OTC market where the growth in the more exotic products is said to be particularly rapid.

A feature of the Hong Kong market, and indeed of the derivatives market worldwide, is that it is highly concentrated. Only a handful of institutions drive the market. Insofar as the banking sector is concerned, we know from a survey which we conducted last year that the bulk of locally incorporated authorised institutions have little or no involvement in derivatives business. To the extent that they are involved, what they are doing is largely of a “plain vanilla” nature – straightforward interest rate swaps or traditional forward foreign exchange rate contracts. Only one or two of the local banks and some of the branches of foreign banks are big players. But the volume of business

for the banking sector as a whole is substantial in the context of Hong Kong: at end-September 1994 the notional amounts of foreign exchange and interest rate related derivatives contracts stood at HK\$9.2 trillion and HK\$5.9 trillion respectively, over HK\$15 trillion combined. By comparison, total assets on the balance sheet of the banking system was less than half of that at about HK\$7 trillion. These figures do indeed look quite staggering.

The Risks

How about the risks then? As recent events in other centres have demonstrated, the availability of derivatives is something of a double-edged weapon. Some market participants have learned to their apparent surprise that the value of their investments in derivatives can go down as well as up.

So there is now a widely held view that derivatives are risky in a special way. And given the rapid growth in these products and the market concentration, there is consequently concern about possible systemic problems. Some fear that the collapse of a major player might have a domino effect on its counterparties, causing major disruptions to markets and undermining the integrity and hence the confidence of Hong Kong as an international financial centre.

These concerns are well motivated. Indeed, they have been agonising supervisory authorities world wide. Risks arising from derivatives are one of the topics receiving most attention from central banks. In-depth investigations have been conducted by them. The general consensus is nevertheless that, behind all those complicated mathematical formulae, the risks relating to derivatives transactions are not that special. They are fundamentally the same as those connected with other financial instruments: namely, market risk, credit risk, liquidity risk, operational risk and legal risk.

Furthermore, the notional amounts outstanding provide little or no guide to the actual risk incurred. We estimate that in Hong Kong the credit exposure arising from the foreign exchange and interest rate related contracts at end September 1994 were \$70 billion and \$21 billion respectively or less than 1% of the nominal amounts. Similarly,

the combined credit exposure of \$91 billion is only just over 1% of the size of the balance sheet of the banking system.

This does not mean that we can afford to be complacent about the risks associated with the derivatives market in Hong Kong. As I have already mentioned, the market seems to be growing rapidly, particularly in the more complex products. More local institutions may decide to enter the market both as users and providers of derivatives. We had better put ourselves in a position to manage those risks prudently.

Furthermore, the growing complexity of derivative instruments has made the risks involved, though of familiar nature, difficult to measure, monitor and therefore manage. The rapid development of financial engineering backed by the increasing use of sophisticated statistical models for pricing and valuation purposes is creating a widening knowledge gap on derivatives products and their risks. This is not just between the mathematics Ph.Ds who create these products and the customers who buy them. Those who are in charge of the originating financial institutions and the regulators who are responsible for supervising them also face this challenge. This risk is compounded by the highly leveraged nature of certain derivatives products which allows users to take on much higher risk for the same capital outlay.

Risk Management

International Standards

Like nuclear energy, therefore, the power of derivatives needs to be harnessed safely. The challenge for regulators is how to encourage safe and proper use of derivatives so that the financial markets can reap the benefits of these powerful inventions without giving rise to excessive and unnecessary risks.

In this respect I am encouraged by the concerted efforts and the progress being made by both regulatory bodies and the practitioners in developing a framework for managing the risks of derivatives. In this, as in many other aspects of banking supervision, the Basle Committee on Banking Supervision has played an important role in developing appropriate standards.

Recent initiatives by the Basle Committee have focussed on four main ways of improving the supervisory framework for derivatives:

First, ensuring that financial institutions have proper risk management systems in place;

second, ensuring that sufficient capital is held against the risks;

third, broadening the recognition of bilateral netting for capital adequacy purposes to encourage banks to enter into such risk-reducing arrangements; and

fourth, ensuring that there is adequate reporting and public disclosure by financial institutions of their involvement in derivatives business.

Sound risk management is the first line of defence against the risks posed by derivatives. This same point has been made by organisations representing practitioners such as the Group of Thirty (a US-based group of influential bankers, brokers and industrialists) and securities regulators represented by the International Organisation of Securities Commissions (IOSCO).

The recommendations and guidelines issued recently by these bodies emphasise similar basic principles. These include appropriate oversight by boards of directors and senior management; an adequate risk management process that integrates prudent risk limits, sound measurement procedures and information systems, continuous risk monitoring by an independent risk management function and frequent management reporting; and comprehensive internal controls and audit procedures.

Of course, it is easier said than done to require the boards and senior management of banks to understand the risks involved in the derivatives business. The President of the New York Fed said recently that he did “understand that people of my generation who are not astrophysicists have to strain to understand these products”. But he added that such difficulty is not “an excuse for non-involvement. To put it simply and directly, if the bosses do not or cannot understand both the risks and rewards in their products, their firm should not be in the business.”

I understand from a recent magazine article that by 4.15 pm each day a leading US investment bank boils down its worldwide trading, arbitrage and investment positions into a one-page report for the Chairman. As the recipient of many reports myself, that seems like a worthwhile objective – subject of course to the quality of the information systems which produce the report being acceptable.

Sound risk management should prevent or limit losses in the first place. But still there is a need for derivative activities to be supported by **adequate capital** in the unfortunate event that losses do materialise. The existing Basle Capital Accord for international banks addresses to a certain extent the credit risk arising from derivatives activities. It does not however deal with the market risk arising from fluctuations in the prices of traded debt and equity instruments, including their derivatives. The Basle Committee has therefore put forward proposals to measure various types of market risk and to require capital to be held against these. These are similar to the requirements already set out in the European Union’s Capital Adequacy Directive which becomes operational for European banks on 1 January 1996. Both sets of requirements are complex for the non-expert, but in fact are regarded by major market participants as being vastly over-simplified. The Basle Committee is therefore exploring the possibility of permitting banks to use their in-house statistical models to measure their risks. You can see immediately the challenge which this poses for supervisors in trying to establish that such models are conceptually sound and implemented with integrity. It is however a challenge that we must prepare ourselves to meet.

Apart from the market risk proposals, the Basle capital adequacy framework is also being refined to permit greater recognition of **bilateral netting** of credit exposures on swaps and other off-balance sheet instruments. Other things being equal, this will reduce the capital required to be held against such instruments, but this is on the assumption that the risk faced by banks is genuinely reduced through netting. In order to ensure that this is the case, the Basle Committee has laid down various safeguards, in particular that supervisors must be satisfied that the various netting agreements used by their banks are legally enforceable in each relevant jurisdiction.

Recent initiatives by groups representing both regulators and practitioners have also emphasised the importance of **reporting and disclosure** of derivatives activities by financial institutions as a means of making meaningful international comparisons. There are two important aspects. First, supervisors need adequate information to assess properly the risks taken on by individual institutions and to make comparative analyses. Second, adequate public disclosure by financial institutions of their involvement in derivatives business would permit more informed decisions by counterparties. This would also impose more discipline on senior management against taking on excessive risks and in paying greater attention to the underlying risk management process. From this perspective, greater disclosure can complement the supervisory effort.

Various initiatives are also being taken by national accounting bodies to improve disclosure related to derivatives. In addition, the Bank for International Settlements published in September 1994 a discussion paper prepared by a task force of the Euro-currency Standing Committee which recommends a framework for the disclosure of market and credit risks based on firms' internal risk management and performance assessment systems (the so-called Fisher Report). Such initiatives are welcome, but there are still a number of difficult accounting and risk measurement issues that remain unresolved.

Regulatory Framework in Hong Kong

I believe the Basle Committee approach provides a sound basis for developing an appropriate response to the challenge posed by the rapid development of derivatives. Rather than reinventing the wheel, and to ensure that we meet international standards, the Monetary Authority is basically adopting the same approach. I would like briefly to outline the progress of our work on this front.

(a) December 1994 guideline

We have just issued in December 1994 a guideline on risk management of derivatives which incorporates guidelines issued by the Basle Committee in July 1994. Institutions are expected to have risk management systems and controls in place which are commensurate with

the nature of their derivatives business and the size of risks that they are incurring. The Monetary Authority will examine and make assessments on the adequacy of these systems. However, what is basic to all institutions is that, as with all other aspects of their activities, there should be appropriate oversight by the board of directors and senior management. We have emphasised that in our guideline. It is also important that the process of risk management for derivatives activities should be integrated into the institution's overall risk management system.

(b) Capability of customers

Recent events have demonstrated the credit, legal and reputational risks that can arise for financial institutions that engage in derivatives transactions with customers who do not fully understand the risks involved or for whom such transactions may be inappropriate. We have therefore taken the opportunity of issuing the guideline to remind authorised institutions that they should, for their own protection, have policies and procedures to reasonably ensure that their customers have the capability to understand the nature and risks of derivatives transactions into which they enter, particularly those which involve complex structured products; and that customers should be provided with sufficient information such as sensitivity analyses to help them to understand the risks. A customer unable to meet his obligations will obviously affect the position of authorised institutions adversely.

(c) Possible guideline on operational aspects

Our December 1994 guideline focusses only on high level controls. But we intend to study further the more operational aspects of risk management of derivatives with a view to issuing a further guideline later this year. To facilitate this study, a questionnaire survey

has been issued to about 50 authorised institutions with derivatives involvement and a series of visits to the treasury departments of the more active players will be conducted in the coming months to understand their current risk management practices. This will help us to establish best market practice and to identify areas where systems enhancement may be necessary.

(d) Capital requirements

On capital support for market risk, we are keeping closely in touch with developments in Basle and Europe and contributing to discussion on this complex subject. We expect that proposals for capital requirements on market risk will emerge during the course of 1995. We do not however envisage that such proposals would be implemented in Hong Kong until 1996 at the earliest.

(e) Bilateral netting

We are also finalising guidelines which set out the circumstances under which authorised institutions will be able to use bilateral netting arrangements to reduce the credit exposure on derivatives transactions. As already mentioned, this will reduce the capital required to be held against such exposures. This demonstrates that we do not see higher capital as an end in itself : rather the object is to ensure that risks are properly identified and measured and that the appropriate amount of capital supports those risks.

Our work on netting has been much assisted by the work of the Law Society of Hong Kong which has produced a Statement of Law regarding the legal status of netting in Hong Kong. Generally, this confirms that Hong Kong law is sympathetic to the concept of netting, including netting of derivatives contracts. Against this background, we will require

authorised institutions who wish to use netting agreements to obtain legal opinions to the effect that these will stand up under Hong Kong law and, if necessary, under the law of jurisdictions outside Hong Kong.

(f) Disclosure

The final element in our supervisory approach is to address the question of more public disclosure by authorised institutions of their derivatives activities. This is being pursued in the context of a joint package to be developed with the Securities and Futures Commission and the Stock Exchange in respect of additional financial information to be disclosed in authorised institutions' annual accounts from 1995 onwards. As I have already said, there are a number of difficult measurement and accounting issues which are still unresolved in respect of derivatives and I would not expect us to find a complete answer during the course of this year.

Nevertheless, we will be aiming to take an important step forward and to provide the basis for subsequent enhancements in disclosure as accounting standards in this area develop.

(g) Capability of supervisors

In adopting this supervisory approach, we also have to look critically at our own capabilities as supervisors and ensure that we have sufficient expertise to form a view of the adequacy of individual institutions' systems and practices for managing their risks in their derivatives activities. We are addressing this through our recruitment and training policies. We will also be examining the possibility of enlisting outside experts, for example in the universities, who may be able to provide us with assistance in understanding and evaluating statistical pricing and valuation models. We do not unfortunately have many mathematics Ph.Ds in-house.

Conclusion

I have attempted to give a balanced view of the benefits and risks of derivatives and have spoken at some length on the supervisory response to the challenges presented by derivatives. I believe that derivatives are an important and useful innovation and that it would be wrong to try to outlaw derivatives or to regulate them out of existence. Effective risk management should not be confused with risk elimination.

We should also put the risks of derivatives in perspective. I agree with Mr. Gerald Corrigan, former President of the New York Fed, that "While we are all understandably preoccupied with the daunting task of trying to keep pace with the latest developments in this world of "high-tech" banking and finance, we should remember that,

almost without exception, the most serious banking problems which have been encountered in recent years have grown out of old-fashioned difficulties with bad loans and excessive concentration".

I am encouraged by the good progress that is being made by regulators and practitioners in the main centres in capturing and confining the risks which arise from derivatives operations. I am optimistic that these concerted efforts will produce solutions that deliver effective regulation that protects both financial institutions and the ultimate users of the product without stifling market innovation. The Monetary Authority will devote much effort to strengthening our supervisory framework to bring it in line with the best practices adopted in other major financial centres. Ⓜ