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# THE EUROMARKETS AFTER 1992

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ABSTRACT

Over the last three decades, differential national regulation in conjunction with increasing capital mobility has given rise to tremendous growth in the Eurocurrency markets. In this paper, we analyse whether the announced plans of the European Commission to remove barriers to capital flows (in July 1990) and to harmonize other financial regulations (by the end of 1992) will have a major effect on the Euromarkets.

The analysis in this paper revolves around the concept of the Net Reguatory Burden (NRB). Three variables will play a crucial role for the development of the Euromarkets after 1992. These are (1) reserve requirements on bank deposits, (2) taxation of residents and non-residents on interest income, dividends and capital gains, and (3) disclosure of interest and dividends to tax authorities. Presently there is considerable variation in these factors across Europe. Competitive pressures should lead to a convergence of regulation, but national sovereignty leaves open the possibility for some divergence of the NRB across European countries, and in comparison with other financial centers such as Switzerland. These differences in NRB will play a key role in determining the location and size of Euromarkets after 1992.

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# THE EUROMARKETS AFTER 1992

by
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## I. Introduction

Financial markets and institutions hold a critical place in modern market-based economies. Through their pivotal role in the execution of money and credit policies, and their operation of the payments mechanism, many officials and academics consider firms within the financial services sector (and banks in particular) as 'special' institutions. Quite naturally, then, government officials who are held responsible for the performance of their domestic economies have seen fit to place their domestic banks and financial institutions under close regulatory scrutiny. The fiduciary nature of many financial transactions, and the susceptibility of the financial sector to recurring crises have added to the argument for tight supervision.

Throughout most of the twentieth century, a complex set of regulations have evolved to circumscribe and monitor the activities of firms offering financial services. These regulations entail both costs and benefits for individual firms. As regulations act to promote public confidence in financial institutions, restrict entry into the industry, or supply ancillary services (e.g. deposit insurance, wire transfers) below their costs, private firms benefit. On the other side of the equation are the costs that hit private firms, such as foregone interest on required reserves, foregone earnings from excessive capital requirements, and foregone revenues from limits (e.g., geographic, product line) on their activities. The difference

between these costs and benefits measures the Net Regulatory Burden (NRB) placed upon private firms.

In a single, closed economy with a lone regulatory body, we expect that private firms will use financial innovations, product repackaging, and other strategies to minimize their NRB. A single economy may have many regulatory bodies at the Federal level, complemented by a host of other regulatory groups at the State and local levels.[1/] These regulators compete with one another to enhance the reach of their regulatory domains. Domestic financial firms appreciate this competition which widens their scope for reducing the NRB. In this game-theoretic setting, domestic regulators are likely to respond to private initiatives with reregulations in an effort to recover part of their lost regulatory domain.

In the open, world economy with many governments and many regulatory authorities, we find a still more fertile ground for firms to reduce their NRB. National regulatory authorities may compete on the basis of NRB. Again, private firms benefit from this international competition, especially if financial innovation and technological change allows them to operate successfully at a distance from their home office.

The primary thesis of this paper is that the Eurocurrency market is a natural outgrowth of differential national regulation set in a world with declining barriers to capital movements and increasing capabilities in telecommunications and data processing. The Eurocurrency market and its offspring (the Eurobond, Euro-commercial paper, and Euro-equity markets) comprise one of the most important financial innovations of the

last forty years. The key to the innovation is an example of "unbundling," in this case, taking the exchange risk of one currency (the U.S. dollar, for example) and combining it with the regulatory climate and political risk of another financial center. The Eurocurrency and Eurobond markets, which were virtually non-existent until the late 1950s, have grown to become major centers of activity and influence.

My assigned task in this paper is to assess the prospects for Euromarkets in the post-1992 era. I will not attempt an unconditional forecast for the Euromarkets. The more valuable conclusion we reach is that the prospects for the Euromarkets are conditional on the regulatory balance, both among European Community (EC) countries and between EC and non-EC countries. In our context, it will be convenient to summarize the regulatory balance in terms of the Net Regulatory Burden in competing financial centers.

In reaching this conclusion, we draw out a number of other implications based on the dynamic interplay between regulators and regulatees in the open economy. First, our reading of the evidence suggests that the equilibrium Net Regulatory Burden ($NRB^*$) that can be assessed in any country has fallen because of increased competition among financial services firms and technological change. Second, if private firms feel that their regulatory burden is too high, one strategy open to firms is to transfer some of their activities to another regulatory jurisdiction -- i.e. "structural arbitrage." Financial innovation, technological change and the accumulated experience

of financial services firms in dealing with change have very likely narrowed the 'neutral band' around NRB* needed to induce structural arbitrage.

Together, the first two points suggest that the scope for maintaining a radically different regulatory regime is dropping, as is the scope for inflexibility in policies, quantitative controls, taxes, etc. for meeting domestic macroeconomic/monetary policy objectives. Countries will be driven, de facto and endogenously, toward harmonization. Active coordination of regulation may be useful, but there should be a continuing need for flexibility because of the dynamic nature of financial services. As a long-run proposition, the equilibrium, sustainable NRB* is probably greater than zero, because of the uncertainties inherent in financial contracting, political risks, the value attached to promises of official regulatory authorities regarding their onshore markets, and the convenience associated with onshore transactions. This suggests that even if transactions costs approach zero and an island state promotes a NRB that also approaches zero, that island state will not attract all of the world's financial services business.

Regarding the Euromarkets in general, and the offshore markets for EC currencies in particular, our title suggests the question of whether there will be a Euro-DM in London, a Euro-Lira in Paris, and so forth after 1992? In this paper, we take '1992' as a metaphor for the bold plan adopted by the European Commission. The plan calls for the abolition of all capital controls among participants in the European Monetary System by July 1, 1990 and this is really the key date for our analysis. It

is after this date (rather than December 31, 1992) that all EC residents will share the flexibility to move capital freely between onshore and offshore markets.

After July 1, 1990, incentives for offshore markets may drop because of liberalization and relaxation of controls in onshore markets. Nevertheless, incentives will still exist as the NRB for DM or Lira onshore will likely be higher than it is offshore based on the need for onshore regulators to meet their domestic monetary policy objectives. As financial centers, however, London and Paris will still face competition within the EC (e.g. Luxembourg) and from outside the EC (e.g. Switzerland)

In the case of offshore markets for non-EC currencies, the incentives for a Euro-dollar market in London, Luxembourg or Paris will continue as before. The fact that non-EC centers (e.g. Singapore, Hong Kong, etc.) have not taken over the Euro-dollar market suggests that these centers have pushed their regulatory competition to the limit. However, if the EC reregulates to increase its NRB (such as by new withholding tax laws or increased disclosure rules, such as have been discussed), migration of the Euro-dollar market to non-EC centers would be a likely outcome.

Our focus on the NRB is to facilitate the exposition of a stylized model. Holding other factors constant, we will demonstrate the role played by the NRB. Both borrowers and lenders may be willing to trade off a high NRB against other factors -- convenience of local transactions, market liquidity, local market expertise, and so forth -- which are not dealt with

here. The optimal level of the NRB*, its relations to economy-wide, systemic risks, and the distribution of the NRB (across shareholders, depositors, and taxpayers) are other interesting issues that are left as important but unanswered questions.

In the remainder of the paper, section II presents an overview of the Eurocurrency market including its origin, growth, pricing mechanics, and important innovative features. In section III, we develop the theme of international competition in regulation. The Net Regulatory Burden concept is defined and we discuss the notion of structural arbitrage. The main features of the plan for EC financial markets in 1992 are reviewed in section IV. We also discuss those regulatory factors that may remain unresolved by 1992 and how they are likely to effect the Euromarkets. A concluding section presents our conditional forecasts about the Euromarkets and the development of European financial centers.

## II. Origins and Essentials of the Eurocurrency Market

The Eurocurrency market -- the market for deposits denominated in a currency different from the indigenous currency of the financial center -- took shape in the 1960s as something of an enigma, but unimportant enough to be overlooked. As the market expanded to financial centers outside of Europe (such as the Bahamas, Singapore and Hong Kong), the term 'offshore' (as distinct from onshore) became more appropriate to describe its location. As the market grew in scale and in scope (to include currencies other than the dollar), officials saw it, at best, as a minor nuisance -- something to make the formulation of monetary

policy a bit more difficult, and at worst, as a major policy issue -- an unregulated and independent source of instability in world financial markets. Today the Eurocurrency markets are a common and well-accepted fixture of the international financial markets.

a. Historical Overview

The founders of the Eurocurrency market did not set out to create a market that would rival U.S. financial markets in terms of size and importance. The objective of British merchant banks in the late 1950s was simply to overcome Bank of England restrictions on the use of Sterling for external loans. Their solution was pragmatic -- use the U.S. dollar to conduct these transactions from accounts based in London. Since Bank of England regulations did not cover the U.S. dollar, British merchant banks could set competitive interest rates to attract deposits and offer external loans denominated in dollars.

But the solution was also innovative, not simply because it had never been done before, but because it gave the market an early illustration of "unbundling" -- in this case, taking the exchange risk of one currency and combining it with the regulatory climate and political risk of another financial center. Perhaps some officials did see the genius of this innovation and the impending snowball about to be set loose. When Paul Einzig, the journalist for the Financial Times, first came across the market, he was asked not to write about it.[2/]

The Eurocurrency market got an additional boost from the Russians, who at the time were reluctant to hold their U.S.

dollars (needed for international trade transactions) in U.S. accounts. Instead, they deposited their dollars in London and Paris with affiliates of state-owned Russian banks.[3/]

A more important, although temporary, stimulus to the Eurocurrency market was the set of credit restrictions and capital controls imposed by the United States during the 1963-78 period. In response to the undesired build-up of dollars overseas (dollars that the United States was obliged to convert into gold at $35 per ounce) the United States adopted the Interest Equalization Tax (IET), effectively an excise tax on American purchases of new or outstanding foreign securities. But the IET resulted neither in new tax revenues for the United States, nor a halt to the accumulation of dollars abroad. Rather than pay the tax or halt dollar lending to foreigners, the borrowing activity simply shifted its locus to the Eurocurrency markets in London and Luxembourg. Other U.S. regulations such as the Foreign Credit Restraint Program ("voluntary" in 1965 and mandatory in 1968) gave firms further incentives to investigate the Eurocurrency markets. These measures were eliminated in 1974.

European governments also experimented with capital controls during this period which similarly helped to promote the non-dollar segments of the Eurocurrency market. Bundesbank rules requiring foreigners to place funds at the Bardepot in non-interest bearing accounts, and the negative interest rates imposed on foreigners by the Swiss National Bank are two examples. These German capital controls expired in 1974, and the Swiss negative interest rates were abolished in December 1979.[4/]

The lasting stimulus to the Eurocurrency market, then, has been the differential regulation between offshore and onshore banking operations. As we will review, particular U.S. banking regulations (i.e. interest rate ceilings on time deposits, mandatory reserve requirements held at zero interest, and mandatory deposit insurance) became increasingly costly throughout the 1960s. By setting up their deposit-taking and lending operations offshore, banks were able to reduce their costs, passing on more favorable rates to both depositors and borrowers.

b. Growth of the Eurocurrency Market

The data in Table 1 indicate the growth of the Eurocurrency deposit market, from essentially zero in 1960 to over $4.5 trillion on a gross basis and $2.2 trillion on a net basis (netting out all interbank deposits) in March 1988. The market has grown at a compound annual rate of approximately 20% over the last 15 years. The market, once exclusively dollar-denominated seemed to stabilize during the 1970s with a roughly 75-80% dollar share. Recently, however, the dollar's share has fallen to about 65%. Simply as a matter of accounting, the dollar's share of the Eurocurrency market falls as the dollar depreciates against other currencies. But the use of other currency units, especially the Japanese yen, has clearly accelerated.

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Insert Table 1 Here

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Data on the geographic reach of the market is reported in Table 2. Europe has been the dominant region, and the United Kingdom the dominant country. Europe and the U.K. appear to have

lost market share, although some of the decline is spurious because the Bank for International Settlements (BIS) has increased their reporting coverage. Japan has substantially increased its market share, coinciding with its capital market liberalizations of the past few years. At 14.1% in 1987, Japan ranks second. The United States has roughly maintained its market share. The establishment of International Banking Facilities (IBFs) in 1981 which permit offshore transactions for non-U.S. residents helped the U.S. to attract deposits from the Caribbean and elsewhere.[5] The remaining 20% of the cross-border deposit market is spread over a large number of other countries. Again, some of this increase is spurious because of improved reporting coverage.

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Insert Table 2 Here

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In terms of several dimensions -- scale of operations, number of currencies represented, and geographic spread of financial centers -- the Eurocurrency market has emerged as a world-class market.

c. Pricing of Eurocurrency Deposits and Loans

For our purposes, it will be convenient to imagine a world with n currencies and n countries or financial centers. To begin with, consider the case of one currency (the U.S. dollar) and two financial centers (New York and London). The relationship between onshore and offshore interest rates can be easily developed within the context of a loanable funds framework.[6]

Suppose that in the onshore market, the demand (D) for funds depends on the required rate of return on available projects,

while the supply (S) of funds depends on individuals' rates of time preference. The curves take on the expected slopes as illustrated in Figure 1. In the absence of transactions costs, equilibrium would be at point A. However, banks incur costs in collecting deposits and in servicing loans. The major categories of costs are (i) non-interest bearing reserves at the Federal Reserve, (ii) FDIC insurance, (iii) credit review, (iv) asset-liability risk management, (v) taxes, and (vi) administrative overhead. If, after reaching a given scale, these costs can be summarized by an amount $\underline{x}$, then the onshore market will reach an equilibrium with deposit rate $R_D$, lending rate $R_L$, and market size Q.

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Insert Figure 1 Here

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Now assume that a new market in U.S. dollar-denominated balances opens in London. Americans will supply dollars to the offshore market only if they are compensated for bearing the extra costs and risks associated with London. Since Americans can earn $R_D$ with minimum inconvenience and no political risks in the onshore market, the supply curve to the offshore market (S') is hinged at $R_D$.[7] Similarly, in the absence of capital controls, no borrower would travel to London to pay a higher price for funds.[8] Therefore, the demand curve for offshore funds (D') must be hinged at $R_L$, reflecting the unfunded projects along segment $\underline{yz}$ of D.

Assuming that the cost of collecting deposits and servicing loans in the offshore market ($\underline{x}'$) is less than in the onshore market, we can determine the offshore deposit rate $R'_D$, lending rate $R'_L$, and market size Q' as before. Since Eurobanks (i) earn

interest on their voluntary level of reserves, (ii) do not pay FDIC-like insurance, (iii) deal primarily with known, high-quality credits, (iv) use floating interest rate arrangements and maturity matching to minimize interest rate risks, (v) often operate in tax havens, or under other special tax incentives, and (vi) operate a wholesale business with lower overheads, we fully expect to find $x' << x$. Figure 1 illustrates the normal relationship between onshore and offshore interest rates, that is, $R_L > R'_L > R'_D > R_D$ .[9/] In more familiar terms, this inequality states that the New York "Prime" lending rate exceeds the London Interbank Offered Rate (LIBOR) which exceeds the London Interbank Bid Rate (LIBID) which in turn exceeds the cost of funds (say a Certificate of Deposit rate) of a New York bank. In today's market, the LIBOR-LIBID spread may average about 0.25% while the spread between the New York CD rate and Prime may approach 2.00%.

The offshore market survives by driving a wedge into the onshore financial market -- it provides a similar financial service at a lower cost. The interest differential $(R'_D - R_D)$ measures the extra compensation paid to depositors for bearing additional risk, taxes or inconvenience with deposits outside of their home country. The interest differential $(R_L - R'_L)$ measures the incentives for borrowers to gain acceptance in the offshore market, where size and credit quality may act as entry barriers. Both $(R'_D - R_D)$ and $(R_L - R'_L)$ should be responsive to market forces, financial innovation and the accumulation of financial know-how. Domestic financial deregulation and money market mutual

funds that channel funds from small investors offshore should reduce ($R'_D - R_D$). Active corporate financing strategies that seek the lowest cost source of funds world-wide should lead to a reduction in ($R_L - R'_L$).[10/]

d. Market Share and Pricing in Competing Offshore Centers

Now consider the case of one currency (the U.S. dollar) and several offshore centers (London, Germany, Singapore, and Rio). In Figure 2, we continue to assume that the demand for dollars offshore is described by D', which reflects the underlying set of projects. The supply of funds to each offshore center depends on depositors' assessments of the costs of using the center (i.e. known taxes and capital controls, as well as the cost of time zone differences) and the risks (i.e. future taxes and capital controls). In principle, each center might have its own cost ($x'_A$, $x'_B$, etc.) for collecting deposits and servicing loans. For convenience, assume that these costs are identical across centers and equal to 0.25%. In Figure 2, this selection of x' results in an London deposit rate of 8.00% and a lending rate of 8.25% and a London market size of $Q_A$.

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Insert Figure 2 Here

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If a German offshore center is to exist, it must offer loans at 8.25%, which means it must pay no more than 8.00% on deposits, and it must be satisfied with a market size of $Q_B$. A similar story applies to Singapore with a resulting market size of $Q_C$ and Rio with a market size of $Q_D$. In our example, once the most efficient and least risky financial center has set the price of funds, other centers must follow suit and quantity is the only

other variable left to adjust.[11/]

In reality, if Germany or Singapore were saddled with higher operating costs, they might be able to set a higher $R'_L$ and still attract borrowers. But their loan portfolios would have higher credit risks than London. Figure 2 also suggests that countries which are viewed by depositors as more risky will need more favorable regulations to lower their costs and reduce their lending rates.

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Insert Figure 3 Here

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Figure 3 offers a representation of the general case of n currencies and n financial centers. Regulatory costs and political risks vary as we move from column to column. Exchange risks vary as we move from row to row. The cells along the northeast-southwest diagonal represent the onshore market, and the remaining cells represent the offshore market. We have analyzed the interest rate differential between New York dollars and London dollars using a loanable funds approach. Arbitrage and regulatory competition should keep the offshore interest rates for a single currency nearly equal. The market share of the offshore market earned by a financial center depends on both the costs of using the center and the perceived risks of capital controls and new taxes. The interest rate differential between offshore instruments should conform to the predictions of the interest rate parity relationship, as we review in the next section.

e. Euromarkets, Innovation, and Market Linkages

The link between assets that are alike in all respects (e.g.

maturity, credit risk, political risk, etc.) except for their currency of denomination is described by the well-known interest rate parity relationship:

$$(1) \qquad F_t = S_t \, (1.0 + i) \, / \, (1.0 + i^*)$$

which relates the current forward rate ($F_t$) for delivery one-period ahead to the current spot rate ($S_t$) and a pair of one-period interest rates on domestic (i) and foreign currency ($i^*$). By providing a setting in which the assumption of similar-risk instruments was satisfied, the Euromarkets have given us the cleanest tests of this important arbitrage pricing relationship.[12/]

Traditionally, interest rate parity has been used to describe the incentives for international capital flows, covered against exchange risk. But equation (1) can also be interpreted as an "assignment statement." Equation (1) suggests that a forward contract can be constructed by combining a spot contract with borrowing and lending in two currencies. The right-hand-side of (1) is therefore a replicating portfolio; we can construct a synthetic forward contract when the market does not provide a forward contract directly (for example, in the case of long-term forward contracts). And this then explains why forward contracts do not exist for currencies in which borrowing and lending is restricted. Equation (1) also suggests that a forward contract is a redundant instrument, since it can be replicated perfectly by other contracts. Forward contracts exist, therefore, only because they reduce transaction costs in comparison with the replicating portfolio.

Equation (1) can be rearranged to produce:

$$(2) \qquad (1.0 + i^*) = (1.0 + i)\ S_t / F_t$$

which suggests that the yield on a foreign security (with a particular maturity and credit risk, etc.) can be replicated by a dollar security (with similar attributes) combined with a forward exchange contract. Therefore, if yen commercial paper does not exist or if access to the Euro-DM bond market were temporarily blocked, a synthetic instrument can be constructed.[13/]

Another rearrangement of equation (1) leads to:

$$(3) \qquad (1.0 + i) = (1.0 + i^*)\ F_t / S_t$$

which suggests that U.S. dollar financing can be replicated by a foreign security combined with a forward exchange contract. Equation (3) is the argument underpinning swap-driven bond issues which originate in one currency but when combined with a forward contract (or a set of forward contracts) have the attributes of a dollar security.

The integration of international financial markets through the quest for covered interest arbitrage profits is a powerful force. It has long been understood that covered interest arbitrage integrates the short-term Eurocurrency markets. But it is now becoming more apparent that longer-term Eurocurrency markets, commercial paper markets, and onshore short-term financial markets are also being integrated by actual or potential arbitrage. Our equations (2) and (3) reveal how straightforward it is to use the Euromarkets to overcome

prohibitions on particular markets or instruments, or to overcome quantity restrictions or restrictions on access. As a result, the incentive for onshore regulators to maintain these restrictions is dropping. On the contrary, the incentives are toward reregulation in order to compete with offshore markets and synthetic instruments.

## III. International Competition in Regulation

In the previous section, we demonstrated that compliance with regulations in the onshore banking market creates opportunities to develop a parallel, offshore market for the delivery of similar services. Barriers must exist to keep all activity from migrating offshore. In this case, political risks and minimum transaction size temper the flow of deposits offshore, and credit quality and size perform a similar role for borrowers.[14/] But in addition to the narrow provision of bank deposits and loans, we have also shown that Euromarkets can be used to replicate a variety of non-bank, financial instruments (e.g. long-term forward contracts, short-term commercial paper, long-term bonds, Eurocurrency interest rate futures, and so on), many of which may also be regulated by onshore financial authorities. Consequently, the offshore banking market raises a competitive threat to onshore financial services activities, in general, and not simply to onshore banking institutions.

### a. Competition Among Regulators and Contestable Markets

The rise of offshore markets underscores that market participants have the alternative to arrange transactions in any

of several financial centers. Therefore, if domestic regulators desire to have the transactions conducted within their center (either to maintain an adequate level of prudential regulation, or to maximize their revenues from the taxation of financial services, or simply to maximize their regulatory domain), the regulatory requirements cannot be set arbitrarily. Indeed, as Edward Kane (1987) has recently argued, domestic financial regulations are determined competitively and endogenously after taking account of regulations (both present and prospective) in other financial centers.

The essence of Kane's (1987) analysis is that the market for suppliers of financial regulation is highly competitive. As such, the movement to liberalize regulations affecting financial institutions is not the result of a sudden outpouring of laissez-faire feeling, but rather the result of an endogenous process as national regulators vie for market share. The market for financial regulation is contestable in the sense that other national regulatory bodies offer (or threaten to offer) rules that may be more favorable than those of the domestic regulator. This actual or threatened competition serves to constrain the actions of suppliers of financial regulation.

This view results in what Kane refers to as a "regulatory dialectic" -- a dynamic interaction between the regulator and the regulatee, where there is continuous action and reaction by all parties. The players in this game-theoretic setting may behave aggressively or defensively. To the extent that the parties behave adaptively, even if underlying factors (e.g. communications technology, the level of financial transactions,

etc.) remain constant, it is likely to require considerable time for an equilibrium regulatory structure to emerge.

In a changing environment, players will adapt with varying speed and degrees of freedom. Kane (1987, p. 115) summarizes the "average adaptive efficiencies" of various players as follows:

(1) Less-regulated players move faster and more freely than more tightly regulated ones;

(2) Private players move faster and more freely than governmental ones;

(3) Regulated players move faster and more freely than regulators;

(4) International regulatory bodies move more slowly and less freely than all other players.

Given Kane's ordering of adaptive efficiencies, we expect that the lag between a regulation and its avoidance is on average shorter than the lag between avoidance and <u>re</u>regulation. The lag in reregulation may be shorter for industry-based, self-regulatory groups than for governments. And it will probably be the longest when international regulatory groups are involved. Appreciation of this likelihood seems to have affected the style of regulatory harmonization that the EC has adopted, which we will discuss shortly.

b. Net Regulatory Burden and Structural Arbitrage

A given regulatory regime bestows both benefits and costs on individual financial-services firms. Regulations that (1) assure the stability and orderliness of the system over time and promote public confidence in financial institutions, (2) restrict entry into the industry and monitor anti-competitive pricing

arrangements, (3) provide ancillary services, such as deposit insurance or wire transfers, at below private cost and other transaction cost savings measures, all benefit private firms. Regulations may also result in revenue losses from (1) foregone interest on required reserves, (2) foregone earnings on excessive capital requirements, and (3) foregone revenues from limitations on geographic activity or product offerings) as well as explicit charges. The difference between these costs and benefits defines the Net Regulatory Burden (NRB) placed upon private firms.[15/]

Private firms monitor their NRB and transfer activities into another regulatory regime when, ceteris paribus, their NRB can be reduced. In a perfect capital market with no entry or exit costs, no transaction costs, no barriers between countries, and no sovereign risk, we would predict that all banking activities would migrate to the country with the lowest NRB inclusive of taxes. In the real world, a variety of imperfections exist that permit some dispersion of NRB across countries. This dispersion among $NRB_i$ cannot be too great, or else private firms will have an incentive to relocate their activities. Entry and exit costs, currency conversion costs, and distance related delivery costs, plus uncertainties surrounding these costs and other control measures act as effective barriers to complete NRB equalization across countries. Technological change which has lowered communications and information processing costs, combined with the rapid growth of international business have lowered the gap in NRB needed to induce arbitrage.

In a similar fashion, regulators have also become more

willing to compete on the basis of their NRB. The regulator must insure that his regulatory revenues (when combined with supplementary budgetary support that comes willingly from informed taxpayers) are sufficient to produce a given set of regulatory services. If this condition is not met, the regulatory burden is unsustainable, and reregulation will force it back into line. However, if the regulator is generating more than enough revenues to cover his costs, he needs to be concerned that private firms will migrate to lower NRB regions. In this case, the regulator could either lower his NRB, or impose taxes and controls to stop the migration of activity.

Since taxes and controls are easily avoided, the policymaker will probably alter his NRB. The question for policymakers then is: "What is the long-run, equilibrium, sustainable value of the net regulatory burden ($NRB^*$)?"

c. Implications for Coordination of International Financial Regulation[16]

Even within a single economy, the optimal design of financial regulation is a complex matter. Continuing to think of regulation as a tax, the issue we wish to consider is whether a government will necessarily be able to collect a tax that is "excessive."

Regulations impose costs which, in part, will be transferred to clients. Costly regulations create incentives for financial firms to innovate in order to reduce their costs and capture a larger market share. Money market mutual funds and off-balance sheet financing techniques are two well-known domestic examples. The greater the extent of regulatory costs, the greater is the incentive to innovate or avoid the domestic financial system. The

1,200 mile movement of Citibank's credit card operations from New York to South Dakota (in part, to escape New York's interest rate ceilings) illustrates this kind of domestic mobility. The limiting case might be found in a country experiencing hyperinflation, in which case residents may shift into commodity monies or completely avoid domestic financial institutions.

In the international setting, the scope for governments to collect excessive regulatory taxes is reduced because there is greater competition among national regulatory environments. Each domestic financial center faces competition from foreign and offshore financial centers. As transactions costs and information costs decline, the cost of using an offshore financial center declines. The development of offshore currency and bond markets in the 1960s represents a case in which borrowers and lenders found that they could carry out the requisite market transactions more efficiently and with sufficient safety by operating offshore -- in a parallel market. Capital flight from LDCs is an extreme example of residents escaping the local inflationary tax or fleeing from low or highly variable real rates of return. While the capital flight example sounds dramatic, Dooley (1987) has argued that under some definitions, the shift by Americans of $250 billion from domestic to Eurocurrency accounts in 1980-82 could usefully be interpreted as capital flight.

In the past, policymakers have often set financial regulations as if there would be no international feedback effects. The obvious point to make is that in today's world, communications costs are low and capital mobility is high. It is

becoming less feasible for a state or a nation to impose a net regulatory burden that stands too far apart from world norms. In the last 20 years, U.S. and European financial institutions have moved a large part of their operations offshore, suggesting that they judged the cost of domestic financial regulations as excessive. If we assume that transaction costs and communication costs are declining, would it follow that the NRB* on financial institutions is zero -- i.e. that a financial institution would migrate rather than pay any positive regulatory tax?

In our judgement, a long-run equilibrium can be maintained with a positive NRB. Financial transactions involve uncertainty -- about the monetary unit of account, about the credit worthiness of the financial institutions, and about the political stability of the financial center. Financial institutions ought to value their access to lender of last resort facilities, the opportunity to be headquartered in a stable political climate, and so forth. And in those markets that are largely unregulated, with a NRB approaching zero, we observe that they have not taken over a 100% share of the Euromarkets. If financial institutions find it in their interest to pay some regulatory tax, the economic question then concerns the sustainable magnitude of this tax.

As we have stressed throughout, communications costs are falling and capital mobility is increasing. Whatever the cost of the regulatory burden placed on financial institutions, it seems clear that this cost must be roughly similar across the major countries of the world. Given the complexity of the financial system, accomplishing the necessary consistency, coverage, and

coordination of regulations represents a major undertaking. The approach to regulation in the Eurocurrency market provides some indication of the problems that might be faced and how they might be overcome.[17/]

Eurocurrency operations occur "offshore" but not beyond the reach of governments. Eurocurrency banks could be regulated on a "territorial" basis. Under this approach, the country in which a deposit was issued would impose reserve requirements on both domestic banks as well as branches and subsidiaries of foreign banks. For the territorial approach to be effective would require an agreement among all countries, small and large, that might potentially harbor Eurobanks. On the other hand, all of the major players in this market are headquartered in a major industrial country -- this is almost a criterion for success in attracting deposits in this market. Eurocurrency banks could instead be regulated on a "domiciliary" approach requiring the country in which the headquarters of the bank is domiciled to impose consistent regulations across all offshore branches and subsidiaries. The latter approach would "only" require agreement across major industrial countries. A large bank might move its headquarters to a regulation-free mini-state, but this seems unlikely given inter alia the value of lender of last resort facilities, as argued earlier.

The approach taken by the Bank for International Settlements (BIS) is along the lines of the domiciliary approach. In the Basle Concordat (1974), the United States and thirty other countries agreed to assume lender of last resort responsibility

for their offshore banks. In 1980, the BIS announced an agreement among central banks requiring commercial banks headquartered within their territories to consolidate their worldwide accounts. This agreement would enable bank examiners to regulate offshore and onshore operations on a consistent basis.

The recent discussions at the BIS on capital adequacy requirements fit within the domiciliary framework. A recent study by Cumming and Sweet (1987) suggests that there is considerable variation in the financial structures across the G-10 countries with greater integration of banking and securities activities outside of Japan and the United States. Whether the present level of diversity is consistent with stable financial markets is unclear. We can conclude that the "one-market" hypothesis outlined in the Brady Commission Report and elsewhere clearly needs to be interpreted internationally. Not only are there strong arbitrage price linkages between stocks, futures, options and various "bank products" within one country, but these linkages extend between countries for similar products denominated in U.S. dollars or in other currencies. Clearly, however, a consistent set of regulations will be necessary to prevent competitive distortions.[18/]

## IV. Financial Services in the European Community in 1992

Several of the papers in this conference address in detail the current and proposed regulations that will effect the financial services industry in the European Community 1992. In this section, we briefly review the key principles of the plan and then turn to several unresolved policy issues that could have

a dramatic impact on the Euromarkets.[19]

a. Basic Tenets of the Plan

A scant seven paragraphs (numbers 101-107) of the European Commission's White Paper (1985) form the basis of the plan to remove internal barriers affecting financial markets in the EC.[20] This, in itself, is consistent with the Commission's minimalist framework. The broad goals are (1) a minimal amount of regulation shared by all EC countries, (2) complete freedom to offer financial services throughout the EC based on mutual recognition of national laws, regulations and practices, and (3) home country control over all activities supervised by firms headquartered in the home country.

The common core of regulation shared by all EC countries is intended to safeguard certain fundamental public goods dealing with the safety and solvency of the financial system, as well as setting minimum standards for investor, depositor, and consumer protection. The principle of "mutual recognition" leaves scope for accommodating differences in regulation across countries. Rather than to 'straight-jacket' regulation across the EC, this feature allows for competition and dynamic adjustment, as hypothesized by Kane (1987) and discussed earlier in Section III. The principle of home country control reflects a domiciliary approach, along the lines of the Basle Concordat. As such, home country control both preserves national sovereignty in these areas and exploits existing regulatory and supervisory bodies without the need for a new supranational, Community-wide agency.

Taken together, these principles circumvent the need to

homogenize a wide array of financial regulations and practices, thus speeding up the ultimate goal of unifying the internal financial markets. Furthermore, by exploiting competition among regulatory authorities, the EC will ultimately achieve a market-determined level of regulation that is more responsive to market conditions than one designed ex ante by a supranational body, and then revised subject to long and variable lags.

b. Unresolved Policy Issues

With only seven paragraphs forming the foundation for a unified financial market, a great many details have been left unspecified. The resolution of these issues bears heavily on the Euromarkets.

The starting point of this discussion must be the specification of regulations that will reside in the common core. The expressed desire is to keep these regulations to a minimum, but which variables will be covered and will numerical values be a part of these regulations? Padoa-Schioppa (1988) has suggested that the directives which form the common regulatory framework need not specify every single detail. Rather, it may suffice to simply list those variables which must be addressed in national regulations, perhaps specifying a range of acceptable values. This approach appears sensible both as it would speed up the process of agreement on a core, and as it would permit countries to preserve their national sovereignty relating to key issues (control of national monetary policy, national taxation policy, and so forth). However, it could well lead to a very minimal common core which in turn would permit a wider variety of

national regulatory regimes with wider variability of net regulatory burdens.

We now consider three policy variables the treatment of which in 1992 will have a critical impact on the Euromarkets. The first is the reserve requirements on demand deposits held in banks. Reserve requirements represent a tax or a regulatory burden to the extent that required reserves (1) exceed actuarially sound reserves, and (2) earn less than the market rate of interest. As we see in Table 3, reserve requirements range from zero or near zero in Belgium, Denmark, Luxembourg, and the Netherlands to 15% and higher in Italy, Portugal and Spain. This is a considerable variation, the effect of which is magnified with higher absolute levels of interest rates. Yet because reserve requirements are seen as an instrument of domestic monetary policy (where harmonization might infringe on national sovereignty) there apparently are no plans to harmonize reserve requirements across EC countries. As European financial markets integrate, there will be obvious pressures on central banks to reduce their reserve requirements and to rely on other instruments of monetary policy.

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Insert Table 3 Here

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A second key area is harmonization of tax rates on interest, dividends, and capital gains as well as withholding practices. As we see in Table 4, the distinction (1) between dividends, interest, and capital gains, and (2) between residents and non-residents often matters a great deal.[21/] Again, practices pertaining to withholding tax rates vary considerably across nations.

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Insert Table 4 Here

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In an environment with free capital mobility (the EC after July 1, 1990), Table 4 suggests a fertile ground for tax-motivated capital flows and new financial instruments designed to transform highly-taxed capital flows into lesser-taxed flows. In all EC countries (except Luxembourg), residents either pay a withholding tax on interest income or have their domestic interest income reported to the tax authorities. Non-residents, however, face no withholding taxes against interest income in Denmark, Luxembourg and the Netherlands. Residents incur no withholding tax against dividends in France, Ireland and the United Kingdom, and the latter two countries follow the same treatment for non-residents. Luxembourg appears to offer the most favorable treatment of capital gains within the EC. However, Morgan Guaranty (1988) reports that the capital gains tax rate on individuals is zero in Belgium and Greece, and in many circumstances it is zero in Italy and the Netherlands.

The third critical policy area, related to taxation, is harmonization of disclosure and reporting of interest and dividends to tax authorities (i.e. rules on secrecy). Even though there is no withholding tax on interest paid to residents of Denmark and the Netherlands, banks report interest income to the tax authorities. Luxembourg stands out as the only country with neither withholding tax nor reporting to authorities of interest paid to residents. However, for non-residents of Denmark, Luxembourg and the Netherlands there is neither withholding tax nor reporting to authorities of interest paid. No withholding tax and no reporting to authorities is also the practice for dividends paid to both residents and non-residents

of Ireland and the United Kingdom.

The data in Table 4 suggests that non-residents should prefer to hold interest paying instruments (such as bank deposits or bonds) in either Denmark, Luxembourg, or the Netherlands. Given the precedent of reporting to the tax authorities for residents of Denmark and the Netherlands, Luxembourg stands out. Unless it can be persuaded to amend its secrecy laws or to impose withholding taxes on interest payments, Luxembourg is likely to gain considerable ground as a leading European financial center.

## V. Conclusions Regarding the Euromarkets and the Development of European Financial Centers

In three key areas -- reserve requirements; tax and withholding treatment of interest, dividends and capital gains; and disclosure and secrecy laws -- we currently observe considerable variation across EC countries. All of these factors contribute to the Net Regulatory Burden placed on financial institutions, which they in turn attempt to pass on to their customers. When the barriers to the free flow of capital and financial services finally dissolve, we expect to see tremendous competitive forces unleashed -- forces that will induce the Net Regulatory Burdens to converge across countries.

The main factor which retards the completion of the internal market is the perception of a trade-off between economic efficiency and national sovereignty. It is often argued that the stability of the European Monetary System depends heavily on the coordination of monetary policies, and if EC countries lose this degree of freedom concerning their national sovereignty they can

rely on fiscal policies to meet their internal policy objectives. In this paper, we have argued that the loss of monetary policy independence goes a bit deeper -- that is, the tools of monetary policy (such as reserve requirements) must be coordinated also. And the remaining independence of fiscal policy may be a bit exaggerated -- that is, while countries may be free to spend their tax revenues as they please, they can only collect taxes on mobile factors (financial services) if they are levied at a competitive rate. A country with an excessive Net Regulatory Burden will experience a migration of financial activity and a decline in tax revenues.

While the policymakers of the European Community are rightfully concerned about harmonization of critical policies across the EC and the creation of a "level playing field" free from competitive distortions, this is only half of the story. The net regulatory burden of the EC must be commensurate with that in other industrial countries. If not, there will be a migration of financial services offshore to Switzerland, International Banking Facilities in the United States, Liechtenstein, or elsewhere. As the Europeans have been the beneficiaries of excess U.S. financial market regulation, they can hardly question that this migration will occur. The only question can be, how sensitive will the migration be in response to a given difference in net regulatory burdens?

The recent West German experience offers some indication of the sensitivities of investors and policymakers. In 1988, about DM 120 billion flowed out of West Germany, in part because

investors wanted to avoid the 10% withholding tax on interest income that became effective on January 1, 1989. On April 27, the West German government announced that the withholding tax would be abolished on July 1, 1989. Instead, the West Germans will support some form of unified withholding tax, of the sort proposed in February 1989 by the European Commission.[22/]

The innovations that have taken place in communications technology, information processing, and financial services strongly suggest that the equilibrium Net Regulatory Burden is falling, as is the neutral band around it needed to induce arbitrage. In this environment, a minimal core of prudential regulation is a sound idea. EC countries will be driven, de facto and endogenously, toward harmonization. Active coordination of regulation may be useful, but there is a continuing need for flexibility because of the dynamic nature of financial services.

While these developments threaten national sovereignty, it seems safe to say that for the foreseeable future, national elections and national sovereignty will continue to be strong forces. National policymakers will monitor transactions by domestic residents and transactions in domestic currency more closely than others. The Net Regulatory Burden for these transactions may remain relatively high, leaving incentives for offshore markets for EC currencies within the EC. Luxembourg stands out as a likely candidate to gain market share if its Net Regulatory Burden is not increased. Not surprisingly, the government of Luxembourg has gone on the record to oppose unified EC rules raising withholding taxes and disclosure requirements.

But the EC also faces competition from outside the EC and for

markets in non-EC currencies. As a long-run proposition, the equilibrium, sustainable NRB* is probably greater than zero, because of the uncertainties inherent in financial contracting, political risks, the value attached to promises of official regulatory authorities regarding their onshore markets, and the convenience associated with onshore transactions. The fact that non-EC centers (e.g. Singapore, Hong Kong, etc.) have not taken over the Euro-dollar market suggests that these centers have pushed their regulatory competition to the limit. This suggests that even if transactions costs approach zero, an island state with a NRB approaching zero, will not attract all of the world's financial services business. However, if the EC reregulates and raises its NRB, migration of the Euro-dollar market to non-EC countries is the likely outcome.

FOOTNOTES

1. In the case of the United States, at the Federal level financial activities could fall under the domain of the Federal Reserve Board, the Comptroller on the Currency, the Securities and Exchange Commission, and the Commodity Futures Trading Commission to name only the major bodies. Each of the fifty States would have its own regulatory bodies to deal with banking and insurance. Every city and municipality has a body responsible for local income taxes, real estate taxes, transfer taxes, stamp duties, and so on, all of which affect the net regulatory burden on financial institutions.
2. Quoted in Grabbe (1986, p. 17).
3. The Paris bank, Banque Commerciale pour l'Europe du Nord, carried the cable address EUROBANK, which latter became synonymous with the general activity of accepting deposits offshore. See Kvasnicka (1969).
4. For an analysis of the impact of German capital controls on the differential between onshore and offshore interest rates, see Dooley and Isard (1980). The Swiss control program is described in various issues of the "International Letter," Federal Reserve Bank of Chicago, over the 1974-1979 period.
5. International Bankings Facilities are exempt from reserve requirement, interest rate ceilings and deposit insurance. See Chrystal (1984) for a discussion of the regulations pertaining to IBFs and their significance. On December 23, 1988, the Federal Reserve Board passed a rule which will allow U.S. commercial banks to offer foreign currency denominated deposits effective January 1, 1990. Regulations

for these deposits have yet to be formulated so it is unclear whether these accounts will be competitive with other offshore centers.

6. This section draws on the presentation in Levich and Hawkins (1981).

7. We are assuming away the existence of Russians (say in the 1950s) or others who view the United States as risky and who would deposit funds offshore at rates below $R_D$.

8. For the case of offshore interest rate determination in the presence of capital controls, see Levich and Hawkins (1981, p. 398).

9. As mentioned, offshore lending rates may exceed onshore lending rates ($R'_L > R_L$) when capital rationing or other restrictions affect the domestic market. Onshore deposit rates may exceed offshore deposit rates ($R_D > R'_D$) when there are controls or taxes on non-resident capital inflows, such as in Germany and Switzerland in the early 1970s. The onshore lending rate must exceed the offshore deposit rate ($R_L > R'_D$) otherwise arbitragers will borrow in the onshore market and deposit their funds offshore.

10. A recent case study by Finnerty (1986) has documented that some firms have actually engaged in arbitrage -- issuing their bonds in the Euromarket, and purchasing U.S. securities to earn the interest differential. In the same vein, Kim and Stulz (1988) show that corporations have behaved opportunistically by issuing in the lower cost Eurobond market and gaining an improvement in their equity share

prices. However, the magnitude of this benefit has fallen to become insignificant.

11. An offshore center might adjust its deposit rates higher than 8.00% in our example, but this might signal to the market that it was a less convenient or more risky center to hold deposits. See Stokes (1985) for a discussion of Wells Fargo Bank's difficulties with offshore deposits placed in Citibank's Philippines branch.
12. See, for example, Aliber (1973) and Frenkel and Levich (1975).
13. The technique of solving for a replicating portfolio, writing down an arbitrage pricing relationship and then solving for the implied value of one variable is quite general. Brenner and Galai (1986) use put-call parity of option prices to solve for an implied interest rate on borrowed funds. Machayya (1989) develops an arbitrage model for pricing fixed-rate currency swaps as a function of forward contracts. Koh (1988) shows how to synthesize a Euro-currency interest rate futures contract (which does not now exist) using a combination of Euro-dollar interest rate futures and currency futures contracts.
14. Money market funds that buy Eurodollar deposits have enabled U.S. investors to reduce some of these access barriers.
15. Note that because some regulations may not generate revenues and some regulations entail externalities, the value of net regulatory benefits received by firms need not equal the net regulatory costs collected by the regulatory authorities.
16. This section draws heavily on Levich and Walter (1988, pp. 71-74).

17. For a thorough discussion of this issue, see Dam (1982, pp. 320-8). A related problem is that countries may coordinate on a set of financial regulations that are excessively strict or liberal. In this regard, it would be preferable to maintain competition among regulatory authorities. See Kane (1987) for a complete discussion of this theme.

18. Competitive distortions in international financial services are discussed in Levich and Walter (1988, pp. 74-82).

19. These issues have also been reviewed in Micossi (1988), Morgan Guaranty Trust Company (1988) and Padoa-Schioppa (1988).

20. The European Commission's February 1988 proposal for a second banking directive contains language identical to that in the 1985 White Paper.

21. In contrast to our Table 4, Buchan (1989) citing European Commission sources, reports that the withholding tax on interest paid to non-residents is zero in Belgium, France and Greece. He also reports that the withholding tax on interest paid to both residents and non-residents in Portugal is 25%.

22. See Protzman (1989).

Table 1.

Dimensions of the Eurocurrency Deposit Market
(Billions of U.S. Dollars)

| Year | Gross Size | Net Size | Eurodollars as % of Gross | U.S. Money Stock (M2) |
|---|---|---|---|---|
| 1973 | 315 | 160 | 74% | 861 |
| 1974 | 395 | 220 | 76 | 908 |
| 1975 | 485 | 255 | 78 | 1023 |
| 1976 | 595 | 320 | 80 | 1164 |
| 1977 | 740 | 390 | 76 | 1287 |
| 1978 | 950 | 495 | 74 | 1389 |
| 1979 | 1235 | 590 | 72 | 1500 |
| 1980 | 1525 | 730 | 75 | 1633 |
| 1981 | 1954 | 1018 | 79 | 1796 |
| 1982 | 2168 | 1152 | 80 | 1954 |
| 1983 | 2278 | 1237 | 81 | 2185 |
| 1984 | 2386 | 1277 | 82 | 2363 |
| 1985 | 2846 | 1480 | 75 | 2563 |
| 1986 | 3683 | 1833 | 72 | 2808 |
| 1987 | 4509 | 2221 | 66 | 2901 |
| 1988 (March) | 4561 | 2227 | 67 | 2966 |
| Compound Growth | 20.6% | 20.3% | --- | 9.1% |

Sources: Morgan Guaranty Trust Co., World Financial Markets, various issues.
Economic Report of the President, 1989, Table B-67.

Table 2

Major International Banking Centers
(Billions of U.S. Dollars)

| External Positions of Banks in | End of 1975 Stock of Liabilities | % Share | End of 1980 Stock of Liabilities | % Share | End of 1984 Stock of Liabilities | % Share | End of 1987 Stock of Liabilities | % Share |
|---|---|---|---|---|---|---|---|---|
| Total European | 297.5 | 66.4 | 928.4 | 69.6 | 1108.4 | 52.3 | 2171.0 | 51.7 |
| U.K. | 137.4 | 30.7 | 374.4 | 28.1 | 531.5 | 25.1 | 927.6 | 22.1 |
| France | 42.5 | 9.5 | 130.3 | 9.8 | 138.4 | 6.5 | 271.4 | 6.5 |
| Belgium | ( 40.5 | ( 9.0 | 65.9 | 4.9 | 80.1 | 3.8 | 189.3 | 4.5 |
| Luxembourg | ( | ( | 84.6 | 6.3 | 79.5 | 3.8 | 168.9 | 4.0 |
| Germany | 22.9 | 5.1 | 74.2 | 5.6 | 57.6 | 2.7 | 131.8 | 3.1 |
| Netherlands | 18.5 | 4.1 | 64.6 | 4.8 | 52.4 | 2.5 | 107.6 | 2.6 |
| Switzerland | 16.6 | 3.7 | 43.7 | 3.3 | 33.7 | 1.6 | 82.0 | 1.9 |
| Other (1) | 19.0 | 4.2 | 90.7 | 6.8 | 135.2 | 6.4 | 292.4 | 7.0 |
| Total U.S. | 58.7 | 13.1 | 138.2 | 10.4 | 324.7 | 15.3 | 532.4 | 12.7 |
| US - IBFs | na | na | na | na | 174.0 | 8.2 | 306.0 | 7.3 |
| Other | 58.7 | 13.1 | 138.2 | 10.4 | 150.7 | 7.1 | 226.4 | 5.4 |
| Total Japan | 26.7 | 6.0 | 80.2 | 6.0 | 127.0 | 6.0 | 592.0 | 14.1 |
| Offshore | na | na | na | na | na | na | 191.2 | 4.6 |
| Other | na | na | na | na | na | na | 400.8 | 9.5 |
| Canada | 14.1 | 3.1 | 43.6 | 3.3 | 63.0 | 3.0 | 73.3 | 1.7 |
| Other Reporting Countries (2) | 51.0 | 11.4 | 144.1 | 10.8 | 494.9 | 23.4 | 832.7 | 19.8 |
| Grand Total | 448.0 | 100.0 | 1,334.6 | 100.0 | 2,118.0 | 100.0 | 4,201.4 | 100.0 |

Notes: (1) Includes Italy, Austria, Spain, Sweden, Denmark, Finland, Ireland, and Norway
(2) Includes Bahrain, the Cayman Islands, Hong Kong, Singapore, Netherlands Antilles, and U.S. banks in Panama

Source: Bank for International Settlements, Annual Reports.

TABLE 3

Reserve Requirements In European Community Countries
(mid-1988)

| Country | % of Demand Deposits in Banks |
|---|---|
| Belgium | 0.0 |
| Denmark | 0.0 |
| France | 5.0 |
| Germany | 6.6-12.1 |
| Greece (a) | 7.5 |
| Ireland | 10.0 |
| Italy (a) | 25.0 (b) |
| Luxembourg | 0.0 |
| Netherlands | (c) |
| Portugal | 15.0 |
| Spain (a) | 18.5 |
| United Kingdom | 0.5 |

Notes: (a) Required reserves are remunerated to some degree.

(b) Applied against the increase in deposits since May 1984; the effective level of required reserves is close to 20%.

(c) A small, variable, and remunerated reserve requirement was introduced in May 1988.

Source: Morgan Guaranty Trust (1988)

TABLE 4

Tax Treatments of Dividends, Interest, and Capital Gains in the European Community

| Country | Withholding Tax on Interest Paid to: Residents | Withholding Tax on Interest Paid to: Non-residents | Withholding Tax on Dividends Paid to: Residents | Withholding Tax on Dividends Paid to: Non-residents | Tax Treatment of Capital Gains |
|---|---|---|---|---|---|
| Belgium | 25 | 25 | 25 | 25 | Yes, if speculative |
| Denmark | 0 (a) | 0 | 30 | 30 | Yes |
| France | (b) | 0-51 | 0 | 25 | Yes |
| Germany | 0 (c) | 0 (c) | 25 | 25 | Yes, for shares<br>No, for bonds |
| Greece | (d) | 49 | 42-53 | 42-53 | N.A. |
| Ireland | 0-35 | 0-35 | 0 | 0 | N.A. |
| Italy | 12.5-30 | 12.5-30 | 10 | 32 | No, except in particular cases |
| Luxembourg | 0 | 0 | 15 | 15 | Generally not taxed |
| Netherlands | 0 (a) | 0 | 25 | 25 | Yes, if speculative |
| Portugal | 30 | 30 | 12 | 12 | N.A. |
| Spain | 20 | 20 | 20 | 20 | N.A. |
| U.K. | 25 | 25 | 0 | 0 | Yes |

Notes: (a) Banks report interest income to the tax authorities

(b) Recipients can choose to pay 27% or 47%, depending on the savings instrument, or to lump interest income with other income. Banks report interest income to the tax authorities

(c) Banks do not report interest income to the tax authorities; a 10% withholding rate was in effect from January 1 to July 1, 1989.

(d) Corporations pay 25%; individuals pay 8% plus an amount linked to graduated rates applicable to income taxes.

Sources: Data on withholding taxes are from Morgan Guaranty Trust (1988), who cite Arthur Andersen.
Information on taxation of capital gains cited in Micossi (1988).

FIGURE 1

Determination of Offshore Interest Rates
(One currency, one offshore center)

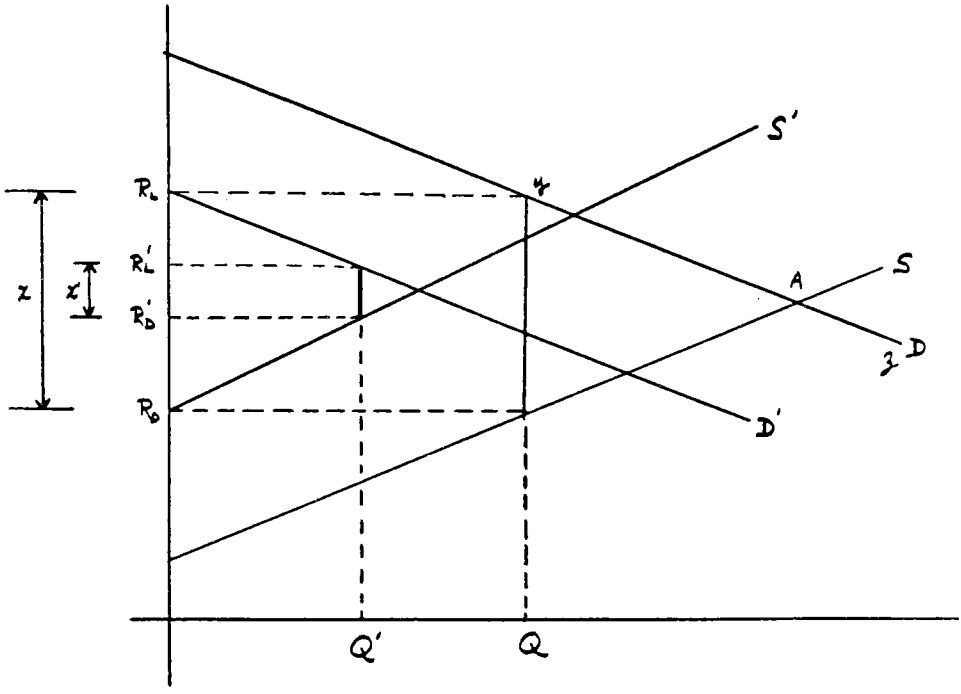

FIGURE 2

Determination of Offshore Interest Rates and Market Shares
(One currency, four offshore centers)

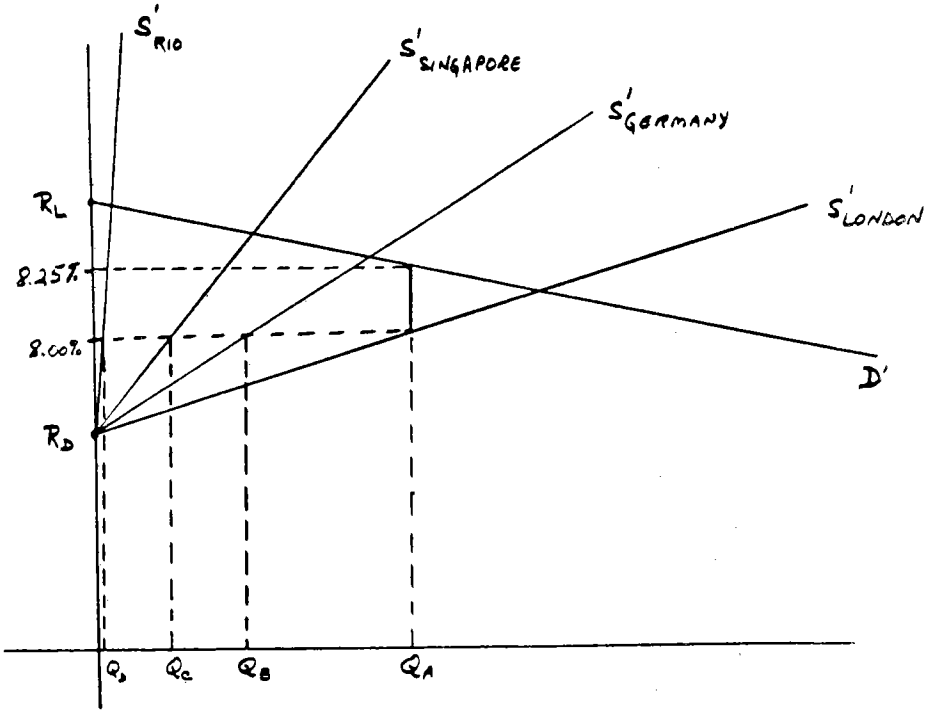

FIGURE 3

The Structure of International Financial Markets
(Many currencies, many financial centers)

| Currency of Denomination \ Country of Issue | United States | Great Britain | Germany | Switzerland | Singapore | Brazil |
|---|---|---|---|---|---|---|
| Dollars | New York Dollars | London Dollars | Frankfurt Dollars | Zurich Dollars | Singapore U.S. Dollars | |
| Sterling | N.Y. IBF £ | London Sterling | Frankfurt Sterling | Zurich Sterling | Singapore £ | |
| D M | N.Y. IBF D.M. | London D.M. | Frankfurt D.M. | Zurich D.M. | Singapore D.M. | |
| Swiss franc | N.Y. IBF Swiss francs | London Swiss francs | Frankfurt Swiss francs | Zurich Swiss francs | Singapore Swiss francs | |
| Singapore Dollar | | | | | Singapore Dollars | |
| Cruzeiro | | | | | | Rio Cruzeiro |

Note: In the United States, non-residents may hold offshore deposits with International Banking Facilities (IBFs). Effective January 1, 1990, legislation will permit U.S. residents to hold non-dollar accounts at U.S. commercial banks.

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