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INTERNATIONAL FINANCIAL MARKETS:
A SURVEY

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This survey provides an introduction to international financial markets, with particular emphasis on fixed-income securities. Since 1970, these markets have grown rapidly and have undergone significant structural changes in terms of competition and regulation. They have become highly integrated with national markets, a phenomenon called globalization, and at the same time, these markets spawned a tremendous number of new instruments and techniques, a process known as financial innovation. Such innovation has created many opportunities for financial service providers and their customers. Financial innovation also brought with it inherent risks for market participants as well as new challenges for regulators.

RELEVANT CONCEPTS AND TERMINOLOGY

We will begin by presenting a conceptual framework to explain the confusing terminology surrounding global financial markets. This framework should also help the reader classify and analyze the value of various instruments and transactions seen in the international marketplace.

The frequently used term Eurocurrency market illustrates the need for such a framework: while the term suggests a market for currencies in Europe, it actually refers to a market for bank deposits and loans in a variety of currencies that are intermediated outside the country where the respective currency serves as a means of payment!

An overview of international financial markets must begin by listing the distinctive qualities of three markets, according to the functions they perform:

1. The market for international payments
2. The market for international credit
3. International markets for real assets

Foreign Exchange Market

The foreign exchange market enables transactors to make payments across borders efficiently. Technically speaking, this is done by exchanging the ownership of demand deposits in the respective national banking systems. Thus, a payment from the United States to Switzerland would involve the simultaneous debiting of the payer's demand deposit account in the United States and the crediting of the recipient's current account in a bank in Zurich.

As in every market, each transaction requires a mutual agreement on the price (exchange rate) and the delivery of the means of payments (the settlement, or value date). If settlement occurs on the second business day, it is usually referred to as a spot transaction and the exchange rate is then known as a spot rate. When settlement takes place on the third business day or later (in major currencies, that time of settlement may extend to 10 years), the price is generally referred to as a forward rate.

The relative time value of money in the two markets affects prices for spot and forward transactions -- an ex-post relationship described by the well-known interest rate parity condition.

International Credit Markets

While the essence of the foreign exchange market is the movement of financial claim over space, credit transactions involve the exchange of funds over time. Savers, whose income temporarily exceeds

their use of funds, make the additional output they have created available to borrowers who have a shortage of funds because they commit resources to real assets (either consumer durables, productive assets in the form of business investment, or government projects) in excess of their current income. Credit markets also aid in distributing risks among participants in this savings and investment process. By generating various types of financial claims, these markets permit savers and borrowers to "fine tune" the combination of risks they are willing to bear.

Such transactions assume various forms. To bring some semblance of order into chaos, it is useful to distinguish first between fixed income securities and equity claims. The essence of this distinction, of course, is that the former yield returns that are contractually fixed, while the latter provide returns that are dependent upon the success of an enterprise. While this broad characterization is sufficient for most purposes, it is not as sharp as it appears, because the markets have developed many hybrid securities containing elements of both. Examples range from high yield bonds (junk bonds) to convertibles and money market preferreds.

International Markets for Foreign Real Assets

Finally, there are international markets for claims on real assets. In this context, one usually refers to Foreign Direct Investment (FDI). It is important to note that the distinction between FDI and international portfolio investment through equities is not always apparent. Formally, in the case of a foreign subsidiary of a multinational enterprise, the parent company holds a significant

percentage of the equity claims in that firm. To understand this type of investment, however, the pure "risk and return" concept is not sufficient; the essence lies in the exercise of managerial control over business assets abroad in order to exploit some technology or another enterprise-specific competitive advantage.¹

A CLASSIFICATION OF INTERNATIONAL CREDIT MARKETS

We begin by introducing a simple conceptual scheme for classifying international credit markets. Essentially it is based on two dimensions: we ask how (through which financial channel) and where (in which governmental jurisdiction) funds are transferred from savers to borrowers.

[Figure 1 about here]

Institutional Structure

The first dimension represents the channel, or the institutional structure of market participants through which funds are moved.

Resources can be transferred from savers to borrowers through two channels: (1) financial intermediaries that attract funds from savers by issuing their own claims and, in turn, lend the funds to those who invest in real assets; and (2) organized securities markets in which savers and borrowers can link up directly (savers can purchase securities issued by ultimate borrowers).² The organizational pattern of such markets is determined either by convention, the explicit agreement of the participating private entities, or by government regulation.

The proportions of funds that are channeled indirectly or through organized securities markets are important distinguishing

Figure 1

INTERNATIONAL CREDIT MARKETS: A SCHEMATIC PRESENTATION

	<u>NATIONAL</u>		<u>INTERNATIONAL</u>
CREDIT CHANNEL			
FINANCIAL INTERMEDIARIES			
SECURITIES MARKETS			
	<u>"INTERNAL"</u>		<u>"EXTERNAL"</u>

characteristics of different credit markets. First, the two channels for funds tend to react differently to external shocks. A capital market dominated by intermediaries is relatively better able to withstand external disturbances, because financial intermediaries absorb some of the risk faced by both savers and ultimate investors. Therefore, different capital markets may react to the same shocks differently, depending upon whether the intermediated or the direct channel is more important. Furthermore, markets where intermediaries dominate are, for better or worse, much more susceptible to direct government guidance of credit flows.

Jurisdictions

The other dimension concerns the jurisdiction in which financial resources are transferred. Most credit transactions take place in domestic financial markets. However, many financial markets have extensive links abroad: domestic investors purchase foreign securities and may deposit funds with foreign financial institutions. Conversely, domestic banks may lend to foreign residents, and foreign residents may issue securities in the national market or deposit funds with resident financial intermediaries. These are the traditional "foreign" markets for international financial transactions.

The significant aspect of such traditional foreign lending and borrowing is that all transactions must abide by the rules, customs, and institutional arrangements prevailing in the national market concerned. Most important, all these transactions are directly subject to public policy, governing transactions with nonresidents ("foreign transactions") in a particular market. To illustrate, when

savers purchase securities in a foreign market, they do so according to the rules, market practices, and regulatory precepts governing such transactions in that particular market. The same applies to those who invest their funds with financial intermediaries abroad.

Likewise, borrowers from abroad who wish to issue securities in a national market must follow the rules and regulations of that market. Here we encounter an important phenomenon that is crucial to understanding international markets: the rules governing the access of foreign borrowers to national markets tend to be discriminatory and restrictive. The same is true with respect to financial intermediaries. The borrower who approaches a foreign financial institution for a loan obtains funds at rates and conditions imposed by the financial institutions of the foreign country, and he is directly affected by the authorities' policy on lending to foreign residents.

During the 1960s, market mechanisms removed international (and to a certain extent even national) borrowing and lending from the jurisdiction of national authorities. This was accomplished by locating the market for credit denominated in a particular currency outside the country where that currency is legal tender, i.e., into a jurisdiction offering a more hospitable regulatory climate for such transactions. For example, markets for dollar denominated loans, deposits, and securities in jurisdictions other than the United States to a large extent avoid U.S. banking and securities regulations. We refer to these markets as Euromarkets or more properly as external or offshore markets to indicate that they are not part of the domestic

(or national) financial system. Thus, the essence of this classification is the nature of regulation. Differences in interest rates, practices, and regulations that exist between domestic and external markets arise primarily from the extent to which regulatory constraints are different.

Summary of Global Market Structure

Today, virtually all major capital markets, including those of the United States, exhibit the three-tiered structure depicted in Figure 1:

- Domestic market.** Usually with unique procedures and institutions stemming from historical and regulatory determinants.
- Foreign market.** Attached to the domestic market, where nonresidents place and take funds, but always under the specific rules established for foreign participants in the national market.
- External or "Offshore" Market.** Located in a different political jurisdiction and only linked to the national by the currency used to denominate the financial claims.

The various external markets have more features in common with each other than with their respective national markets. Therefore, they are properly discussed as a common, integrated market where claims denominated in different currencies are exchanged and are referred to as Euromarkets.

NATIONAL CREDIT MARKETS

The international role of a financial market and its prevailing regulatory climate are closely related. Appropriate regulation makes some markets more attractive than others by minimizing the risk of loss through fraud, various conflicts of interest, inadequate

disclosure, etc. Other regulations impose additional costs or limit freedom for residents and/or nonresidents. Unfortunately, the dividing line is very thin between regulatory measures that improve markets and those that have just the opposite effect. Thus, when governments pursue ambitious social and political objectives by way of financial market policies (such as to allocate credit according to political criteria) or when authorities discriminate against nonresident borrowers and issuers to a significant extent, markets become inefficient very quickly. As a result, both foreign and domestic market participants escape by using external markets.

We will now analyze the most internationally significant credit markets, focusing first on the national markets where domestic as well as foreign residents can raise funds. We will also discuss the Euromarkets and the factors that separate them from the national markets, because those differences provide important arbitrage opportunities. Finally, we will discuss the global commercial paper market, as well as the emerging market for facilities which combine elements of intermediated and securities markets.

The North American Market

The U.S. national market is still the largest financial market. Foreign banks play an active role, especially in the wholesale end. By the same token, U.S. banks confront very few restraints by federal authorities when they engage in international business. The data in Tables 1 through 3 demonstrate that the magnitude of international activities in U.S. markets is substantial. As far as the bond market is concerned, the U.S. market comprised roughly half of the global

market at year-end 1988. Also, there is a significant traditional foreign fixed-income sector, known as "Yankee" market. Yankee bonds are largely dollar denominated, fixed income securities, issued by foreign borrowers in the U.S. market.

[Tables 1-3 about here]

As in all national markets, public (federal and municipal) issuers dominate the U.S. market, although the corporate bond market is still relatively large with a share of approximately 16 percent. Obviously these data reflect the special role of the U.S. Treasury market, which is not only the largest but also the most liquid market in the world. It is of such great interest to international investors that trading in U.S. Treasuries takes place around the clock, with significant trading occurring in Tokyo and London outside of U.S. banking hours. Further, foreign-owned investment banks in the United States have begun to play a significant role in the primary market based on their placing power with investors outside the United States.

The Canadian market is closely linked to the U.S. market, but it has limited international significance aside from a small external sector (Euro-Canadian dollar market).

Japan

The Japanese market, with a huge domestic segment reflecting the size of the Japanese economy, is roughly half the size of the U.S. market. Interestingly, the total stock of Japanese government bonds (JGB) outstanding almost equals that of the market for U.S. Treasuries in absolute U.S. dollar terms.

Table 1

The U.S. Dollar International Credit Markets
(in billions of U.S. dollars)

	Banking Market Changes in		Bond Market New Issues	
	<u>U.S. Bank Claims on Foreigners</u>	<u>U.S. Bank Liabilities to Foreigners</u>	<u>Yankee Bonds</u>	<u>Eurodollar Bonds</u>
1986	60.0	79.8	117.2 ^a	
1987	40.5	87.8	7.4	51.6
1988	57.5 ^b	78.9	9.7	65.7

^aYankee bonds plus Eurodollar bonds.

^bPreliminary

- Sources: 1) Bach, Christopher L. "U.S. International Transactions, Fourth Quarter and Year 1988," Survey of Current Business, U.S. Department of Commerce, March 1989.
- 2) Organisation for Economic Co-operation and Development. Financial Market Trends, February 1987 and February 1989.

Table 2

Investment Positions of U.S. Banks
(volumes outstanding at year end, in billions of U.S. dollars)

	<u>U.S. Bank Claims on Foreigners</u>	<u>U.S. Bank Liabilities to Foreigners</u>
1986	506.4	449.2
1987	540.8	527.0
1988	607.0	618.0

- Sources: 1) Scholl, Russell B. "The International Investment Positions of the U.S. in 1986." Survey of Current Business. U.S. Department of Commerce, June 1987.
- 2) Bach, Christopher L. "U.S. International Transactions, Fourth Quarter and Year 1988," Survey of Current Business, U.S. Department of Commerce, March 1989.

Table 3

Size of Major Bond Markets at Year-End 1987
(Nominal Value Outstanding, Billions of U.S. Dollars Equivalent)^a

Bond Market	Total Publicly Issued	As Pct. of Public Issues in All Markets	Central Gov't.	Central Gov't.		State & Local Gov't.	Corp. (Incl. Cvs)	Other Domestic Publicly Issued	Int'l. Bonds		Private Place. Unclass.
				Agency & Guar.	Gov't.				Foreign Bonds	Euro-bonds	
U.S. Dollar	\$4,165.7	44.3%	\$1,335.2	\$945.1	\$776.3	\$658.5	\$160	\$551	\$379.5	\$364.8	
Japanese Yen	2,120.6	22.6	1,236.2	153.5	54.0	157.3	412.7	41.0	65.9	346.9	
Deutschemark	811.5	8.6	191.7	34.6	23.6	16	456.0	104.0		328.4 ^c	
Italian Lira	540.1	5.7	415.5	24.6	—	54	91.3	1.8	1.5	—	
French Franc	336.8	3.6	98.9	160.5	3.6	62.8	—	31	7.9	—	
U.K. Sterling	332.7	3.5	258.6	—	0.2	19.4	—	6.6	47.9	—	
Belgian Franc	196.8	2.1	97.0	60.4	—	7.6	27.0	4.4	0.4	—	
Canadian Dollar	192.9	2.1	78.4	0.1	63.4	31.3	0.7	0.8	18.2	—	
Swiss Franc	171.7	1.8	91	—	10.5	35.2	36.4	80.5	—	58.1	
Danish Krone	171.2	1.8	49.8	—	—	—	117.9	—	3.5	—	
Swedish Krona	160.6	1.7	68.7	—	2.4	12.8	76.6	—	0.1	—	
Dutch Guilder	128.4	1.4	77.3	—	3.9	29.8	—	12.1	5.3	92.2 ^c	
Australian Dollar	73.6	0.8	28.5	13.8	—	12.9	—	—	18.4	25.9	
Total	\$9,402.6^d		\$3,944.9	\$1,392.6	\$937.9	\$1,034.6	\$1,234.6	\$858.0^d	\$1,216.3^c		

Sector as Pct. of Public Issues in All Markets

100.0%	42.0%	14.8%	10.0%	11.0%	13.1%	9.1%
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^a Exchange rates prevailing as of December 31, 1987: ¥121.025/US\$, DM1.5698/US\$, Lit1.172.0/US\$, Fr5.322/US\$, £0.5301/US\$, Bfr32.907/US\$, C\$1.299/US\$, Sfr1.2905/US\$, Dkr6.051/US\$, Skrs.754/US\$, Dfl 1.7662/US\$, A\$1.3889/US\$, and ECU 0.762/US\$.
^b Includes straight, convertible and floating rate debt.
^c In addition, there exists an unspecified amount of privately placed issues of the private sector.
^d In addition, there was \$3.8 billion of outstanding ECU-denominated Eurobonds at year-end 1987.

Source: Salomon Brothers, Inc. International Bond Market Analysis, May 20, 1988.

Until the early 1980s, however, the external segment of the Japanese market was rather underdeveloped due to tight regulations, including extensive exchange and capital controls. Beginning slowly in the 1970s and accelerating in the early 80s, there has been considerable liberalization, especially with respect to discrimination against foreign borrowers and issuers as well as foreign financial institutions operating in the Tokyo market. By 1988, Tokyo had become the home of a modest offshore banking market for non-yen currencies, especially dollar deposits and interbank placements. Secondly, the so-called Samurai market for foreign bond issues in Japan has expanded considerably. Its growth would have been even greater had it not been for competition from the more efficient (i.e., less regulated) market for Euroyen bonds.

[Table 4 about here]

Similar trends can be seen in the banking market. While Japanese banks denominate most of their international business in dollars, they and their foreign competitors have begun to do a considerable volume in Euroyen deposits and loans. Indeed, this segment has been the fastest growing of the Eurocurrency markets, albeit from a very low base.

The Teutonic Bloc: West Germany, Switzerland, and The Netherlands

Next to the U.S. dollar and the Japanese yen, the Deutsche Mark (DM) market ranks third in world importance. The international role of this currency is enhanced because the conservative, steady monetary policy of the Bundesbank has effectively become the reference point for central bank policy of most other European countries who -- with

Table 4

Japanese Yen Bond Market
(new issues in billions of U.S. dollars)

	Samurai Bonds	Euroyen Bonds
1986	.80	3.12
1987	.39	3.40
1988	.77	2.01

Source: Organisation for Economic Co-operation and Development.
Financial Market Trends, February 1987 and February
1989.

different degrees of success -- align their monetary policies to the low inflation policy of the West German central bank. Of course, this feature is reinforced by the fixed exchange rate targets within the European Monetary System which the following countries comprise: Belgium, Denmark, France, West Germany, Ireland, Italy, Luxembourg, and The Netherlands, and Spain since mid-1989.

In the international banking market, the Euro-DM market is second only to the U.S. dollar segment. More significantly, markets for DM, Dutch guilder, and Swiss franc bonds are of considerable magnitude, as documented by data in Table 3. However, the negative effect of market fragmentation on liquidity must also be noted. For international portfolio managers, only the market for German government securities (so-called "Bunds") has the liquidity required to allow for continuous 24-hour global trading.

The financial markets in this bloc of countries are dominated by large financial intermediaries engaged in all aspects of banking (universal banks). Regulations are reasonably liberal by international standards, and the markets have a history of being usually open to foreign investors and borrowers.³

The German bond market has some further interesting features. Most notable is the virtual absence of a domestic corporate bond market. As even German corporations find it less burdensome, from a regulatory perspective, and cheaper, due to the escape from withholding taxes, to use the facilities of the offshore market. Thus, there is no real distinction between the foreign market for DM bonds and the Euro-DM bond market. Other unique features are a

relatively large market for the debentures of financial institutions (more than 50 percent of the total bond market) and a large market for debt certificates which have limited liquidity and are not securities in a legal sense.

The United Kingdom

The capital markets of the United Kingdom and France belong to the international "middle-weight" class. The United Kingdom, particularly, has a very active government market (the "gilt" market), but its international role is diminishing as the United Kingdom and pound sterling play an increasingly minor role in the world economy.

[Table 5 about here]

In contrast, London has become an international financial center and a home for the external markets denominated in other currencies. London is definitely the focus of the Eurocurrency market, particularly at the wholesale level. Interbank rates for various currencies (e.g., LIBOR [London Interbank Offered Rate], LIBID, LIMEAN) have become the pricing standards for bank funds worldwide, being frequently used even for domestic transactions. With respect to markets for fixed income securities, London has managed to attract a large proportion of the international issuing business, as well as secondary market activity in fixed-income securities (Eurobonds and -notes), major government securities markets, and even markets for equities of large companies from many countries. London has achieved this position largely due to the infrastructure already in existence, the conducive nature of the regulation, and the relatively free access to the market. Changes in the London market structure ("Big Bang") in

Table 5

The Relative Size of the U.S. Economy
(based on 1980 GDP, current prices)

	<u>% of U.S.</u> <u>1955</u>	<u>% of U.S.</u> <u>1970</u>	<u>% of U.S.</u> <u>1980</u>	<u>% of U.S.</u> <u>1990</u>
United States	100	100	100	100
Japan	6	20	40	50
West Germany	11	19	27	26
France	13	15	22	23
Britain	14	12	14	11
Canada	6	9	10	12
Italy	6	9	13	12

Source: IMF. International Financial Statistics, various issues, and authors' estimates.

1985 made the domestic market more efficient, as measured by turnover and trading spreads, but the implementation of regulatory reforms have raised questions about London's international dominance.

France

The French franc market is somewhat larger than the U.K. market. In addition, as Table 3 shows, it comprises a sizable corporate sector. However, the international role of the French market has been quite limited due to a long history of exchange and capital controls. The liberalization of both the external controls and the rules that govern internal markets has caused international investors and issuers to look more intensely at the French market. This potential has been enhanced by the growth of markets for derivative securities such as futures and options. If current liberalization and growth trends continue, the French market will become a significant regional market in Europe -- not to speak of its potential as part of an integrated European market -- provided the European Community achieves monetary unification.

Italy and Spain

The economies of Italy and Spain, in spite of their intermittent problems, have grown tremendously. However, their financial markets traditionally have been characterized by excessive regulation to accommodate heavy borrowing by the public sector. Such borrowings, indeed, caused Italy to become the fourth largest bond market in the world in 1987! Still, international investors stayed away due to

rigid regulation of fixed income markets and, most importantly, extensive foreign exchange and capital controls.

In 1987 and 1988, there was substantial liberalization of securities markets in Italy and Spain, and this attracted some international interest, particularly once the international investment community had been assured that capital and exchange controls would be phenomena of the past.

Other Markets

Outside the above-mentioned countries, viable fixed-income markets become sporadic and their international role is negligible. Minor exceptions are the Australian and New Zealand markets, where rapid and far-reaching liberalization of financial markets in the early 1980s has led to a significant growth of external markets. As data in Table 3 show, Australian dollar denominated Eurobonds comprise 25 percent of total Australian dollar bond markets.

The remaining markets may be designated largely as "exotic." There are occasional issues in Scandinavian currencies, Luxembourg francs, Kuwaiti dinars, or European Currency Units. Such securities tend to reflect "windows," where the constellation of interest rates and currency expectations induces investors to provide temporary opportunities for borrowers.

The Offshore Markets

As pointed out earlier, different national markets are separated by regulation, whereby the regulation and control of the relative money supply (e.g., the currency) represents only a relatively minor

aspect of that segmentation. In contrast, the Euromarkets are quite homogeneous, which is why many observers treat them as one market, using the term in singular form. These markets are fairly big and therefore important in and of themselves for both users and providers of funds. In addition, it is largely via the offshore market that national markets have been integrated, which justifies in a fashion the use of the term global financial market. Again, however, it is important to distinguish between intermediated markets and securities markets. The first category refers to the Eurocurrency market for bank deposits and bank loans. In contrast, securities include the Eurobond, note, and commercial paper markets.

While similar in principle, the reasons for the existence of the intermediated Eurocurrency market differ somewhat from those that explain the segmented markets for fixed-income securities. Indeed, each could exist without the other.⁴ Recognizing these determinants is not only important from the point of view of understanding markets, but also with respect to the analysis of market imperfections that allow arbitrage transactions. Indeed, much of what is known as financial innovation is based on an exploitation of variations in offshore-onshore differences in terms of interest rates and financial contract provisions.

The Catalyst of Regulatory Costs

Beginning in the early 1960s, the external market for bank deposits and assets came into existence because banks operating domestically (a category that includes foreign-owned banks) are burdened with costly regulations. These regulations include reserve

requirements, the cost of deposit insurance schemes, taxes, and other factors. By the same token, regulations and political pressures that force banks to book assets that are inferior from a risk-return point of view make financial intermediaries in national markets less competitive. Thus, costs have forced the shift of deposits and bank assets from national markets to "books" offshore.

Nonresident Convertibility

This basic condition has to be complemented by another: offshore banks must be able to clear payments in the respective national payment system, since at the beginning and end of every offshore deposit, and at the beginning and end of every loan, a payment must be made through the clearing system of the country where the respective currency is legal tender. Technically speaking, this system requires the existence of nonresident convertibility as a necessary, but not sufficient, condition for the existence of an offshore banking market. Without it, offshore transactions can only happen on a brokered basis by matching placers and takers of funds. In addition, transactors must have some freedom from exchange controls, because all offshore deposits and loans are international transactions from a legal point of view.

Risks: Real and Perceived

The competitive advantage of the external markets is curtailed, however, by the risks that market participants perceive to be associated with offshore deposits and loans. In this context, the concept of "sovereign risk" is particularly relevant.⁵ It refers to

the possibility that depositors may be deprived of access to their funds, or that offshore banks may be unable to fulfill their loan commitments, as a result of governmental action in the offshore location.

Risk perceptions, therefore, curtail the amount of funds that are shifted to the offshore market. Yet, through time, these risk perceptions have been substantially reduced and since the mid-1970s the rate advantage of Eurodollar deposits and loans over their domestic equivalent is largely governed by cost factors.

According to the authors' rough estimates, by the mid-1980s, almost 50 percent of all U.S. dollar time deposits and associated loans were booked offshore. The proportions for other currencies are smaller, but they are still significant: 20 to 30 percent of Swiss franc time deposits are intermediated outside of Switzerland, between 10 and 20 percent of German time deposits are offshore, and similar magnitudes prevail for other major countries.

Foreign Issuers and Domestic Investors

With respect to the Eurobond market, the set of market imperfections responsible for its existence is based essentially on a regulatory dichotomy: foreign borrowers are prevented from issuing securities in national markets in various ways. (Sometimes these restrictions also pertain to domestic corporate issuers, especially when government preempts the domestic market.) On the other hand, the regulations that might prevent domestic investors from purchasing foreign securities are either less rigid or simply unenforceable.

In this context, investors throughout the world have learned that "country risk" begins at home. High rates of taxation, the existence or threat of exchange controls, political instability, and often an interest rate structure that is kept artificially low have caused people with money to keep a portion of their savings outside their own borders. Often this group comprises the better part of the middle and upper classes in many countries. The havens are well known; they include Switzerland, Luxembourg, London, Singapore, Hong Kong, and the Caribbean. The United States is also an important recipient of "flight capital."⁶

Medium-term, fixed-income obligations of well-known entities denominated in strong currencies (essentially U.S. dollars, the currencies of the DM bloc, and the Japanese yen) represent the ideal vehicle for this investment clientele. Such securities are issued and largely placed outside the respective countries where these currencies are means of payment. They are therefore free from withholding taxes and assure anonymity to the holder because they are invariably issued in bearer form. And, while the Eurobond market has attracted a fair share of institutional investors, the market is to a great extent dominated by the behavior of individual investors. Indeed, with the wave of liberalization of major -- and even not so major -- national markets in the first half of the 1980s, many institutional investors pursuing active portfolio strategies have shifted their investments back into the national markets, where they find securities with better liquidity.

Arbitrage Opportunities

It is indeed the difference between the reaction of institutional investors who dominate in national markets and individual investors whose behavior characterizes the offshore markets -- in conjunction with some mild form of market segmentation -- that gives rise to dynamic arbitrage opportunities.

First of all, it must be recognized that access to offshore and onshore markets is limited both for issuers and investors. National markets discriminate against foreign issuers. To illustrate, even in a relatively liberal market such as the United States, foreign issuers find it burdensome to comply with the comprehensive SEC disclosure requirements. In addition, a number of important U.S. institutional investors, such as insurance companies, public pension funds, and others, face restrictions concerning the purchase of securities issued by foreign entities.

From the investor's perspective, governments attempt (not always successfully) to gain revenue from nonresident investors by imposing a withholding tax (or source tax) on interest, dividends, and royalties paid to nonresidents. By the same token, many countries issue only registered securities in the national market, which deprives the offshore investor of the anonymity he or she wants.

These failures to arbitrage are obviously not complete, and they would not lead to different market prices were it not for a second set of variables: the institutionally dominated national markets react differently to credit evaluation, currency expectations, and maturity preferences, as compared to the offshore markets where individual

investors' concerns prevail. To illustrate, while institutional investors judge creditworthiness by "objective standards" such as the designations of professional rating agencies, individual investors put little faith in these agencies because they do not provide any form of money-back guarantee. Instead, individual investors tend to judge creditworthiness by "name," which usually reflects the quality perceptions of the issuer's product. By the same token, only people who invest other people's money will buy fixed income securities with a maturity of 15 to 30 years and more. Individual investors, especially those who come from countries where political turmoil and monetary instability prevail, will not even consider maturities beyond 5 to 10 years due to the perceived inflation and credit risk.⁷

Concerns about changes in exchange rates weigh much more in the offshore market: individual investors have long learned to analyze the value of their holdings in terms of real purchasing power measured in terms of an international basket of goods and services. Institutional investors, on the other hand, discharge their fiduciary responsibilities by providing their beneficiaries with a return set in nominal terms.

Recognition of the dynamics of partially segmented markets is not only important for gaining an understanding of the global financial marketplace in general. It is also necessary in appreciating another recent phenomenon in global capital markets, financial innovation.

FINANCIAL INNOVATION

Beginning in the 1970s and accelerating in the early 80s, financial markets have seen a wave of new instruments and techniques. One of the motivating factors was advances in information technology, particularly the spread of personal computers throughout the financial industry. Further, increasing interest rate and exchange rate volatility worldwide has fostered the demand for hedge products. Last, but not least, the results of academic financial research were increasingly implemented by financial service providers who offered new products to a receptive market.⁸

It was particularly the development of markets for "derivative" securities, such as futures and options, that led to further developments along these lines. Market participants learned to "unbundle," or "strip" financial contracts into their various components and, by the same token, put them together again into securities that suited the needs of their clients. And this demand was often driven by market imperfections, usually based on regulatory discrepancies.

It was not surprising that the offshore markets generated more than their fair share of financial innovation, with respect to both conceptualization and implementation. This was simply because regulatory discrepancies as well as differences in market perceptions of various investor groups provided fertile soil for financial engineering. This inducement on the demand side was furthered by unique conditions on the supply side. In the offshore markets, which

are characterized by almost complete freedom of entry, various financial institutions met head-on in a field open to all comers.

It is not surprising that complaints are frequently heard about the lack of profitability and competitive excesses in the Euromarkets. Nevertheless, these dynamic changes have been largely beneficial for market users. Figure 2 summarizes financial innovations in the bond market; it shows that the markets have spawned a wide variety of instruments that divide and allocate various burdens and risks to the counterparty that is best able to bear them.

[Figure 2 about here]

Most importantly, many of these innovations emanating from the offshore markets quickly found their way into national markets, contributing to an increase in choice for users of financial markets.

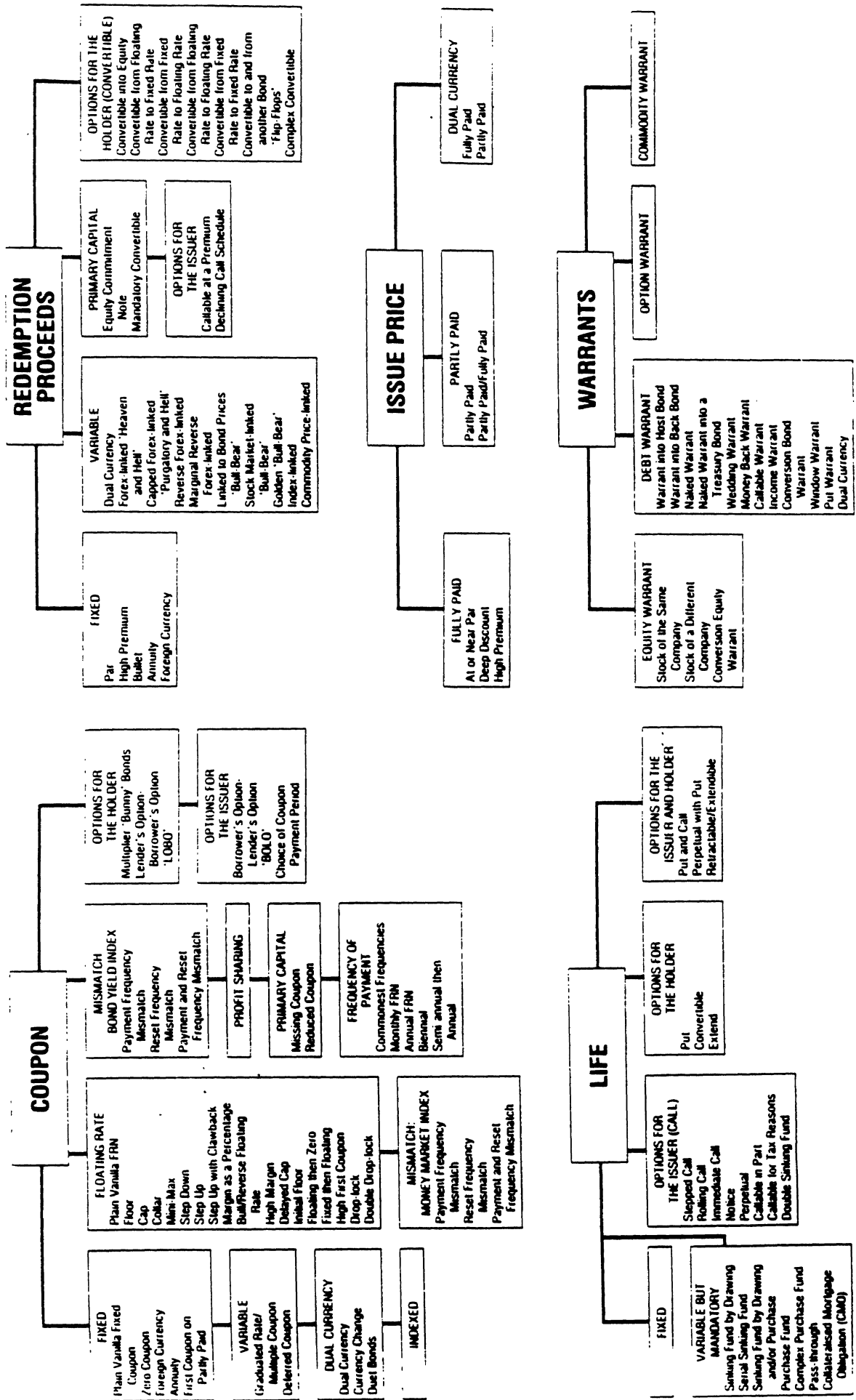
We shall conclude this survey by reviewing markets for Eurocommercial paper and medium term notes, the growing market for facilities, and the global swap market. These submarkets are good illustrations of financial innovation, as well as being important in their own right.

EUROCOMMERCIAL PAPER PROGRAMS

At first sight, it may seem odd to use Commercial Paper (CP) to illustrate an offshore market innovation since it has a long and successful history in the U.S. domestic market.

The origins of commercial paper in the United States go back almost a century. The market has grown tremendously, and at the end of 1987 it reached a volume of \$350 billion. Corporations and their captive finance companies are the most important issuers. They

Figure 2
A Classification of Innovations in the Bond Market



Source: Mason, Richard. Innovations in the Structure of International Securities, CSFB Research, Credit Suisse First Boston, September 1986.

efficiently raise funds by placing short-term notes with investors, either directly or through a dealer. Many of the investors are cash-rich corporations, but there are many other buyers, including money market mutual funds and more traditional institutional investors. Since this investor clientele tends to be risk-averse, an acceptable rating by one of the credit agencies, such as Moody's or Standard & Poor's, is essential. Furthermore, since the market tends to reject the name of an issuer whose credit standing becomes suspicious, or on rare occasion, when the CP market as a whole is affected by general concerns about credit, assured availability of funds becomes a problem. For that reason, issuers in the U.S. market obtain "committed back-up lines" from banks for a small fee; the banks will make (higher-priced) funds available when the issuer is shut out from the CP market.

In the 1980s, the U.S. CP market has received an additional boost by allowing foreign issuers, or domestic issuers with lesser-known names, to sell paper under a letter of credit (L/C) from a reputable financial institution, which effectively transfers the credit risk to the issuer of the L/C.

The essential reason for a CP market is that it eliminates the need for the financial intermediary and its cost. This makes sense only if the service provided by the intermediary is not worth its cost. Traditionally, the U.S. market has been characterized by a fragmented banking system that had to bear a number of regulatory costs. At the same time, the nonfinancial sector offered a wide variety of creditworthy corporate issuers. With the weakening of the

large banks due to the LDC debt crisis, the banking sector has also lost credit standing in relative terms and the CP market has flourished accordingly.⁹

Eurocommercial Paper

Eurocommercial Paper (ECP) is different. Like its U.S. counterpart it is an unsecured promissory note, but it is issued and placed outside the jurisdiction of the currency of denomination. ECP was introduced in the early 1970s when U.S. capital transfer restrictions forced U.S. corporate borrowers to raise funds abroad. However, the ECP market confronted a fundamental problem. The major incentive for avoiding intermediation -- avoiding the regulatory cost -- was absent in the Euromarket. Thus, bank borrowing and Eurodollar deposits provided for effective competition. Disintermediation was unattractive until 1982, when the credit standing of major banks began to deteriorate, both onshore and offshore. The relative strength of nonbank borrowers, largely well-known multinational corporations and governmental entities, gave them a significant cost advantage over banks, while at the same time investors were willing to accept lower yields in order to avoid perceived bank risks.

A Comparison between U.S. and Eurocommercial Paper

A comparison between U.S. CP and ECP illustrates a phenomenon already found in the Eurobond market: various regulations and institutional practices introduce mild barriers to arbitrage, while at the same time investors in each market are driven by somewhat

different criteria that lead to (variable) cost differentials between the two markets.¹⁰ The market characteristics separating the dollar ECP market from the U.S. CP market are as follows:

- Buyers of ECP, coming from a broad range of countries, draw credit distinctions but do not divide issuers consistently by nationality. U.S. investors in CP systematically require foreign issuers to offer higher yields than like-rated U.S. issuers.
- The average rating of U.S. issuers in the ECP market is of significantly lower quality than U.S. issuers in the U.S. CP market. Foreign issuers in the United States show a distribution of quality significantly better than that of U.S. issuers in the ECP market.
- Central banks, corporations, and banks are the important parts of the investor base for particular segments of the ECP market. The most important U.S. CP holders -- money market funds -- are not very important abroad.
- The average maturity of ECP remains about twice as long as that of U.S. CP. Thus, ECP continues to be actively traded in the secondary market; in contrast, most U.S. CP is held to maturity by the original investors.
- Issuing, clearance, and payment of ECP are more dispersed geographically and more time-consuming than U.S. CP.
- Dealing is highly competitive in the ECP market; in contrast, two firms dominate half of dealer-placed U.S. CP.
- To date, all ECP has been placed by third parties. Many U.S. CP issuers place paper directly with investors.
- Credit ratings and committed back-up lines associated with them are necessary in the U.S. CP market; in the ECP market, they are common, but paper can be sold without such credit enhancement.
- ECP has been and mostly continues to be priced in relation to bank deposit interest rates. Pricing in the United States is based on absolute rates that vary in relation to rates on Treasury bills and bank certificates of deposit (CDs).

MEDIUM-TERM NOTE PROGRAMS

In contrast to Commercial Paper, medium-term notes (MTNs) had their origins in the Tap CD markets offshore. A medium-term note is

simply an IOU with a maturity anywhere from six months to 10 years, placed at the issuer's risk without the firm underwriting commitment that we find in the bond market. In this respect, the MTN market is very similar to CP. Except for the method of underwriting and distribution, however, most of the characteristics of MTNs are similar to those of bonds: they pay coupons, the securities are cleared in the same way, and the same documentation is required.

From the issuer's perspective, a company may issue according to its needs for funds and exploit special "windows" of temporary demand for its paper over certain maturity ranges. The flexibility of the medium-term note structure is what appeals to issuers; like CP, it is a continually offered program with wide-ranging maturity options. Issuing houses appreciate MTNs too; unlike bond underwriting, they do not take an underwriting risk. Investors like MTNs, because the placement house's commitment to make a liquid market is kept alive as long as it is interested in managing the MTN program.

In contrast, with a bond issue, once the bonds are placed, the investment bank quickly loses interest in making a secondary market. The difference in the distribution method also affects the type of customer. Large bond issues tend to favor institutional investors who will relieve the issuing house of its underwriting commitment by snapping up a large chunk of the issue. MTN programs, in contrast, are more flexible and appeal to the upper segment of private investor clientele, who are willing to make yield concessions in return for an acceptable name and a believable promise of liquidity.

MTNs combine Euromarket as well as national market features.

FINANCING FACILITIES

While Commercial Paper is clearly a security, ingenious bankers in the offshore markets have created an interesting hybrid that is important both by itself and conceptually. These new "facilities" combine the elements of intermediated and direct markets for credit.

Facilities are truly a financial innovation insofar as they "unbundle" features of financial contracts that are normally combined. In a syndicated loan, a group of banks provides a borrower with the option to draw down funds within the overall credit limit at its convenience after giving short notice. Thus, they sell availability for a commitment fee. Pricing of drawdowns is relative to a base rate -- typically above, at, or below LIBOR.

Facilities have made large inroads into the market for syndicated credits, as they are based on the principle of "divide and conquer." They take advantage of the fact that there are institutions that don't mind providing, for a fee, an availability guarantee (underwriting commitment) but don't like to book a low-yielding asset. When the borrower requires funds, he issues notes which are then placed at a maximum yield, say LIBOR + 1/8 or less, with investors.

These institutions are very much opposed to providing cash for a long time, largely because of their own uncertain liquidity needs. However, they don't mind parting with excess funds for a limited period of time, say, three or six months, as long as they can change their minds at maturity. Their appetite for such short-term paper is

further increased if they can be assured that the paper they buy has a reasonable secondary market.

Because the participants in facilities need only provide what they want to, pricing is keener. In addition, facilities have borrowed other techniques from the securities markets, such as the competitive bidding procedure, which enables those institutions with the best placing power to get a larger share of the total distribution of paper within the framework of a facility.

In the early days of the facilities, banks could book the commitment of availability as an off-balance-sheet item and this contributed to the success of this innovation. But regulators, primarily in London, quickly forced the banks to allocate capital to these commitments. This rule has obviously slowed down the growth of such facilities, but profit-seeking financial institutions are inventive. The market quickly saw the growth of the next generation of facilities, so-called multi-option facilities, or MOFs. Under such an arrangement, the committed portion of the total facility is quite limited, thus minimizing the burden on banks' capital ratios. However, the relatively small committed portion of the total facility is surrounded by layers of borrowing opportunities in short-term paper markets, particularly markets for Commercial Paper where they exist and/or Bankers' Acceptances in a variety of countries and currencies.

While not the answer to all problems, facilities have become a permanent feature in the international banking markets and some of their aspects (e.g., the competitive bidding features) have found

their way into domestic markets in the form of competitive advance facilities, or CAFs.

THE GLOBAL SWAP MARKET

Swaps are probably the most successful financial innovations to surface in the early 1980s. The word swap simply denotes an exchange of different cash flows; in other words, two parties agree to pay each other the net amounts of periodic future cash flows. This involves the equivalents of periodic interest payments ("coupons") or principal.

The specification of the cash flows serves as the foundation for classifying swaps. When periodic cash flows are defined in terms of different reference rates within one currency market, they are referred to as interest rate swaps. The most frequent example would be an exchange of payment streams, one based on long-term Treasuries, the other on a short-term money market rate, usually LIBOR (London Interbank Offered Rate). Obviously, parties can also exchange cash flows based on two different short-term money market instruments, e.g., three months LIBOR against 90-day T-bills, or a 90-day CP (Commercial Paper) index compiled by the Federal Reserve. Such interest rate swaps are referred to as basis swaps. Since in such interest swaps the principal amount is unaffected -- only "notional" -- it is used only to define the size of the periodic payments.

This feature of principal protection is different with respect to a second category of swaps that involve the exchange of cash flows denominated in different currencies, naturally called currency swaps.

Since exchange rate changes affect the value of the respective amounts of principal, currency swaps do involve the amounts of principal in each currency as the final cash flows to be settled. For this reason, they are riskier than interest rate swaps.

Finally, cash flows can be exchanged that differ both in terms of exchange rates and interest rate basis. Not very imaginatively, such swaps are usually called cross-currency interest rate swaps. Apart from these basic swaps, fertile minds have developed many variations, such as swoptions, deferred swaps, zero-swaps, amortizing swaps, and so on.

Risks in Swaps

Swaps are conditional exchanges of cash flows; that is, one party is only obliged to make the stipulated payment if the counterparty performs its obligation. This does not mean that swaps are without credit risk. While the expected values are the same for each stream of future cash flows at the initiation of the swap agreement (otherwise the parties would not agree to a deal), the actual values of the respective cash flow obligations will invariably change over time in line with changes of the different bases for rates of interest or relative currency values. This condition leads to default risk in the swaps market.

How to explain and control these swap risks has been a vexing problem for financial institutions and regulators alike.¹¹ Nevertheless, swaps are such an elegant technique to change the configuration of cash flows without affecting the underlying asset or liability, they will surely endure regulatory problems. Figure 3

shows the effects of swaps on the international capital market: they are becoming the mechanism for linking, and thus integrating, the various segments of the global capital market.

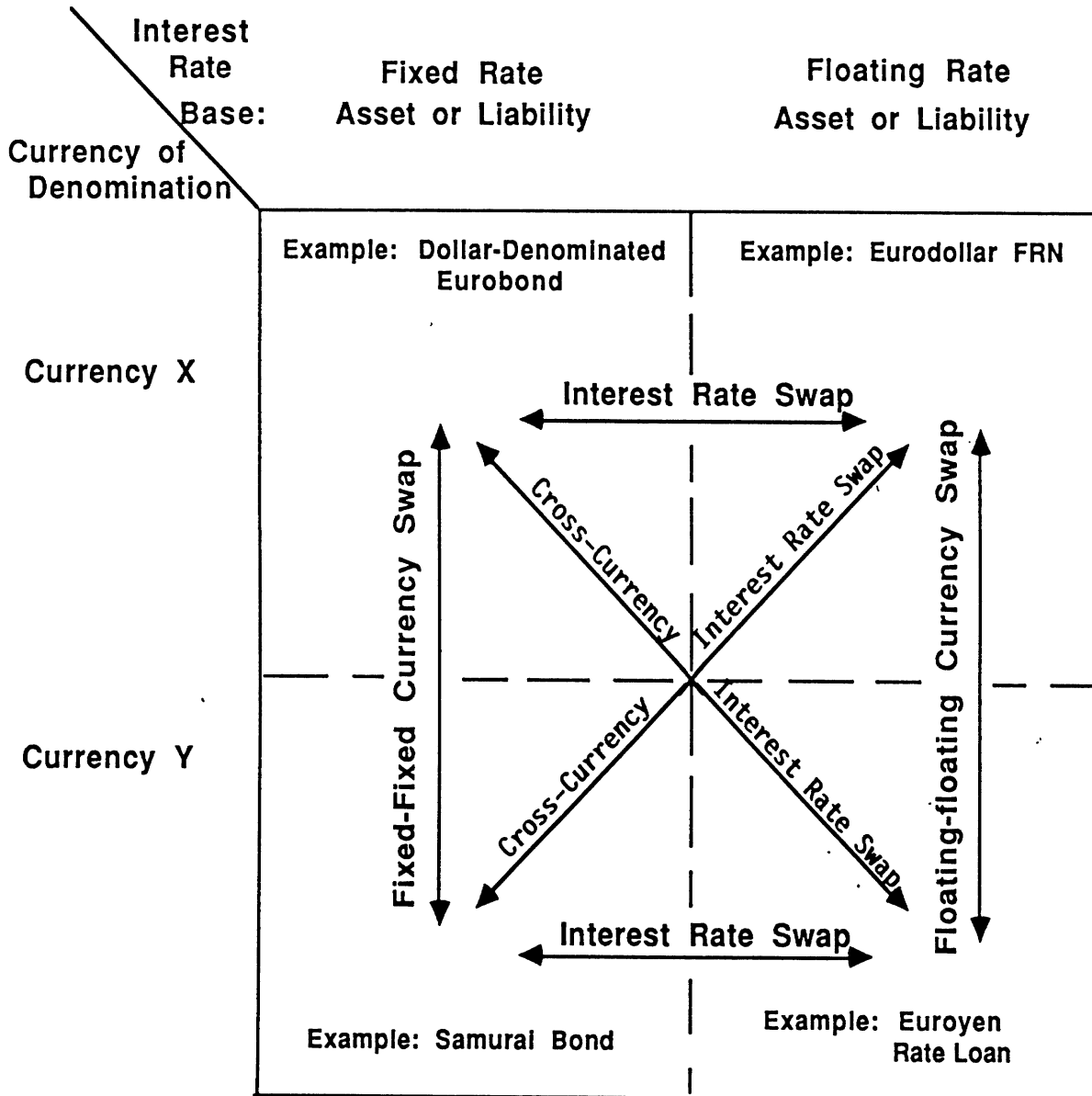
[Figure 3 about here]

SUMMARY AND CONCLUSIONS

This review of the global financial markets focused on their structure. It provided a conceptual framework that should permit the novice to quickly find his or her way around the complex markets and their arcane terminology. Subsequently a tour of the major national markets for fixed-income securities was provided. The survey supplied more detail on the offshore markets, or Euromarkets. The factors segmenting markets and those that impact differently on various market segments were emphasized. The closely related phenomenon of financial innovation was defined and illustrated with brief reviews of the global CP and MTN markets, the market for facilities, and, finally, the swap market. Throughout this survey, the emphasis is on conceptual clarification and on illustration of the economic forces shaping the markets.¹² Finally, it must be stressed that none of these factors is static. This is particularly true for various aspects of government regulation and taxation, factors that introduce constant change into the global financial market picture.

Figure 3

How Swaps Link the International Capital Markets



Source: This chart has been developed by Ian H. Giddy for use in Gunter Dufey and Ian H. Giddy, The International Money Market, forthcoming, Prentice Hall.

NOTES

- ¹Hood and Young (1979), among others, present a comprehensive review of the theory of the foreign direct investment.
- ²Of course, the channels may be combined. A bank, for example, may fund itself by issuing negotiable securities.
- ³All these countries have, however, imposed restraints on both issuers and investors at times when their markets have been under pressure.
- ⁴There is also alleged to be a market for Euroequities. On closer inspection, this turns out to be a matter of journalistic hyperbole. New equity issues of multinational companies are increasingly distributed internationally and may have been listed on a number of major stock exchanges. However, equities cannot be differentiated like fixed-income securities; thus, prices in secondary markets tend to be quickly adjusted through arbitrage, and trading concentrates on one market, usually the domestic stock exchange of the corporation.
- ⁵For a detailed discussion of the risk of Eurodollar deposits, refer to Dufey and Giddy (1984)
- ⁶Williamson and Lessard (1987) and Ingo Walter (1985).
- ⁷Because of transaction costs and inconvenience, they usually will not invest in short-term money market paper, either.
- ⁸For a detailed discussion of financial innovation, see Rawls and Smithson (1989) and Lucas et al. (1987).
- ⁹The U.S. CP market is unique; nowhere else in the world are conditions so well developed for a viable CP market, i.e. a fragmented banking system burdened with costly regulation and great numbers of corporate issuers and investors. Only in Japan are these conditions also present, and indeed a CP market evolved quickly once regulations permitted it. Governments are generally not in favor of a CP market, as it limits attempts to direct the flow of credit and the ready availability of liquid short-term paper may make the implementation of monetary policy a bit more difficult.
- ¹⁰McCauley and Hargraves (1987).
- ¹¹The problem lies largely in the inconsistencies of traditional bank accounting: loans are booked on an accrual basis, swaps and other traded securities are marked to market. Thus, a given interest rate change has a different effect on a fixed-rate loan in contrast to a floating-rate loan whose rate has been fixed with a swap.
- ¹²For a comprehensive description of the various instruments, see Salomon Brothers, Inc., Global Fixed Income Catalog, 1987, updated.

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