PN-HBX-996

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FINANCIAL SECTOR - DEVELOPMENT PROJECT II (FSDP II)

APPLICATION OF INTERNATIONAL FINANCIAL INNOVATIONS TO DEVELOPING COUNTRIES

FEBRUARY 1996

Prepared by Professor Yoon S. Park
The George Washington University
Washington, D.C.

Submitted by:
KPMG Peat Marwick LLP
Policy Economics Group

Preface

In this study Professor Yoon Park provides a prescription for the meshing of three not obviously intersecting fields-- financial derivatives, financial needs of LDCs, and the role of multilateral and bilateral development agencies. As he notes, "[T]here has been no systematic study of the topic, laying out their key characteristics in a non-technical manner and the various ways that these innovative financial techniques can be utilized to hedge against financial risks....This study is a modest first step towards such an effort." (p.1) To accomplish this formidable task, Professor Park recounts the history of financial innovations and the forces that induced them. He then provides a careful taxonomy of these modern financial tools and illustrates their applications in real world LDC financial uses.

Like all good teachers, Professor Park sets the stage for the techniques to be discussed by first defining each of them clearly and then illustrating how they have been used in real world LDC financial arrangements. The glossary of financial terms-- from *acceptance* and *American-style option* through *zero coupon bonds*-- is not only a handy compendium supporting his argument but is itself worth keeping handy as a general reference in plain English to decode such exotic concepts as *collar* and *straddle write* and to clarify such distinctions as those between *plain vanilla* and *reverse swap*.

This paper assuages the neophyte's anxiety with clear discourse and the general reader's skepticism with real world examples. Along the way, it provides convincing arguments that these techniques are not mere financial legerdemain, but crucial tools of modern finance:

- 40 percent of all newly issued international bonds involve swaps;
- Combining interest rate swaps and currency swaps can insulate both borrowers in LDCs and lenders in developed countries from the gyrations of floating exchange rates;
- Not a single case of failure has been reported for those who have used derivatives for hedging purposes

While the clarity with which the developments leading to these financial innovations and, in particular, the precise manner in which these contracts work and how risks are priced and hedged are carefully detailed, it is their applications-- actual and potential-- to the problems of LDCs' finance that comprises the vital core of Professor Park's contribution. These examples demonstrate the utility of derivatives in facilitating the financing of real world deals, including :

- A gold mine in Ghana whose finance incorporated a currency swap;
- A copper mine in Chile whose finance utilized currency options;
- A petroleum project in Algeria whose finance employed a commodity-indexed bond.

The inherent usefulness of these financial techniques nevertheless is frequently impeded by the underdeveloped financial institutions in LDCs and the hesitancy of their financial decision-makers to apply them. From these observations, Professor Park concludes that the

role of the multilateral and bilateral development agencies is twofold: to provide training in the application of modern financial derivatives and as required to provide guarantees where the applications require a residual risk bearer.

Given the importance of his topic and the clear explication and straight-forward policy counsel that Professor Park systematically delivers, the readers of his study gain greatly from his "modest first step," a debt for which the only applicable derivative is gratitude.

Michael L. Unger
Senior Advisor
Finance and Private Sector
Bureau for Africa

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APPLICATION OF INTERNATIONAL FINANCIAL INNOVATIONS TO DEVELOPING COUNTRIES

1. Introduction

During the past decade or so, the pace of international financial innovations has accelerated considerably, spawning a host of new derivative trading products and financial techniques. Some of the well known among them include futures and options in currencies, interest rates and indices as well as various financial and commodity swaps such as interest rate and currency swaps. While most of these products were originally developed for market participants in major industrialized countries, they are also highly useful to many developing countries. Unfortunately, developing countries have been very slow in adopting these innovative techniques for their financial operations in such fields as debt management, financing operations, foreign exchange reserve management and financial market development.

The typical response from the policy makers of developing countries has been that these financial innovations are too sophisticated for them and hence not applicable to their situations. In reality, however, some of the more astute and venturesome developing countries have successfully utilized these innovations, though to a very limited extent. Policy makers in developing countries have to be convinced of the utility of these innovations to their countries in order for them to try these techniques. Unfortunately, there has been no systematic study of the topic, especially laying out their key characteristics in a non-technical manner and the various ways that these innovative financial techniques can be utilized to hedge against financial risks, to increase returns and to manage their foreign debt more effectively, so that policy makers in developing countries can have a basic grasp of important financial innovations.

It is very critical to analyze and categorize the various complex innovations according to their degree of applicability to developing countries, with specific examples for such applications. Furthermore, the study should highlight the kinds of legal, institutional and regulatory framework necessary for promoting their usage. This study is a modest first step towards such an effort. Chapter 2 surveys and classifies major financial innovations that might be useful to developing countries. Chapter 3 discusses various reasons for the recent phenomenon of rapid financial innovation around the world. Chapter 4 explores the key innovative techniques that can be applied to various funding and project financing schemes in developing countries. Chapter 5 discusses the policy implications raised in our study, so that developing countries can promote the utilization of modern innovative financial techniques.

2. Survey of Major Financial Innovations

a. Overview of the International Financial Environment

The past three decades have witnessed a phenomenal growth of international financial markets in terms of both volume and diversity. The modern version of the international

financial markets originated in the late 1950s with the emergence of the Eurodollar market. It is true that international finance was important in providing funds for expansion of railroads and other infrastructure in many parts of the world starting from the late 19th century. However, for more than 30 years from the Great Depression until the late 1950s, international finance was in a state of hibernation.

Several observations can be made about international finance from the late 19th century until the onset of the Great Depression. First, banks were engaged in two main types of international financial intermediation during that period: the underwriting and sale of foreign bonds by foreign governments and businesses, and short-term international bank loans. Underwriting activities did not require a large capital base but still generated hefty commission income for the banks. In many cases, short-term bank loans were used as bridge financing for the borrowers until the sale of their own bonds in international financial markets.

Second, in the absence of government-to-government loans or public international-agency loans a la World Bank and International Monetary Fund, money raised for foreign countries was mostly private funds arranged by private banks. Governments of industrialized creditor countries stayed away from foreign lending as much as possible except for wartime emergency loans. Third, defaults on foreign loans and foreign bonds were distressingly common, mainly due to frequent political turmoil and economic crises (such as commodity price collapses) and, to a lesser extent, economic mismanagement in debtor countries and unscrupulous banking practices. Bankers often pushed loans on borrowers for the sake of the commissions and other fees.

Foreign defaults showed a tendency toward bunching, and such systemic disturbances exacerbated the financial crises. In the 1870s, a worldwide recession caused massive defaults by a number of East European and Latin American governments. In the 1890s, again there were widespread defaults by many of the same governments as well as by U.S. railroads. The end of World War I, along with the Russian revolution and the breakup of the Austro-Hungarian Empire, saw another wave of international defaults. Finally, the Great Depression and deflation of the 1930s brought the most widespread defaults and bank collapses.

It is interesting to note that the biggest defaults in terms of monetary value during this period were caused not by developing countries, but by borrowers of the major industrial nations. These included the U.S. railroads in the 1890s, the Russian Empire due to the revolution at the end of World War I, and the German government in 1933. Defaults by major powers on their foreign obligations were more politically motivated than economically forced. As a way to reduce political risks, therefore, foreign loans were frequently made to the lender's colonies or to countries under its sphere of influence. Such "imperial" lending was very fashionable in the 19th and the early 20th century.

The massive foreign loan defaults and banking collapses in the early 1930s were traumatic for international financiers, and the world economy had not fully recovered from the prolonged depression when World War II started in Europe in 1939. Unlike the case at the end of World War I, reconstruction activities after World War II were not financed by private

bankers and financiers, who still remained demoralized and in a mood of extreme caution toward international financing due to their bitter experience in the 1930s. Instead, postwar reconstruction of Europe and Asia was financed by multilateral lending agencies such as the World Bank and through U.S. government aid programs such as the Marshall Plan.

Unlike the inter-war period, the post-World War II economic system was protected by a number of important international agreements so as to avoid a recurrence of self-defeating protectionist economic measures and financial panics. After the War, the International Monetary Fund was established under the Bretton Woods Agreement to promote international monetary cooperation through exchange rate stability and to provide financial assistance to member countries in temporary balance-of-payments difficulty. The other Bretton Woods institution, the World Bank, was established to provide long-term loans for postwar reconstruction and for economic development of less developed countries. The General Agreement on Tariffs and Trade (GATT) became effective in 1948 to promote a free international trading system through tariff reduction, nondiscrimination, and frequent multilateral trading consultations.

The favorable international economic and political environment in the postwar period led to gradual increases in world trade and foreign direct investments by businesses. Western financial institutions slowly regained the confidence they had lost in the Depression, and they became active again in short-term trade financing. In the immediate postwar period, however, European countries and Japan suffered from lack of foreign exchange and had to maintain strict exchange controls. Only when major European currencies became convertible in late 1958, did U.S. and European banks show increased signs of vitality. Around the same time, bankers in Europe became aware of Eurodollars and used them for trade financing and short-term international bank loans.

b. Recent Developments in the World Financial Environment

During the past ten years, international financial markets have expanded rapidly, outpacing the growth rate in nominal income in industrial twenty countries. Coupled with this increase in activity, these financial markets have also undergone extensive structural changes. These changes can be described along the three broad categories: internationalization, securitization, and financial innovation. This section discusses the first two, while the last topic will be explored in full in Chapter 3.

The **internationalization** of financial markets is a trend that has been under way for some time. It has been reflected in the faster growth of the Euromarket system and greater foreign participation in domestic financial markets. Internationalization is a commonly used term for the global integration of financial markets that has been under way. The variety of institutions, financial instruments, flow of funds channels, and supervisory entities that make up domestic financial systems is reflected, and amplified, in the emerging international financial system.

The growing importance of external financial transactions for domestic banks in the major industrial countries has been reflected in the rise in the proportion of total bank business

accounted for by foreign loans or foreign security purchases. The greater participation of foreign financial entities in domestic markets has also been evident in most major markets. The number of foreign banking firms in the major industrial countries has increased sharply and accounts for a considerably greater share of total bank assets.

Securitization has occurred in tandem with the internationalization of financial activity. Securitization has involved a greater use of direct debt markets in the form of marketable securities in lieu of non-tradable loan assets. It refers to a move away from traditional bank lending and deposit-taking activities toward financial intermediation involving various kinds of negotiable instruments.

The manifestations of securitization are numerous and varied. In the U.S. domestic market, loan-backed securities have achieved a significant presence. These are securities whose underlying assets are loans. Although mortgages are the predominant type of loans finding their way into loan-basked securities, a number of other types of assets have also been used. Among these are car loans, credit card receivables, computer leases, and U.S. Small Business Administration loans. Securitization of assets is limited only by the ingenuity of the packagers. The easiest assets to securitize, however, are those that are homogeneous in maturity and credit standings. To date, securitizing non-homogeneous assets, such as commercial and industrial loans, has not met with much success, although this may change if plans by the major credit rating agencies such as Moody's and Standard and Poor's to rate the instruments succeed.

A major attraction of securitization for originating financial institutions is that the process can result in assets being removed from an institution's books. This can be of particular interest to a financial institution that must meet minimum capital requirements based on asset level. Another attraction is that securitization can aid an institution in matching the maturity level of its assets and liabilities. For the economy as a whole, securitization can also result in a better matching of the maturities of assets and liabilities. For example, insurance companies have long-term liabilities. By purchasing mortgage-backed securities, insurance companies can acquire assets with comparable maturities.

Loan-backed securities have not yet achieved the degree of market presence in other countries that they have achieved in the United States. This is probably due to both the size of, and the extensive distribution systems in, the U.S. market. It may also be due in part to the ability of the advanced U.S. legal system to produce the standard underwriting and distribution agreements and the standard forms that make the securitization of assets feasible. Nevertheless, loan-backed securities are appearing outside the United States. Mortgage-backed floating rate notes have been issued in the United Kingdom, and some U.S. mortgage-backed bonds have been issued in the Euromarkets.

Securitization has taken place in syndicated Eurocredits and loan participations, along with the new emphasis upon the marketability of bank assets. In the United States, outright sales of loans are increasing, coupled with increases in syndications and participations. In Euromarkets, new practices include the trading of claims on sovereign debtors and more

extensive selling of participations in syndicated Eurocredits. Furthermore, syndicated Eurocredits have been increasingly displaced by issues of international bonds or, more recently, by the use of note issuance facilities or non-underwritten Eurocommercial paper. Thus, international borrowers now face an increased diversity of financing sources, ranging from the traditional syndicated Eurocredits to straight Eurobonds, FRNs, convertible Eurobonds, indexed Eurobonds, medium-term notes (MTNs), Euronotes, and Eurocommercial paper.

c. Classification of Financial Innovations

During the past two decades, the pace of financial innovations has accelerated precipitously. In connection with this paper, it may be instructive to divide these innovations into two categories: those related to various financial derivatives (swaps, futures, options, caps, floors, collars, etc.) and those related to various long-term funding techniques for project financing, such as BOT, BOO, project leasing, structured notes, indexed bonds, etc. As of early 1994, the worldwide outstanding volume of securities (cash market instruments) stood at $47.8 trillion:

Bonds	$18.6 trillion
Stocks	13.7
Money market instruments	15.5
Total securities	$47.8 trillion
Futures	$ 6.6 trillion
Options	6.9
Forwards	12.5
Swaps	9.1
Total financial derivatives	$35.1 trillion

Source: Barbara Donnelly Granito, "Assessing the Size of the Market," The Wall Street Journal, August 25, 1994.

The above volume may be compared to the total world GDP of about $28 trillion in 1994. On the other hand, the total outstanding volume of financial derivatives (in terms of their notional principal amounts) are estimated at $35.1 trillion as of early 1994. Even though the outstanding volume of derivatives is slightly less than that of the cash market instruments, the speed of increase for derivatives has been much faster than that of cash market instruments which have been around since the beginning of stock and bond markets in Western countries centuries ago. In comparison, financial derivatives have been in existence only during the past couple of decades.

There are four types of financial transactions: spot (cash market), forwards, futures and options. Except for spot and forward transactions which have been around since the beginning of the market economy, both futures and options have been around only for the past couple of decades. The first financial futures contract was offered in 1972 in the form of currency futures at the Chicago Mercantile Exchange. Both forward and futures contracts are similar in that the delivery takes place sometime in the future. However, forward contracts are tailor-made, individualized contracts traded over the counter, while futures are standardized forward contracts which are traded only on organized futures exchanges such as the Chicago Mercantile Exchange, Chicago Board of Trade, London International Financial Futures Exchange (LIFFE), Singapore Monetary Exchange (SIMEX), etc. Unlike spot, forward and futures contracts, all of which are symmetric contracts in that the buyer as well as the seller have both the right and obligation to buy or sell, the options contracts are asymmetric in the sense that only the option buyer (or option holder) has the right to buy or sell, while the option seller (options writer) has only obligations and no right to buy or sell.
The following table summarizes the various financial transactions.

FOUR TYPES OF FINANCIAL TRANSACTIONS

* Spot

* Forward - Foreign Exchange Forwards
  FRAs (Forward Rate Agreements)

* Futures - Currency Futures (1972)
  Interest Futures (1975)
  Index Futures (1982)
  Pollution Futures (SO-2) (1992)

* Options

  (a) Options on Physicals
  Stock Options (1973)
  Currency Options (1982)
  Interest Options (1982)
  Index Options (1983)

  (b) Options on Futures (1984)
  Options on Currency Futures
  Options on Interest Futures
  Options on Index Futures

  (c) Options on Swaps (Swaptions) (1986)
  Currency Swaptions
  Interest Swaptions

In addition to the above financial derivatives, during the past two decades financial swaps have become an important derivatives innovation. These financial swaps have become important tools for hedging against various financial risks. Financial swaps can be classified into four broad categories: assets swaps, liabilities swaps, interest rate swaps, and commodity swaps which do not involve swaps of any physical commodities but simply swaps of commodity prices (between spot price of a commodity and a long-term fixed price). The following table summarizes the various financial swaps and the year when each swap first appeared.

FINANCIAL SWAPS

ASSETS SWAPS (1980's)

Loan Swap
Debt/Equity Swap
Equity Swap
Debt for Nature Swap
Debt for Export Swap
Debt for Charity Swap
Debt for Development Swap
Debt for Scholarship Swap
Debt for Bond Swap

LIABILITIES SWAPS

Currency Swap (1981)
(Cross-Currency Long-term Debt Swap)

INTEREST RATE SWAPS (1982)

Coupon Swap
Basis Swap
Yield Curve Swap
Amortizing vs Non-Amortizing (Bullet) Swap
Accreting Swap
Forward Swap
Extension Swap
Extendable Swap
Non-LIBOR Swap
Zero-Coupon Swap
Off-Market (or Non-Par) Swap
Par Value Swap
Synthetic Swap

COMMODITY SWAPS (1987)

Copper Swap
Oil Swap

In addition to the financial derivatives, the recent decades have witnessed an explosive growth of various new funding and project financing techniques. Of particular interest are various off-balance sheet project financing techniques such as:

Build, Operate and Transfer (BOT)
Build, Own and Operate (BOO)
Lease, Operate and Transfer (LOT)
Build, Lease and Transfer (BLT)

The above techniques involve some forms of contractual agreements under which the contractor (usually a private sector firm) undertakes the construction, financing, operation and maintenance of an infrastructure facility for a given period of time, termed as the concession period. During this concession period, the contractor is allowed to charge the users of the facility a toll or other fees sufficient to recover the costs and earn a risk adjusted return on his investment. Other off-balance sheet project financing techniques involve the new innovative uses of leasing, such as project lease, export lease, cross-border lease, etc.

In recent years, many countries have been moving towards the use of limited-recourse financing techniques as a way to avoid the risks involved in major new project developments. The popularity of these techniques lies in the belief that they might prevent losses and reduce the danger of piling up large debts. The trend marks a definite move away from recourse deals financed mainly by conventional credits carrying full sovereign guarantees. Limited recourse financing techniques are part of off-balance-sheet project financing, which also includes various forms of lease as well as the take-or-pay contracts.

In an operating lease the lessor not only keeps the title but also carries out routine upkeep such as maintenance and repairs of the leased property. In a financial lease, however, these tasks are performed by the lessee, who also pays the property tax and insurance premium to protect the leased property. If the lessee has the right to purchase the leased property at the end of the lease period, such a financial lease is also called a hire purchase. However, some countries do not permit this type of lease. Another type of financial lease is project lease, in which the facility to be leased is financed by conventional bridge financing during its construction period. Only when the construction process is complete, the project lease comes into effect. Similar to the project lease is a sale-and-lease-back, under which a facility that has been in operation is sold to the lessor and leased back to the former owner.

The take-or-pay contract, typical in a large pipeline construction project, is signed between a pipeline company (the project entity) and a group of oil or gas companies which will

actually utilize the pipeline. Under the contract, the users agree to pay the project entity a fixed sum per annum for an extended period of time regardless of whether the full pipeline capacity is utilized or not. The fixed payment is set at such a level sufficient to service the long-term debt incurred to finance the pipeline construction as well as an adequate return on equity for the project sponsors. The debt financing is on a non-recourse basis, collateralized by the long-term take-or-pay contract.

Limited-recourse financing was first pioneered in the early 1970s for developing the North Sea oil fields. It took some elements of risk off the balance sheets of the oil companies and handed them to the creditor banks. For a number of smaller companies, without the assets to back conventional loans, financing off the back of the future proceeds of their oil was the only way of raising the necessary capital. The concept of limited recourse financing, which relies more on the project's future cash flows than on the creditworthiness of a project entity, has since been applied to other revenue-generating projects, including certain infrastructure projects. As privatization has become more fashionable, limited-recourse infrastructure projects have also gained popularity.

In a later chapter, more detailed discussions will be carried out on the ways that developing countries can utilize these innovative techniques such as BOT. As part of financial innovations, many financial institutions have engaged in a variety of off-balance sheet activities in recent years. Not only the types of activities have been expanded but also their volume has increased exponentially. The aggregate size of total contingent liabilities generated by off-balance sheet activities among the top 10 U.S. banks are estimated at almost seven times their combined balance sheet assets as of end-1994. "Off-balance sheet activities" is not a phrase that refers to a precisely delineated group of activities. Rather, off-balance sheet activities are a somewhat amorphous collection of income-generating businesses that do not appear on a bank's balance sheet. Off-balance sheet activities are also not new. Income-generating activities that do not create additions to banks' balance sheets have been a long-standing part of the banking industry's products and services. The holding of assets in trust for a fee is an example of a long-standing bank off-balance sheet activity. What is new is the explosive growth in their volume and their variety.

Certain off-balance sheet activities such as financial services generate fee income but do not create contingent assets or liabilities. In addition, the credit risk they produce is not as large or apparent as that produced by contingent claims. Financial services include a number of items that have long been offered by banks. Some financial service off-balance sheet activities are: loan servicing; loan pass-through; trust-related services, including portfolio management, investment advisory services, securities processing, customer stock, bond, and money market brokerage, and trust and estate management; payment services, such as network arrangements, transaction processing, overdraft banking, credit and debit cards, automated teller machines (ATMs), point of sale (POS) terminals, home banking, cash management, and bank-to-bank payments; insurance services; correspondent banking services, such as credit services, security services, trust services, international services, and payment services; and export trading company services.

On the other hand, an increasing number of new off-balance sheet activities create contingent assets or liabilities. The introduction of terms such as interest rate swaps and currency swaps serves to highlight an important point: the subject of off-balance sheet activities is receiving considerable attention not only because of the growing involvement of banks in traditional off-balance sheet activities but also because of the rapid development of new off-balance sheet activities. There are four categories of off-balance sheet activities. The first consists of guarantees and similar contingent liabilities. The second consists of commitments. The third consists of market-related transactions. And the fourth consists of advisory, management, and underwriting functions. Contingent liabilities arise when a bank underwrites the current obligations of a third party. Commitments arise when a bank has no immediate credit exposure but could become exposed at a future date. Some of the newer instruments in the off-balance sheet field defy easy categorization. The following table presents various categories of off-balance sheet activities.

Off-Balance Sheet Activities of Banks

I. Guarantees and Similar Contingent Liabilities

1. Guarantees
2. Acceptances
3. Transactions With Recourse
4. Standby Letters of Credit
5. Documentary Letters of Credit
6. Warranties and Indemnities
7. Endorsements

II. Commitments

A. Irrevocable Commitments

1. Asset Sale and Repurchase Agreements
2. Outright Forward Purchases
3. Forward Deposits
4. Partly-paid Shares and Securities
5. Other Standby Facilities
6. Note Issuance Facilities and Revolving Underwriting Facilities

B. Revocable Commitments

1. Credit Lines
2. Undrawn Overdraft Facilities

III. Foreign Exchange, Interest Rate and Stock Index Related Transactions

1. Forward Foreign Exchange Transactions
2. Currency and Interest Rate Swaps
3. Currency Futures
4. Currency Options
5. Forward Rate Agreements
6. Interest Rate Futures
7. Interest Rate Options
8. Stock Index Futures
9. Stock Index Options
10. Options on Interest Rate or Currency Futures

IV. Advisory, Management and Underwriting Functions

1. Fiduciary Services, e.g., Trust Funds, Portfolio Management
2. Agency Functions
3. Countertrade
4. Safe-keeping of Securities
5. Securities Underwriting

3. Reasons for Recent Financial Innovations

World financial markets have experienced a sharp acceleration in the pace of financial innovations during the past two decades. Major new financial instruments have either been created or have dramatically increased their role in the markets, transforming in the process the international financial system in important ways. In many respects, these innovations have improved the efficiency of international financial markets by offering a broader and more flexible range of instruments for various participants in the markets. At the same time, some of the innovations, including a variety of off-balance-sheet commitments, have raised a new concern for increased risks in the international financial system.

The extensive changes in financial instruments and financial institutions during the past decade have been especially pronounced in the international financial markets, commonly known as the Euromarkets. Both the richness and complexity of international funding sources bear testimony to the robust spirit of financial innovations that pervades the Euromarkets. Some of the innovations turned out to be faddish, but others have gained wide acceptance and made valuable contribution to the growth of Euromarkets. Both the development of markets for new financial instruments and the expansion and deepening of markets for the pre-existing instruments are the results of the innovative spirit in the Euromarkets. Viewed in this way, however, the very existence of the Euromarkets is founded on this spirit of financial innovation.

The emergence of various Euromarket instruments since the early 1960s has been the result of financial innovation designed to meet the special needs of long-term international borrowers and investors.

The recent rapid expansion of Euromarkets has been promoted by further institutional innovations. The private use of both the European Currency Unit (ECU) and the Special Drawing Right (SDR) was first practiced for Eurobonds and then their use was extended to bank deposits and Eurocredits. New clearing house mechanisms for international bonds and Euro CDs have greatly facilitated secondary market trading of these instruments. Grey market trading was pioneered in the Eurobond market and it still remains a unique feature of the market. Development of FRNs, Eurocredits and other floating-rate instruments in the 1970s is another example of Euromarket innovation.

Financial innovation involves more than development and diversification of new borrowing sources. It affects the entire range of financial intermediation, both domestic and international. In fact, the variety of services offered by financial intermediaries has been equally impressive on the liability side of their balance sheets. Liability management of modern financial institutions has become an important part of their integrated approach to financial intermediation. Innovations on the liability side have especially significant policy implications for monetary authorities.

During the past couple of decades, many financial institutions have sharply expanded their use of guarantees as part of the general trend toward off-balance sheet activities. This trend has been fostered by the stepped-up pace of financial innovations. Both the richness and complexity of international financial flows bear a testimony to the robust spirit of financial innovations that has pervaded globalized financial markets.

The rapid pace of financial innovations in recent years is due to several factors. The first of these was the high level of interest rates worldwide from late 1960s. Not only the high level of interest rates but also the greater fluctuation of interest rates increased significantly the risk exposure of most market participants. Savers and investment managers became exposed to larger capital losses, as well as capital gains, on their financial portfolios due to widely fluctuating interest rates, since the market price of debt instruments moves inversely with interest rates. Also, banking institutions that have traditionally engaged in maturity transformation by funding medium to long-term loans with short-term liabilities are subject to greater uncertainty over their funding costs due to widely fluctuating money market rates.

Financial institutions have devised various countermeasures to cope with this increased risk. On the one hand, the interest rates on medium to long-term loans, including adjustable-rate mortgages loans, have shifted increasingly from fixed rates to floating ones tied to certain short-term base rates such as three- or six-month LIBOR or the prime rate. Floating-rate loans significantly reduce the funding cost risk for financial intermediaries. Floating rates have been adopted not just for bank loans in the form of Eurocredits but also for long-term debt securities such as floating-rate notes. On the other side of their balance sheet, financial institutions have

also diversified their liabilities and lengthened their maturities. The trend toward liability diversification in terms of both instruments and maturities has intensified recently concomitant with the general deregulatory movement in the financial sector.

High interest rates increase the opportunity cost of holding noninterest-bearing assets and encourage the economizing of such assets. Thus, high interest rates provide incentives for savers to shift out of demand deposits and into high-yield alternatives provided by new types of money market instruments. In order to slow down the disintermediation process, banks have had to devise new types of bank liabilities. Banks, forced to pay increasingly market-related rates in order to attract deposits, started to use actively a variety of new instruments for raising interest-sensitive funds, and they have also contributed to the creation of new secondary markets in which these assets are traded actively. Variable rate financing such as FRNs and floating-rate CDs have enabled banks to raise medium- and long-term funds at a time when fluctuating interest rates continue to act as a major disincentive for savers to purchasing and holding long-term investment assets. The fast-growing interest rate swaps, futures and options market also serves as an example of continuing efforts to reduce risk exposure created by high and volatile interest rates.

The floating exchange rate regime, in force since early 1973 with the breakdown of the Bretton Woods system, greatly increased the volatility of exchange rate movements, increasing the level of financial risk exposure for market participants similar to widely fluctuating interest rates. Before 1973, many economists expected exchange rates to be fairly stable under the flexible exchange rate system. Because most market-determined prices are not volatile, it was believed that the market-determined price of foreign exchange would not be volatile, either.[1] Instead of being stable, however, exchange rates have been highly volatile under the floating exchange rate regime.

When spot exchange rates are volatile, the differences between forward exchange rates and corresponding future spot rates tend to be amplified[2], thus lessening the degree of accuracy of the forward exchange rate as a predictor of the actual spot rate on a particular future date. Widening divergences between forward exchange rates and the subsequently observed spot rates for corresponding dates increase the degree of risk present in the financial market. Innovations such as currency swaps, currency options and currency futures reflect the attempt by market participants to mitigate or even circumvent the heightened exchange rate risk perceived during the past two decades of floating exchange rates. A number of innovations in the financial market have been designed specifically to lessen the foreign exchange risk exposure for international investors.

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[1]For example, see Harry G. Johnson, "The Case for Flexible Exchange Rates," Federal Reserve Bank of St. Louis Review, June 1969.

[2]See, for example, International Monetary Fund, Annual Report 1982, Washington, D.C., 1982, pp. 42-45.

They include currency option bonds, commodity-linked bonds, and bonds denominated in SDRs and European Currency Units (ECUs).

As the volume of outstanding loans to developing countries increased rapidly in the 1970s, international credit risk became a critical issue for financial intermediaries in the Euromarket. The world debt crisis in the 1980s has accentuated the need for devising new ways to deal with mounting international credit risk in general. In an attempt to supplement or even replace the traditional syndicated Eurocredit mechanism, financial markets have experimented with a variety of new financing techniques such as bought deals, club loans, loan swaps, participation certificates, revolving underwriting facility (RUF), multiple option facility (MOF), and so on. These innovations are intended for certain specific needs perceived in this era of heightened international credit risk.

Another reason for proliferation of financial innovations was the rapid development of computer and communications technology, which has provided financial institutions with the capacity to process massive amounts of data and to make financial transfers rapidly and economically. The introduction of such new technology contributes to greater transactional efficiency and a higher degree of integration of world financial markets. The impact of new information processing techniques has been most visible in such new financial services as automated teller machines (ATMs), home banking system, and point-of-sale (POS) terminals. Corporate and individual depositors are now able to carry out significant portfolio shifts in order to economize on cash balances and low-yielding transactions accounts by quickly investing their liquid resources in various money market instruments.

Cash flow management has been enhanced significantly by such electronic fund transfer systems as the U.S. Federal Reserve System's Fed Wire and the New York's Clearing House Interbank Payments System (CHIPS), which have made it possible to clear millions of transactions efficiently and rapidly. London's new Clearing House Automated Payments System (CHAPS) plays a similar role, significantly reducing transactions costs. Automated international message transfer services such as the Society for Worldwide Interbank Financial Telecommunications (SWIFT) contribute to integration of world financial markets through efficient and almost instantaneous sharing of messages and information worldwide. In many instances, sophisticated new equipment has resulted in sizable amounts of excess capacity, thereby creating incentives for expanding existing financial services and offering new kinds of services. New electronic banking technology has also produced significant structural changes in the organization of financial markets. For example, automated payment systems have facilitated the entry of non-banking institutions into the retail deposit business since ATMs have made it possible to avoid the heavy expense of building extensive branch networks.

Also, the regulatory environment for international financial transactions has been conducive to the kind of competitive and creative spirit needed in financial innovations. Regulatory authorities have traditionally allowed a greater operational leeway for "Euro" or foreign currency banking. In fact, this regulatory asymmetry was originally responsible for the creation of the Euromarket itself in the first place. For example, the absence of reserve

requirements and interest rate ceilings encouraged the development of the Eurodollar market by providing competitive advantage to banking institutions in Eurodollar funding operations. The Eurobond market was also promoted in the absence of strict securities regulations applied to domestic markets such as registration requirements and disclosure rules.

Consequently, the Euromarket has provided a relatively fertile field for financial innovations free of stifling regulatory constraints. Even in the domestic financial markets of most Western industrial countries the process of financial deregulation has been at work during the past decade or so. In general, deregulation tended to follow rather than precede the introduction of new financial products and services which first would transform the financial market environment substantially enough to force the change in the traditional regulatory outlook. Deregulation would then accelerate further financial innovations, triggering more deregulation and so on in a self-reinforcing manner.

Between the Great Depression in the early 1930s and the expansion of Eurobanking in the 1960s, bank regulatory philosophy in major Western industrialized countries was dominated by a preoccupation with the soundness of individual institutions, mindful of the great financial crash in the late 1920s and early 1930s. Competition in banking was viewed as a double-edged sword, incorporating notable deficiencies as well as some generally recognized advantages in improving the quality of banking services to the public. However, recent regulatory changes were designed to promote competition not only among banks but also between commercial banks and other financial institutions, encouraging rapid financial innovation in Euromarkets.

Even in the absence of the various factors listed above, financial innovation would have taken place anyway in response to increasing competitive pressures in Euromarkets. Over the past twenty-five years the various segments of Euromarkets have experienced truly exponential growth. The gross size of the Eurocurrency market rose from less than $10 billion in 1963 to over $5,000 billion by the end of 1994, while the total outstanding volume of cross-border international banking assets grew from $2,370 billion in 1982 to $7,804 billion in 1994. The total annual borrowing through various short- and long-term instruments and borrowing facilities in international capital markets increased from $102 billion in 1978 to $968 billion in 1994.[3]

As the size of the Euromarket expanded, the number of participants in the market also increased sharply, bringing about the process of product differentiation in response to competitive pressures typically occurring in mature markets. Thus, financial innovation may be considered as part of a normal process of market maturity. However, the rate of production and spread of financial innovations is greater in international than in domestic financial markets due to the wider range of needs for specialized financial techniques tailored to a variety of market participants from all over the world. The greater diversity of participating institutions with their own unique, locally-generated techniques and traditions leads to cross-fertilization of concepts in Euromarkets.

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[3]Financial Market Trends, OECD, Paris, June 1979 and June 1995.

New financial products and services can be more easily tested and applied because of the economies of scale offered on a global scale in the Euromarket environment.

Thus, financial innovations in the Euromarket exhibit themselves in numerous forms to serve specific needs of diverse market participants. They can be classified broadly into five groups depending upon their basic purposes. First, some of the financial innovations are designed to reduce the cost of transactions. Such efficiency-enhancing innovations have been of two kinds: innovations which substituted one transaction's medium for another because of a difference in the real costs of their use, and innovations which lowered the cost of using a particular medium.[4] Second, some innovations are intended to alleviate the perceived risk inherent in international financial transactions. In this regard, interest rate risk, exchange rate risk and the credit risk are most noteworthy in recent years.

Third, some innovations are conceived to mitigate or even circumvent the impact of regulations on financial transactions. As was mentioned earlier, the very origin of the Euromarket was closely tied to these efforts to cope with the regulatory constraints. Fourth, some innovations are created to take advantage of new profit opportunities opened up by technology or deregulation. Such "profit niche" strategy is a natural process of market maturity occasioned by increased competition and economies of scale. Lastly, some innovations are intended to increase the overall flexibility of financial management. Diversification of both funding sources and lending instruments contributes to operational stability and flexibility in the Euromarket.

Within the overall framework of international financial innovations, the Eurobond market has amply benefitted from more than its fair share of the innovative process. The Eurobond market has turned out to be an especially fertile ground for financial innovations. Since bonds have long-term maturities, the impact of recent high and volatile interest rates was keenly felt, urgently requiring new techniques to shield investors from adverse effects. Some of the innovations in this category include deep discount and zero coupon bonds, floating- and rolling-rate notes, index- and commodity-linked bonds, drop lock bonds, and extendable maturity bonds. Some innovations are designed to alleviate the heavy burden of high interest rate on the borrowers. Interest rate swaps belong to this category.

The fact that investors and borrowers of Eurobonds come from many countries with different currencies makes it especially important for Eurobonds to adopt techniques to deal with long-term foreign exchange risk. In the floating exchange rate regime, the earlier classification of currencies as either strong or weak has come to have only transient relevance, since once strong currencies frequently become weak ones and vice versa. Consequently, Eurobond investors are exposed to increased uncertainty over the long-term value of their Eurobond investments denominated in specific currencies. Various attempts have been made to cope with

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[4]Robert Craig West, "A Theory of Financial Innovations in the United States," Federal Reserve Bank of Kansas City Research Working Paper, 1982, p. 3.

the foreign exchange risk to Eurobond investors. They include currency option bonds, and bonds denominated in such artificial currency units as SDR, ECU, EUA and Eurco.[5] On the other hand, some innovations such as currency swaps are designed to provide assistance to bond issuers.

4. Applications of Financial Innovations to Developing Countries

a. BOT and BOO Schemes

In both BOT (Build, Operate and Transfer) and BOO (Build, Own and Operate), the project is designed, built and then operated by a private entity. With BOT the project developer is provided a certain number of years of positive revenue to compensate for his investment, after which the project reverts to the government. An example is the Channel Tunnel, where Eurotunnel -- a private company created for the purpose -- has been granted a 55-year concession on Channel Tunnel traffic before the UK and French governments take it over. In BOO, however, the title to the project does not revert to the government.

BOT and BOO have been promoted as a way for LDCs to build infrastructure projects without having to pay out of the government expenditure budget. Many development finance institutions are keen to promote private-sector initiative. Furthermore, an increasing number of private companies have been active in developing countries on BOT/BOO-based infrastructure projects. A frequent problem is the long project gestation period due to the procedures of authorities in developing countries.

Another problem is repatriating funds. Unless BOT or BOO is a natural foreign-exchange producer such as a mining project whose products are destined for exports, a developer will have to convert local-currency earnings into convertible currencies. This is further complicated in infrastructure projects (like roads or bridges) because of socio-political reasons for keeping tolls down and the question of government cross-subsidies.

In Pakistan's power projects this problem has been resolved by the World Bank's intervention to secure the private sector's investment. Parts of the power-purchasing agreement guarantee the developer an adequate return adjusted to foreign exchange fluctuation. There is also an agreement that the central bank will provide foreign exchange to foreign project sponsors in order to repatriate the profits. But there still remains some suspicion that governments in developing countries are using BOT and BOO to get the private sector to rekindle projects the public sector could not make happen due to the projects' inherent weakness in future cash flows.

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[5]For a fuller description of various artificial currency units and their economic implications, see Joseph Aschheim and Yoon S. Park, Artificial Currency Units: The Formation of Functional Currency Areas, Princeton University Essays in International Finance No. 114, 1976.

With the world debt crisis, many developing countries found it increasingly difficult to arrange conventional long-term credits for project financing. Thus, it is important to isolate the project as much as possible from country risks. If adequately structured for certain viable projects, both BOT and BOO schemes can provide a viable alternative for project financing. Malaysia provided one of the early examples of BOT in a developing country with the Labuan Water Supply Project. The state water authority awarded a concession to a private consortium (Labuan Water Supply Bhd) for the construction and operation of a water treatment plant and pipeline for the island, which lies off the coast of Sabah.

Why are contractors willing to take on the additional risks of limited-recourse financing in general, and BOT in particular? These techniques have several advantages. For many engineering companies, running a project can be a useful diversification away from construction and engineering work. In what is a cyclical business it enables them to maintain a higher proportion of their skilled staff, when the construction market is in a down cycle. At the same time it diversifies their income stream. BOT has emerged as developing countries have sought to obtain a longer term commitment from contractors by imposing equity requirements and technical or operating support on potential projects. Given the competitive environment, putting equity in the company set up to build and operate a project is becoming increasingly accepted as part of the cost of a project deal.

Because of the external debt crisis facing many developing countries, it is far more problematic to finance power sector investment in developing countries. The capability of many developing countries to attract external financing has been sharply reduced due to rising debt service difficulties on their existing loans. In addition to the problem of obtaining external financing for foreign exchange costs of a power sector project, it has also become increasingly difficult to secure the local currency financing by the traditional method of budgetary allocations, as most governments try to reduce huge budget deficits either voluntarily or under the IMF/World Bank-mandated austerity economic measures. Furthermore, state power agencies are unable to increase their contribution to new capital investment out of internally generated cash flows, because it has become increasingly difficult politically to raise electricity tariffs in an environment of high and rising unemployment and economic recession brought about by the various austerity measures.

In the current circumstance, therefore, it is urgent to develop an alternative financing scheme that satisfies the following criteria: First, it involves no additional indebtedness which contributes to exacerbating the existing external debt burden of a developing country. Second, it requires no additional budgetary allocations to provide local currency requirements of the project. And third, it should consider the local political sensitivity to a possible foreign takeover of a key industry such as the power sector.

The BOT technique can be used to finance a power project in developing countries. Essentially the scheme involves construction in a developing country of a power plant by a private project entity (the sponsor), which may be a consortium of foreign companies, under a long-term power purchase contract between the foreign entity and the national power authority.

The annual purchase price will be set high enough to compensate the foreign entity for the financing cost of the power plant as well as providing an adequate return on its equity investment.

The power plant will be operated by the project entity, which is motivated to operate the plant as efficiently as possible because the pricing structure is set to reward operational efficiency. To ensure that the project entity will be paid annually at least an amount sufficient to cover debt service charges, the long-term power purchase contract generally mandates a "capacity charge" similar to a take-or-pay contract. The annual capacity charge is paid the project entity regardless of actual power delivery. On the other hand, the "energy charge" is based on the actual volume of power delivery to cover the variable costs of the power generation.

Potential participants in the project entity (the sponsor group) are foreign engineering/construction firms in search of new business in developing countries, power equipment manufacturing firms eager to sell their equipment, and/or international oil/coal/gas producing companies in search of a long-term customer for their energy products. Of course, the latter will be interested in the project only when the developing country needs to import oil/coal/gas to fire the new power plant. If the developing country intends to build a power plant using locally produced oil/coal/gas, only the first two categories of firms can be potential participants in the sponsor group.

The BOT scheme allows construction of an expensive power plant in a developing country without additional foreign debt incurred by a developing country. Furthermore, since the foreign sponsor group will be solely responsible for the completion and operation of the plant, there will be no additional budgetary burden for the government even for the local currency portion of the plant construction. Power generation is performed by a private enterprise, which is motivated to operate the plant as efficiently as possible to maximize its profit. Since the sponsor group is likely to be from developed countries with high credit ratings, the debt financing cost for the power plant will be lower than the traditional alternative of a local power agency borrowing abroad with its government guarantee.

Construction of a power station in a developing country under a BOT scheme has many benefits. For the host developing country, the scheme allows it to develop the power sector without incurring additional external debt. Privatization of the power sector from the initial stage may be conducive to operational efficiency in power production, without further burdening the government budget. The scheme can also lead to reduction of the country's existing external debt through potential securities issues to fund the local currency portion of the project cost. Finally, the scheme results in an increase in foreign direct investments in the host developing country by large international companies, which may lead to further direct investments in other projects in the host country as well.

Such a scheme is also attractive to a number of potential project sponsors. Power equipment manufacturers can not only sell their equipment but also participate further in the

profit of the power project. The same is true for large engineering/construction companies looking for new projects in new markets. These companies can realize diversification of their operations. Coal/oil companies can secure a long-term customer for their oil/coal reserves. General trading companies can similarly benefit from such a venture.

In a BOT scheme the World Bank Group can play a very useful and productive role for the host developing country. The IFC can become a small equity investor in the project entity along with the other project sponsors; in addition, the IFC may participate in co-financing the debt portion of the project cost. MIGA can participate in providing the insurance for both the force majeure risk and the political risk, jointly with bilateral national insurance agencies such as the U.S. Overseas Private Investment Corporation (OPIC) and others. Finally, the World Bank Group can play the role of a key project advisor to the host developing country in planning and designing the project, working out contractual arrangements which will meet the government's objectives, locating and attracting private sponsors to the project, and evaluating proposals submitted by potential investors.

b. Interest Rate Swaps

An interest rate swap is in essence an arbitrage between the credit spread differentials between the fixed-rate market such as Eurobonds and foreign bonds and the floating-rate market such as FRNs and Eurocredits. The arbitrage opportunity is created by the contrast between the narrow (50 to 100 basis points) interest rate differential in the floating-rate market between high- and low-rated borrowers on the one hand and the broad (200 to 300 basis points) interest rate differential in the fixed-rate market, on the other. Thus, the asymmetry in risk perception between the two credit markets is the basic rationale for an interest rate arbitrage.

In its most basic form, the fixed-to-floating interest rate swap (or coupon swap) is an exchange by two parties of interest payment flows on borrowings made in these two credit markets -- fixed for floating and floating for fixed. As the result, each party obtains the type of liability it prefers and at a more attractive rate. Since the interest rate swap concept first appeared in early 1982, the number of swap transactions has increased sharply. And its complexity has also risen due to development of variations of the basic interest swap, such as the basis swap (or floating-to-floating rate swap) and the cross currency interest rate swap. Apart from the obvious cost savings for both swap partners, the interest rate swap provides financing flexibility for an entity which can transform floating-rate obligations to fixed rate and vice versa. Since interest rate swaps can also be based on existing, outstanding debt obligations, enterprises may avoid increasing financial leverage to their balance sheets while varying debt mix.

Several factors account for the rapid growth of interest rate swaps. Forces underlying the financial market condition led to complementary demand for swaps on the part of companies preferring fixed-rate borrowings and banks willing to accept floating-rate liabilities. On the fixed-rate borrower side, the high level of real interest rates in recent years caused a relatively short supply of fixed-rate funds which the market consequently allocated disproportionately to

the most creditworthy borrowers, among them generally large banks and triple-A rated industrial corporations. The less than prime credit borrowers from both developed and developing countries found fixed-rate borrowing prohibitively expensive. Interest rate swaps provided them with access to the fixed-rate market they preferred, enabling them to avoid the risks of floating-risk obligations.

From the banks' perspective on the floating-rate side, increased tightening of control over bank capital ratios and asset/liability maturity profiles by central banks encouraged commercial banks to engage in swaps. The first bank to do so in a big way, Deutsche Bank, needed to refinance much of the liability funding for its floating-rate Eurocredit assets to conform to the new Bundesbank regulations. Between August 1982 and July 1983, for example, the bank went on an interest rate swap spree, making seven fixed-rate bond issues which it converted into medium-term floating rate debt. Within a year it had refinanced $1.1 billion of its balance sheet in this way. Other banks engaged in the swaps for similar reasons. Of course, a swap will be successful only if both sides benefit from it. The presence of arbitrage opportunities offers a way for both parties not only to obtain their preferred type of debt but also to do so more cheaply than they would by tapping their preferred market directly by themselves.

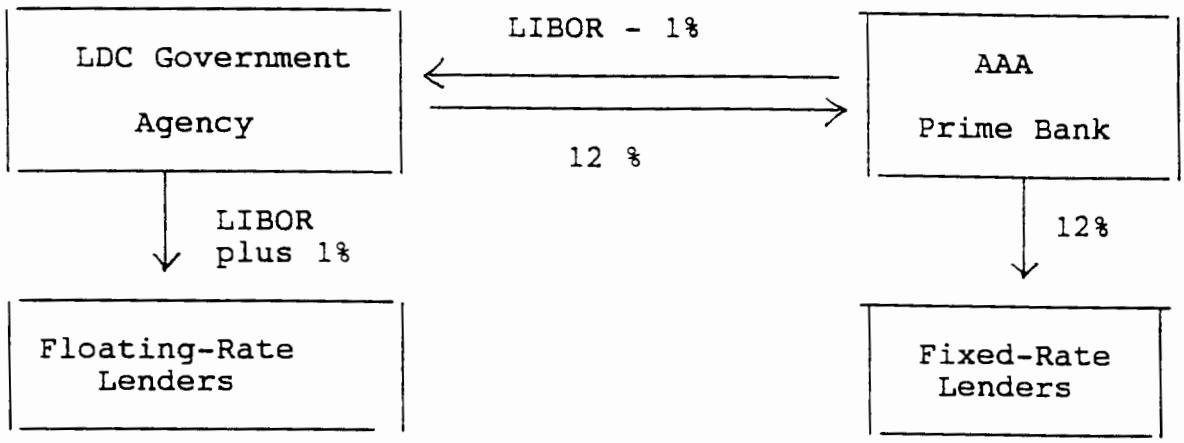
The following hypothetical example illustrates how the two swap parties can take advantage of credit spread differentials to lower the cost of borrowing in each one's preferred market. It assumes that both wish to borrow similar amounts with like maturities and that the schedule below represents the cost of borrowing available to each in the two markets.

Borrower	**Fixed-Rate Market**	**Floating-Rate Market**
LDC Government Agency	15%	LIBOR plus 1%
AAA Prime Bank	12%	LIBOR
Credit Spread	3%	1%

In this situation a government agency of a developing country borrows, say, 8-year $100 million Eurocredit at LIBOR plus one percent, while the prime bank obtains a fixed-rate fund by issuing $100 million Eurobonds at 12 percent. At the same time, the two sides enter into a swap agreement in which each promises to swap interest payments, thus the floating-rate borrower paying in effect the fixed rate and vice versa. The LDC government agency, the weaker credit, thus agrees to pay 12% each year to the AAA prime bank, which in turn agrees to pay the LDC counterparty the floating rate, which is <u>less</u> than its original opportunity cost of raising floating-rate funds at LIBOR. In this case, if the prime bank pays the LDC government agency only LIBOR minus one percent, both swap parties end up saving one percent per annum in their respective borrowing cost. For example, the prime bank effectively pays only LIBOR minus one percent for its 8-year $100 million de facto floating-rate borrowing, while the LDC borrower effectively pays only 14 percent instead of 15 percent for its 8-year $100 million de

fact fixed-rate borrowing. By exploiting their comparative advantages in the two (fixed- and floating-rate) market segments which exhibit asymmetry in the relative interest rate differentials between the two borrowers with different creditworthiness, both partners benefit from the interest rate swap. The following diagram illustrates the flow of funds and interest payments between the swap counterparties and their respective creditors.

Swap Interest Payment Flows



Since each party saves one percent, the total arbitrage savings of the swap amounts to two percent, the difference between the three percent fixed-rate market and one percent floating-rate market interest spreads listed in the above example. Actual arbitrage savings to the counterparties would total a bit less since almost all swaps use banks as middlemen. The bank in the middle charges a certain percentage of the principal amount for its services such as arrangement and guarantee for the weaker credit, usually amounting to 1/8 to 1/4 percent of the interest payments due from the weaker credit party (LDC government agency), which in this example is 12%. Generally, a savings of 1/4 to 1/2 percent must exist for each counterparty to make the swap deal worth their while. The greater the credit disparity that exists between the two markets for the counterparties, the greater the arbitrage opportunity and, therefore, the greater the incentive to engage in a swap.

There are three types of secondary market transactions: swap sales or assignments to a new counterparty, swap terminations, and reverse swaps. Swap sales and swap terminations extinguish the seller's obligations, while reverse swaps are written to offset the effects of an existing swap. Counterparties in swap transactions assume credit risk arising from the possibility that a counterparty does not perform under the swap contract and exposes the other counterparty to unexpected mismatch and losses if interest or currency rates have moved adversely. The swap technique has been one of the most successful recent financial innovations: 40 percent of all new international bond issues now involve a swap of one form or another.

A recent development in swap markets has been the growth of asset swaps; that is, the use of an interest swap to transform an asset rather than a liability. The transactions mostly have involved the transformation of fixed rate assets into floating rate assets, through the creation of "synthetic floaters." The asset holder who receives a fixed rate coupon from his asset agrees to a fixed rate payment on a fixed-floating interest rate swap in return for a floating rate payment. The swap counterparty thus receives fixed payments and pays floating rates without necessarily possessing floating rate assets; hence the term "synthetic floats."

The growing commodity status of the interest rate swap carries a lesson for bankers. In the new competitive market environment, financial products have life cycles just as do the products of other industries. Moreover, because many bank products can be imitated quickly by competitors, often saturation occurs and decline sets in faster than in manufacturing industries where patents offer some degree of protection. The narrowing of bank margins on classic swaps and their growing commodity status indicates that they have already passed through their development stage and are fast nearing the end of their growth stage. As it reaches maturity, new variations in the basic interest rate swap concept are appearing. Now there are cross currency interest rate swaps, floating-to-floating interest rate swaps, and others. The range of swap participants has also widened to include insurance companies, utilities, and LDC borrowers which prefer fixed-rate borrowings over floating-rate ones. Thus, the interest rate swap and its variations are likely to remain a potent financial technique for international borrowers in the foreseeable future.

c. Currency Swaps

The new currency swap is a financial innovation pioneered in 1981 in the uncertain market condition characterized by volatile interest and exchange rate movements. (This new currency swap is quite different from the foreign exchange market currency swap, which involves a spot sale or purchase of a foreign currency, offset by a simultaneous reversal of the contract in the forward market.) Unique in its concept as a combination of a traditional currency swap and a debt swap, this new technique provides different sets of financial incentives to the swap participants. On the one side, a participant can minimize his "effective" long-term borrowing cost while avoiding the risk of potential market saturation. On the other side, his counterpart can lock up the accumulated book value gain resulting from favorable exchange rate and interest rate changes since his earlier foreign currency borrowing and at the same time obtain long-term exposure coverage not commonly available in the foreign exchange market.

The currency swap was first tried in August 1981 by the World Bank, which floated a $290 million Eurobond issue whose dollar proceeds were used in currency swaps with IBM for German marks and Swiss francs. The swap transactions turned out so satisfactory to the World Bank that it executed another one the following month, this time for the amount of $330 million with a group of banks consisting of Morgan Guaranty, Paribas and Chase Manhattan. These swap transactions have been highly praised by market practitioners as both innovative and ingenious. A respected trade journal nominated them as one of "the deals of the year" for 1981

for having been the most creative financing techniques.[6]

Long-term currency swaps as an international financing tool have been in existence for years. Until 1981, however, they had been used almost exclusively to overcome foreign exchange controls and capital market imperfections related to limited availability of funds and underdeveloped financial intermediation. A traditional long-term currency swap involves an agreement to exchange certain amounts of two currencies now on a spot basis and simultaneously to reverse the transaction later at a new exchange rate. Normally, one party pays to the other an annual commission that approximates the forward premium or discount. The commission depends upon the interest rate differential between the two currencies (for details, see Suhar and Lyons[7]).

However, the new currency swaps contain several features which are usually not found in a typical swap operation. In the case of the World Bank swap, it first borrowed U.S. dollars by issuing long-term bonds in the U.S. capital market or the Eurobond market. Unlike a traditional currency swap, however, the World Bank did not exchange its dollars with a swap partner for another currency, say, German marks. Instead, the Bank converted its dollars into German marks on the spot exchange market. At this point, the Bank had assets denominated in German marks while holding a long-term liability in U.S. dollars. Simultaneously, therefore, it separately covers its future dollar exposure by entering into a forward foreign exchange contract with a swap partner, through which it will in the future receive U.S. dollars required to meet its dollar bond obligations. In return for these dollars, the Bank agrees to provide to the swap partner the equivalent German marks in the future.

While the World Bank has a dollar-denominated liability that needs to be covered but only holds German mark-denominated assets, its swap partner has an opposite situation in that it has a long-term debt denominated in German marks which it wants to cover with new dollar-denominated obligations. Through a currency swap agreement, therefore, the World Bank effectively (if not in a strict legal sense) exchanges its new long-term dollar loan obligation for the outstanding German mark obligation of the swap partner. After the swap, the Bank owes its swap partner German marks and the swap counterparty owes the Bank U.S. dollars. Because the two currencies will be exchanged in the future on the same debt servicing dates of the two loans, both parties have eliminated their long-term currency exposures and each has in turn assumed the opposite party's debt obligation. The fact that both IBM and the World Bank carried AAA credit-rating resulted in no added credit risk to both swap parties.

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[6]"Swapping Currencies with the World Bank," Institutional Investor, December 1981, pp. 98-101.

[7]V. V. Suhar and D. D. Lyons, "Choosing between a Parallel Loan and a Swap," Euromoney, March 1979, pp. 114-19.

Through the swap, IBM was able to cover its long-term exposure on German marks. In this sense, it has a functional similarity to forward foreign exchange covering. However, forward covering is available mostly for short maturities and rarely used in a long-term exposure. Its effect on the foreign exchange market is also different from that of a currency swap. In the currency swap, the World Bank first raises a long-term dollar loan and immediately converts its dollar proceeds into German marks, thus pushing up the spot rate of the German mark. On the other hand, simple forward covering does not include spot conversion of dollars into marks and only involves the purchase of forward marks, thus leading to appreciation of the forward rate of the German mark. The effect of the appreciating forward rate of the mark on its spot rate depends upon the degree of linkage between its two rates.

In terms of contractual obligations, the currency swap agreement obligates the World Bank to "sell" German marks to IBM for dollars (and obligates IBM to "buy" the marks from the Bank for dollars) in the future. Unlike a typical swap, however, the future buy-and-sell rate is not based upon a forward rate but related to the debt service schedules of the Bank's new dollar loan and IBM's original mark loan. The amounts of swap between dollars and marks in the future are the amounts due for interest and principal payments according to their respective debt service schedules. Thus, the relevant future exchange rates in a currency swap are not market-determined but debt service-determined, as conditioned by the respective interest rates and spot exchange rates prevailing at the time of the currency swap contract. In this sense, the swap is more in the nature of a long-term debt swap than a mere currency swap. Each swap partner in effect commits to take over the debt of the other partner, even though legally each party is still responsible to its original debtors. This is one reason why the World Bank insists on a triple-A credit risk such as IBM as its swap partner.

The World Bank's currency swap with IBM in 1981 must be understood in terms of the comparison of the interest rate differential between the mark and dollar loans with the potential depreciation of the dollar against the mark. The financial incentive for the World Bank in entering into the currency swap transaction with IBM is related to the Bank's assumption that the U.S. dollar will not depreciate more than the forward discount on the U.S. dollar over the maturity horizon considered. On the other hand, the Bank's swap partner has a set of financial incentives different from that of the World Bank in entering into the swap agreement. In the case of IBM, it originally borrowed German marks in early 1980 by issuing long-term debt obligations in Europe. As the U.S. dollar strengthened against the German mark over the following year, IBM wanted to find ways to close out its German mark exposure, while simultaneously locking up its foreign exchange gain that had accumulated. In return, IBM was willing to incur (nominally) higher-interest dollar obligations in exchange for its (nominally) low-interest German mark loan, as its price for the long-term DM exposure coverage. The amount of lock-up gain accruing to IBM at the time of the swap depends upon two factors: the strengthening of the U.S. dollar vis-a-vis the German mark between the time of IBM's original DM borrowing and the time of the swap, and the change in long-term interest rates for mark-denominated loans in the same period.

Conceptually, IBM could lock in its exchange gain and interest gain by borrowing long-term dollars and paying off the DM loan, instead of entering into a currency swap agreement with the World Bank. Such a refunding operation -- that is, replacing one long-term loan with another long-term loan, sometimes takes place within a domestic capital market whenever long-term interest rates have declined substantially from the previous level. IBM's refunding would be different from a traditional refunding operation only in that it would involve two different currencies. Generally, however, long-term lenders require protective clauses which impose very high prepayment penalties, known as call premiums, which tend to decrease nearer to the final maturity. In recent years when long-term interest rates have fluctuated widely, high prepayment penalties have become a standard feature of a long-term loan or a bond issue. In contrast, however, a currency swap allows IBM to achieve the same financial goal without being obligated to pay prepayment penalties.

The fact that each party still remains legally liable for its respective original debt after the swap makes this technique different from a credit swap or a parallel loan. In a credit swap or swap loan, a parent company lends, for example, dollar funds to an intermediary such as a bank, usually located in a weak-currency country, which in turn lends local currency funds to the company's foreign subsidiary there. In a parallel loan, two companies in different countries make their respective local currency loans to each other. Both credit swaps and parallel loans recognize the right of offset, because the loans are to each other (or its subsidiary). However, the right of offset is not possible in this currency swap between IBM and the World Bank, because the loans are not to each other but borrowed from entirely separate creditors located in two different markets.

The currency swap technique has been used by many international borrowers which, in the process of "effective" borrowing cost minimization, frequently find themselves in currency bunching and thus face the possibility of market saturation. Such is the case for a large multinational corporation or institution which normally pursues a rational global financing strategy. Unlike the short-term or floating-rate roll-over markets, the long-term segments of the major world capital markets have not kept pace with the growth in demand for long-term funds from international borrowers. This has appreciably increased the possibility of market saturation for large international borrowers of long-term fixed-rate funds.

The currency swap also provides flexibility to a multinational company in covering its long-term foreign exchange exposure. Short-term exposure coverage is readily available on the foreign exchange market, but longer term coverage is not easy to realize even for sophisticated multinationals. Especially when it comes to a large long-term bond issue denominated in a foreign currency, usually the issuing company has no means to cover its foreign exchange risk at a reasonable price. However, the currency swap technique can provide not only a perfectly tailor-made long-term exposure coverage but also allow a company to lock up the foreign exchange gain that has accumulated on its foreign currency-denominated long-term liability. Conceptually, a swap partner such a IBM could achieve the same result as described above by executing a currency swap with itself. Thus, IBM itself could borrow a long-term dollar loan, convert its dollar proceeds into German marks on the spot market, and invest the German marks

to counter-balance its existing DM-denominated long-term loan. However, one crucial drawback is that this alternative would balloon IBM's balance sheet by doubling its original DM debt with the addition of an equivalent amount of a dollar-denominated debt. For this reason, a multinational corporation does not engage in a currency swap with itself.

The currency swap technique can be successfully used not only by major international borrowers such as the World Bank and IBM. It also provides a commercial bank with an effective means to accommodate the demand for long-term exposure coverage by its major corporate customers. Suppose Exxon asks Citibank for a long-term ten-year forward cover for DM2.5 billion. Citibank may not be able to accommodate the request without a means of covering its risk exposure. Having every incentive to oblige an important corporate customer, however, Citibank may say "yes" to Exxon and do a ten-year forward cover of DM2.5 billion. Then, Citibank seeks out a major international borrower such as the World Bank to off-load its DM obligation through a currency swap. Without the fall-back position of a currency swap, it is highly unlikely that Citibank can accommodate Exxon's request.

On the other hand, the currency swap technique has some limitations. It can be utilized only by a long-term borrower such as the World Bank which can generate future cash flows in the foreign currency concerned. In general, large multinational enterprises with extensive international operations are the prime candidates for a currency swap. It will not be easy to find a qualified swap partner such as IBM which, having borrowed long term in a foreign currency, subsequently wants to get out of the foreign currency loan. Furthermore, since legally both sides are still responsible to their respective original lenders, both swap partners have to possess a prime credit rating or be guaranteed by a prime bank.

In recent years, the currency swap concept has broadened to include the cases when Company A, which really needs, say, U.S. dollar funds, can borrow, say, German mark funds at a lower interest rate than Company B which actually seeks German mark funds. If Company B can borrow dollar funds at a cheaper rate than Company A, the two parties can each tap the financial market where each has the comparative advantage (meaning Company A in the DM market and Company B in the $ market) and then swap each other's respective debt service obligations denominated in two different currencies. In this way, both parties can each benefit from lower-cost long-term financing in their respectively preferred currencies.

d. Financial Futures

One of the most successful and yet highly controversial innovations in financial markets in recent years has been the financial futures contract, i.e., where the underlying asset is not some physical commodity like coffee, cocoa or silver, but fixed interest financial instruments or foreign exchange rates. A futures contract is a standardized, transferable agreement to buy or sell a given commodity or financial instrument on a specified future date at a set price. In a futures transaction the buyer (sometimes called the long) agrees to purchase and the seller (or short) to deliver a specified item according to the terms of the contract. For example, the buyer of a Treasury bill contract commits himself to purchase at some specified future date a thirteen-

week Treasury bill paying a rate of interest negotiated at the time the contract is purchased. In contrast, a cash or spot market transaction simultaneously prices and transfers physical ownership of the item being sold. A cash commodity (cash security) refers to the actual physical commodity (security) as distinguished from the futures commodity.

Futures contracts are traded on exchanges. The basic function of a futures exchange is to set and enforce trading rules. There are more than a dozen futures exchanges in the United States and abroad. The principal exchanges are found in Chicago, New York, London and Singapore. Short-term interest rate futures trade on a number of exchange; however, the most active trading in these contracts takes place at the International Monetary Market (IMM) division of the Chicago Mercantile Exchange (CME).

Not long ago futures trading was limited to contracts for agricultural and other commodities. Trading in futures contracts for financial instruments began in the early 1970s, after almost a decade of accelerating inflation exposed market participants to unprecedented levels of exchange rate and interest rate risk. Foreign currency futures, introduced in 1972 by the Chicago Mercantile Exchange, were the first financial futures contracts to be traded. The first interest rate futures contract, a contract for the future delivery of mortgage certificates issued by the Government National Mortgage Association, began trading on the floor of the Chicago Board of Trade in 1975. Today financial futures are among the most actively traded of all futures contracts. At present there are active futures markets for two different money market instruments: three-month Treasury bills and three-month Eurodollar time deposits. Treasury bill futures were introduced by the Chicago Mercantile Exchange in 1976, while trading in Eurodollar futures began late in 1981. U.S. domestic certificate of deposit futures were also actively traded for a time but that market became dormant for all practical purposes, for reasons to be explained later in this section.

Three distinguishing characteristics are common to all futures contracts. First, a futures contract introduces the element of time into a transaction. Second, futures contracts are standardized agreements. Each futures exchange determines the specifications of the contracts traded on the exchange so that all contracts for a given item specify the same delivery location and a uniform deliverable grade. Traded contracts must also specify one of a limited number of designated delivery dates (also called contract maturity or settlement dates). The only item negotiated at the time of a futures transaction is price. Third, the exchange clearinghouse interposes itself as a counterparty to each contract. Once a futures transaction is concluded, a buyer and seller need never deal with one another again; their contractual obligations are with the clearinghouse. The clearinghouse, in turn, guarantees contract performance for both parties.

The first of these characteristics is not unique to futures contracts. A forward contract, like a futures contract, is a formal commitment between two parties specifying the terms of a transaction to be undertaken at a future date. Unlike futures contracts, however, forward contracts are not standardized; rather, they are custom-tailored agreements. As a general rule forward contracts are not transferable and so cannot be traded to a third party.

All futures exchanges now require members to maintain margin accounts. Brokers who execute orders on behalf of customers are required to collect margin deposits from them before undertaking any trades. Minimum margin requirements are set by the exchanges. Brokers can, and most do, require their customers to maintain margins higher than the minimum levels set by the exchange. Any gains or losses realized when the contracts are marked to market at the end of a trading session are added to or subtracted from a trader's margin account. If the margin account balance falls below a specified minimum, called the maintenance margin, the trader faces a margin call requiring the deposit of additional margin money, called variation margin, to his account.

Futures market participants are typically divided into two categories: hedgers and speculators. Hedging refers to a futures market transaction made as a temporary substitute for a spot market transaction to be made at a later date. The purpose of hedging is to take advantage of current prices in future transactions. Hedging in financial markets is aimed at reducing the risk of adverse interest rate or exchange rate movements by taking a position in the futures market that is opposite to existing or anticipated positions in the cash market. This makes use of the idea that interest rate futures prices move inversely with interest rates. Hence, if an investor is worried that his investments will lose value if interest rates rise and he does not want to sell them, he could sell financial futures and make an offsetting profit when the futures prices fall as interest rates rise.

Both hedgers and speculators are necessary to the efficient operation of the financial futures market. Speculators provide liquidity to the market, allowing hedgers to buy or sell in volume without difficulty. In practice the use of these markets will vary greatly between potential participants. According to a recent study by the U.S. Commodity Futures Trading Commission, the dominant commercial users of interest-rate futures markets are government securities dealers who use the markets for both speculative and hedging purposes. The dominant commercial users of foreign currency futures appear to be foreign exchange dealers, primarily commercial banks, that use the markets to profit from differences in exchange rates between the forward and futures markets, as well as for hedging purposes. According to the CFTC, hedging use of interest rate contracts amounts to between 15-35 percent of open interest at any one time, and around 10-20 percent of foreign currency contracts.

For participants in international financial markets, Eurodollar futures, which are futures contracts in Eurodollar deposits, are of special interest because of the enormous size of the Eurodollar market. Eurodollars are U.S. dollar-denominated deposits held with banks or bank branches located outside of the United States, or with International Banking Facilities (IBFs) inside the United States.[8] There are two types of Eurodollar deposits: nontransferable time

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[8]An International Banking Facility, or IBF, is an office of a U.S. bank, U.S. branch of a foreign bank, or Edge Act corporation, which is domiciled in the United States but operates under rules and regulations similar to those applied to foreign branches of U.S. banks. IBFs are restricted to doing business with foreign residents, foreign banks and foreign branches of U.S.

deposits and CDs. Time deposits make up the bulk of the Eurodollar market. These deposits have fixed maturities ranging from one day to five years; most are very short-term, three months being a common maturity. Eurodollar CDs are also most commonly issued with maturities under a year. Eurodollar futures contracts are actively traded on two exchanges. In the United States, a three-month Eurodollar time deposit contract is traded at the IMM. A similar contract is also traded at the London International Financial Futures Exchange (LIFFE). The IMM contract is described below as an example.

Technically, the buyer of a Eurodollar contract is required to place $1,000,000 in a three-month Euro-dollar time deposit paying the contracted rate of interest on the contract maturity date. This requirement exists only in principle, however, because the Eurodollar contract is cash settled. Cash settlement means that actual physical delivery never takes place; instead, any net changes in the value of the contract at maturity are settled in cash on the basis of spot market Eurodollar rates. Thus, cash settlement can be viewed as a final marking to market of the contract with the settlement amount based on the difference between the previous day's closing price and the final settlement price.

Price quotations for Eurodollar futures are based on a price index similar to that used for Treasury bill futures. Unlike Treasury bills, Eurodollar time deposits (as well as domestic and Eurodollar CDs) pay explicit interest. The rate of interest paid on the face amount of such a deposit is termed an add-on yield because the depositor receives the face amount of the deposit plus an explicit interest payment when the deposit matures. In the case of Eurodollar time deposits, the add-on yield is commonly called the London Interbank Offered Rate (LIBOR), which is the interest rate at which major international banks offer to place Eurodollar deposits with one another. Like other money market rates, LIBOR is an annualized rate based on a 360-day year.

When a futures contract contains provisions for physical delivery, market forces cause the futures price to converge to the spot market price as the delivery date draws near. This phenomenon is called convergence. In the case of a cash-settled contract, the futures exchange forces convergence to take place by setting the price of outstanding futures contracts equal to the spot market price at the end of the last maturity day of trading. To determine the final settlement price for its Eurodollar futures contract, the Mercantile Exchange clearinghouse randomly polls twelve banks actively participating in the London Eurodollar market at two different times during the last day of trading: once at a randomly selected time during the last 90 minutes of trading and again at the close of trading. The two highest and lowest price quotes from each polling are dropped and the remaining quotes are averaged to arrive at the LIBOR rate used for final settlement.

As with Treasury bill futures, every change of one basis point in the Eurodollar futures index price is worth twenty-five dollars. Thus, if the IMM price index rises 10 basis points

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banks, and foreign operations of multinational firms.

during the last trading session, all shorts have $250 per contract subtracted from their margin accounts while the longs each receive $250 per contract. Once the contracts are marked to market for the last time, buyers and sellers are relieved of the responsibility of actually placing or taking the deposits specified by the contract. The IMM Eurodollar contract is the first futures contract traded in the United States to rely exclusively on a cash settlement procedure. The LIFFE Eurodollar contract also relies principally on cash settlement, although it does have provisions for physical delivery.

Trading in the IMM Eurodollar contract began in December 1981. The LIFFE introduced its Eurodollar contract in late 1982. Both markets are currently very active in trading Eurodollar futures contracts. Trading activity in the IMM contract is much heavier than in the LIFFE contract, however. Three factors have contributed to the popularity of Eurodollar futures. First, most major international banks rely heavily on Eurodollar market for short-term funds. To maintain ready access to this market, many of these banks have become active market-makers in Eurodollar deposits. Eurodollar futures provide a means of hedging interest rate risk arising from these activities.

Second, major international corporations have come to rely increasingly on Eurodollar markets for borrowed funds. Borrowing rates for these corporations are typically based on the three- or six-month LIBOR. When loans are priced this way, Eurodollar futures offer a means of hedging borrowing costs. Finally, Eurodollar and U.S. domestic CD futures display almost identical price characteristics, which means that the two contracts are virtually perfect substitutes as hedging instruments. The physical delivery requirements for CD futures proved to be awkward in comparison with the cash-settled Eurodollar contract, however, causing U.S. banks, once among the heaviest users of CD futures, to rely instead on Eurodollar futures to hedge domestic borrowing costs. In fact, the steep rise in trading volume in the Eurodollar contract during 1984 coincided with a decline in CD futures trading volume beginning at about the same time. Thus, it appears that the success of the Eurodollar contract has contributed to the demise of trading in CD futures.

e. Financial Options

The chief distinction between an option contract and either a futures or a forward contract lies in the obligations of the contract holder. Both futures and forward contracts obligate the buyer (long) to purchase and take delivery of the underlying instrument or commodity if the contract is held to expiration. To do otherwise is to default on the contract. The buyer of an option is not legally obliged to take any further action over the life of the contract once the option has been purchased. If the option is not exercised at or prior to expiration, the option seller or writer (short) is also freed of all contractual obligations, and the option expires worthless. Depending on whether the option buyer has the right to buy or sell the underlying instrument or commodity, two different types of option contracts exist; these are calls and puts, respectively. Anyone can either buy or write either of these two option types, and for every call or put there must be both a buyer and a writer to complete the transaction.

Financial options began to be traded on organized exchanges in 1973 when the Chicago Board Options Exchange (CBOE) was organized and began listing standardized stock options. Soon after the start of trading on the CBOE, the American, Pacific, and Philadelphia stock exchanges also began listing standardized stock options. As interest in options trading among institutional investors and other financial market participants became evident, the number of exchange-traded options grew rapidly. Today several different types of standardized options trade on virtually all major futures and stock exchanges, including stock options, other financial options such as foreign currency options, commodity options, and futures options.

A call option is said to be in-the-money when the market price of the underlying instrument is above the strike price (or the option exercise price) and out-of-the-money when the market price of the underlying instrument falls below the strike price. When a call option is in-the-money the buyer has the right to purchase the underlying instrument at a price below the market price. The holder of an in-the-money American option can exercise it at any time before expiration date. In contrast, a European option can only be exercised on the expiration date.

Before the expiration date, out-of-the-money options will typically sell at a positive premium because of the possibility that the price of the underlying instrument will rise before expiration. At expiration the buyer will exercise the option if it is in-the-money or let it expire unexercised if it is out-of-the-money. An out-of-the-money call option has no value at expiration, since buyers will not purchase the underlying instrument at a price above the current market price. The value of an in-the-money call option at expiration is the current market price of the underlying instrument minus the strike price.

The buyer (holder) of a put option receives the right to sell a specified security at the strike or exercise price stipulated by the contract. In exchange for a cash premium (put price), the seller (writer) of a put option becomes contractually obliged to buy the underlying security at the strike price at the option of the holder. A put option is in-the-money when the market price of the underlying instrument is below the strike price and out-of-the-money when the market price is above the strike price.

Exchange-traded or standardized options, like futures contracts, are standardized contracts traded on organized exchanges. An option contract is completely specified by the description of the underlying instrument, strike price, and the expiration date. An exchange-traded option always specifies a uniform underlying instrument, one of a limited number of strike prices, and one of a limited number of expiration dates. Strike price intervals and expiration dates for traded contracts are determined by the exchange. Contract performance for exchange-traded options, as with futures contracts, is guaranteed by a clearing corporation that interposes itself as a third party to each option contract. The clearing corporation becomes the seller to each buyer and the buyer to each seller, thereby removing the risk that the seller of an option might fail to meet contract obligations.

Contract standardization together with the clearing corporation guarantee facilitates options trading. A holder or seller of an exchange-traded option can always liquidate an open

position in an option before expiration by making an offsetting transaction. For example, a holder of a Treasury bill futures call option can offset his position by selling a T-bill futures call with the same strike price and expiration date; the net profit or loss from such a transaction is determined by the difference between the premium originally paid for the call and the price received when it is sold. Similarly, the holder of a put option can liquidate his position by selling a put with the same strike price and expiration date. As with futures contracts, most positions in standardized options are liquidated before the expiration date with an offsetting transaction rather than being held for the purpose of selling or buying the underlying instrument.

Unlike futures contracts, buyers of put and call options are not required to deposit funds in a margin account because their risk of loss is limited to the premium paid for the option. Sellers of put and call options are required to maintain margin accounts, however, since they face a considerable risk of loss.

Over-the-counter (OTC) options are custom-tailored agreements for which option specifications (the underlying instrument, amount, strike price, exercise rights, and expiration date) are all negotiated by the two parties to the contract. OTC options are usually sold directly rather than through an exchange. Major commercial and investment banks often write custom-tailored interest rate options for their commercial customers. A bank, for example, might write a cap, or series of interest rate put options, for a commercial customer to fix a maximum interest rate on a floating-rate loan tied to short-term interest rates.

Since the fall of 1982, futures exchanges in the United States have been allowed to trade options on futures contracts. These new option contracts give the option holder the right, but not the obligation, to buy or sell a futures contract at a specified price until a fixed future date. Currently, over two dozen futures option contracts are traded in agricultural contracts, on gold and silver futures, and on foreign currencies, debt instruments, and stock indices. The five option contracts with the largest total number of contracts outstanding are: Treasury bond futures (Chicago Board of Trade), soybean futures (Chicago Board of Trade), corn futures (Chicago Board of Trade), gold futures (Commodity Exchange), and German mark futures (Chicago Mercantile Exchange). At this stage in the development of futures option markets, options on financial futures dominate trading activity.

Most financial futures options are traded with three expiration dates three months apart, the longest maturity being nine months forward. All are traded on a March-June-September-December cycle. Depending on the market on which the option is traded, the last option trading day is either the expiration date of the underlying futures contract or approximately three weeks prior to expiration of the futures contract. The strike or exercise prices of the options in a futures contract bracket the current price of the underlying contract at discrete intervals; as the futures price fluctuates, additional exercise prices are opened for trading by the exchange. All futures options traded in the United States can be exercised prior to maturity (American-style options rather than European-style options). Each option also corresponds one-for-one with an underlying futures contract. Financial futures option premiums are quoted in one of two ways.

For debt instruments and index futures options, premiums are described in points and valued in dollars. In foreign currency futures options, premiums are quoted and valued in dollars.

As mentioned above, once an option position has been taken, three actions are available: expiration, exercise, or offset. To illustrate the desirability of each of these actions, suppose that on the option expiration day an investor owns a Treasury bond futures call option with a strike price of 75 and it is the option expiration day. If the call is exercised, the investor acquires a long Treasury bond futures contract valued at $75,000. If treasury bond futures contracts are trading for any price less than 75, exercising the call creates a loss. It would be better to let the option expire unexercised and purchase the Treasury bond futures contract directly. In general, the value of a call option is zero at expiration if the price of the underlying instrument is less than the option strike price. Therefore, the investor also does not benefit from an option offset trade (writing a call on the same option) because the premium is zero.

In late 1982, the first opportunity to trade in currency options became available on the Philadelphia Stock Exchange, thus providing a secondary market similar to the market in commodity options at the Chicago Futures Exchange. Options became an alternative to futures, which were already traded. Their advantage is that they are less risky than futures. The Philadelphia Stock Exchange submitted its proposals to trade in currency options in early 1981, and the long delay between the submission and the beginning of trading was a result of a debate about the division of regulatory jurisdiction between the Commodities Futures Trading Commission (CFTC) and the Securities and Exchange Commission (SEC). Legislation made it clear that SEC had jurisdiction over corporate and municipal securities and over stock options, while CFTC had jurisdiction over futures contracts, commodity options and options on futures contracts. But it was not clear which had jurisdiction over options on securities for which there are futures contracts, such as foreign currencies and debt securities. Finally, CFTC was given the supervisory role for currency options.

The currency option market should help firms that submit bids in a foreign currency for goods or service to a foreign customer. In these circumstances, the normal risks of competitive bidding are compounded by exchange risks. A firm can create a perfect hedge by making use of forwards and options. By selling short a forward contract for the date when it will receive payment if its bid is successful and at the same time buying a call option for the same price and time, the hedge is complete. If the firm's bid is successful, the foreign currency payment will be offset by the forward contract and the option will not be exercised. If the bid is not accepted, the firm will exercise its option to cover its obligation under the forward contract. Alternatively, the firm may buy the foreign currency call options at the time of bidding, so that it can exercise the call options to purchase the required amount of foreign currency if it wins the bid.

International money managers should find options attractive because of the variety of portfolio strategies they allow. As well as using options as a hedge, selling options would allow them to take in premium income. International money managers may wish to write a call at one strike price and buy a call option at a higher strike price (a spread). Since the premium on the call with the lower strike price will be greater, this strategy limits the manager's losses while

generating premium income. Or a portfolio manager may wish to buy both a put and a call (a straddle). This enables the manager to profit from large exchange rate movements in either direction.

Banks may wish to hedge trading positions or customer transactions with options. They could arbitrage between the spot, futures and options markets to keep prices in line. The option market also allows banks to hedge loans that enable the borrower to select the currency he wishes to draw down at preset exchange rates. Banks that find options attractive provide the market with an important source of liquidity. For, like any new market, the options market needs liquidity to be effective, and its success ultimately depends on members of the foreign exchange community being sufficiently committed to provide this liquidity. So far, the financial options market has proved to be a resounding success.

In fact, financial futures and options can be regarded, together with interest rate and currency swaps, as the most successful of the recent financial innovations. The growth in the diversity of contracts traded, in the volume of some of the major contracts, and in the number of exchanges, has been rapid in recent years.

Special types of financial options are the **cap, collar, and floor**. Interest rate and exchange rate caps, collars and floors are available and they are similar in nature. For example, an interest-rate cap is a financial instrument that effectively fixes or limits a maximum interest payment on floating-rate debt. An interest-rate cap can be perceived as a series of interest-rate call options for successively more distant interest rate rest dates for long-term floating-rate debt; and an interest-rate floor is a similarly constructed series of put options. An interest-rate collar is a combination of cap and floor.

These techniques can be utilized for project financing in developing countries. Recently, an American utility company was considering an investment in power plants in developing countries on an BOO basis. During the construction period, the company would finance the construction loan on a floating-rate basis. It wanted to hedge against rate increases by an interest-rate cap but discovered the cap premium too expensive. In order to "earn" the cap premium, the company was willing to sell an interest-rate floor, thus effective creating a zero-cost collar. An exchange-rate collar can similarly employed to hedge against the foreign exchange rate risk cheaply.

f. Euronote and Eurocommercial Paper Facilities

Euronote facilities have been one of the fastest growing innovations in international financial markets. A Euronote facility is a financial arrangement designed to facilitate the raising of funds by an issuer through the placement of its short-term paper with a range of sophisticated investors in the Eurocurrency market. There are basically two types of Euronote facility: committed and uncommitted. A Eurocommercial paper (ECP) facility is an uncommitted facility through which a commercial or investment bank in the Euromarkets agrees, but without obligation, that from time to time it may either offer to purchase the issuer's notes

at a price bid by the dealer or, as agent for the issuer, attempt to find purchasers for the issuer's notes at prices set by the issuer.

On the other hand, under a committed Euronote facility a group of banks agrees to purchase the short-term Euronotes issued by a borrower during a specified medium- or long-term period, if the issuer cannot place the Euronotes in the market even at the specified maximum spread above the reference rate. The facilities aim to satisfy investor demand for short-dated paper and provide borrowers with competitively priced medium-term commitments of funds. These facilities allow for successive placements of three-, six- or twelve-month promissory notes with international investors, underwritten by a single bank or group of banks, over a specified period of time. Names for these instruments include a note issuance facility (NIF), revolving underwriting facility (RUF), short-term or standby note issuance facility (SNIF), multiple option facility (MOF), note purchase facility (NPF), global note facility (GNF), primary underwriting facility (PUF), transferable revolving underwriting facility (TRUF), etc.,

NIF is the most common among the various facilities used to describe a medium-term arrangement under which a borrower can issue short-term paper, known as Euronotes, backed by commercial-bank underwriting commitments. A NIF is a medium-term legally binding commitment under which a borrower can issue short-term paper in its own name, but where underwriting banks are committed either to purchase any notes which the borrower is unable to sell, or to provide standby credit. For bank borrowers the paper is usually short-term certificates of deposit, while for non-bank borrowers it is in the form of promissory notes (commonly known as Euronotes).

g. Applications to Developing Countries

The current financial market environment is highly conducive to a number of innovative schemes that can be successfully applied to diverse financing as well as risk management circumstances. Essential in any innovative scheme is flexibility, so that a developing country and financial market participants can arrive at an optimum financing package suitable to both. As the process of financial innovations is continually evolving, it would be impossible to make any comprehensive list of potential uses of various innovative mechanisms by developing countries. However, one may discuss certain major areas of innovative financial techniques that developing countries may employ for their international funding and project financing requirements.

(1) Risk Management: Exposure of developing countries to such financial risks as changes in interest rates, exchange rates and commodity prices have been a serious problem well recognized over the years. Fortunately, financial markets have devised a number of innovative hedging mechanisms that can protect market participants from their volatility over the longer-term horizon. Specifically, interest rate swaps are designed to hedge against interest rate volatility, ideal for many developing countries that would like to manage their interest rate risk stemming from floating-rate syndicated loans or FRNs. Currency swaps involve swapping not only interest streams but also the principal amounts

of two liabilities denominated in different currencies. They have been used as long-term hedges against foreign exchange risks inherent in any long-term foreign currency financing.

While both interest rate and currency swaps can be highly useful and cost effective in hedging against the interest rate and foreign exchange risks, many developing countries might be unable to locate a suitable counterparty willing to enter into swap contracts due to their poor credit standing. For example, a state-owned utilities company in the Philippines may want to convert into dollar-denominated debt its long-term yen-denominated export credit received from the Japan Export-Import Bank to finance its power plant construction. In this case, the utilities company needs to enter into a long-term currency swap contract with a counterparty, say, a Japanese bank which wants to convert its dollar-denominated debt into yen-denominated debt but is reluctant to do the currency swap with the Philippine company due the latter's weak credit standing.

In such cases, an international development finance agency such as the World Bank might be able to provide credit enhancement through a guarantee so that the LDC entity can successfully accomplish a long-term interest rate or currency swap. Credit risk exposure to the World Bank for such a guarantee is minimal, since the actual credit risk exposure to the Bank is commensurate to the joint probability that the client government is unable to meet its contractual obligations to provide the required interest payments (interest rate swaps) or the debt service payments (currency swaps) <u>and</u> that either the interest rates or the exchange rates <u>also</u> have moved against the client country. The probability of loss to the guarantor is thus the joint probability of the default risk <u>and</u> the even (50%) probability of the interest rate or exchange rate moving <u>adversely</u> against the guarantor. Even if the client government is unable to meet its obligations, the Bank will be able to take over the remaining swap obligations and sell off the swap contracts at a profit if either interest rates or exchange rates have moved favorably for the client government since the swap contract. This would help offset the Bank's loss from the credit risk.

(2) <u>Commodity Swap</u>: Producers as well as consumers of commodities with volatile price movements, such as oil, copper and coffee, can hedge price volatility for a fixed volume or quantity of the commodity through commodity (price) swaps, in which the two parties swap recognized spot prices for pre-set fixed prices on a long-term basis. Such commodity swaps are particularly useful for major commodity-producing, and commodity-importing developing countries, which seek to ensure stable export or import prices of their key export or import commodities.

In a commodity swap, the commodity <u>producer</u> agrees for a fixed period of time such as three or five years to make payments to a financial institution which acts as the swap counterparty whenever the average spot price exceeds the level specified in the swap agreement, and vice versa. Conversely, commodity <u>consumers</u> would receive for the same fixed period of time a difference check from a financial institution acting as the

intermediary when spot market prices are higher than a pre-fixed price, and vice versa. Banks that wish to intermediate commodity swaps are subject to two risk-related problems. First, there is a risk that the developing country counterparty fails to transmit the required difference payment (known as the difference check), either because of political interference from the host government or transfer risk problems in the host country. Second, because the facilitating bank incurs long-term, developing country exposure, many bank regulators in OECD countries require the establishment of mandatory loan loss reserves. These reserves often make it unprofitable for banks in OECD countries to intermediate these transactions.

Commodity swaps could be arranged for any major commodity which meets two basic requirements: price volatility and sufficient liquidity in the spot market to identify transparent and objective spot prices. They include such commodities as zinc, lead, copper, oil, natural gas, hydrocarbon derivatives, pulp, cocoa, coffee, orange juice, and grain. Commodity swaps enable developing countries to stabilize their export revenues, import costs, or basic terms of trade. They generate the same price stabilization benefits as producer cartels and buffer stocks but without the market-distorting side effects, as such swaps are entered into freely between the producer/exporter and the consumer/importer in an open market. Since such swaps enable borrowers to lock in fixed input or output prices for much longer periods than the two or three years of protection typically afforded by conventional commodity futures and options, they are especially suitable for projects with long payback periods.

(3) Commodity-Indexed Loans or Bonds: Commodity producing countries may be able to utilize commodity-indexed loans or bonds, whose principal and/or interest rates are adjusted upward if the referenced commodity price rises above a certain level. Such borrowings generally carry lower interest rates due to the possibility for investors to participate in the potential benefit of future price increases of the commodities concerned. Any commodity price decrease would not adversely impact the indexed bond issuer any way because the issuer is obligated to pay more in terms of principal or interest, which change only when the commodity price increases.

(4) Off-Balance Sheet Project Financing: Due to the lack of a project entity's capacity for shouldering further debt, an increasing number of infrastructure projects in developing countries are carried out through such off-balance sheet techniques as BOT or BOO. In such techniques, commercial risks such as project completion risk and efficiency risk are borne by the private project sponsors and investors. On the other hand, certain risks such as market risk and transfer risk are borne by the state-owned infrastructure entity, frequently backed by the central government.

(5) Escrow Accounts for Project Financing: International financing of a project which is expected to generate export revenues is often collateralized by long-term sales contracts, with an escrow account set up at a bank located in an international financial center such as London or Singapore. Foreign currency receivables out of project exports will be

collected into the escrow account in order to ensure payment of debt service obligations on a priority basis. However, there is always the risk that the project entity will fail to export the requisite volume of products; then, the expected flows of foreign currency receivables into the escrow account will fail to materialize as projected, leaving the creditors without an assured source of repayments. To mitigate this risk, bilateral or multilateral development agencies could issue long-term performance guarantees that would indemnify the creditors if the exporter's non-performance were caused by political factors such as a failure to receive the necessary export licenses, etc. In this instance, the agencies would not be guaranteeing the commercial risk of the loan repayments. Rather, they would merely insure that domestic political factors do not prevent the borrower from exporting products to generate expected foreign currency revenues.

(6) Forfaiting: While the respective export credit agencies (ECAs) of industrialized countries have been active in promoting exports of their domestically produced goods through both financing and insurance, they are limited under the OECD guidelines in terms of maturity (a maximum of ten years), coverage (a maximum of 85 percent of the contract price) and the country of sourcing (only home country origin of the goods). Furthermore, the ECAs normally provide financing and issue guarantees for public sector investment projects and imports of parastatals. They will not do business with private entities in developing countries unless they receive a counter-guarantee from the government or a reputable, creditworthy bank in the developing country. Medium- to long-term trade financing mechanism such as forfaiting has filled the gap. In forfaiting, the importer (mostly in developing or transition countries) furnishes to the exporter (mostly in industrialized countries) long-term promissory notes with staggered semi-annual maturities, backed by a commercial bank in the importing country. The exporter then discounts the promissory notes to a forfaiter (frequently, a bank in a developed country) without recourse to the exporter. The net effect is that the exporter receives immediate payment and the forfaiter assumes sole responsibility for all commercial, political and transfer risks.

Such forfaiting is possible only when the importer's bank has adequate credit standing. Forfaiters are currently doing business in a diverse group of developing countries, but due to the underlying country and transfer risk, the maximum maturity for many transactions is generally in the vicinity of one to three years. However, many forfaiters have suggested that developing country borrowers could obtain longer term and lower interest financing if the developing countries could receive a third-party guarantee on sovereign risk and/or on repayment of the later installments of the obligations.

h. Implications for Developing Countries

Changes in institutional structure, regulations, instruments, and supervisory practices in international financial markets are likely to continue. The major financial markets are becoming more closely integrated. The impetus for cross-border finance continues to be provided by macroeconomic developments and financial factors. Moreover, further relaxation of controls on

cross-border financial flows, the spread of new instruments and techniques, and the continuing effects of earlier innovations and deregulation provide new opportunities for international lending and borrowing.

As one discusses the implications of financial innovations for developing countries, it has to be remembered that the developing world is composed of countries with diverse economic, financial and political backgrounds. Thus, it is difficult to generalize the implications of recent international financial market innovations for the entire developing world. Despite the risk of oversimplification, however, one can discern some of the important changes in the way that developing countries have to adapt themselves in accessing external financing sources in the new financial environment. In the 1960s the primary source of external capital for the developing world was multilateral and bilateral institutions, many of which were established in the 1950s and 1960s.

In the aftermath of the world debt crisis in the early 1980s, commercial banks sharply decreased their voluntary lending to developing countries except for the more creditworthy mostly concentrated in East and South Asia. In the 1980s, the developing world has been divided into the dual financial categories of creditworthy and creditless countries. International financial markets have demonstrated since 1982 a marked tendency toward favoring the former and ignoring the latter. In the 1970s when commercial banks were the main source of private capital for developing countries, they showed a high degree of willingness and risk-taking in developing country finance. However, recent financial innovations have been performance based, discriminating among developing countries. Only those with demonstrated debt-servicing capability are able to take advantage of innovative financing techniques, while heavily-indebted and less creditworthy developing countries are largely shut out of the current process of international financial innovations.

The paradoxical result of this development is that some of the more advanced developing countries such as Korea, Malaysia and Thailand are faced with a much broader menu of financing options, even when these countries do not require external financing as much as in the 1970s or early 1980s. On the other hand, the rest of the developing world finds itself largely beyond the reach of the international banking community and financial markets. For them the current situation is similar to being returned to the 1950s and 1960s when they had to depend primarily upon official sources of finance, either bilateral or multilateral, for their external capital requirements.

Therefore, a challenge now facing both the development community and the international financial community is how to assist less creditworthy developing countries to adapt themselves to take advantage of the new realities of international financial markets. Innovative financial instruments and techniques are here to stay and it is necessary for developing countries to understand them and actively utilize them. However, this requires developing countries to adopt a new approach in accessing the capital markets of the 1990s. In the 1970s the lenders (i.e., commercial banks) largely came to developing countries searching for borrowers and the international financing technique in the form of syndicated Eurocredits was standardized and

simple enough for most developing countries to comprehend easily. The new financial environment is different from that of the 1970s, however. It is now up to each developing country to sift through an array of new, fairly sophisticated financing options in order to arrive at an optimum method most suitable to the borrower at this time.

On many occasions, the financing alternative desired by a developing country borrower may not be feasible for a variety of reasons, including its creditworthiness. In such cases, the developing country may need certain credit enhancement mechanisms such as a guarantee by official bilateral or multilateral financial institutions in order to utilize new financing techniques. All these factors require a new set of policy responses from the concerned parties in order to facilitate developing country access to international financial markets.

i. Examples for LDC Uses of Financial Innovation

It is true that innovative techniques in international financial markets were originally developed for the primary uses by private and public entities in industrialized countries. However, these techniques have also been used increasingly for developing country entities. The following are some of the examples in order to illustrate the potential of financial innovation for LDCs. They are cited here only to illustrate many potential uses of financial innovation by developing countries. It would be impossible to list in one place all the possible ways that LDCs can utilize various innovative financial techniques.

(1) Long-term Currency Swap for Exchange Risk Hedging:

A gold mine company in Ghana imported a new mining equipment from Britain, financed by a long-term supplier's credit. The credit terms were generous as far as the interest rate was concerned, as the British export credit agency was involved in order to promote the machinery export from Britain. However, the supplier's credit was denominated in British pounds, while the company's gold export revenues would be in U.S. dollars. The company wanted to take advantage of the low-interest British export credit but at the same time hedging the currency risk. The hedging was accomplished by a long-term currency swap between British pounds and U.S. dollars. Currency and interest rate swaps are available at many large commercial and investment banks, which are actively engaged in trading financial swaps by locating swap counter-parties around the globe.

(2) Assuring Stable Revenues for Export Commodities:

A Mexican copper company wanted to borrow dollars long term in order to finance its copper refinery expansion. Unfortunately, Western banks were reluctant to extend long-term loans to the copper company primarily because of the uncertainty of the company's dollar revenues due to international copper price volatility. In order to assure a stable copper export revenue stream in the future, the Mexican company entered a multi-year copper swap with a Western commercial bank, under which the company would pay the bank each quarter an amount determined by the then-prevailing spot price multiplied by a fixed number of tons of

copper while at the same time receiving payments from the bank an amount determined by multiplying a pre-fixed price (in this case, $4,000 per ton) by the same number of tons of copper. The bank hedged this spot vs. fixed copper price swap by entering a reverse copper price swap with a European copper importing company. As a result of this long-term copper swap, the Mexican company was able to borrow dollars long term from Western banks in order to finance its copper refinery expansion project. The governments of oil-exporting countries can also use long-term oil swaps to assure stable oil export revenues regardless of oil spot price fluctuation.

(3) Currency Futures and Options for Foreign Debt Service Management:

Some developing countries such as Chile have used currency futures and options to hedge foreign exchange risks for their foreign debt service obligations. For example, an LDC government would each year estimate expected foreign currency requirements to service the maturing foreign debt amortization and interest payments in the coming year and compare them with the expected foreign currency revenues. If there are discrepancies, say, more yen and German mark debt service requirements but export proceeds mostly in dollars, the central bank would buy yen and German marks forward (or buy yen and German mark call options). Such hedging would lock in the dollar-equivalent cost of servicing yen- or DM-denominated debt for the country.

(4) BOO and BOT for Infrastructure Financing:

Many developing countries such as the Philippines, Pakistan and China have utilized BOO and BOT to finance their infrastructure projects. For example, the state-owned National Power Corporation in the Philippines entered into long-term electricity purchase contracts with private firms (both local and foreign joint-venture companies) in the country. Private firms then would arrange long-term international loans collateralized by the power purchase contracts and build power plants to provide electricity to the National Power Corporation.

(5) Interest Rate Caps, Floors and Collars:

An American utilities firm wanted to build a power plant in a Latin American country on a BOO basis. During the construction period, the company was able to arrange a bridge loan at a floating interest rate tied to 6-month LIBOR. In order to hedge against sharp increases in LIBOR during the construction period, the company wanted to buy interest rate caps but found the cap prices burdensome. The company decided to sell interest rate floors, using the income (floor premium income) to pay for the price of interest rate caps. In essence, the company used interest rate collars (selling floors and buying caps) for the purpose of hedging against interest rate increase at almost no cost to itself.

(6) Commodity-Indexed Bonds by LDC Companies

LDC companies, which export mineral products such as oil, gold, copper, and silver, can issue commodity-indexed bonds in order to lower interest costs. For example, the Algerian state oil company issued oil-indexed dollar Eurobonds in the international capital market. The principal of bonds would be increased according to a formula tied to future oil spot price increases. In exchange, the bonds carried a very low coupon rate reflecting the potential future capital gain for bond investors. On the other hand, the oil company would be able to meet the additional payments due to oil price increases.

5. LDC Policy Measures Promoting the Use of Financial Innovation

In recent years, many developing countries have adopted financial sector reforms and market liberalization measures. In many of these countries, interest rates have been fully liberalized or managed more flexibly than before. Other countries have curtailed their directed credit programs though few have eliminated them entirely. Competition among financial institutions has been promoted by opening the domestic market to foreign banks and by authorizing charters for new banks and nonbank financial intermediaries. Access to local capital markets by both foreign portfolio investors and foreign financial institutions has been significantly liberalized. Former centrally planned economies aim to stimulate competition through extensive restructuring of their banking and financial systems.

In some countries financial liberalization has been quite comprehensive. Argentina, Chile and Uruguay carried out extensive reforms in the mid-1970s, including the elimination of interest rate controls, directed credit programs, and exchange controls. However, this liberalization without the concomitant macroeconomic reform ended in disarray; the government of Argentina had to reintroduce controls, and all three governments had to deal with widespread bank failures. The Turkish government, which had followed a similar path, had to reintroduce interest rate controls when real rates rose too far. But in Asia, where macroeconomic conditions were more stable and reforms were implemented more gradually, there has been no need to reintroduce controls.[9]

Experience suggests that financial reform and liberalization need to be undertaken alongside macroeconomic reform. Countries that attempted financial liberalization before undertaking other needed economic reforms suffered destabilizing capital flows, high interest rates, and corporate distress. Financial liberalization cannot succeed unless it is accompanied by the restructuring of insolvent banks and firms, and by adequate regulation and supervision. Domestic financial markets need to be competitive in order to ensure that local financial intermediaries are efficiently run to meet the new competitive challenges from foreign financial institutions. And opening the capital account must be carefully done in order to avoid the

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[9]Yoon Je Cho and Dinanath Khatkhate, Lessons from Financial Liberalization in Asia-A Comparative Study, World Bank, 1989.

destabilizing capital flows that proved so difficult to manage in a number of countries attempting deregulation. The "Big Bang" approach to financial liberalization, as demonstrated in the Southern Cone countries among others, accompanies a high degree of risk. It clearly demonstrates that a good policy such as financial market liberalization can have a bad result through poor implementation. It further demonstrates that financial market reform and liberalization, if not properly designed and implemented, can cause instability of the financial system, which in turn may magnify macroeconomic instability. Proper sequencing and speed is the key to successful financial sector development, especially when the countries have shallow and oligopolistic financial markets.

Financial market development has to be viewed within the broader context of economic and financial liberalization designed to remove structural rigidities in the economy that have impeded efficient resource allocation and factor use. Recent political and economic developments in the Eastern European countries clearly demonstrate that decentralized and privatized decision making is ultimately more successful at promoting economic development and growth. Financial market integration in its various functional and geographic forms reflects an important aspect of decentralized decision making in the environment of deregulation and liberalization, substituting market forces for government controls in global resource allocation. But the critical issue here is not so much the direction of financial market deepening but its speed and sequencing. It is in this area that more study and research is needed.

Nevertheless, a tentative conclusion may be drawn on a possible policy sequencing regarding financial market development. Viewed within the broad context of a country's macroeconomic development, financial sector development and innovation are part of the sequencing in the economic development process. We can delineate three distinct stages in this process.

Stage I (Industrialization and Real Sector Development): In this stage, the government and public institutions play the major regulator and controller for financial intermediation. Economic development plans are an important tool for the government at this stage, where directed credit programs are quite extensively applied. The economic structure is rather simple, and there is general lack of key economic infrastructure, such as transportation, energy, telecommunication and education facilities. Directed credit programs, managed by an enlightened government, can channel scarce investment capital into these infrastructure projects as well as key industrial sectors which emphasize export promotion and import substitution, which generates precious foreign exchange.

At this stage of economic development, deficit financing and the state control of financial institutions is frequently used to provide domestic investment resources for key investments, and selected foreign borrowings are utilized to meet the domestic savings gap. If the financial sector is completely liberalized at this early stage, scarce financial resources may be channeled into certain consumption-focused sectors such as residential or rental housing, luxury restaurants, retail outlets, etc.

Stage II (Financial Sector Development): Once the economy has reached certain take-off stage in terms of basic infrastructure and key industrial sector development, the government can afford to promote the growth of financial markets. Commercial banks may be privatized, and money and capital markets are promoted to increase the efficiency in resource allocation in the increasingly complex economy. Large companies, which have benefitted from the rapid industrialization in the Stage I, are encouraged to go public in the stock market in order to broaden their equity base.

Non-bank financial institutions such as merchant banks, insurance companies, pension funds, mutual funds, investment companies, leasing companies, and venture capital firms are also promoted to broaden and deepen the financial system of the country. At this stage, the government can aggressively pursue financial sector liberalization and deregulation to promote competition and diversity in the financial system.

Stage III (Financial Market Integration): Once the local financial market has become an active part of resource mobilization for the economy, the government can move towards internationalizing its financial sector along with the already internationalized trade and investment sectors. International capital flows may be liberalized, and access to local stock markets by foreign portfolio investors is progressively liberalized. Along with the move to make its currency completely convertible, the government may remove the entry barriers to foreign financial institutions to the local markets, which can encourage competition and infusion of new financial technology.

In this sequencing process, the key issue facing the government policy makers is to identify correctly the right timing on when one stage passes and the economy is ready for the next stage. Too long a delay may cause a drag in the economy, too hasty transition from one stage to the next can contribute to financial disruptions and even financial crises. Government policy makers should be nimble enough to synchronize their degree of regulation and deregulation with the underlying economic development stages.

Unlike the sequencing model for financial sector development mentioned above, promotion of innovative financial techniques that have been discussed in this paper can be introduced at any stage of the sequencing process. Even those countries at Stage I can utilize currency and interest rate swaps to manage foreign exchange and interest rate risks of their foreign loans, as exemplified by the Ghana gold mine case discussed in Chapter 4. Similarly, even primary commodity exporters can benefit from commodity swaps to cope with volatile international commodity prices, and commodity-indexed bonds can be used to issue long-term international bonds at low interest rates. BOT and BOO techniques can be used by many developing countries to utilize private capital for infrastructure projects.

Recent scandals involving financial derivatives, such as the bankruptcies of California's Orange County and Britain's Barings merchant bank, are the results of using derivatives for speculative <u>investment</u> activities. Not a single case of failure has been reported for those who have used derivatives for financial <u>hedging</u> purposes that are recommended for LDCs in this

paper. Developing countries should stick to the hedging and financing operations involving innovative techniques and stay away from leveraged and speculative uses of exotic derivatives to raise the yields from investment and trading activities.

In conclusion, various financial innovative techniques described in this paper can be safely utilized by developing countries at any stage of economic and financial development. There are only two deliberate policy measures recommended for developing countries to promote judicious uses of financial derivatives. First is training and education in the technical details of various derivative techniques and their potential uses. Bilateral and multilateral development finance agencies can provide financial technical assistance to developing countries in such training programs. Second, for some of innovative techniques such as financial swaps and BOO/BOT, many LDC entities may require credit enhancement through partial risk guarantees (not full commercial and financial credit risk guarantees). Here again, bilateral and multilateral development finance agencies can be helpful by aggressively providing guarantees (at the World Bank, this phenomenon is called "mainstreaming of guarantee operations") for LDC clients in addition to their traditional lending operations.

6. Conclusion and Recommendations

As developing economies grow and diversify, demand for physical capital results in commensurate increases in demand for greater volume and new forms of credit and financial instruments. Most LDCs do not have a variety of financial instruments for users of funds and to attract savers. Consequently, savings is slowed and the flow of finance is deterred. One reason for this is that laws or regulations may impose ceilings on interest or yield below the rate the market would demand and, therefore, constrict the development of new instruments to meet new situations. In addition, many LDC governments have enacted measures that restrict the growth of primary securities markets and impede the issuance of securities. These governments impose limitations on the price at which securities can be issued and have tax laws that encourage companies to finance operations through bank borrowing while discouraging them from issuing equity or debt securities.

Similarly, there are legal and operational obstacles to development of capital markets in LDCs. These include legal codes and regulations concerning security of assets, title, transfer of property, taking possession of collateral on loans in default, sharing ownership of assets, financial information systems and related prerequisites for the vigorous growth of the financial sector. In addition, many LDC governments have introduced various combinations of measures to direct or allocate commercial credit into term loans.

The stunted growth of domestic financial markets in developing countries makes it critically urgent for LDCs to improve their access to international funding sources. The world debt crisis in the 1980s has made it very complicated for LDCs to tap traditional international capital markets such as syndicated Eurocredits effectively. Thus, developing countries should look at a variety of innovative funding and project financing methods, as detailed in the previous sections.

The objective of this study is to enhance understanding of latest international financial innovations relevant for LDCs. The governments of developing countries need to be alert to the winds of change now blowing across international capital markets in order better to adapt their financing strategies to the new situation. Developing countries have to learn to diversify their financing sources based upon a careful analysis of underlying market mechanisms and their respective strengths and weaknesses. It requires developing the international financial expertise of both policy makers and major borrowing entities in LDCs, so that they can thoroughly evaluate the various financing alternatives open to them. It is tempting to believe that developing countries do not possess the luxury of comparison shopping in international financial markets. However, the markets are surprisingly flexible and diversified to accommodate a wide variety of borrowers. Comparison shopping does help, even in international finance.

Developing countries no longer need to be tied to one currency only in order to raise external funds. LDC borrowers now can choose almost any currency regardless of their future cash inflows from export proceeds and invisibles earnings, because currency swaps can hedge their foreign exchange exposure on a long-term basis. Similarly, a short-term financing can be effectively turned into a long-term one through the use of NIF or RUF mechanisms. There are a number of other possibilities for LDCs caused by the flexibility of international capital markets.

Recent developments in international capital markets make it imperative for LDCs to take a close look at new mechanisms and new instruments in order to maximize their international financing potential. The outlook is especially promising for most middle-income LDCs as well as many large low-income LDCs in accessing international capital market both creatively and flexibly. However, it requires careful preparation and judicious study of the various financial markets and their innovative practices by policy makers in developing countries.

Traditional international capital markets include the major domestic financial markets of advanced industrialized countries, where a wide variety of foreign borrowers traditionally have raised funds through various channels such as foreign bond issues, commercial paper, medium-term notes, banker's acceptances and other mechanisms. However, many LDCs are severely handicapped in accessing these traditional markets due to the ingrained reluctance among traders and investors in industrial countries to hold LDC paper. Innovative funding and project financing techniques can significantly increase the capital market opportunities for many developing countries.

Multilateral financial institutions have been mainly engaged in international financial intermediation as principals, raising funds in international markets themselves and on-lending them to LDCs. In addition to this primary financial intermediation role, multilateral institutions should also play a more active role in promoting LDC access to international capital markets so that developing countries can nurture their own international financing capacity through active utilization of innovative techniques.

There are several ways in which multilateral institutions can play a useful role in this regard. First, they can become more involved in advising LDCs to develop coherent strategies to utilize international capital markets directly. Such strategies are more than debt management based upon macroeconomic considerations; they are a positive step forward for LDCs to cultivate emerging relationships with international capital markets through various market mechanisms and policy changes. This type of assistance to LDCs is possible only when it is based upon a solid understanding by multilateral institutions of international financial market operations and institutions, including their latest financial innovations. Many bilateral and multilateral agencies have been involved in the development of viable LDC domestic financial sectors, including financial markets. Such traditional assistance needs to be international as well, so that LDCs can develop coherent, long-term strategies to access international capital markets more effectively, rather than reactively. The fact that LDCs depended almost exclusively on syndicated bank loans in the 1970s to raise private-source international funds testifies to their inexperience and lack of sophistication in international finance.

Second, multinational institutions may also extend guarantees for developing countries in order for them to tap international markets at reasonable costs. Such guarantees can be syndicated by multinational agencies among other public and private financial institutions, including insurance companies which already have become active in this area in their pursuit of extra fee income. Along with the syndication of LDC credit guarantees, multinational financial institutions can also participate in underwriting LDC securities in international markets. Such underwriting leadership by multinational financial institutions like IFC can encourage the private investment banking community to participate in the syndication of LDC issues.

Finally, many multinational financial institutions should move beyond their traditional and primary role of project lending to a new role as international merchant bankers for LDCs. Many developing countries need not just more project loans but also expert financial advice on the optimum way to finance their overall economic development. Many LDCs, bombarded with so many confusing and often contradictory financial ideas from international bankers, need to get objective and expert financial advice from multinational development financing institutions such as the World Bank. Moving toward a new role as an international merchant banker for LDCs may be the future direction of the World Bank and similar multilateral agencies.

The international financial environment has undergone a drastic change for developing countries in recent decades, with ominous uncertainty hanging over them. The world debt crisis and the occasional financial market disturbances have important implications for LDCs in their pursuit of international capital to finance the external resource gap. The globalization of financial markets has further facilitated cross-border flows of capital, both legitimate and otherwise. The international trend toward financial securitization has made the task of external financing by LDCs far more complicated and challenging. Whether they like it or not, developing countries are increasingly challenged to move forward in step with new international funding and project financing techniques that are
an integral part of financial innovations around the world.

Glossary of Terms

Acceptance: Promise to pay, created when the drawee of a time draft stamps or writes the word "accepted" above his signature and a designated payment date. Once accepted, the draft is the equivalent of a promissory note. Acceptances are negotiable instruments. Depending upon the acceptor, there are banker's acceptance and trade acceptance.

American-Style Option (also **American Option**): An option which may be exercised at any time up to and including the expiration date. **(See European-Style Option.)**

Arbitrage: Trading strategies designed to profit from price differences for the same or similar goods in different markets. Historically the term implied little or no risk of loss or uncertainty about total profits.

Asian dollars: Eurodollars in the Asian region, especially Singapore and Hong Kong. (See **Eurodollars.**)

Asian dollar bonds: Eurobonds issued in East Asia, especially Singapore and Hong Kong. **(See Eurobonds.)**

Assignment (Swap Market): The sale of a swap contract by one party to another, usually for a lump-sum payment. Swap assignments are cumbersome because they require the approval of the remaining original party.

At-The-Money: An option is at the money when the price of the underlying instrument is very close or equal to the option's exercise price. **(See In-The-Money and Out-Of-The-Money.)**

Back-To-Back Loans: Two parties in different countries make loans to one another, of equal value, each loan denominated in the currency of the lender and each maturing on the same date. The payment flows are identical to those of spot and forward currency transactions. Similar to a parallel loan, with the important difference that a back-to-back loan gives the lender the right to offset claims against pledged collateral if the borrower defaults, while the parallel loan does not. Currency swaps have a similar structure except that there is not necessarily any "loan" on the balance sheet.

Bank advisory committees: Also called coordinating committees, a limited number of banks designated by the authorities of a country to act on behalf of and as a liaison group with all bank creditors of a single borrower that is experiencing difficulty. Once an agreement is reached with the advisory committee it is then submitted for approval to all participating banks. Typically, membership of advisory committees is determined on the basis of banks' exposure and to secure a regional balance. The bank with the largest exposure usually heads the committee, while member banks often act as regional coordinators.

Basis: The spread or difference between two market prices or two interest rates. For example, the spread between commercial paper and Eurodollar rates or the spread between a futures price and the price of the underlying asset.

Basis Point: One one-hundredth of one percentage point, most often used in quotation of spreads between interest rates or to describe changes in yields on securities.

Basle Concordat: An agreement by the Group of Ten industrial countries to allocate bank supervisory responsibility by host and parent governments for international banking activities by commercial banks. The original Concordat was agreed to in 1975 and the revised Concordat in 1983.

Basle Committee: A committee set up by the Group of Ten in response to the failure of Herstatt Bank in Germany in order to establish guidelines for supervisory responsibilities of international banking activities by commercial banks. Once also known as the Blanden Committee or the Cooke Committee, named after a committee chairman at the time.

BOO (Build, Own and Operate): An off-balance sheet project financing technique, especially popular for infrastructure projects in developing countries, in which a private sector entity finances and builds a revenue-generating project and operates it under a long-term sales contract with a public sector agency. This is different from a traditional **concession agreement** with a host country under which simply a permission is granted to the concessionaire to conduct a business. In a concession agreement, the rights and responsibilities of both foreign investors and the host country are defined before an investment is made.

BOT (Build, Operate and Transfer): Unlike BOO in which the title to the project stays with the private investors indefinitely, BOT mandates that the title be transferred to the public sector agency at the end of the long-term contract after the private investors have presumably recovered their original investments plus adequate returns during the contract period.

Capped Floating Rate Notes: A type of floating rate note (see FRN), with an upper limit on the interest rate. The lender forgoes the possibility of obtaining a return above the cap rate, should market interest rates exceed the cap rate, but in return receives higher-than-usual spreads over LIBOR. In essence, the note issuer obtains an interest rate cap - a form of option - from the buyer.

Cash Settlement: The provision on some option and futures contracts which does not require delivery of the underlying instrument or commodity on the maturity date. For options, the difference between the settlement price on the underlying and the option's exercise price is paid to the option holder at exercise. For futures contracts, the exchange establishes a settlement price on the final day of trading and all remaining open positions are marked to market at that price. (See Marking to Market.)

CATS: Certificates of Accrual on Treasury Securities, a synthetic form of zero-coupon U.S. Treasury bonds created through **STRIPS**. (See also **TIGRs**.)

CBOE: Chicago Board Options Exchange.

CBT (also **CBOT**): Chicago Board of Trade.

CD (also **Certificate of Deposit**): A negotiable certificate issued by a bank as evidence of an interest-bearing time deposit.

Clearing House Interbank Payments System (CHIPS): A computerized network for transfer of international US dollar payments linking over 100 depository institutions which have offices or subsidiaries in New York City. Messages covering payments between the various depository institutions are entered into the CHIPS computer over the business day. At the end of each day, participants' net positions are settled through the Federal Reserve's funds transfer system.

Collateralized Mortgage Obligations (also CMOs): Mortgage-backed bonds on which principal is repaid periodically. CMOs generally consist of several tranches or classes with various classes receiving principal repayments in a prescribed order. Principal in the first class is retired before the mortgage amortisation and prepayments are used to pay down the principal in the second class, and so on.

COLTS: Continuously Offered Long-term Securities, a form of medium-term notes (MTNs), issued by the World Bank since mid-1980s.

COMEX: The Commodity Exchange. A New York exchange trading futures contracts on gold and silver and option contracts on gold futures.

Commercial Paper: A short-term unsecured promise to repay a fixed amount (representing borrowed funds plus interest) on a certain future date and at a specific place,. The note stands on the general creditworthiness of the issuer or on the standing of a third party that is obligated to repay if the original borrower defaults. The most active commercial-paper market is in the United States. (See also **Letter of Credit**.)

Commodity Futures Trading Commission (CFTC): The Federal agency which regulates futures trading in the United States.

Conversion: An arbitrage strategy in options involving the purchase of the underlying instrument offset by the establishment of a synthetic short position in options on the underlying (the purchase of a put and sale of a call). The overall position is unaffected by price movements in the underlying instrument. This trade would be established when small price discrepancies occur between the long position in the underlying and the synthetic short position in the options.

Convertible Bond: Bond giving the investor the option to convert the bond into equity at a fixed conversion price.

Cooke Committee: See **Basle Committee**

Coupon-Stripping: The process of producing single-payment (zero coupon) instruments from existing conventional bonds. It can be accomplished either by separating the coupons from the principal or by selling receipts representing the individual coupons and principal on a security held by a trustee. (See **CATS** and **STRIPS**.)

Covered Writing: Generally refers to selling call options "covered" by an equal or larger long position in the security underlying the option. It is a strategy intended to augment overall returns by earning fee income on the options written against securities held for normal investment purposes.

Currency Swap: A transaction in which two counterparties exchange specific amounts of two different currencies at the outset and repay over time according to an agreement governing interest payments and possibly amortisation of principal. Payment flows in currency swaps (in which payments are based on fixed interest rates in each currency) are generally like those of spot and forward currency transactions.

Currency Warrants: Usually, detachable options included in securities issues giving the holder the right to purchase from the issuer additional securities denominated in a currency different from that of the original issue. The coupon and price of the securities covered by the warrant are fixed at the time of the sale of the original issue. Can also be a currency option in negotiable form.

Debt Refinancing: Either a rollover of maturing debt obligations or the conversion of existing or future debt service payments into a new medium-term loan.

Deep Discount Bonds: Coupon-bearing securities that sell at prices well below par. Generally refers to seasoned bonds whose prices have declined in secondary-market trading because market yields have risen well above the coupon rate, which reflects the levels prevailing at the time they were issued. Tax consequences discourage new issuance of deep discount bonds in the United States.

Delta: Technical analysis term used in measuring the interaction between the price of an option premium and the price of the underlying security or futures contract. An option that changes in premium by $1 for every $2 in the price of the underlying has a delta of 0.5. The delta rises toward 1.0 for in-the-money options and approaches zero for options that are deeply out of the money. Compare with gamma, which is the sensitivity of an option's delta to small changes in the price of the underlying. (See **Gamma**.)

Disintermediation: Withdrawal of funds from interest-bearing deposit accounts when rates on competing financial instruments, such as money market mutual funds, banker's acceptances, commercial paper and other money market instruments offer the investor a better return.

Dual-Currency Bonds: Long-term securities denominated in two currencies. The most common types have been bonds with initial payment and interim coupon payments in a non-dollar currency, say Swiss francs or yen, and a fixed final principal payment in US dollars.

Duration: A measure of a security's maturity which takes into account the periodic coupon payments. Specifically, it is the weighted average maturity of all payments of a security, coupon plus principal, where the weights are the discounted present values of the payments. As such the duration is shorter than the stated term to maturity on all securities except for zero coupon bonds, for which they are equal because the zero coupon bond is a single-payment security.

End-User (Swap Market): In contrast to a swap-trading institution, a counterparty which engages in a swap to change its interest rate or currency exposure. End-users may be non-financial corporations, financial institutions or governments.

Euro-Commercial Paper (ECP): Notes sold in London for same-day settlement in US dollars in New York. The maturities are more tailored to the needs of issuer and investor than the standard Euro-note terms of 1, 3, and 6 months. This is a recent development in the Euro-market.

Euro-Commercial-Paper Facility: Facility for issuing short-term notes without a back-up line of credit and generally with flexible maturities.

Euro-Note: A short-term note issued under a NIF or Euro-commercial-paper facility (See Note **Issuance Facility** and **Euro-Commercial-Paper Facility**).

European-Style Option (also **European Option**): An option which may be exercised only on the expiration date. It is an alternative to an American option, which can be exercised on any business day prior to expiration, or on the expiration date.

Exercise Price (also **Strike Price**): The fixed price at which an option holder has the right to buy, in the case of a call option, or to sell, in the case of a put option, the financial instrument covered by the option.

Expected Volatility: The degree of volatility that option pricing formulae assume will prevail over the remaining life of an option.

Expiration (also **Expiration Date, Expiry,** and **Maturity Date**): (1) The date at which a European-style option may be exercised at the choice of the holder; (2) the date before or at which an American-style option may be exercised.

Federal Financial Institution Examination Council: An organization of U.S. government regulatory agencies responsible for U.S. depository institutions. It is designed to promote more uniform supervisory and examination policies. The agencies include: Federal Deposit Insurance Corporation; Federal Home Loan Bank Board; Federal Reserve Board; National Credit Union Administration; Office of the Comptroller of the Currency.

Federal Funds Market: A market for unsecured loans between depository institutions in the United States in immediately available funds, essentially reserves held at Federal Reserve Banks. Most activity is for next-day maturity. **Term Federal funds** refers to longer maturities which can be up to several weeks or months.

Federal National Mortgage Association (also FNMA and Fannie Mae): A corporation owned by private shareholders but chartered by the U.S. government to support the housing market. FNMA holds a large portfolio of mortgages, some of which are federally guaranteed or insured while others are uninsured (so-called "conventional" mortgages). To fund the purchases of mortgages FNMA sells debentures and short-term notes in the credit markets. FNMA also packages pools of mortgages for sale to investors.

Fedwire: The Federal Reserve's electronic funds and securities transfer network.

Foreign Bonds: Bonds issued by non-resident borrowers in a national capital market subject to the securities regulations prevailing in that market.

Forward Rate Agreement (FRA): An agreement between two parties wishing to protect themselves against movements in interest rates. The two parties agree on an interest rate for a specified period ending on a specified future settlement date for an agreed principal amount. No commitment is made by either party to lend or borrow the principal amount; their exposure is only the interest difference between the agreed and actual rates at settlement.

FRABBA terms: Standard terms agreed by the British Bankers' Association for interbank trading of FRAs. (See **Forward Rate Agreements**.)

FRN: A medium-term security carrying a floating rate of interest which is reset at regular intervals, typically quarterly or half-yearly, in relation to some predetermined reference rate, typically LIBOR. (See **LIBOR**.)

Front-end Fees: Fees paid up front by borrowers of syndicated loans to the managers, underwriters and participating banks of the Eurocredit syndicate.

Futures Contract: An exchange-traded contract generally calling for delivery of a specified amount of a particular grade of commodity or financial instrument at a fixed date in the future. Contracts are highly standardized and traders need only agree on the price and number of contracts traded. Traders' positions are maintained at the exchange's clearing house, which becomes a counterparty to each trader once the trade has been cleared at the end of each day's

trading session. Members holding positions at the clearing house must post a margin which is marked to market daily. Most trades are unwound before delivery by offset trades. The interposition of the clearing house facilitates unwinding since a trader need not find his original counterparty, but may arrange an offsetting position with any trader on the exchange. (See **Margin** and **Marking to Market**.)

Gamma: The sensitivity of an option's delta to small unit changes in the price of the underlying. Some option traders attempt to construct "gamma-neutral" positions in options (long and short) such that the delta of the overall position remains unchanged for small changes in the price of the underlying instrument. Using this method writers can produce a fairly constant delta and avoid the transactions costs involved in purchasing and selling the underlying as its price changes.

Gearing Ratio (As applied to multilateral lending institutions): The ratio between loans and guarantees on the one hand and the total subscribed capital and retained earnings on the other. Also known as the Statutory Lending Limit (SLL), the gearing ratio mandates most multilateral development finance institutions such as the World Bank to limit their total loans and guarantees outstanding to their total capital base composed of paid-in and callable capital as well as retained earnings including reserves.

Government National Mortgage Association (also **GNMA** and **Ginnie Mae**): A wholly-owned government corporation in the US Department of Housing and Urban Development which is designed to support the housing market. To help provide secondary-market liquidity, GNMA guarantees privately issued securities backed by pools of federally insured or guaranteed mortgages. In the most common form of GNMA security, monthly interest payments and amortisation and prepayments of principal on mortgages are "passed through" to the holder.

Grantor: see Writer.

Headroom: A similar concept to the statutory lending limit, it
defines the available lending resources as the difference between the statutory lending limit and outstanding loans and guarantees.

Hedge: To reduce risk by taking a position which offsets existing or anticipated exposure to a change in market rates.

Hedge Ratio: The proportion of underlying securities or options needed to hedge a written option. The hedge ratio is determined by the delta.

In-The-Money: Option contracts are in the money when there is a net financial benefit to be derived from exercising the option immediately. A call option is in the money when the price of the underlying instrument is above the exercise price and a put option is in the money when the price of the underlying is below the exercise price.

Interbank Market: Short-term market in which banks lend and borrow Eurocurrencies and other short-term funds among themselves.

Interest Rate Cap: An option-like feature for which the buyer pays a fee or premium to obtain protection against a rise in a particular interest rate above a certain level. For example, an interest rate cap may cover a specified principal amount of a loan over a designated time period such as a calendar quarter. If the covered interest rate rises above the rate ceiling, the seller of the rate cap pays the purchaser an amount of money equal to the average rate differential times the principal amount times one-quarter.

Interest Rate Mismatch (also Interest Rate Gap or Gap): The risk/opportunity banks face that a shift in interest rates will reduce/increase interest income. The mismatch arises out of differences in the repricing schedules of assets and liabilities. The banks' traditional interest rate mismatch, lending long-term and borrowing in short-term markets, exposes them, for example, to the risk that rates will rise: as interest rates rise, low-yielding short-term liabilities will be replaced and repriced more rapidly than assets. Some money-centre banks manage their interest rate mismatches actively in the hopes of taking advantage of anticipated interest rate changes.

Interest Rate Swap: A transaction in which two counterparties exchange interest payment streams of differing character based on an underlying notional principal amount. The three main types are coupon swaps (fixed rate to floating rate in the same currency), basis swaps (one floating rate index to another floating rate index in the same currency), and cross-currency interest rate swaps (fixed rate in one currency to floating rate in another).

Intermediary (Swap Market): A counterparty who enters into a swap in order to earn fees or trading profits. Most intermediaries, or swap dealers, are major US money-centre banks, major US and UK investment and merchant banks, and major Japanese securities companies.

International Banking Facilities (also IBFs): A means by which any depository institution in the U.S. and Japan is allowed to use its domestic offices to offer foreign customers deposit and loan services free of reserve requirements and interest rate regulations.

Intrinsic Value: The net benefit to be derived from exercising an option contract immediately. It is the difference between the price of the underlying and the option's exercise price. An option generally sells for at least its intrinsic value.

Irrevocable Revolving Credit Agreement: A binding commitment by a bank to lend to a customer. **(See Revolving Credit Agreement.)**

ISDA: International Swap and Derivatives Association.

Junk Bonds: High-yielding bonds that are below investment grade and are at times used in corporate take-overs and buy-outs. Investment-grade securities are generally those rated at or above Baa by Moody's Investors Services or BBB by Standard & Poor's Corporation.

LDC Loan Swaps: The exchange by one lender of some or all of its exposure to a particular borrower in an LDC with a second lender for its exposure to a borrower in the same or a different LDC. In some transactions loans are sold for cash or swapped for equity.

Lender of Last Resort (or LLR): Usually a central bank or a similar government agency that stands ready to provide the liquidity needed during a crisis to any qualified depository institution.

Letter of Credit (also Standby Letter of Credit): The most common form is an obligation on the part of a bank to a third party to redeem a customer's maturing security if the bank's customer cannot perform. Banks in North America often extend letters of credit to back securities issued by tax-exempt borrowers or to back commercial paper. **Standby letters of credit** call upon the bank to redeem issues upon the default of the borrower. Under **direct-pay letter of credit**, the bank pays off all maturing obligations and obtains reimbursement from the borrower.

Leveraged Buy-outs: Corporate acquisitions through stock purchases financed by the issuance of debt (which may include **Junk Bonds**).

LIBID: London Interbank Bid Rate. The rate which a bank is willing to pay for funds in the international interbank market.

LIBOR: London Interbank Offered Rate. The rate at which banks offer to lend funds in the international interbank market.

LIFFE: The London International Financial Futures Exchange.

LIMEAN: The mean of LIBID and LIBOR. Also known as LIMID.

Limited Recourse Project Financing: A project financing arrangement under which project financiers are compensated only according to special conditions that are spelled out in the financing agreement, such as export proceeds generated from the project that are channelled though an offshore escrow account.

Loan Sale: The sale, transfer or assignment of a loan or a loan participation to a third party with or without the knowledge of the borrower.

Long Option Position: The position of a trader who has purchased an option regardless of whether it is a put or a call. A participant with a long call option position can profit from a rise in the price of the underlying while a holder of a long put option can profit from a fall in the price of the underlying instrument.

Margin: Funds or collateral posted as a good-faith performance guarantee. In repurchase agreements lenders of funds often make borrowers post margin by requiring them to deliver securities in excess of the amount of money borrowed. Futures and options exchanges often

require traders to post initial margin when they enter into new contracts. Margin accounts are debited or credited to reflect changes in the current market prices of the positions held. Members must replenish the margin account if margin falls below a minimum. In similar fashion, customers must post margin on positions held for them at the exchange clearing house by member firms. (See **Marking to Market**.)

Marking to market: The process of recalculating the exposure in a trading position in securities, option contracts, or futures contracts. In exchange-traded contracts, the exchange clearing house marks members' positions to market each day using closing market prices. Members must maintain a certain minimum level of margin at the exchange clearing house and must post additional margin if the marking-to-market process reduces margin below the minimum (see **Margin**).

Market Liquidity Risk: The possibility that a financial instrument cannot be sold quickly and at full market value.

Medium-Term Notes (or **MTNs**): Longer-term U.S. or Eurocommercial paper. (See also **COLTS**.)

Merchant Bank: A bank engaged in mostly investment banking activities. Similar to **Investment Bank**.

Mirror Swap: A reverse swap written with the original counterparty.

Mortgage-Backed Bonds: Bonds traded mainly in the United States which pay interest semi-annually and repay principal either periodically or at maturity, and where underlying collateral is a pool of mortgages. (See **Collateralized Mortgage Obligations** and **Pay-Through Bonds**.)

Multiple-Component Facility: Facility under which several different options for drawing funds are available to the borrower. These may include issuing notes, drawing on short-term or medium-term credits or swinglines. (See **NIF** and **Swingline**.)

Negative-Carry Cost: Due to the normal positive yield curve in which the long-term interest rate is generally higher than short-term rates, any short-term liquidity investments funded by long-term borrowings (as in the World Bank's case) tend to result in a loss.

Net-Writers: Options-market-makers and traders who have written or sold more options than they have purchased.

NIBOR: New York inter-bank offer rate. Similar to **LIBOR**.

Note Issuance Facility (NIF): A medium-term arrangement enabling borrowers to issue short-term paper, typically of three or six months' maturity, in their own names. Usually a group of underwriting banks guarantees the availability of funds to the borrower by purchasing any unsold

notes at each roll-over date, or by providing a standby credit. Facilities produced by competing banks are called, variously, revolving underwriting facilities, note purchase facilities, and Euro-note facilities.

Notional Principal Amount: The principal balance underlying a financial swap transaction, which is used to compute swap payments in an interest rate or currency swap. Once the obligation to pay interest is separated from the principal on the underlying swap instrument, it becomes a notional amount and is the fictitious principal generating the cash flows in a swap agreement.

Off-Balance-Sheet Activities: Banks' business, often fee-based, that does not generally involve booking assets and taking deposits. Examples are trading of swaps, options, foreign exchange forwards, standby commitments and letters of credit.

Offshore Financial Center: A financial center where on-shore-type financial regulations are either absent or relaxed to attract international financial operations.

Options: Contracts granting to the option purchaser the right, but not the obligation, to buy (call option) or sell (put option) a certain amount of commodity (commodity option) or financial instrument (financial options such as stock option, interest option, currency option or index option) during a specified period at an agreed-upon price (strike price or exercise).

Options Book: The aggregation of all written and purchased options held by a market participant.

Options Clearing Corporation (also OCC): The corporation which provides clearing facilities for all option trades on US securities exchanges. Its new Intermarket Clearing Corporation assumed clearing operations at the New York Futures Exchange on 11th January 1986.

OTC Market (Over-The-Counter Market): Trading in financial instruments transacted off organized exchanges. Generally the parties must negotiate all details of the transactions, or agree to certain simplifying market conventions. In most cases, OTC market transactions are negotiated over the telephone. OTC trading includes transactions among market-makers and between market-makers and their customers. Firms mutually determine their trading partners on a bilateral basis.

Out-Of-The-Money: An option contract is out of the money when there is no benefit to be derived from exercising the option immediately. A call option is out of the money when the price of the underlying is below the option's exercise price. A put option is out of the money when the price of the underlying is above the option's exercise price.

Paris Club: Ad-hoc arrangements to reschedule official loans to developing countries by the industrialized creditor country governments.

Partly-Paid Bonds: Securities for which the buyer pays only a portion of the total issue price. The holder is obligated to pay for additional amounts at predetermined dates. So far the practice has been limited primarily to issues denominated in US dollars and pounds sterling.

Pass-Throughs: Certificates representing ownership in a pool of mortgages. The monthly interest payments, amortisation, and prepayments of principal are "passed through" to the owners of the certificates by firms servicing the mortgage payments. GNMA-guaranteed pass-through certificates are the most common type.

Pay-Through Bond: A mortgage-backed debt obligation of the issuer. Interest and amortisation are paid periodically, as well as prepayments of principal that occur.

Physicals (also Actuals): An option contract on physicals requires the delivery of an actual financial instrument. By contrast, some options call for cash settlement while others require delivery of a futures contract (which may itself require delivery of an actual financial instrument or require cash settlement).

Plain-Vanilla Swap: A US dollar interest rate swap in which one party makes floating rate payments based on six-month LIBOR and receives fixed rate funds expressed as a spread over the rate on US Treasury securities. The maturity is usually five to seven years and deal size is typically at least $50-100 million.

Premium: The price for an option paid by an option holder to the option writer.

Put Option: See Options.

Recourse: A general legal term meaning that the purchaser of a financial asset from an original creditor has a claim on the original creditor in case the debtor defaults. Specific arrangements to provide recourse arise in a variety of innovative transactions, including LDC Loan Swaps and various types of securitized assets. Such arrangements can take many forms, including: an explicit guarantee that credit losses will be reimbursed or the assets replaced by assets of similar quality; an agreement to repurchase assets before maturity; or more indirectly, indemnification by a third-party guarantor for any losses that occur.

Reinvestment Risk: The chance that a security's coupons will be reinvested at yields different from the security's stated yield to maturity.

Repurchase Agreement (RP or repo): A holder of securities sells them an investor with an agreement to repurchase them at a fixed price on a fixed date. The security "buyer" in effect lends the "seller" money for the period of the agreement, and the terms of the agreement are structured to compensate him for this. Dealers use Rps extensively to finance their positions.

Reverse Conversion: An arbitrage trade in options involving the sale of the underlying instrument and the establishment of a synthetic long position in options on the underlying (the

purchase of a call and sale of a put). **(See Arbitrage, Conversion and Synthetic Position.)**

Reverse Swap: One form of activity in the secondary swap market. A reverse swap offsets the interest rate or currency exposure on an existing swap. They can be written with the original counterparty or with a new counterparty. In either case, they are typically executed to realize capital gains.

Revolving Credit Agreement: A commitment by a bank to lend to a customer under predefined terms. The commitments generally contain covenants allowing the bank to refuse to lend if there has been a material adverse change in the borrower's financial condition.

RUF: See Note Issuance Facility.

Securitization: The term is most often used narrowly to mean the process by which traditional bank or thrift institution assets, mainly loans or mortgages, are converted into negotiable securities which may be purchased either by depository institutions or by non-bank investors. More broadly, the term refers to the development of markets for a variety of new negotiable instruments, such as NIFs and FRNs in the international markets and commercial paper in the United States, which replace bank loans as a means of borrowing. Used in the latter sense, the term often suggests **disintermediation** of the banking system, as investors and borrowers bypass banks and transact business directly.

Settlement Price: The price of the financial instrument underlying the option contract at the time the contract is exercised. Where necessary, option contracts specify objective standards for determining the settlement price.

Settlement Risk: The possibility that operational difficulties interrupt delivery of funds even where the counterparty is able to perform.

Shelf Registration: Rule 415 of the U.S. Securities and Exchange Commission which allows major corporations to go directly to the equity and debt markets to sell securities quickly. Previous rules, which had required companies to file registration notices with the SEC and wait at least two days for approval, had favored the formation of syndicates to sell securities. Rule 415 allows blanket registration of issues over the ensuing two years and encourages direct sale of blocks of securities to individual investment houses.

Short Option Position: The position of a trader who has sold or written an option regardless of whether it is a put or a call. The writer's maximum potential profit is the premium received.

Short Volatility Position: An option position designed to profit from an expected decline in the implied volatility component of the option's price. The position can take different forms. One form is to sell options and use delta-hedging techniques to protect against changes in the price level of the underlying instrument.

SIBOR: Singapore interbank offered rate. Similar to LIBOR.

Single-Purpose Corporation: A U.S. corporation set up to issue short-term paper in order to purchase assets of a certain type or to make loans and advances to a single firm. The stock of such corporations is sometimes donated to charitable institutions. The corporation usually issues commercial paper or preferred stock with a dividend reset at short intervals to reflect market rates. Examples of assets purchased include trade receivables and mortgages.

Statutory Lending Limit (SLL): See Gearing Ratio.

Straddle: An options position designed to profit from an expected increase in the price volatility of the underlying instrument. A straddle consists of the purchase of a put and a call with the same exercise date and exercise price.

Straddle Write: An options strategy designed to profit from an expected decline in the implied volatility component of prices. The position consists of selling a straddle.

Strap: An options straddle position consisting of the purchase of more calls than puts although all have the same exercise price and exercise date. While the trader expects an increase in price volatility, there is also an expectation that the price of the underlying is more likely to rise than to fall.

Strike Price: An option's exercise price.

Strip: An options straddle position consisting of the purchase of more puts than calls although all have the sa,me exercise date and exercise price. While the trader expects an increase in price volatility, there is also the expectation that the price of the underlying is more likely to fall than to rise.

STRIPS (Separate Trading of Registered Principal of Securities): The U.S. Treasury's acronym for zero coupon instruments derived from selected long-term notes and bonds. At a bondholder's request, the Federal Reserve, as the Treasury's fiscal agent, will separate a designated security into its individual coupon components and corpus or principal payment. The pieces may be traded separately and must be maintained on the Treasury's book-entry system.

Student Loan Marketing Association: A U.S. federally sponsored, publicly owned corporation which grants loans to commercial banks, thrift institutions and state lending agencies for the purpose of maintaining or expanding the size of a lender's student loan portfolio.

Swap: A financial transaction in which two counterparties agree to exchange streams of payments over time according to a predetermined rule. A swap is normally used to transform the market exposure associated with a loan or bond borrowing from one interest rate base (fixed term or floating rate) or currency of denomination to another. **(See Currency Swaps and Interest Rate Swaps.)**

Sweep Accounts: A service provided by a depository financial institution to invest on an overnight basis all, or a portion, of a customer's idle balances.

Swingline: Facility for short-term funds which can be drawn at short notice to cover the period between the offer of notes under a note issuance facility and the receipt of funds. (See NIFs.)

Synthetic Positions: Combinations of options or the underlying instrument to produce a desired risk gain position that cannot be obtained directly. Synthetic positions can be established in the following fashion:

(1) Long call: Purchase put and purchase the underlying.
(2) Long put: Purchase call and sell the underlying.
(3) Long position in the underlying instrument: Purchase call and sell put with same strike price and same exercise date.
(4) Short position in the underlying : Sell call and purchase put with same strike price and exercise date.

Tender Panel: A method for distributing notes issued under note issuance facilities. A group of financial institutions have the right to bid for the short-term notes issued under the facility on each issue date. **(See NIFs.)**

Term Federal Funds Market: see Federal Funds Market.

TIGRs: Treasury Investment Growth Receipts, a synthetic form of zero-coupon U.S. Treasury bonds through **STRIPs. (See CATS.)**

Time Value: The imputed monetary value of an option reflecting the possibility that the price of the underlying will move so that the option will become more valuable. The total value of an option, or its price, is comprised of its intrinsic value and its time value.

Transfer Risk: A type of country risk that a required amount of foreign exchange reserves is not available at the country's central bank to convert domestic currencies into a foreign currency in order to meet payment obligations denominated in the foreign currency.

Uncovered Writers (also Naked Writers): Options sellers who do not attempt to reduce their market risk by taking offsetting positions in the underlying security or other options. This strategy is also called taking a "biased" view in option writing, that is, anticipating that the option will fall in value.

Underlying: The designated financial instruments which must be delivered in completion of an option contract or a futures contract. For example, the underlying may be fixed-income securities, foreign exchange, equities, or futures contracts (in the case of an option on a futures contract).

VA-Guaranteed Mortgage: A residential mortgage in the United States made by a private lender and guaranteed by the Veterans Administration. Eligible mortgage borrowers have had a stipulated period of active military service.

Voluntary Termination (Swap Market): The cancellation of a swap contract which is agreed to by both counterparties. A voluntary termination usually involves a lump-sum payment from one party to the other.

Warrant: Tradable instruments conferring on the holder the right to purchase from, or sell to, the warrant issuer a fixed-income security or equity stock under specified conditions for some period of time. Recently, the most common warrants have been sold in conjunction with Eurobond offerings and enable the holder to obtain a security identical to the original issue.

Warranty: Statement, either written or implied, that assertions made in completion of a contract are true. Under a warranty agreement, the buyer has recourse against the seller.

Writer (also Grantor): The party that sells an option. The writer is required to carry out the terms of the option at the choice of the holder.

Zero Coupon Bonds: Single-payment long-term securities which do not call for periodic interest payments. The bonds are sold at discounts from par and the investor's entire return is realized at maturity.

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