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**LA THÈSE A ÉTÉ
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THE EURO-CURRENCY MARKET:
ITS INTERNAL OPERATIONS
AND IMPACT ON NATIONAL ECONOMIES

by Thomas G. Tustin

A thesis presented to the School
of Graduate Studies of the
University of Ottawa as partial
fulfillment of the requirements
for the degree of Master of Arts

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INTRODUCTION

The Euro-currency market is a highly competitive international capital market where currencies are exchanged outside the country in which the funds are denominated. The market's intense competitive atmosphere may be viewed as a double-edged sword, generating both positive and negative effects. Because the market is virtually free of costly controls and regulations or cartel arrangements, the allocative efficiency of the participating Euro-banks has been improved in the sense that they are able to operate profitably on narrower margins between the lending and depositing rates than banks operating in domestic capital markets. The competitive nature of the market has produced some distressing consequences as well however. There has been a modification in the maturity structure of assets and liabilities during recent years, reflecting the fact that the Euro-banks have been borrowing short while lending long. In addition, the Euro-banks have adopted a favourable attitude towards less creditworthy customers, (such as developing nations) lending large amounts of funds to them, but not at rates fully reflective of the extra degree of risk.

The Euro-currency market has also facilitated an increase in the degree of economic intergration among the industrialized nations. Through the network of interest-rate linkages and by increasing the scope for the international movement of capital, the market increases the degree of monetary interdependence, and as such, reduces the ability of national authorities to persue independent monetary policies.

In addition to its potential to offset monetary policies that are out of step with the policies of the rest of the developed nations, the Euro-currency market may also exert an impact over a variety of other national economic policies, such as exchange-rate policy, balance of payments considerations, and international reserve policy. In recognition of its potential impact, many analysts have called for the imposition of controls and regulations over the market in order to insulate national economies. Not all market observers agree that controls should be imposed however, a number claim that the market provides the world economy with considerable benefits, and consequently, the application of a system of controls and regulations would have detrimental impact, rather than having a positive impact.

Considerable discussion has taken place regarding the question of whether or not the market can effect a process of deposit and credit multiplication. Most analysts have concluded that the market's potential in this regard is quite modest. Some dissenting authors have contended that the market can indeed effect a large deposit and credit multiplication process. In addition to the debate on the numerical value of the multiplier, there is considerable controversy about the appropriate framework to be used in the estimation. Three approaches have been put forward - the fractional reserve analogue, the larger banking system network, and the portfolio choice approach.

This study attempts to examine the interrelationships between national economies and the Euro-currency market, and

via the Euro-currency market, the interrelationships between nations. The study also attempts to examine the issue of regulation, whether or not some form of controls should be applied to the market.

Chapter one introduces the market, examining the market's origins, its size, and the use of a vehicle currency.

Chapter two deals with the participants in the market on both the demand and supply sides, as well as the Euro-banks and the transactions carried on by these institutions.

Chapter three examines the different approaches taken in estimating the value of the deposit and credit multipliers. The conclusions to this chapter deal with the appropriateness of the different approaches with respect to the peculiarities of the Euro-currency market.

Chapter four investigates the interdependencies between Euro-currency interest rates and national interest rates.

Chapter five examines the impact that the market may have had, or has the potential to have, on national economic policies. In particular, the impact exerted on exchange-rate and monetary policies is dealt with. In addition, some consideration is given to the significance that the market may have had with respect to the United States balance of payments.

Chapter six deals with the debate as to whether the market should be controlled or not.

A final chapter, the conclusion, summarizes and presents the author's views on several topics of debate.

CHAPTER 1 - Introduction To The Euro-Currency Market

(1) Background

The Euro-currency market is an international financial market where institutions participating in the market (predominately large commercial banks) acquire claims and issues liabilities denominated in a currency other than that of the country of residence. As the name indicates, the market is based in Europe, with London acting as the main trading center. Other centers have been established in Paris, Zurich, Basle, Frankfurt, Luxemburg, as well as many other European cities. The name "Euro-currency market", however, is something of a misnomer - for two reasons. First of all, it implies that the currencies traded in the market are of European vintage, whereas in fact the volume of transactions denominated in European currencies represents only a small part of the market's total transactions. By far the largest volume of transactions are denominated in U. S. dollars. The second reason why the name is somewhat misplaced is because the market is not confined to the geographical boundaries of Europe. While it is true that European based banks play a dominant role in the market, trading in Euro-currencies takes place in many other currencies throughout the world. Countries such as Canada, Panama, the Bahamas, Japan, Singapore, and others are all active in the market.

The primary functions of the market is to channel funds from areas of excess supply to areas where there is an excess demand for capital. This implies that the market must be re-

latively sensitive to international interest rate differentials if it is to operate as an effective conduit for the international flow of capital.

The Euro-currency market is largely an unregulated financial market, having no central governing authority. Consequently, the absence of any externally imposed regulations and their associated costs give the institutions participating in the market (the Euro-banks) a competitive edge over their domestic counterparts who are saddled with various forms of regulations and controls. Some authors (1) have contended that the development of the Euro-currency market was an innovative response of domestic institutions to the imposition of costly forms of regulations. In effect, these institutions attempted to circumvent the externally imposed constraints. E. Wayne Clendenning provides a good example of how U. S. banks used the Euro-dollar market, in the face of legislative measures designed to curb the outflow of capital from the United States, in an effort to continue to supply their multi-national customers.

He states:

" One of the major impediments in the way of national markets performing this role was the continued existence of national exchange controls limiting the

(1) Velk, T. G. Grantham & A. Fraas - "Euro-dollars: A Financial Innovation Induced by the Necessary Costs of Bank Regulation." Unpublished Paper, McGill University, 1975.

borrowing and lending activities of banks and non-bank residents of various countries with non-residents. These control procedures took many forms but, in general, severely limited the ability of national capital markets to meet the international financing requirements of multi-national enterprises. . . . As a result, banks of many countries have looked upon the Euro-currency system as a market in which they can use to expand the scope of their international operations without disturbing their national regulatory authorities" (2)

It is the absence of any externally imposed regulations that enable the Euro-banks to operate on smaller margins between their lending and borrowing rates than their U. S. and European domestic counterparts, and are therefore able to maintain a competitive edge over these domestic banks. ^B

(ii) Origins

The Euro-currency market began its operations in 1958, however, there have been many isolated instances where foreign currency transactions (ie: denominating a liability in a currency other than that of the country of residence), have been performed prior to the establishment of today's market. Paul Einzig has traced the Euro-market's earliest precursors to Medieval times with the practice of "drawing bills payable at the quarterly fairs in terms of foreign currencies other than those of the country of payment." (3)

(2) Clendenning, E. W. - The Euro-Currency Markets and the International Activities of Canadian Banks. Ottawa, 1976. P. 50-51

(3) Einzig, P. - The Euro-Dollar System: Practice and Theory of International Interest Rates New York, 5th Edition, 1974 P.

There were several factors contributing to the birth of the market in 1958, but only one principle reason why the market has continued to grow and thrive.

The first factor leading to the market's inception was the dollar balances held in London by the Eastern Bloc countries. These balances were originally held in the U. S. capital market, but with the advent of the Cold War in the early 1950's, the balances were transferred to London. Apparently it was felt that the dollar balances could be more easily blocked if they were left in the United States. Consequently, the London banks found themselves with large dollar balances which they could employ profitably.

The second factor leading to the rise of the market, was the sterling crisis of 1957 and the imposition of exchange controls by the British authorities. In 1957, sterling was still a major currency, and as such was used extensively to finance world trade. With the application of the sterling exchange controls, the London banks felt that the future development of the London market, as a major financial center, would be seriously undermined. Therefore, in order to circumvent the controls program, the London financiers turned to U. S. dollars as a replacement for sterling in the financing of international trade.

Another important contributing factor, was the return to external convertability and the relaxation of exchange controls throughout Western Europe in 1958. The advent of convertability

made it possible for dollar balances to be held by non-residents, and all the major European currencies became freely convertible into U.S. dollars. Jeffrey Owens attaches major importance to this factor for the market's growth. He states:

"If there is any year which marks the beginning of the market in its present form, it must be the year 1958. Without general convertability, the Euro-dollar market would never have grown to its present size." (4)

The return to convertability allowed British and Swiss commercial banks the freedom to accept foreign-currency deposits at rates more favourable than those offered in New York. In addition, the United States was experiencing very large payments deficits which provided a large supply of funds to Europe. These deficits were a source of concern to the U.S. authorities, and eventually they led the authorities to take "progressive measures . . . to limit access by foreigners to the New York market." (5) The U.S. dollar at this time held a dominant position in financing world trade, and with access to the New York market closed off, the funds had to remain in Europe, being deposited in the London (predominately) and Swiss banks. The innovation that was spawned here, according to Clendenning, was not the acceptance of the dollars by foreign banks, but

(4) Owens, J. - The Growth of the Euro-Dollar Market: An Appraisal of its Domestic and International Implications. Bangor Occasional Papers in Economics No. 4 University of Wales 1974, P. 9

(5) Boulton, Sir G. - "Background and Emergence of the Euro-Dollar Market." In: The Euro-Dollar H.V. Prochmore (Ed) Chicago 1970 P. 11

instead:

"their placement outside the U.S. money market and banking system. This change in function performed by the U.S. dollar deposits is what distinguishes the Euro-dollar market from the previous foreign market of U.S. dollar deposits." (6)

The principle reason why the market has continued to grow and thrive is due mainly to the fact that this market is free of costly regulations. The absence of regulations enables the Euro-banks to operate profitably on smaller margins between lending and borrowing rate. The absence of regulations as a factor contributing to the market's growth is also endorsed by Clendenning, who states:

"The success of the European banks in attracting U.S. dollar deposits results mainly from the limitations placed on the U.S. banking system by the regulatory controls imposed upon the U.S. deposit rates by the Federal Reserve System." (6)

(iii) The Size of the Market

The size of the market is difficult to estimate because of the substantial volume of inter-bank lending that is carried out. The most widely quoted figures relating to the market's size are those published by the Bank for International Settlements, (BIS). The estimate given by the BIS for the size of the market in 1976 was \$247 billion (U.S.)

The Official statement reads:

(6) Clendenning, E. W. - The Euro-Dollar Market
Oxford, 1970 P. 23
(Emphasis added)

" Net of double-counting, the total volume of Euro-credit outstanding through the reporting European centers may be estimated to have expanded from \$205 to \$247 billion, or by about 20 per cent in 1976." (7)

The BIS concept of the net size of the Euro-currency market can only be regarded as an approximate estimate however. The net size estimate refers to the amount of foreign currency credit outstanding through the banks of the eight European reporting countries, (Belgium, France, Italy, Luxemburg, the Netherlands, Sweden, Switzerland, the United Kingdom and West Germany).

The BIS net size estimate includes funds which the reporting banks obtain from and relend to non-bank sources. This estimate also includes funds which are supplied and relent by the reporting banks themselves. In fact, Helmut Mayer estimates that the reporting bank sources and uses of credit accounted for 70% on the sources side and 57% on the uses side in mid-1975. (8) The reporting banks are considered as original suppliers and users of Euro-currency funds:

"...as original suppliers...to the extent that they use funds obtained in domestic currency for switching into foreign currency; and similarly they are counted on the uses side of the market to the extent that they use foreign currency funds for switching into domestic currency." (9)

(7) Bank for International Settlements - 47th Annual Report 1976-1977. Basle, 1977 P. 108

(8) Mayer, H. "The BIS Concept of the Euro-currency Market" Eurömoneý (May) 1976 P. 60

(9) Ibid. P. 60

The BIS estimate excludes the Interbank positions between the reporting banks themselves in order to avoid the double counting of funds.

On the sources side, Helmut Mayer gives us a fairly good indication of the proportion that each source contributes to the market, as shown in the table below.

TABLE I SOURCES OF EURO-CURRENCY FUNDS

(1)	Commercial Banks in the Reporting Area	16%
(2)	Banks Outside the Reporting Area	29%
(3)	Central Banks and Other Monetary Agencies	25%
	Total Banks	70%
(4)	Domestic Non-bank Depositors	6%
(5)	Non-resident Non-bank Depositors	15%
(6)	Trustee Funds, including some funds placed in the market by financial holdings and investment trusts	9%
	Total Non-Banks	30%

Source: H. Mayer - "The BIS Concept of the Euro-currency Market" Euro-money 1976, P. 63

Table II below, shows the size and growth of the Euro-market from 1969 - 77. The size of the market can only be regarded as a partial estimate however. The figure arrived at is based solely on the banking returns of the nine European reporting nations. The size of the various Euro-currency markets not based in Europe, (ie: Canada, Japan, Nassau, Singapore, etc) are not included.

TABLE II ESTIMATED SIZE OF THE EURO-CURRENCY MARKET (Billions)
 (Outstanding Amount of Foreign currency Credits Channelled
 Through the Reporting European Banks)

Year	Total	Of Which Bank	Non-Bank	U.S.	Rest of World	Unall- ocated	Total
1969	15.0	7.0	8.0	16.8	12.0	0.2	44.0
1970	24.0	9.0	15.0	13.1	19.0	0.9	57.0
1971	32.8	13.7	19.1	8.3	28.9	1.0	71.0
1972	38.9	18.1	20.8	9.6	43.1	0.4	92.0
1973	49.9	19.5	29.5	13.5	67.8	1.7	132.0
1974	61.9	20.9	41.0	18.2	94.6	2.3	177.0
1975	63.0	19.4	43.6	16.5	122.3	3.2	205.0
1976	74.4	22.9	51.5	18.2	150.5	3.9	247.0
1977	99.2	29.3	69.9	21.0	174.4	5.4	200.0

Source: Bank for International Settlements - 45th and 48th Annual Reports. Basle, Switzerland.

It must be remembered that these funds are simply "channelled through the reporting European banks to their final end-users." These estimates do not account for the size of the Euro-currency markets in other parts of the world, and therefore underestimate the market's size somewhat.

A good contrast to the estimated size of the market given to us by the BIS figures is provided by David Ashby. It should be stressed that some of the figures are only estimates and that the intent of the estimate is simply to "give a good indication of the orders of magnitude involved."

TABLE III - ESTIMATED SIZE OF THE MARKET

ESTIMATED SIZE OF THE SUPER DOLLAR MARKET (U.S. \$000 MILLIONS,
END YEAR)

	<u>1971</u>	<u>1972</u>	<u>1973</u>
1. Europe-Based Market			
(A) Commercial Bank's External Assets	100	132	193
Belgium-Luxemburg	10	14	21
France	12	16	24
Germany	3	3	5
Italy	13	18	25
Netherlands	6	7	10
Sweden	43	56	84
Switzerland	13	16	22
United Kingdom	43	56	84
(B) London Inter-Bank Market	16	21	34
(C) Other U.K. Domestic Market	4	5	10
(D) Other European Domestic Market	10	14	20
(E) GROSS EUROPE-BASED MARKET (A & B & C & D)	130	172	256
(F) Net Europe-Based Market (As reported by BIS)	71	91	132
11. Non-European Market			
(G) Gross	27	40	57
Bahamas	12	18	28
Canada	7	8	11
Japan	7	10	11
Panama	$\frac{1}{2}$	1	2
Singapore	1	3	6
(H) NET	10	15	24
111. TOTAL SUPER-DOLLAR MARKET			
(J) GROSS (E & G)	157	212	314
(K) NET (F & H)	80	105	155

SOURCE: D. Ashby - The \$300 Billion Super-Dollar Market
THE BANKER - (May) 1974

To summarize, the gross size of the market - the total value of foreign currency loans outstanding by all commercial banks throughout the world-is estimated to have grown to roughly

\$314 billion, an increase of over \$100 billion in one year. On a net basis - excluding most inter-banks transactions - the estimate is \$155 billion. Ashby favours the gross estimate as the more reasonable approximation of the size of the market. He states that the BIS figures exclude a large volume of the inter-bank business in order to net out the double counting that arises when funds are transferred from one bank to another. This netting out, according to the author, simply:

" represents the economist's point of view of the market, measuring the funds through the market for final users... But for the international banker, seeking to put a figure on the total size of the market in which he operates... a wider definition that embraces all forms of Euro-currency activity is more meaningful..."(10)

Therefore, according to Ashby, the true estimate of the size of the market must entail the much broader definition, and would be reflected in the larger estimate - \$314 billion.

(IV). The Use of A Vehicle Currency

There is a wide variety of currencies traded in the market, each of varying importance. Table IV below gives us some indication of the volume and importance of some of the currencies traded in the Euro-market.

(10) Ashby, D. - "The \$300 Billion Super dollar Market." The Banker 1974. P. 451. (Emphasis in Original)

TABLE IV - EXTERNAL POSITIONS OF REPORTING EUROPEAN BANKS
IN DOLLARS AND OTHER FOREIGN CURRENCIES
(Millions of Dollars) Liabilities

Year	<u>DOLLARS</u>		<u>OTHER FOREIGN CURRENCIES</u> OF WHICH				
	Total	Vis-a-vis Non-Banks	Total	Vis-a-vis Non-Banks	D.Marks	Swiss France	Ster- ling
1970	58,700	11,240	16,590	2450	8,080	5,720	940
1971	70,750	9,980	26,980	2750	14,630	7,760	2110
1972	96,730	11,810	35,200	3620	19,540	8,810	2210
1973	131,380	17,470	60,720	5630	32,020	17,160	4560
1974	155,690	23,110	63,990	8050	34,220	18,250	3560
1975	189,470	24,280	69,200	6690	39,940	15,290	3140
1976	230,040	29,550	80,610	8970	47,230	15,880	3980
1977	272,880	34,200	110,560	12050	64,970	20,870	5980

Source: BIS - 45th and 48th Annual Reports. Basle, Switzerland

The most striking feature of the table, is the overwhelming proportion of transactions that are denominated in U.S. dollars. Approximately 71 percent of all transactions conducted in the market are denominated in U.S. dollars. Because this proportion is so large, the market is often referred to as the Euro-dollar market. The two other major currencies in the market, German Marks and Swiss Francs, account for roughly 17 and 5 percent respectively. All other currencies in the market account for the remaining eight percent.

The reason why the U.S. dollar captures such a disproportionate share of the market is due to the fact that the U.S. dollar serves as a vehicle, or key currency to the world.

Fred Bergsten points out that in order to have its currency serve as a vehicle currency, that country's economy must exhibit certain attributes. First of all, the size of the country's economy must be large, vis-a-vis the rest of the world. The importance of this characteristic is that the country must possess the power to deter other countries from taking actions inimical to its interests. Secondly, the country must also be strong enough to possess a relatively high degree of independence of national action, particularly during periods of political and economic uncertainty. The country must also have developed a relatively sophisticated capital market in order that it "possess a high stock and flow of savings...to finance adequate domestic growth, and to maintain a base for capital exports." (11) The country must also forego exchange controls because:

"such controls must either be pervasive and hence violate the fundamental requirement of key currency convertability, or partial and hence widely viewed as ineffective substitutes for eventual devaluation which would also violate the basic fixed price convertability requirement." (12)

(11) Bergsten, F. - The Dilemmas of the Dollar: The Economic and Politics of United States International Monetary Policy. New York, 1975. P. 198 -

(12) Ibid. - P. 198

It is interesting to note the reaction of market participants in the 1971-73 period, regarding the uncertainty of the U.S. dollar's external value. Geffory Bell states that:

"The non-dollar component of the market rose even more rapidly in 1971 as fears grew about the exchange rate and investors scrambled to buy Deutschmarks, Swiss Francs and other non-dollar currencies, with even sterling showing a sharp increase, all in expectation of revaluation against the dollar." (13)

What had happened to cause this currency scramble, was that the U.S. had violated some of the properties which had made its role as a vehicle currency possible.

The usage of a vehicle currency can confer some substantial benefits and advantages to those who hold this currency. A. K. Swoboda states that there is no reason for the existence of a vehicle currency if certain highly restrictive conditions prevail - such as perfect certainty as to the stability of exchange-rate and prices. But, as Swoboda states:

"when transactions costs - broker's fees, bank charges ...and so forth - are involved in the exchange of one asset for another, it becomes profitable for those agents whose receipts and expenditure streams are at least partially denominated in foreign currency even though the interest return on the latter is zero." (14)

Therefore, foreign currency balances will be positive when asset-exchange costs are positive, and will vary directly

(13) Bell, G. - The Euro-Dollar Market and the International Financial System. New York. 1973
P. 22

(14) Swoboda, A.K. The Euro-Dollar Market: An Interpretation
Princeton Essays in International Finance
Princeton: 1968 P. 5 - 6

with these costs. These holdings should also vary inversely with the trader's domestic rate of interest because when that rate of interest rises, the opportunity costs of these foreign-cash holdings rises.

There are several advantages of holding foreign cash balances in a vehicle currency, such as increased interest income on working balances, and the opportunity to accumulate wealth in an asset of almost universal purchasing power.

Increased interest income on working balances can be realized directly from the use of a vehicle currency due to a reduction in the size of idle (non-interest bearing) cash balances. To illustrate, assume that an importer deals with many countries. Therefore, in the absence of a vehicle currency, the importer must hold balances in each of the foreign currencies with which he deals with, in order to meet uncertain expenditures and receipts. If the use of the vehicle currency is introduced, then the size of these idle balances will fall. This comes about because as the volume of transactions increase, the optimum level of cash holdings of the vehicle currency will increase less than proportionately. This result is obtained from the general principle that:

"whenever discrepancies exist in the timing or currency denomination of income and expenditure streams, economies of cash balances can be realized by pooling different income and expenditure streams together...these economies are directly related to the value and number of separate expenditure streams that are pooled together and denominated in a single currency." (15)

The result of smaller idle cash balances leads to a rise in the proportion of interest bearing assets held as working balances. The larger this proportion, the larger will be the interest income on the working balances.

CHAPTER 2 - The Participants in the Euro-Market

(1) The Supply of Euro-Currencies

The supply of Euro-currencies comes from a variety of sources, notably central banks and other monetary authorities, commercial banks, national and international co-operations, wealthy individuals, and international organizations.

The volume of funds in the Euro-dollar market owned directly or indirectly by central banks and other monetary authorities is quite large, with a more modest volume held in the form of other currencies.

There are three methods by which central banks can deposit their funds in the Euro-market. The first is through the use of swap operations, where the central bank provides their domestic banks with dollars or other currency, "with a general or specific understanding that these dollars will be used to acquire foreign currency assets." (1) This type of action may be used to discourage an inflow or outflow of capital, or to inhibit a reflow of exchange through the commercial banks during periods when movements of funds becomes exaggerated in the expectation of exchange revaluation.

A good example of this type of swap operation was carried out in Italy during the late 1950's and early 1960's. The central authorities wanted to stem the inflow of funds, and began offering their commercial banks facilities for

(1) Oscar Altman - "Recent Developments in Foreign Markets for Dollars and Other Currencies."
Imf Staff Papers (March) 1962 P. 58

obtaining dollars by means of swaps on favourable terms (the authorities underwrote the exchange risk). By September 1972, the Italian commercial banks net exchange position vis-a-vis non-residents turned around from a liability position of \$350 million to a net foreign currency asset position of almost \$200 million, and:

"The banks were enabled to increase their net foreign currency lending to resident customers by about \$400 million. Thus, something over half the dollars made available by the authorities (\$950 million) were transferred abroad for employment, probably mostly in the Euro-dollar market." (2)

The second method whereby official funds can reach the Euro-market, is through the deposit of dollars in local banks without requiring these domestic banks to surrender an equivalent amount in domestic currency. The commercial banks are free to dispose of these dollars as they please.

The final method is through the direct placement of funds by the central authorities in the Euro-market. The primary reason why a central bank would be motivated to deposit funds in the Euro-market, is the desire to earn higher yields on their official reserves than obtainable in other capital markets, (notably the U.S. capital market). Central banks generally "have very few options as to where to invest their

(2) Ferras, G. - "Central Banks and the Euro-Dollar Market"
In: H.V. Prockmore (Editor) The Eurodollar
Chicago 1970 P. 93 . (addition added)

exchange reserves. Their primary considerations are liquidity, safety and the breath and resiliency of trading facilities - requirements that can only be satisfied by ... a handful of markets." (3)

Commercial banks represent a major source of funds flowing to the Euro-market. These banks have used the market on a large scale for the placement of their excess cash reserves. This supply is of special importance for commercial banks in those countries "that have no money market large enough to absorb available surplus funds." (4)

U.S. banks, while more active on the demand side, have also acted as suppliers. The usual procedure of U.S. banks is to place their deposits with their overseas branches or by granting credits to overseas correspondants.

Commercial banks are also motivated by the desire to earn higher yields on their working assets, but both safety and liquidity considerations are also taken into consideration as well, as F.H.Klopstock states:

"These institutions are not in the business of deriving major parts of their earnings from money market investments; profitable employment of liquid reserves, albeit important, is simply a sideline of their operations. The liquidity and safety of the funds to be invested...play a major part in determining their choice of investment outlets." (5)

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- (3) Klopstock F.H. - "The International Money Market: Scope, Structure and Instruments." Journal of Finance (March) 1965, P.184
- (4) Ibid. P. 187
- (5) Ibid. P. 185

When commercial banks do enter the Euro-market on the supply side, in most cases, "the investment of commercial bank funds involves interest arbitrage transactions- either between Euro-dollars and domestic securities or between Euro-dollars and other Euro-currencies." (6)

Individual and corporations are also large suppliers of funds to the Euro-market. National and multi-national corporations have used the Euro-currency market for "temporary placement of funds that had previously been borrowed in advance of their needs in European capital markets." (7)

Since the U.S. dollar acts as a vehicle currency to the world, non-U.S. firms engaged in international trade hold large deposits of U.S. dollars in the Euro-market. These holdings, and similar holdings of other corporations and individuals represent "idle balances" and are "generally kept in the most liquid form of sight deposits which do not fluctuate substantially." (8) However, for the most part, the balances held by individuals and firms are "working balances", held in the Euro-market in an attempt to earn a higher rate of interest than what is available in domestic money markets. G. C. Martenson states that both individuals and corporations are becoming

(6) Clendenning, E. Wayne - The Euro-Dollar Market Op. Cit.
P. 40

(7) Ibid. - P. 46

(8) Martenson, G.C. - The Euro-Dollar Market Boston
1964 P. 23

increasingly sophisticated with regard to the placement of their funds, such that:

"while by far the largest part of all liquid funds is still held on domestic accounts, it is clear that, when considering the disposition of such funds, the holders are becoming increasingly accustomed to comparing the relevant conditions on the domestic markets - yields, relating liquidity, security, etc. - with those which exist or which are expected to develop in markets abroad." (9)

With respect to the international organizations, such as the BIS, it is only rarely that such organizations contribute to the supply of funds in the Euro-market. One possible motive, however, for entry on this side of the market, is to stabilize it in times of temporary disturbances.

The table below gives some indication of the institutional and geographical sources of supply.

TABLE V GEOGRAPHICAL AND INSTITUTIONAL SOURCE OF EURO-CURRENCIES
QUANTITY SUPPLIED AT END OF YEAR (Billions)

	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
Outside Reporting:						
European Area						
United States	4.1	4.5	6.1	15.4	18.8	24.9
Other Countries	18.2	24.8	32.5	101.1	141.5	161.5
Total	22.3	29.3	28.6	177.0	160.3	191.4
Inside Area						
Non-Banks	12.5	14.2	16.0	39.2	45.5	54.9
Banks	9.2	13.5	16.4	40.3	41.2	53.7
Total	21.7	27.7	32.4	79.5	86.7	108.6
TOTAL	44.0	57.0	71.0	205.0	247.0	300.0

Sources: BIS - Various Annual Reports; and E.W. Clendenning-The Euro-Currency Markets and the International Activity of Canadian Banks. Ottawa, 1976 P. 38

(9) Ibid - P. 23.

(ii) The Demand For Euro-Currencies

The sources of demand for Euro-currencies are as varied as the supply. Oscar Altman distinguishes three types of uses for Euro-currencies upon which the demand could be derived. The first use is the ability of the Euro-currencies to finance international trade. Since the U.S. dollar is generally accepted as a means of payment through the world, (ie: it acts as a vehicle currency), international traders and investors have used the market as a source of funds to facilitate this exchange. The second use Altman foresees for the funds, is use in financing "commercial loans and other domestic transactions." (10) These two uses are termed "end-use" purposes because the funds are removed from the Euro-market and consumed by the demands. Of the two end-uses above, foreign-trade financing is the most important, due to, as F.H. Klopstock states, restrictions imposed upon the uses other than to finance foreign trade, by governments.(11) The final use for Euro-currencies is that they can be employed by the commercial banks to improve or correct their liquidity positions.

(10) Altman, Oscar - "Euro-Dollars: Some Further Comments"
IMF Staff Papers (March) 1965 P. 3
 (addition added)

(11) Klopstock, F.H. - The Euro-Dollar Market: Some Un-
 resolved Issues Princeton Essays
International Finance No. 65,
 Princeton N.J. 1968 P. 2

Altman goes on to say that:

"The Euro-dollar deposit is a new and international market instrument that make it possible for hundreds of commercial banks to deal with each other continually in order to adjust to their own liquidity positions." (12)

Potential sources of demand can be found quite easily after the uses of Euro-currencies are specified. Commercial banks, in adjusting their liquidity positions, have "found the Euro-dollar market an increasingly convenient source of funds, particularly during times of domestic credit stringency." (13) Canadian banks have borrowed Euro-currencies in order to re-lend the funds to the New York market in the form of broker's loans. Morgan, Harrington and Zis state that U.K. banks have "often borrowed Euro-dollars and switched them into sterling in order to make loans to local authorities and finance houses." (14)

Central banks and other monetary authorities do not, as a general rule, enter the market on the demand side very often. An exception to this rule is Belgium, who, "has made frequent use of Euro-dollar borrowing as a means of government finance." (15)

- (12) Altman, Oscar - "Euro-Dollars" P. 1
- (13) Bank of England - "The Euro-Currency Business of Banks in London" Quarterly Bulletin (March) 1970 P. 34
- (14) V. Morgan, R. Harrington and G. Zis - "The Euro-dollar Market" In: Banking Systems and Monetary Policy In The EEC. London, 1974, P. 140
- (15) Ibid. P.140

In instances when central banks have demanded Euro-funds, the purpose has usually been "to stabilize foreign exchange markets or to obtain dollar balances." (16)

National and multi-national corporations, as well as individuals have used the market as a source of readily available funds for employment in international and domestic transactions, as well as for financing capital investment projects.

The table below gives an indication of the demand for Euro-currencies by geographical area.

TABLE VI - ESTIMATED USES OF EURO-CURRENCY FUNDS
(in Billions of U.S. Dollars)

End of Month	Reporting European Area		United States	Canada and Japan	Other Developed Countries	Eastern Europe		
	Total	of which Non-Banks						
1974	61.5	41.3	18.2	18.2	20.4	10.1		
1975	63.0	43.6	16.5	20.2	25.8	15.9		
1976	74.4	51.5	18.2	21.6	33.0	20.8		
1977	99.2	69.9	21.0	18.7	42.6	23.8		
		Off-shore Banking Centers	Oil-Exporting Countries	Developing Countries	Unall-located	Total		
1974	26.7		3.4	15.7	2.7	177.0		
1975	35.6		5.3	19.5	3.2	205.0		
1976	40.8		9.6	24.7	3.9	247.0		
1977	43.7		15.6	30.0	5.4	300.0		

Source: Bank for International Settlements - 48th Annual Report Basle, Switzerland 1978. P. 102.

(16) Federal Reserve Bank of Cleveland - "The Euro-Dollar Market: Part 1 - Market Structure" Economic Review 1968 (March) P. 8

Throughout most of the 1960's, most of the Euro-currency borrowing was made by the developed countries. However, since the beginning of the 1970's, the developing nations have become more active in securing funds from the Euro-market. Morgan, Harrington and Zis, postulate two reasons for this trend. They state:

"Firstly, most of the developed countries were going through a phase of easy money and the demand for foreign currency loans was reduced. Secondly, competition among the banks to find outlets for dollar funds resulted in a lengthening of terms at which they were willing to lend until these terms became long enough to be of interest to less-developed countries. In December 1972 and February 1973 loans were arranged for Brazil with terms of 12 and 15 years respectively." (17)

The Euro-market has proved to be of great value in supplying funds to those countries experiencing balance of payments difficulties. Both Italy in 1973 and France in 1974 arranged loans to finance payments deficits. In addition, the rise in oil prices has produced strains on the payments position of the oil consuming nations, and the market has proved to be an effective conduit. Its main function in relation to the oil price rises has been to rechannel funds from the OPEC nations back to the oil consuming nations to pay for their oil imports.

(iii) The Euro-banks and Their Transactions

The institutions which act as intermediaries in the market are large commercial banks, called Euro-banks. These

Euro-banks can be defined as:

"an international banking institution with its own capital base, a certain degree of management autonomy, executive offices in London or another international finance center, and whose principal activity is related directly or indirectly in the taking of deposits in Euro-currencies...and on-lending them to customers or other banks." (18)

The Euro-banks have chosen to enter the market because Euro-currency transactions, "despite relatively small margins and intense competition among lending banks, the size, diversity and flexibility of this market permit higher returns on capital than most national markets." (19) Another factor contributing to the entry of some banks, is that if they had not entered the Euro-market, they might have suffered some loss, or at least would run the risk of losing some part of their domestic Prime-Name Client business to their competitors in the Euro-market. This factor has been of special importance for the establishment of branches in London by the American banks, as G. Bell testifies:

" The main reason for the opening of branches by U.S. banks...has been promoted by the competitive positions within the United States as well as the need to follow their customers abroad." (20)

The British authorities have generally made it quite easy

(18) S.I. Davis - The Euro-Bank: Its Origins, Management and Outlook London, 1976. P. 22

(19) J. Blondel - "Revolving Credits in Euro-currencies" The Banker (Sept) 1972 P. 1154

(20) Bell - P. 29

for new potential Euro-banks - those with banking from an established financial institution - to enter the London Euro-market, as Stephen Davis states:

"Such approval has been granted following a relatively brief trial period to the Euro-bank affiliates of foreign banking institutions of size and stature the Bank considers adequate to provide sufficient support to the London affiliates." (21)

Included among the Euro-banks are branches of some of the largest banks in the world. In the London market alone, ninety-seven of the world's 100 largest banks have some form of representation. There is an inherent tendency towards big banks because the market, "is entirely of a wholesale nature and transactions are typically of a minimum size of \$1 million. (22) Loans in excess of \$100 million, and larger, have become a common feature of the market. Once established, there are four broad categories within which a Euro-bank can specialize:

- "(1) By acting as intermediaries.
- (2) By seeking funds for the expansion of their own commercial operations.
- (3) By lending and borrowing funds in order to adjust their liquidity positions, and
- (4) By entering into arbitrage and speculative operations." (23)

(21) Davis - P. 35

(22) Bell - P. 12 (Emphasis in Original)

(23) Clendenning - The Euro-Dollar Market. P. 12 - 13

By "acting as an intermediary", these banks deal primarily with other banks in the market, preferring to have as little contact with commercial or industrial borrowers as possible. The intermediary banks operate on large scale on both sides of the market, and stand ready to quote the rates at which they will accept and offer funds. These banks provide a very useful service of "bringing together the major international banks who have loanable funds but limited knowledge of local markets, and the large number of smaller banks which want dollar deposits for end-use loans." (24)

The banks operating in this area of specialization operate with a minimum of risk, and therefore they must work on smaller margins than those of banks operating in other areas. The margins that the intermediary banks work on range anywhere from 1/32 percent to as high as 1/4 percent, (25) between the quoted bid and asked rates. Loans made by these banks are generally made for periods of up to one year, although loans for periods of longer than one year have been made.

By seeking funds in the Euro-currency market for their own commercial operations, these banks are attempting to expand

(24) F.E. Morris and J.S. Little - "The Euro-Dollar Market Today: Size, Scope and Participants" In: Prochnow - The Euro-dollar P. 56

(25) Altman - "Recent Developments" P. 59

or maintain their positions in domestic and international lending activities. These are three basic purposes to which Euro-currency funds can be used when obtained by these specialized banks.

"to finance international trade for either residents or non-residents, (2) to finance domestic activity in other countries, or (3) to finance domestic activity in its own country." (26)

The motive for the first two purposes is to expand its international and domestic borrowing and lending activities. The motive for participation in the third purpose is to maintain the level of its domestic activity when it cannot obtain the financial resources needed from its own domestic money markets. In this respect, the Euro-market may be used as a source of additional funds, and the banks may use these funds to increase their resources and their ability to extend credit. By obtaining additional funds from the market, banks can circumvent central bank's domestic monetary policies, because as Oscar Altman states, "if they are subject to a domestic credit squeeze by their monetary authorities, they can obtain additional liquidity by accepting dollar deposits." (27)

In regards to the third area of specialization - to adjust their own liquidity positions, some banks, notably those whose domestic money markets have not been sufficiently developed so

(26) Clendenning - The Euro-Dollar Market P. 13

(27) Altman - "Recent Developments" P. 61

as to provide a full range of financial services and maturities, may use the market to obtain additional instruments in which they can place their liquidity. In this regard, the Euro-market may be supplanting the domestic money markets of some countries, with "banks placing funds in the (Euro) market during periods of excess liquidity and withdrawing funds when they have a shortage of liquidity". (28)

The most important aspect of the arbitrage and speculative function is the interest arbitrage between the "Euro-dollar deposits and other Euro-currency deposits." (29) The market has also proved to be a ready source of funds for those banks who have engaged in speculative activities with respect to various national currencies.

While activities of the Euro-banks have been classified into four broad categories, there are no restrictions placed on the participating banks confining them to one area of specialization. They can, and in many cases do, operate in all areas simultaneously. But, as Oscar Altman states, there is a tendency for a bank to become specialized in specific activities:

"The great majority do a diversified business, placing deposits with other banks, making loans to industrial or commercial customers...Nevertheless

(28) Clendenning - The Euro-Dollar Market P. 14
(addition added)

(29) Ibid - P. 14

the relative importance of these activities varies greatly from one bank to another. To a considerable extent, banks are specialized with respect to areas of investment, types of customers, size of commitments, and maturities." (30)

Because of the large size of the loan transactions that are conducted within this market, there is a natural bias for large banks. Smaller and medium sized banks, in an effort to capture a share of the market, have banded together to form "consortia" banks. The consortia banks however, are not the exclusive preserve of smaller banks, because "the consortium banking movement includes most of the major banks in the world." (31) In general, a consortia bank is one whose capital has been subscribed by a number of different banks, hence "the shareholders of most consortium banks are themselves banks... are of different nationality...and come mostly from the developed countries of the North Atlantic." (32) The basic idea of a consortia is to pool the resources and skills of a number of banks together, and thereby, the strength and expertise of the resulting consortia will be significantly

(30) Altman - "Recent Developments" P. 54

(31) von Clemm, Michael, - "The Rise of Consortium Banking"
Harvard Business Review (May, June) 1971
P. 121

(32) Boreham, G.F. - "Current Banking Practices in the United Kingdom, West Germany, and Australia"
Discussion Paper prepared for the Economic Council of Canada. No. 62 1976 P. 38

increased. The end result of this co-operation is to give the consortia a competitive edge over individual banks operating in the market. With regard to helping smaller banks, the effect of a consortia bank is twofold:

"both in terms of providing a Euro-market service for the customers of share holding banks which have no direct representation in this market themselves, and in terms of channelling business ...back to their shareholders." (33)

The earlier consortia did not perform any specific specialization, but instead, as Michael von Clemm states, tended to, "concentrate largely on traditional banking functions." (34) However, the more recent consortia, (circa 1972 and later) have tended to adopt specific areas of specialization, such as a geographical specialization, or in the provision of capital for a particular industry.

A consortium with a geographical specialization, for example, is the Anglo Romanian Bank, and whose terms of reference is to "be involved in banking business relating to Romanian trade with the U.K. and Commonwealth countries, and also with some European and other countries." (35) The trend in consortium banking now is in the direction of providing a

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- (33) The Banker - "Consortium Banks Grow Up"
(Nov.) 1973. P. 1303
- (34) von Clemm - P. 126
- (35) The Banker - "Consortium Banks" P. 1303

specialized service. The BANKER has concluded that:

"Whereas the older consortium banks have in most cases been able to expand into wide ranging independent banking operations in their own right, the latest additions are likely to be much more restricted both in their freedom of operation and in the extent to which they diversify." (36)

This view of consortium banking is also held by Michael Blandem, who sees the future role of these banks as continuing to provide an:

"appropriate method of seeking international business for smaller banks not of a size to attempt full international coverage themselves; it may also continue to be appropriate for specialized purposes where particular expertise (in a geographical area, such as Latin America, or in a particular type of business, such as oil finance) is brought together with the resources of big group of banks:" (37)

Another vehicle by which large loans have been effected is through "syndication". A syndicate is formed when a number of banks - individual or consortium banks - join together in order to raise a large sum of money for a particular loan.

"The key element in lending through syndicates is that it affords a much greater distribution of risks than a single-bank lending." (38)

(36) Ibid. - P. 1303 - 1305

(37) Blandem, M. - "Consortium Banks - Is the Honeymoon Over?" The Banker - (Nov) 1974 P. 1344.

(38) Mohammed, A.F. and Saccomanni, F. - "Short-Term Banking and Euro-Currency Credits to Developing Countries." IMF Staff Papers (Nov) 1973. P. 622

The method of syndication is given by G. Boreham:

" A consortium bank will take the lead in negotiating a loan and then bring in other lenders to participate in the issue; the number of lenders has ranged from three to 50 spread throughout the world. Each member of the syndicate agree to provide a certain portion of the total amount, although the lead bank need not contribute." (39)

Two methods of syndication are common in the Euro-market. The first is called the "broadcast system", where the managing bank solicits a large number of banks around the world to join the syndicate. The second, called the "straight syndication", is a method whereby a loan is committed from the beginning by a group of banks selected by the lead or managing bank.

Syndication has become a fairly popular method of minimizing the risks for a particular bank when the competitive pressures of the market rise significantly. The increase in the competitive environment can occur when there is a combination of a rapidly rising supply of funds on the market, and a dearth of "big-name" borrowers to whom large amounts of funds would normally be entrusted by a single lender. In such a situation, banks have been forced to lend to lesser known customers (such as third-world countries) and have done so by reducing the amounts committed in any one transaction." (40)

(39) Boreham - P. 40 (footnote)

(40) Mohammed and Saccomanni - P. 622

While syndication has proven to be an effective method of reducing the risk that any one Euro-bank has to bear in lending to any particular customer, there are inherent dangers in this method of lending, because:

" banking principles are increasingly supplemented by insurance principles in that the focus is primarily on risk distribution and secondarily on credit worthiness analysis. Being a lead bank does not involve any greater financial risk than a participant bank if the former does not take up a very substantial amount of the loan." (41)

The evaluation of risk is also a problem associated with the loan syndication. Such a risk evaluation is often summary with the lead bank often relying on "the feasibility and the profitability studies carried out by the contractors...or suppliers of equipment." (42) Michael von Clemm states:

"much, if not most, lending is done on a "name" or "near name" basis, which is to say that minimum financial analysis is performed by the individual participants in a lending syndicate - indeed, even the syndicate manager's financial analysis of the borrower is often slight when the loan is made on a "name" basis." (43)

Because the competition in the market is so fierce, there have been changes in the relative shares of the market accounted for by the different groupings of Euro-banks. Table VII, shows the structural changes that have occurred since 1968, for three broad categories of Euro-banks.

(41) Ibid - P. 622

(42) Ibid - P. 623

(43) von Clemm - P. 129

TABLE VII PERCENTAGE OF TOTAL LENDING BY BANK CATEGORY

Bank Category	April 1968	July 1969	Feb. 1970	Oct. 1971	Oct. 1972	Nov. 1977
British and Commonwealth*	35.5	31.0	35.7	33.2	31.3	N/A
of which: British	N/A	N/A	N/A	27.5	26.1	22.7
Commonwealth	N/A	N/A	5.7	5.2	6.0	N/A
American Banks	48.3	56.1	48.4	48.6	43.2	28.6
Other Foreign Banks	16.3	13.0	18.4	20.0	22.7	48.8
of which: Consortium	N/A	N/A	N/A	5.3	5.9	15.2
Other Foreign	N/A	N/A	N/A	14.7	16.8	33.6
Total Lending	7224	15887	21366	24743	33820	40251

* Includes British Overseas Banks

Sources: Mary Cambell - "Term Structure of the Euro-currency markets" The Banker; and, Bank of England Quarterly Bulletin (March) London, 1978, Table, 21-3.

The table shows that the relative shares of lending activity accounted for by the U.S. banks has fallen off substantially. The British and Commonwealth banks have also suffered a decline. The big gainers have been the consortium and other foreign banks (notably the Japanese and European banks), who have captured almost half the market.

The intense competition in the market among the Euro-banks has led to a modification in the maturity structure of assets and liabilities during recent years. While assets have tended to remain short-term, liabilities have moved toward longer maturities. This lengthening in liability maturity has come about because:

"borrowing governments and public agencies of deficit

countries wanted to acquire funds for relatively longer periods of time. In addition the apparent glut of funds flowing into the system induced Euro-banks to seek new outlets, including agencies in developing countries who wished to borrow for relatively long periods and other, perhaps risky ventures." (44)

This divergence of the time to maturity for both sides of the market is shown in Table VIII below. The table shows the ratio according to the category of lender/borrower and maturity.

TABLE VIII - MATURITY ANALYSIS OF LIABILITIES AND ASSETS OF U.K. BANKS IN FOREIGN CURRENCIES

Maturity	Liability-Asset Ratio			
	U.K. Inter-Bank	Other U.K. Residents	Banks Abroad	Other Non-Residents
July, 1969				
Up to 3 Months	1.0.	2.18	0.86	1.93
3 Months to 1 Year	0.96	0.41	1.10	1.78
1 Year and Longer	0.98	0.01	1.26	0.19
Over-All Position	1.00	0.90	0.91	1.33
November, 1974				
Up to 3 Months	0.97	1.16	1.34	1.28
3 Months to 1 Year	1.02	0.30	1.37	0.62
1 Year and Longer	0.98	0.01	0.93	0.10
Over-All Position	0.98	0.42	1.30	0.62
November, 1977				
Up to 3 Months	1.041	1.907	1.255	2.439
3 Months to 1 Year	1.223	0.276	1.775	0.514
1 Year and Longer	1.174	0.011	0.457	0.154
Over-All Position	1.108	0.323	1.338	0.579

Sources: G.W. McKenzie - The Economics of the Euro-Currency System, London, 1976 P. 125; and Bank of England, Quarterly Bulletin March 1978 Table 21/3

(44) McKenzie, G. W. - The Economics of the Euro-Currency System. London, 1976. P. 124.

The table shows that the asset-liability ratio of the U.K. Euro-banks vis-a-vis one another has remained relatively unchanged at approximately one. The important ratio here in relation to a changed maturity structure in the market, is illustrated in the third column showing the ratio for these banks vis-a-vis foreign banks. The table states that in 1969, for assets with maturities of up to three months, short-term assets exceeded liabilities. The reverse held true for assets exceeding one year, reflecting the fact that the U.K. banks had reversed their positions and were now borrowing short and lending long (over one year).

In respect to the banks' positions vis-a-vis non-residents, the November 1977 figures show that the U.K. banks had suffered a further decline in their asset-liability ratio.

The existence of the Euro-currency market ensures that there will be an increase in the interest elasticity of capital and an increase in the magnitude and velocity of international capital flows. The result of this is that:

"the money markets of the major industrial nations have become very closely linked. And as a result, of this linkage, the Euro-dollar market has had a significant impact on the rates of growth of the money supply over a wide geographical area." (1)

The market's impact on the domestic money supply policies of different nations leads to the proposition that the market also "can affect total world demand in a meaningful sense." (2) Therefore, it becomes rather important to determine if the Euro-banks, acting in their role as financial intermediaries, can create, or cause a multiple deposit and credit expansion as do commercial banks in a domestic banking system.

The problem of determining whether or not the Euro-market can effect a multiplication of deposits and credit has proved to be the most contentious area of debate on the Euro-market. There exists no consensus on the magnitude of credit creation that the market can effect, with some analysts claiming the market possesses large credit creation powers, while others claim that it can effect only a minimal amount of credit creation.

(1) Bell - The Euro-Dollar Market . . .
Op. Cit. P. 42

(2) Idim - "Credit Creation Through Euro-Dollars?"
The Banker (August) 1964 P. 494

In addition, there is no agreement on the approach to be taken in determining the extent of the market's autonomous credit and deposit creation powers. There are several different approaches that can be taken. The most commonly used approach is the fractional reserve analogue, where the Euro-banks are assumed to act in the same manner as do domestic banks operating under a fractional reserve banking system. The second approach taken regards the Euro-banks as being part of a larger banking system. This approach is based upon the assumption that there is an "interdependence between the Euro-banks and other banks that deal in dollar deposits and loans." (3). The final framework used is the portfolio balance model, where the multiplier is estimated on the basis of a continuously changing rate of 'leakages' out of the market. This changing rate of leakages is determined by the relative interest rates in the different capital markets.

(1) The Fractional Reserve System

In a domestic banking system, where the commercial banks are subject to a fractional reserve requirement, reserves are supplied to the banks exogenously from a variety of sources.(4)

(3) Mulendyke, Ann-Marie - Causes and Consequences of the Euro-Dollar Expansion. Ph.D. Dissertation, The University of Chicago, Chicago Illinois. March 1975. And Research Paper No. 7503, Federal Reserve Bank of New York. P. 4

(4) Reserves may be supplied by the central bank, by deposits of currency from the non-bank public, by a balance of payments surplus, or by a gold sales to the monetary authorities.

An injection of reserves from any source will enable the banks to effect a process of deposit creation. The change in total deposits resulting from any injection of reserves will be

$$D = \frac{1}{1 - (1-r)(1-e)} \cdot R; \text{ where } D \text{ is the change in deposits,}$$

r is the reserve requirement, e is the ratio of leakages to deposits, and R is the initial reserve injection. This same injection of reserves will enable the banks to effect a process of credit creation. The total volume of credit that can be created is represented as, $g = \frac{(1-r)}{1 - (1-r)(1-e)} \cdot R$; where g is the credit multiplier.

Many commentators on the Euro-market have attempted to explain credit and deposit creation in the Euro-market in terms of the fractional reserve multiplier approach, commonly applied to a domestic banking system.

Geoffery Bell's (5) analysis of the Euro-multiplier is fairly simple, but it can be used to show the basic framework and the mechanics involved in credit creation.

First, Bell distinguishes two separate models of credit creation, the first dealing with the inter-bank lending market, and the second dealing with lending to non-bank customers. A distinction is also drawn between 'high-powered' and 'secondary' dollars. High-powered dollars are defined as the liabilities of U.S. residents which can be used to serve as a medium of

(5) Bell - "Credit Creation" and The Euro-Dollar Market

exchange. Secondary dollars denote the dollar denominated liabilities of Euro-banks, which are liquid assets (time deposits), but cannot be used as a medium of exchange.

Bell assumes that a resident of the U.S. transfers a demand deposit at a U.S. bank to a Euro-bank, held now as a time deposit. The U.S. banking system is unaffected by this transfer because the level of demand deposits at U.S. banks remains the same, only the ownership of the deposit has changed with the Euro-bank now assuming ownership. The money supply of the U.S. is also unaffected because the foreign-owned demand deposits are counted as part of the money supply. The net effect of the transfer has been to create an addition to the supply of dollar denominated deposits - there is no reduction in the level of U.S. demand deposits, while there is an increase in the level of deposits at Euro-banks. The Euro-banks will then convert its new demand deposit into an interest bearing asset by relending, or redepositing the funds at a second Euro-bank at a higher interest rate than it pays on the time deposit. This first Euro-bank has also converted a demand deposit into a time deposit (at the second Euro-bank). The result of this second transfer is the creation of another dollar denominated time deposit. Therefore from the original demand deposit, (ie: say \$100), we have doubled the amount (ie: \$200) of liquid assets, with the total supply of U.S. demand deposits remaining the same, only the ownership of the deposit has changed.

Theoretically, it would be possible to continue this process of credit pyramiding indefinitely because there is no limiting factor. The economic significance of this secondary deposit creation is limited because banks, as Bell states, are "basically non-spenders (simply intermediaries between final lenders and borrowers)".(6) The real importance of this inter-bank market, ascribed to by Bell, is that "funds can be quickly placed in the hands of those banks with loan demands, which improves the efficiency of reserve allocation." (7)

The second model of credit creation is the more important case of loans to non-bank customers. When a Euro-bank makes a loan to a commercial customer, the ownership of the demand deposit in the U.S. is transferred from the Euro-bank to the commercial customer. Therefore, the high-powered money is removed from the market and the process of secondary creation ends. The borrower has the choice of spending the loan proceeds directly in the U.S. market, or he may convert his loan into another currency and spend that. (Bell assumes that a borrower cannot spend a dollar loan in a country whose currency is not the dollar, and in this sense he implicitly assumes that a Euro-dollar does not embody the medium of exchange function). If the borrower spends the loan in the U.S. market, then the ownership of the

(6) Idim - The Euro-Dollar Market
P. 49

(7) Ibid - P. 49

demand deposit is transferred to an American resident. Therefore, the total volume of U.S. bank deposit remains the same as long as the proceeds of the transaction received by the American resident does not go to pay off a bank loan. The action of the foreign spender has increased spending in the U.S., and has also tended to raise incomes there as well.

If the American resident decides to place some portion of his receipts in the Euro-market, then the Euro-banking system will again have some amount of high-powered money to lend. Thus the Euro-market is able to effect a process of credit creation.

The same consequences hold true where the non-bank borrower uses his loan of dollars to acquire another currency, for example French francs. In this case, the demand deposit in the U.S. will end up in the hands of the Banque de France. If the Banque decides to hold a U.S. time deposit or government security, then no further Euro-market expansion can take place. However, if the Banque decides to redeposit the funds back into the Euro-market because of its desire to earn a higher yield on its balances, then the process of Euro-expansion of credit can take place.

Bell goes on to state that the key variable in the multiple expansion of credit is the volume of redepositing. This volume is dependent upon the "interest sensitivity of dollar holders and the minimum money balances in an economy - which determines the volume of idle balances that could be activated by employment

in the Euro-market. (8)

Bell concedes that the return flow to the Euro-market is probably small, but, he states that if central banks are included in the analysis then the "possibility of a substantial return flow is increased." (9) Bell's justification for this possibility is that central banks are "large lenders to the system. . . and it is by no means inconceivable that a part of these dollars were originally borrowed from the Euro-market." (10) Fred Klopstock (11) has also applied the multiplier framework to the Euro-market. However, he has some reservations about the complete applicability of the concept to the market. He states that: "in theory, credit and deposit creation in the United States and Euro-dollar systems might be postulated to be similar, in actual practice the forces behind monetary expansion in the two systems differ in many important respects." (12)

There are three important differences between the two systems that Klopstock has in mind - the reserves held by the Euro-banks, the ratio of leakages out of the system, and the market's ability to issue a medium of exchange.

(8) Idim - "Credit Creation" P. 501

(9) Ibid - P. 501

(10) Ibid - P. 501

(11) Klopstock, Fred - "Money Creation in the Euro-dollar Market - A Note on Professor Friedman's Views." Federal Reserve Bank of New York Monthly Review (Jan) 1970: and, The Euro -Dollar Market: Some Unresolved Issues

(12) Idim - "Money Creation" P. 12

With respect to the reserve issue, Klopstock notes that Euro-banks are not required to hold any minimum level of reserves in non-earning assets at a central bank. The reserves that the banks do hold are contingency reserves, held to meet unexpected withdrawals, and the level of these reserves is minimal. For liabilities payable on a specific date, or only after some advance notice, the level of contingency reserves would be small. For deposits payable at call and for current account deposits, Klopstock states that the function of reserves can be served through alternative measures such as:

"One is the Euro-bank's cash reserves in local currency, if convertible into dollars (though their actual use could entail unanticipated interest rate and forward-rate costs). Another is stand-by credit lines at American banks. And a commonly used alternative is call deposits of dollars in other Euro-banks, as such deposits can be made available in the United States within a day or two, if need be." (13)

With only a small fraction of deposits held as reserves, it would seem theoretically possible to have a very large expansion of credit. However, the actual credit expansion, according to Klopstock, will be quite limited because of the "massive" leakage of currency from the system. The Euro-banking system, unlike the U.S. banking system, cannot count "on recapturing more than a small fraction of their loan proceeds...(and) tend to lose most of the dollar balances employed in loan extensions." (14)

(13) Idim - The Euro-Dollar Market P. 6

(14) Idim - "Money Creation" P. 13 (addition added)

The basic reason cited by Klopstock for this massive volume of leakages is due to the fact that the market's deposits, in the main, do not embody the functional qualities of money - ie: it does not serve as a medium of exchange. Klopstock states that:

"A full understanding of the difference between the deposit expansion process of the two systems hinges on the fact that deposit liabilities of American banks serve as the principle means of payment while those of Euro-banks do not. Few Euro-banks provide dollar checking facilities. Only a small proportion of Euro-bank deposits consist of call and overnight deposits. Although these latter resemble demand deposits... call and overnight deposits held in Euro-banks by non-banks are quite small.

Since its demand deposits serve as means of payments ... the United States banking system in the aggregate may expect that the deposits created as it expands credit will stay in the system.

Euro-banks in the aggregate . . . can expect no more than a modest rise in their deposit liabilities as a result of their dollar loans." (15)

Klopstock then estimated that the Euro-credit multiplier would lie in the approximate range of 0.50 to 0.90 (16), which would mean that the growth of the market would be, to an overwhelming extent, due to the market's ability to attract new deposits, and not due to any indigenous ability to cause a multiple expansion of credit.

Fritz Machlup (17) distinguishes three different sources whereby Euro-bank dollar deposits may come into existence: The

(15) Ibid. - P. 14

(16) Idim. - The Euro-Dollar Market. P. 8

(17) Machlup, Fritz - "Euro-Dollar creation: A Mystery Story" Banca Nazionale del Lavoro Quarterly Review (Sept) and "The Magicians And Their Rabbits" Morgan Guaranty Survey (May) 1971 P. 3-13

inflows of deposits from abroad, conversions from domestic currencies into dollars, and creations of dollar deposits by the Euro-banking system through the expansions of loans and investments. This last source of dollar deposits are "made in Europe."

The Euro-banks are assumed to hold three different kinds of dollar assets, with each class of assets having a different redeposit ratio. The first category of assets consist of claims against banks and other debtors residents in the U.S.. The probability of redeposits for this class of assets is the lowest of the three because Americans are most likely to use the dollars for transactions in the United States. (18)

The second category of assets consists of claims against banks and other debtors located neither in the U.S. nor in Europe.. The probability of a redeposit here is greater for this class of asset than for the first category because "these dollars lent or invested may well be used for payments to firms or individuals who will redeposit the dollars with European Banks."(19)

The third category of assets specified by Machlup, deals with dollar claims against banks and other debtors resident in Europe. The probability of redepositing for this asset with a Euro-bank is the greatest of all the different classes. As long

(18) Idim. - "The Magicians" P. 4

(19) Ibid. - P. 6

as leakages (loans or investments not redeposited back into the system) are not absolute - 100% - then the Euro-banking systems' "dollar-deposit liabilities are increased beyond the amounts due to primary deposits. This explains the 'multiple creation' of Euro-dollars by European banks." (20)

Machlup then tries to form an estimate of the two sources of primary deposits - inflows of dollars from abroad (defined by Machlup as the net outflows of private capital from the U.S. plus the errors and omissions category of the U.S. balance of payments) and currency conversions into dollars. Adjusting the resulting figure to account for the U.S. capital outflow that did not go to the Euro-market and adding an estimated figure for the capital flow into Europe that originated in countries other than the U.S. Machlup states that:

"the result would hardly come to 50% of the increase in Euro-dollar deposits. On this sort of reasoning rests the judgement that perhaps more than half of all Euro-dollars now in existence have been "made in Europe." (21)

This figure of 50% would give a Euro-dollar deposit multiplier of two.

John Makin (22) begins his model of the Euro-dollar deposit multiplier with the assumption that Euro-dollars serve as a store

(20) Ibid. - P. 6

(21) Ibid. - P. 10

(22) Makin, John - "Demand and Supply Functions For Stocks Of Euro-Dollar Deposits: An Empirical Study" Review of Economics and Statistics Nov. 1972; and, "Identifying a Reserve Base For The Euro-Dollar System." Journal of Finance (June) 1973

of value and as a substitute for a medium of exchange. Makin states that while such a deposit cannot be used directly to finance expenditures, a Euro-dollar depositor:

"may time the maturity of the deposit so that the receipt of a direct dollar claim in the form of a demand deposit on a United States financial institution will coincide with a payments requirement. In this way Euro-dollar deposits serve as a substitute for money... It cannot be used directly to effect payment, but it is readily transformed into the means of payment upon previously specified terms." (23)

Makin's objective is to specify a stable demand function for Euro-dollar deposits because such a condition is "a necessary condition for a reflow of deposits... and hence is a necessary condition for the growth of Euro-dollar deposits by way of multiple deposit creation." (24) Upon the assumption that dollar deposits can be used as "substitute money", then the "demand for them should be positively related to an index of the international flow payments among Euro-dollar holders, and negatively to the returns on alternative assets. (25) Alternative assets are listed as claims on U.S. financial institutions, gold, and claims denominated in currencies expected to appreciate against the dollar.

The stock of deposits supplied is specified to depend upon the stock of reserves held by the Euro-banks. These reserves

- (23) Idim. - "Demand and Supply Functions" P. 381-382
 (24) Ibid. - P. 382
 (25) Idib. - P. 383

are endogenously determined and serve as precautionary reserves. The reserves are assumed to be negatively related to the opportunity cost of holding reserves (where the rate on 90-day Euro-dollar deposits serve as a proxy for the opportunity cost), and are positively related to the growth in Euro-dollar deposits (but the rise in reserves will be less than proportionate to the growth in deposits, due to economies of scale in reserve holdings). Makin has estimated that the ratio of reserves to Euro-bank net assets has fallen from 14% in 1964 to roughly 5% in 1970. (26) This fall has been attributed to three factors: - the economies of scale in the management of reserves, the absence of any reserve requirements, and the availability of contingency reserves from the United States. The reserves are defined as the demand deposits of foreign banks at U.S. banks exclusive of claims on home offices of the branch banks. Claims are treated by Makin as loans to the parent banks.

On the demand side, Makin's analysis leads him to conclude that "holdings of Euro-dollar deposits have risen systematically with an index of world trade flows among industrial countries, the major holders of Euro-dollar deposits in the period under consideration." (27) From this, Makin suggests that the hypothesis that Euro-dollar deposits serve as a medium of exchange

(26) Idim - "Identifying a Reserve Base" P. 616

(27) Idim - "Demand and Supply Functions" P. 387

or near-money, cannot be rejected.

On the supply side, the results conformed to Makin's prior expectations that the supply of deposits increased directly with reserves after some time lag. This gives us a steady relationship between Euro-bank reserves and the total deposits supplied, with deposits supplied responding to reserve changes.

Makin incorporates Clendenning's delayed reflow effect (28) into his analysis. This delayed reflow effect calls for a time lag between the "granting of a Euro-dollar loan and the reflow of a loan proceeds." (29)

With a stable relationship between total deposits and reserves Makin then estimates the growth of deposits induced by the Euro-deposit multiplier, by using the growth of reserves as his guide (a constantly falling rate of reserves is used).

His estimates of the short-run multiplier, based upon a one-quarter feedback of deposits of 0.903 and with reserves

(28) Clendenning, E.W. - "Euro-Dollars and Credit Creation"
International Currency Review
(Mar/April) 1971

(29) Ibid

- P. 18: Clendenning identifies three cases where this delayed reflow might be of particular importance: (1) if the loan proceeds are converted into foreign currencies at a central bank and the central bank holds the dollars as reserves, (2) if the dollars are used to finance a series of transactions outside the market (most likely Europe) before re-entering it. (3) where the loan proceeds end up in the hands of a firm or individual who may want to hold Euro-dollar balances.

falling at the rate of 3.45% per quarter, is 10.31. The long-run multiplier, based upon the delayed reflow of 0.9458, is given as 18.45. (30)

The short-run multiplier of 10.31 would account for roughly 22% of Euro-dollar deposit growth. The long-run multiplier of 18.45 would account for about 40% of deposit growth over the period from 1964-III to 1970-IV. The difference between the two deposit growth rates is assumed to be the impact of Clendenning's 'delayed reflow' of funds to the market.

Guido Carli (31), and Michelle Frationni and Paolo Savona(32) have adopted a novel approach to the determination of the Euro-market's credit multiplier. Their models are based upon the concept of the 'international monetary base', which is similar to the concept of a country's monetary base.

Carli begins his analysis by describing the process of credit creation in a domestic banking system, based upon the monetary base concept.

(30) Idim - "Demand and Supply Functions" P. 389

(31) Carli, Guido - "Euro-Dollars: A Paper Pyramid?"
Banca Nazionale del Lavoro Quarterly Review (June) 1971

(32) Frationni, M. and Savona, P. - "International Liquidity: An Analytical and Empirical Reinterpretation." In A Debate on the EuroDollar Market, Quaderni di Ricerche No. 11 (Rome Bancari e Finanziari Luigi Einaudi, 1972): and, "Euro-dollar Creation: Comments on Prof. Machlup's Propositions and Developments" Banca Nazionale del Lavoro Quarterly Review (June) 1971

"The thesis that banks can multiply credit and through this deposits... (is based upon the process) that First the banking system as a whole grants a line of credit to a customer, then the customer draws checks on his line of credit and the check's recipients have them credited on their own accounts in the same banking system; as a result bank deposits are created.

According to this line of thinking, a study of credit-creation mechanisms must begin by singling out that category of financial instruments on which the banking system as a whole relies when granting credit lines, ie. those assets which can be used as reserves... instruments by the banks. These assets which are the basis of the process of credit multiplication are usually denominated 'reserve funds' or 'credit base' or, even more frequently, 'monetary base'". (33)

Carli then claims that the 'magic art' of credit creation, based upon the monetary base, is also performed in the Euro-dollar market. He then expands the concept of the monetary base to arrive at the international monetary base. Carli states that the U.S. has managed to get itself into a large short-term debt, with the result:

"the rest of the world has found itself in the corresponding position of holding short-term claims on these liabilities mostly in the form of deposits and money market paper held by official organizations (mainly central banks), commercial banks and individuals. Any variations in the quantity of these holdings alter the liquidity conditions of the rest of the world...Therefore the liquidity of the rest of the world is affected by the behaviour of the U.S. balance of payments." (34)

Therefore Carli's definition of the international monetary base includes the balance on liquidity basis of the U.S. balance of payments. Included in the liquidity balance is the inter-

(33) Carli - Euro-dollars" .P. 95-96 (Addition added and emphasis in original)

(34) Ibid. - P. 99

national reserves held by foreign central banks, deposits at U.S. commercial banks held by individuals and overseas commercial banks, and the balances on "other liquidity" and "U.S. Official Reserve Assets" components of the liquidity balance.

Reserves of the Euro-banks are defined as the Euro-banks claims on the United States. Included here are the liabilities (sight deposits) of the overseas branches of the U.S. banks and Euro-funds lent to U.S. banks and subject to immediate withdrawal. If these sight deposits are converted into time deposits within the U.S. banking system, then the Euro-credit potential will be reduced since these deposits are not immediately available and cannot support a multiple expansion of deposits. However, Carli does recognize that a portion of these deposits will be included as reserves because of agreements allowing for quick convertability into cash or "other monetary assets accepted by their clientele."

Carli then divides the net size of the Euro-market by his Euro-bank claims on the U.S. to obtain his multiplier, and concludes:

"From these figures one can see that the amount of short-term U.S. liabilities in the hands of non-residents has reached proportions justifying fears... that in a short amount of time the credit Euro-banks might create on this base could in fact reach inflationary dimensions, or at least become an important disturbing factor in... domestic monetary markets. However ... the multiplication of international means of payment has occurred with moderation and at the moment does not appear to total more than three times the international monetary base held by banks." (35)

Carli does note that this multiplier could rise to seven, if there was "a weakening in the needs (or the simple holding) of dollars held by U.S. banks." (36)

Frationni and Savona use a much larger concept of the international monetary base (IMB) than Carli does. They define it as all those assets "which can be used by foreign official agencies, commercial banks, and the public to meet reserve requirements, irrespective of the nature of the requirements." (37)

The composition of the international monetary base is given as:

"the sum of the foreign held money stock of the key currency countries and the liabilities of a supernational organization such as the IMF. The IMB includes the gold stock net of private users and gold deposits at the IMF, SDR's, the IMF reserve position plus credits granted by the IMF, unused credit lines at the Federal Reserve Bank of New York, and all dollars and convertible currencies held by non-residents (ie: held by people for whom the currencies are not part of their country's monetary base) and in principle any financial asset which can be transformed into vehicle currencies at sight and without capital loss, provided such a transformation represents an addition to the existing stock of international monetary base." (38)

The question that Frationni and Savona examine is whether the Euro-banking system has the ability to create IMB. The authors have concluded that:

"On this question...there is no reason to expect the Euro-banking system to behave any differently from a domestic banking arrangement. Those who persist in denying this inherent characteristic of the international money market have to sustain the burden of proof... Otherwise they

(36) Ibid. - P. 107

(37) Frationni and Savona - "International Liquidity"
P. 52'

(38) Ibid. - P. 52

ought to supply an explanation why a group of banks - often the same ones and under common management - which is granted money-creating abilities in the domestic market, mysteriously loses these abilities when functioning in the foreign currency market . . . we consider the above theoretically settled." (39)

Frationni and Savona have developed a fairly sophisticated model of Euro-credit creation.(40) Their multiplier concept is similar to that of Carli's, where the credit multiplier is determined by dividing the total earning assets of the Euro-banks by their reserve holdings. Their basic function is given as:

$$CREU = g^S (i_{deu} , i_{cp}) IMB^b$$

where CREU = earning assets of the Euro-banks in non-domestic funds.

i_{deu} = the three month rate on Euro-dollar deposits.

i_{cp} = the rate on commercial paper in the United States (the 4-6 month rate)

IMB^b = the International Monetary Base held by the Euro-banks.

It is assumed that the banks' supply of Euro-dollar loans is homogenous of degree one with respect to IMB^b . With this specification the authors are prepared to estimate the bank credit multiplier (g^S). This multiplier is defined implicitly as $(1-r/r)$, where r is the average reserve ratio of the Euro-banking system. The reserves held by the Euro-banks are defined by Frationni and Savona as IMB^b . The desired level of reserves are assumed to be influenced by

(39) Idim, - "Euro-dollar Creation." P.118

(40) Idim, - "International Liquidity" P.97 - 105

various interest rates and the withdrawal risks of deposits. Because r is not available from the existing data endowment, the objective of the two authors is to estimate the IMB^b through the use of several proxy variables.

The rate on four-to-six-month commercial paper, i_{cp} , is used as a surrogate for the yield on IMB^b . Consequently, any increase in i_{cp} will tend to raise the demand for IMB^b relative to Euro-dollar earning assets, thereby lowering the credit multiplier g^s . The Euro-dollar deposit rate, i_{deu} is used as an indicator of the Euro-market credit rate for which there is no available data. The authors state that they expect the spread between the credit and deposit rates to be quite small in such a highly competitive market.

Frationni and Savona approximate IMB^b through two alternative measures: (a) the short term liabilities of U.S. banks vis-a-vis their foreign branches, and, (b) the uses of Euro-dollars of the United States.

Employing the first measure - short-term liabilities of U.S. banks vis-a-vis their foreign branches - presents certain problems because of the existence of two opposing biases. This measure may understate the true value of IMB^b because it doesn't include the reserves of banks other than the foreign branches of U.S. banks. However, the estimate may overstate the reserve base of foreign branches thereby overstating IMB^b . Frationni and Savona give no information as to the magnitude of each bias, claiming that it would only

be by pure chance that the two biases perfectly neutralize each other.

Using this proxy variable, the authors obtained through a regression equation, a value for the credit multiplier of 7.68.

The second proxy variable for IMB^b was Euro-dollars absorbed by the United States. The credit multiplier obtained here was 5.27

The two authors continued on to test for an "implicit reserve requirement" placed on the foreign branches of U.S. banks. Fratianni and Savona stated that the demand for Euro-dollar funds may be related to other deposit-type liabilities, notably large certificates of deposits (CDs). However this relationship may be applicable only in the case where the market deposit rates are below those set by Regulation Q. When the market rates surpass the Regulation Q ceiling rates on CDs, maturing CDs are not renewed but are shifted to other markets with no rate ceilings. Under such circumstances, the parent U.S. bank will arrange that the CD of its customer be "placed" on the books of its foreign branch, and the net outflow of deposits is offset by "arranging" an equivalent amount with its foreign branch. In this manner the parent bank does not experience a net loss of funds. This type of operation - the shifting of funds to another market and immediately borrowing the funds back - is called "round-trip" borrowing.

Therefore, the "implicit reserve requirement" would become operative during periods when Regulation Q becomes effective and the parent becomes a heavy borrower from its

foreign branches.

Using the two proxy variables for IMB^b , the authors tested the impact of the implicit reserve requirement. Two different periods were tested; the first was 1964 iv to 1966ⁱⁱ when the reserve requirement wasn't binding, and secondly, 1966 iii to 1970 iv when the requirement became operative. The results of the regression equation for the first period were 9.48 and 6.75 for the two proxy variables respectively. However, for the second period, 1966 iii to 1970 iv, when the implicit reserve requirement became operative, the regression results for the value of the credit multiplier became significantly lower, to roughly 7 and 5 for each respective proxy variable. The authors stated that they considered "the test as a preliminary indication that the demand for Euro-dollars funds by U.S. banks has effectively constrained the supply of Euro-dollar credit." (41)

(41) Ibid. - P. 103

(ii) Euro-Banks As Part Of a Larger Banking Network

Milton Friedman (42) and Ann-Marie Mulendyke provide an alternative to the fractional reserve analogue for the explanation of the mechanism of credit creation. The Euro-banking network, under their hypothesis, is not an independent system, but rather one which is connected to, and is only a small segment of a much larger banking network. The link between the two banking systems - the Euro-dollar market and the United States banking system - is that they both deal with dollar deposits and loans. Consequently, any action taken in one part of the market will have repercussions in the other segment. In effect, Friedman's and Mulendyke's analysis makes explicit recognition of the

(42) Friedman, Milton - "The Euro-Dollar Market: Some First Principals." Federal Reserve Bank Of St. Louis Review
July, 1971

interdependencies between the Euro-dollar system and the U.S. banking system. (43)

Milton Friedman's analysis seems, at first glance, to be more applicable to the fractional reserve analogue than to larger banking composite hypothesis. Statements such as:

"This point- that Euro-dollar institutions, like Chicago banks, are part of a fractional reserve banking system- is the key to understanding the Euro-dollar market. The failure to recognize it is the chief source of misunderstanding about the Euro-dollar market." (44)

and:

"Euro-dollars, like "Chicago dollars" are mostly the product of the bookkeeper's pen - that is, the result of the fractional reserve banking." (45)

would seem to confirm suspicions about the direction of his analysis. However, Friedman does recognize that the Euro-banks, like 'Chicago banks' are part of a larger network, so that the one market cannot be examined in isolation of the other.

Important in the analysis is the different sets of regulations governing the Euro-market and the U.S. market. The most important difference in this context is the fact that Euro-

(43) Mulendyke, Ann-Marie - Causes and Consequences of the Expansion: and "Demand and Supply Functions For Stocks of Euro-Dollar Deposits: An Empirical Study: Comment" Review of Economics and Statistics (Aug) 1975

(44) Friedman - "The Euro-Dollar Market" P. 18

(45) ~~Ibid.~~ - P. 21

banks have no externally imposed reserve requirement.

Because of the different conditions governing each market a switching of deposits from one market to the other may allow for a reduction in the level of required reserves to be held in U.S. banks. Friedman illustrates how this may come about, and the consequences of the switch:

"Suppose...that Euro-dollar Bank H of London loans the \$900,000 of excess funds that it has as a result of the initial deposit...to the head office of Morgan Guaranty, ie: gives Morgan Guaranty a check for \$900,000 on itself on return for an I.O.U. from Morgan Guaranty. This kind of borrowing from foreign banks is one of the means by which American banks have blunted the impact of CD losses. The combined effect will be to leave total liabilities of Morgan Guaranty unchanged but to alter their composition: deposit liabilities are now down \$900,000 (instead of the \$1,000,000 deposit liability it formerly had to the Sheik it now has a deposit liability of \$100,000 to Bank H), and other liabilities (funds borrowed from foreign banks) are up \$900,000.

Until very recently, such a change in the form of a bank's liabilities...had an important effect on its reserve position. Specifically it freed reserves...With the shift of funds to Bank H, however, and completion of the \$900,000 loan by Bank H to Morgan Guaranty, Morgan Guaranty's reserve requirement at the Fed. fell appreciably. Before the issuance of new regulations that became effective on September of this year, Morgan Guaranty was not required to keep any reserve, for the liability in the form of the I.O.U....The change in the form of its liabilities would therefore have reduced its reserve requirement by \$157,500...without any change in its total liabilities or total assets...Hence it would have had this much more available to lend." (46)

Friedman goes on to say that the change in the regulations-requiring Morgan Guaranty to hold reserves against its I.O.U.- makes it impossible "to generalize about reserves effects," because they may or may not have additional reserves available to lend after

the transaction between the U.S. and Euro-bank.

The importance of the above quotation from Friedman is that it implicitly recognizes the interconnections and interdependencies between the two markets. Since both markets deal in dollar claims and liabilities, and since Euro-banks hold their reserves at U.S. banks, then an inter-market (in the larger sense) may lead to an expansion of credit in the U.S. market.

Ann-Marie Mulendyke adopts Friedman's allegory of "Chicago banks" and extends the analysis further. To develop this hypothesis, Malendyke states that if we assume that the Chicago banks - the banks residing in the geographical area of Chicago - were exempt from the Regulation Q interest rate ceilings on certificates of deposits (CD's) permissible by the regulation, the Chicago banks would be in a position to attract a large volume of CD's at the expense of the other banks, providing that their rates rose along with the other market rates. Therefore, the Chicago banks, because of the injection of new reserves, would be in a position to cause a multiple expansion of their credit. However:

"If the Chicago banks maintained the same ratio of reserves to deposits as the other banks, then the Chicago banks would show an increase in deposits equal to the loss of deposits at other banks. The Chicago banks would not, by themselves, have created deposits, but the deposits they held would have been created to about the same extent that deposits at other banks, in the system were created." (47)

(47) Mulendyke - "Demand and Supply" P. 352

If it is assumed that the Chicago banks are not subject to reserve requirements, and hold at a lower ratio of reserves to deposits, the net effect on deposit creation will be different than in the case above:

"a shift of deposits to Chicago banks would release reserves. Hence, deposits of Chicago banks could increase by more than the amount of decrease at the other banks for any volume of reserves in the system ...In these circumstances, there is a net addition to deposits brought about by the lower reserve ratio of the Chicago banks. These deposits are truly created by the Chicago banks, because deposits were not extinguished in any other part of the banking system." (48)

Mulendyke then states that the Chicago example "parallels the Euro-dollar case in several important respects." The Euro-banks have no reserve requirements and no interest rate ceilings imposed upon them by a central authority. Therefore:

"an increase in their share of deposits will lead to an increase in the total volume of deposits (at Euro-banks and United States banks combined) by facilitating a higher ratio of deposits to reserves. Thus, it is the ratio of reserves to deposits at Euro-banks relative to that of United States banks that determines the extent of deposit creation by Euro-banks. If ...Euro-banks holdings of reserves...are minimal, then essentially all Euro-dollar deposits are created, regardless of whether there is a multiple creation within the system." (49)

Mulendyke has presented some evidence to support her case. The first step is the specification of reserves held by the Euro-banks. For Euro-banks which are not foreign branches of

(48) Ibid. - P. 352

(49) Ibid. - P. 352

U.S. banks, their deposits held in the U.S. are not classified as reserves. These deposits are subject to a reserve requirement applicable to any ordinary demand deposit (which ranged from 16.5% to 18% for the period of study.) Also included in the working balances were balances held there to facilitate trade and other dollar transactions. These were estimated to be roughly 1.3 billion dollars (50) and were subtracted from the total of foreign bank deposits at U.S. banks.

Reserves against liabilities of U.S. banks to their branches were recorded as non-deposit liabilities to the foreign branches. Included here are both loans to the parent bank and working balances held with the parent in the U.S.

Therefore, Mulendyke adds reserves attributed to branch and non-branch Euro-banks and computes the ratio of reserves to deposits by dividing Euro-reserves by Euro-deposits, with the deposits being measured by the Bank for International Settlements net size series. This ratio was found to lie between 0.4% to 0.8% for most of the period from 1964 to 1973(51)

This reserve ratio was then compared to the U.S. domestic reserve ratio to obtain the "net additions to dollar deposits." The deposit in the domestic context that was selected for comparison were deposits at large domestic Federal Reserve banks.

(50) Idem. - Causes and Consequences p. 24

(51) Ibid. - P. 25

TABLE IX NET ADDITIONS TO EURODOLLARS (Billions of Dollars)
 Calculations Using U.S. Average Reserve Ratio | Calculations Using CD Ratio

YEAR	(1) Ratio of, U.S. Bank Total Reserves to Deposits	(2) Eurodollar Reserves Divided by U.S. Bank Reserve Ratio	(3) Net Additions to Dollars from Eurodollar Expansion	(4) Percentage of 'Created' Eurodollars	(5) Required Reserve Ratio on U.S. CD's	(6) Eurodollar Reserves Divided by CD Ratio	(7) Net Additions to Dollars from Eurodollar Expansion	(8) Percentage of Eurodollars that are Created
1964	0.0049	0.5	8.5	95	0.04	1.1	7.9	88
1965	0.0041	0.5	11.0	96	0.04	1.2	10.3	90
1966	0.0058	0.9	13.6	94	0.06	1.4	13.1	90
1967	0.0058	1.1	16.4	94	0.06	1.7	15.8	90
1968	0.0055	1.5	23.5	94	0.06	2.3	22.9	91
1969	0.0153	5.9	31.6	84	0.06	9.6	27.9	74
1970	0.0128	6.5	39.5	86	0.05	11.8	34.2	74
1971	0.0049	3.1	50.9	94	0.05	5.3	48.7	90
1972	0.0057	5.1	64.9	93	0.05	8.0	62.0	86
1973	0.0079	9.7	87.3	90	0.08	9.6	87.4	90

Source: A.M. Mulendyke; CAUSES AND CONSEQUENCES OF THE EURODOLLAR EXPANSION.
 UNPUBLISHED PH.D. DISSERTATION, THE UNIVERSITY OF CHICAGO, CHICAGO,
 ILLINOIS, MARCH 1975. and; RESEARCH PAPER NO. 7503, FEDERAL RESERVE
 BANK OF NEW YORK, 1975.

In addition, in order to show the minimum possible expansion effects that might occur the CD reserve ratio was also computed and compared.

Therefore, with the Euro-ratio and the U.S. ratios available the potential U.S. deposit expansion that could have occurred is then calculated, the results are given below in the table.

Therefore, for the year 1972, the results show that roughly \$65 billion or 86% of Euro-dollar deposits "constituted a net to the aggregate money supply including Euro-dollar deposits." (52) and in most years "over 90% of Euro-dollar deposits represented a net addition, using the average reserve ratio for U.S. deposits, and between 85 and 90 percent, using the CD reserve ratio." (53)

(iii) The Portfolio Choice Approach

John Hewson (54) and Eisuke Sakakibara (55) have formulated

(52) Ibid. - P. 29

(53) Ibid. - P. 29

(54) Hewson, J. - "Credit Creation in the Euro-Currency Market-Is There a Case for Controls?" In International Money-Experiments and Experience. Papers and Proceedings of The Port Stephens Conference 1976. Wolfgang Kasper (Ed) Canterra, Australia 1976: P. 159-181

Hewson J. and Neihans J. - "The Euro-dollar Market and Monetary Theory." The Journal of Money Credit and Banking (Feb) 1976 P. 1-27

(55) Hewson J. and Sakakibara E. - "The Euro-Dollar Deposit Multiplier: A Portfolio Approach." IMF Staff Papers 1974 P. 307-328; and The Euro-currency Markets and their Implications: A "New View" of International Monetary Problems and Monetary Reform: Lexington 1975.

an alternative approach to the determination of the Euro-multiplier on the basis of the explicit portfolio choices of the markets participants. The model incorporates the "new view" of monetary theory as offered by James Tobin. (56)

Under the traditional multiplier analysis, it is assumed that an injection of new reserves into the banking system will enable the system to expand deposits by some multiple of the initial injection. Under the "new view" this process is not so simple and is governed by principle of profitability:

"Without reserve requirements, expansion of credits and deposits by the commercial banking system would be limited by the availability of assets at yields sufficient to compensate banks for the cost of attracting and holding the corresponding deposits. In a regime of reserve requirements the limits they normally impose, normally cuts the expansion short of this competitive equilibrium. When reserve requirements and deposit interest rate ceilings are effective, the marginal yield of bank loans and investments exceed the marginal costs of deposits to the banking system. In these circumstances additional reserves make it possible and profitable for banks to acquire additional earning assets. The expansion process lowers interest rates...but ordinarily not enough to wipe out the banks' margin.

It is the existence of this margin - not the monetary nature of bank liabilities - which makes it possible for the economics teacher to say that additional loans permitted by new reserves will generate their own deposits." (57)

Tobin then concludes that:

"Commercial banks do not possess, either individually or collectively, a widow's cruse which guarantees that any expansion of deposit liabilities. Certainly this happy state of affairs would not exist in an unregulated competitive financial world. Marshall's scissors of supply and demand apply to the "output" of the banking industry,

(56) Tobin, James - "Commercial Banks as Creators of Money" In, Readings in Money, National Income and Stabilization Policy, W.L. Smith and R.L. Teigen (Editors) Homewood, Illinois 1974 P. 224-229

(57) Ibid. - P. 228

no less than to other financial and non-financial industries. Reserve requirements and interest ceilings give the widow's cruse myth somewhat greater plausibility. But even in these circumstances the scale of bank deposits and liabilities is affected by depositor preferences and by the lending and investing opportunities available to banks." (58)

The relevance of Tobin's arguments to the Euro-currency market is given to us by Hewson and Neihans.

"as we have learned from Tobin, the paradigm of the fixed co-efficient approach is a bank which can, because of imperfections in the credit market, change its balance sheet without affecting the various interest rates...The Euro-dollar market...is highly perfect in the sense that interest rates on all assets and liabilities are determined from day to day in a highly competitive process without significant elements of credit rationing. As a consequence, a simple reinterpretation of the fixed co-efficient multiplier is illegitimate ... The question is still about the creation of Euro-dollars due to a spontaneous shift in asset preferences, but now the interest mechanism moves to the center of the stage." (59)

It is in relation to the portfolio preferences of the non-bank public that moves the interest mechanism to 'center stage'. The rate of interest becomes the equilibrating force in the credit markets. It is assumed that the public's portfolio preferences are largely determined by the relative interest rates in the different capital markets. A shift in asset preferences from U.S. dollars to Euro-dollars, will tend to depress the Euro-dollar interest rate and raise the U.S. interest rate. This change in relative interest rates will induce an outflow of deposits, and to encourage those seeking funds to borrow from

(58) Tobin - P.229

(59) Hewson and Neihans - "The Euro-dollar Market and Monetary Theory." P.5

the Euro-market. Therefore, the "ultimate effect of this exogenous inflow of funds to the Euro-dollar market, would depend on the portfolio adjustments induced by the changes in relative interest rates that arise from exogenous inflows."(60)

This multiplier is termed by Gunter Dufy and Ian Giddy as a "marginal multiplier", and is designed to measure:

"the final effect on the total deposits of any new autonomous deposit. Thus the marginal multiplier for the Euro-dollar market . . . shows the relationship between an increase in the deposits held in the United States by Euro-banks . . . and the resulting change in total Euro-dollar deposits."(61)

In their model, Hewson and Sakakibara explicitly recognize the importance of the portfolio choices made by the bank and non-bank public. The authors assume that the Euro-banks exert no influence on the equilibrium Euro-dollar interest rates. In addition, because of the highly competitive nature of the market, it is assumed that the Euro-banks maintain a constant margin between the lending and deposit rates. Therefore the "principle operating rule of Euro-banks may be viewed as that of adjusting the deposit rate so as to equate deposits simultaneously to loan demands."(62) Reserve holdings are assumed to be minimal, and to account for central bank Euro-market deposits, it is assumed that "European" central banks hold a fixed ratio (cd) of their total foreign reserves (FOR) on deposits at the Euro-market.

(60) Hewson - "Credit Creation" P.164-165

(61) Gunter Dufy and Ian Giddy - The International Money Market. Englewood Cliffs, N.J. 1968 P. 136

(62) Hewson and Sakakibara - "The Euro-Dollar Deposit Multiplier" P.314-315

Therefore given the above assumptions, the equilibrium conditions for the Euro-bank sector is stated as:

$$(1) \quad cd \cdot FOR + \sum_{i=1}^n D_i = \sum_{i=1}^n L_i$$

where; D_i = the demand for Euro-dollar deposits by country i

L_i = the demand for Euro-dollar loans by country i

The demand functions for deposits and loans are assumed to be a function on net wealth, income, rates of return, FOR (the level of foreign reserves of all "European" countries) is the sum of deposits of central banks in the Euro-dollar market, ($D_{ec.ed}$) and the accumulated overall United States balance of payments deficits, (B_{us}). Therefore :

$$FOR = D_{ec.ed} + B_{us}$$

$$(2) \quad FOR = cd \cdot FOR + B_{us}$$

$$FOR = \frac{1}{1-cd} B_{us}$$

Therefore, substituting equation (2) into equation (1); yields:

$$(3) \quad \frac{cd}{1-cd} B_{us} + \sum_{i=1}^n D_i = \sum_{i=1}^n L_i$$

Hewson and Sakakibara then state that in order to derive the deposit multiplier, it is necessary to define the impact on the size of the Euro-dollar market of an exogenous shift (λ) of deposits from the U.S. commercial banks to the Euro-dollar market. This is accomplished by totally differentiating

equation (3) with respect to (λ) . The results show the impact of the shift on the Euro-dollar interest rates:

$$(4) \quad \frac{dr_{ed}}{d\lambda} = \frac{1}{(1-cd) \sum_{i=1}^n \left(\frac{dL_i}{dr_{ed}} - \frac{dD_i}{dr_{ed}} \right) - cd \frac{dB_{us}}{dr_{ed}}}$$

where: r_{ed} = the Euro-dollar interest rate

Defining the size of the Euro-dollar market (S) as the total volume of Euro-bank deposit liabilities, the Euro-dollar deposit multiplier ($M = dS/d\lambda$) is expressed as:

$$(5) \quad M = \frac{dS}{d\lambda} = \frac{d \left(\sum_{i=1}^n D_i + \frac{cd}{1-cd} B_{us} \right)}{d\lambda}$$

Therefore, substituting equation (4) into (5), gives:

$$(6) \quad M = \frac{dS}{d\lambda} = \frac{1}{1-cd} + \frac{\frac{d \sum_{i=1}^n D_i}{dr_{ed}} + \frac{cd}{1-cd} \frac{dB_{us}}{dr_{ed}}}{(1-cd) \sum_{i=1}^n \left(\frac{dL_i}{dr_{ed}} - \frac{dD_i}{dr_{ed}} \right) - cd \frac{dB_{us}}{dr_{ed}}}$$

If the central banks are absent from the market, ($cd=0$), the multiplier would lie between zero and unity. The initial shift of funds would be offset by secondary effects, caused by movements in relative interest rates (interest rate leakages) responding to the capital movements. In particular, the initial shift of funds from the U.S. to the Euro-market would lower the Euro-dollar rate relative to the rates in the U.S. and Europe. This would decrease the relative attractiveness of investing in the Euro-market, but increases the market's attractiveness for borrowers. Therefore the total impact will be positive, causing the multiplier to lie between zero and unity.

If the central banks are included in the analysis, the multiplier would stand between zero and $(1/1-cd)$.

In order to determine the numerical magnitude of this multiplier, the authors estimated the relevant "partials of the deposit and loan functions with respect to the Euro-dollar interest rate." (63) The basic form of the demand function for deposits and loans were given as:

$$D_i = f(r, W_i, Y_i, X, S)$$

$$L_i = g(r, W_i, Y_i, X, S)$$

where; r = vector of interest rates

W_i = wealth variable of country i

Y_i = income variable of country i

X = vector of control variables

S = vector of speculative variables.

The control variable (X) were introduced in order to take account of the controls placed on short-term capital flows, and which were seen to have had considerable impact on the flow of capital into and out of Euro-banks. In relation to the speculative variable (S), the authors introduced it to account for the frequent and large volumes of currency speculation that took place during their period of study, 1968 - 1974. The world was divided into three sections - Canada and the U.S., Western Europe, and the Rest of the World - and three deposit and loan functions were computed for each section.

In order to determine the value of (cd) - the ratio of

central bank Euro-dollar deposits to their total reserves, - it was assumed that the ratio of the change of the sum of "Identified Official Holdings of Euro-dollars" plus "Unidentified Euro-currencies and Residuals" to the change in total foreign reserves of all member countries of the International Monetary Fund would be appropriate. The authors stated that use of this ratio to act as a proxy for Euro-dollar deposits by central banks would make their multiplier estimate a maximum estimate.

Their estimate of the multiplier was 1.41 so that "total deposits would have increased slightly more than the magnitude of the primary inflow." (64)

(64) Ibid. - P. 325

(iv) Criticisms and Conclusions

It has been generally accepted that the fractional reserve approach gives us a fairly good explanation of the process of deposit and credit creation in a closed banking system. This approach may be legitimately applied to such a banking system because it embodies several important institutional characteristics - a stable reserve: deposit ratio, a controllable and stable demand function for reserves - which allow for changes in bank reserves to be associated in a stable and predictable manner with changes in the supply of credit. However, it is the absence of these characteristics that makes the application of this bank multiplication formula to the Euro-market invalid.

In regards to the stability of the reserve ratio, domestic banks are required by law to maintain some minimum level of reserves. The force preventing these reserves from rising more than marginally above the minimum level is the quest for profits. Therefore, because of these two opposing forces, we should have a fairly stable reserve: deposit ratio, and also one which should be relatively inelastic with respect to interest rate movements. The important point to recognize here, states Andrew Crockett, is that:

"there is a discontinuity in the implicit yield on reserves (The 'yield' on reserves can be thought of as the value to a bank of avoiding the legal sanctions that results from inadequate reserves). Below the required minimum, the implicit marginal yield is extremely high; above the prescribed minimum, it is zero. Thus, movements in the yield on alternative

assets will have no influence on the ratio of reserves that an individual bank wishes to hold." (65)

The stock of reserve holdings is also predictable. In a closed banking system, the central bank has the power to create (or destroy) new reserves. These reserves can only leak out of the system through an exogenous increase in the demand for currency on the part of the public. However, the demand for currency is relatively inelastic with respect to interest rates, and consequently, the stock of bank reserves is also invariant with respect to the interest rates. The essential point here is:

"it is the discontinuity in a closed banking system, in the banks' demand for reserves that makes the multiplier useful as an analytical tool and policy instrument. The existence of reserve requirements means that the yield on a marginal loan is always greater than the cost of a marginal deposit. As soon as the authorities remove this constraint... the banks can be counted on to respond by expanding their balance sheets.

In other words, it is not the mechanical nature of credit creation by banks that makes reserve requirements essential, but rather the existence of reserve requirements that makes credit creation conform to a multiplier framework. (This is not intended to be an observation that diminishes the significance of reserve requirements); the existence of a predictable fulcrum on which open market operations can work may be a very desirable feature in improving the responsiveness of the banking system to monetary policy." (66)

(65) Crockett, Andrew - "The Euro-currency Market: An Attempt to Clarify Some Basic Issues." IMF Staff Papers 1976

(66) Ibid. - P. 379-380

The Euro-banks, on the other hand, have no minimum reserve requirements, and no specified type of asset that they must hold as their reserves. The implicit yield on their reserves, as Crockett states, will not be discontinuous, but rather a "continuous function of both the interest rate and the amount held." (67) Rainer Masera has also recognized this problem of specifying the quantity and type of asset to be held as reserve. He states:

"Euro-banks are free in their choice of the maturity composition of both their assets and their liabilities. This makes the level of reserves an endogenous variable for the individual bank and for the system as a whole. When, for instance, interest rates are expected to fall, attempts will be made by Euro-banks to lend somewhat longer and borrow somewhat shorter, while allowing for higher levels of reserves. Reserve ratios and the maturity composition of assets and liabilities depends therefore on actual and expected interest rate conditions." (68)

The upshot of this is that changes in relative rates will induce changes in the quantity and type of reserve asset held, and, as Masera states, "the quantification of these reserves... is likely to prove a will - o' - the - wisp." (69)

In addition to the problems associated with specifying the quantity and type of asset held as reserves, it seems likely that there may be large and variable levels of leakages of

(67) Ibid. - P. 381

(68) Massera, Rainer S. - "Deposit Creation, Multiplication and the Euro-Dollar Market." In: A Debate on the Euro-Dollar Market P. 176.

(69) Ibid. - P. 181

reserves out of the system. Helmut Mayer (70) has questioned the validity of the usage of the multiplier framework on the basis of the market's inability to issue a medium of exchange. It is claimed by Mayer that before a Euro-deposit can be used to effect a transaction, it must be first converted into a deposit with a bank in the U.S. or converted into the domestic currency of the borrower. This alone may account for a sizeable volume of leakages. In addition, the direction of the outflow may produce different leakage volumes. For example, if a European resident withdraws dollars from the market and converts them into his own domestic currency, then eventually the dollars may end up with the country's central bank. The possibility that the central bank may redeposit the dollars back into the Euro-market will depend upon several factors, such as relative interest rates, the country's monetary policy at the time, etc. However, given the propensity of central banks to deposit their international reserves in the market, it is not unreasonable to assume that the chances of some portion of the funds being redeposited back into the market is fairly good. But if the person withdrawing the funds happens to be an American resident, it is likely that the chances of some part of the funds being redeposited back into the market is somewhat poorer because the dollar is the country's medium of payments.

(70) Mayer, Helmut - "Multiplier Effects and Credit Creation In the Euro-Dollar Market." Banca Nazionale del Lavoro Quarterly Review (Sept) 1971 P. 233 - 262

Consequently, the dollar recipient will likely keep their balances in the U.S. banking system and not redeposit them back into the Euro-market.

Therefore, the variability and the magnitude of the leakages from the Euro-market provides an additional problem to those wishing to apply the standard multiplier framework to the Euro-market. In a closed banking system, as Crockett has states, the leakage ratio is fairly constant, and in addition, it is also invariant with respect to interest rate movements. But this leakage ratio is not stable in the Euro-market. It seems likely that it will vary according to the direction of the outflow, and it will also change in response to changes in the interest rates. If, as Crockett has stated, it is the existence of reserve requirements that makes credit creation conform to the multiplier framework, then a necessary condition for validity of this framework is a stable rate of leakages from the market. However, this rate of leakages from the Euro-market is extremely variable and, in addition, probably very large. Therefore, the case for the application of the multiplier framework to the Euro-market is weakened when account is taken of the leakage ratio.

Rainer Masera has concluded that the application of the multiplier concept to the Euro-market is invalid because:

"one of the three basic pillars on which the approach rests is valid in the Euro-system: (i) the 'base' of the system; if any such aggregate can in fact be identified, is not exogenously determined; (ii) the

loss co-efficient in respect of Euro-banks' lending is generally large and extremely variable, so that there is no automatic flow-back of loan proceeds to the Euro-system; (iii) a stable demand function for base reserves of the Euro-system may well exist, but the function ... is highly complex in practice, therefore, this can amount to the same thing as having an unstable and unpredictable function." (71)

Andrew Crockett has also concluded along similar lines, stating:

"Credit multiplier analysis is therefore a special case that is derived from general portfolio theory by assuming that asset demand and supply functions are discontinuous, and thus the demand for reserves is not significantly affected by changes in interest rates in the relevant range. For the Euro-currency market, there is not a prior reason to expect these assumptions to hold, and, indeed, there is strong empirical evidence to the contrary." (72)

If we accept the proposition that the multiplier framework cannot in any meaningful sense be applied to the Euro-market, then we must examine the alternative proposals to see if they do a better job in explanation of the creation of credit in the Euro-currency market.

The proposal put forward by Mulendyke and Friedman, seems to be more applicable to an analysis of the effects of the market on the domestic monetary policies, than multiplication of credit through the autonomous powers of the market. Mulendyke has stated that it is the existence of a different deposit: reserve ratio in the two markets that makes credit creation possible. This approach is dependent upon the

(71) Masera - "Deposit Creation" P. 181

(72) Crockett - "The Euro-Currency Market" P. 382-383

assumption that the Euro-dollar market is simply a small part of the larger U.S. banking system. John Makin has criticized this method of explanation because:

"This view implies that a difference in reserve ratios ... is a necessary condition for the existence of Euro-banks to have added anything to the total of dollar denominated dollars in the world. Such a view ignores the growth of Euro-dollar deposits from sources which desired to hold assets with the properties of dollars that were not issued by the United States. Another way of putting the point is to say that while the Euro-dollar is a close substitute for a United States dollar, it is not a close substitute for it as a St. Louis dollar is for a Chicago dollar, and therefore, the strict analogy of Euro-banks and Chicago banks breaks down. Aliber... has pointed out that it is a degree of 'political risk' as opposed to 'exchange risk' which distinguishes Euro-dollars from United States dollars in the eyes of the depositors. No such 'political risk' distinguishes Chicago dollars from other United States dollars.

Another weak point in the analogy... is that Euro-banks conduct business in currencies not denominated in dollars." (73)

Makin's main argument is that Euro-dollars and U.S. dollars are not perfect substitutes. This criticism is similar to the earlier statements of Mayer about the market's inability to issue a medium of payments. If the two dollars are not perfect substitutes, then the assumption that the Euro-banking system is part of a larger banking system (ie: the U.S. dollar denominated banking system) must be substantially weakened. In any case, this proposal embodies the desirable assumption that there is an interdependence between the U.S. and the Euro-banking

(73) Makin, John - "Demand and Supply Functions For Stocks of Euro-Dollar Deposits: Reply." The Review of Economics and Statistics (August) 1975 P. 355

systems, in the sense that actions taken in one system will have an impact on the other market. However, Mulendyke and Friedman have only chosen to examine the impact on credit conditions of a flow of funds from one market to the other. They have stated that it is interest rate differentials that induces the flow of funds from the U.S. market to the Euro-market, and that it may be profitable for U.S. banks to borrow back funds from the Euro-market. However, both Friedman and Mulendyke fail to state what the impact of this outflow from the U.S. and the inflow to the Euro-market would be. If the initial cause of the flow was interest rate differentials, then presumably the consequence of the flow would be to eliminate the differential. In effect, the "larger banking system" approach fails to account for the dynamic interactions between the two markets. Also their model only deals with the dollar market, thereby regulating the other Euro-currency markets to an insignificant role. Clearly, if account is made for the interdependencies of the Euro-market and the other capital markets of the world, then elimination of large parts of the Euro-market from the analysis is a mistake. The dollar portion of the Euro-market makes up the lions share of the market, but while there is an interaction between the U.S. and Euro-markets, there will also be an interaction between the dollar and other currencies portions of the Euro-market, and also an interaction between the other Euro-currencies and their national money markets.

In this regard, the portfolio model of Hewson and Sakakibara

represents a distinct improvement over the 'larger banking hypothesis'. They attempt to show the linkages between the Euro-currency markets and the other national money markets explicitly through the portfolio choices of the market participants. The portfolio choices are said to be dependent upon relative interest rates, which acts as an equilibrating force.

Although this portfolio model is perhaps the best suited model to explain the interactions between the various national money markets and the Euro-currency market, the model is by no means a perfect fit. It is also open to charges that it contains a basic fallacy in its argumentation because it implicitly assumes that dollars and Euro-dollars are perfect substitutes. The authors state that the decision whether or not to invest in the market will be based on the relative interest rates prevailing in the relevant markets. However, if these dollars are not perfect substitutes, then the decision to invest or not will involve something more than a straightforward computation of interest rates. In particular, the decision must give explicit recognition to the services that money balances yield. Masera also recognizes this fallacy in the portfolio approach. He states:

"Tobin's idea is that reserve requirements and interest rate ceilings are the ultimate causes of this discrepancy between marginal cost and marginal yield in the banking system, and that this has nothing to do with the monetary nature of bank liabilities. But he does not ask himself why despite this discrepancy, there is a demand for bank liabilities on the public. In fact the counterpart to the restrictions and to the margin is that holders of monetary balances must be willing to an (explicit) interest

yield...held in monetary form which is much lower than other market yields. The answer to this question clearly is that monetary balances are a joint product, where the proportion of non-pecuniary services yielded is very large. This does not imply that liabilities of non-bank financial intermediaries can also yield non-pecuniary services, but such services will account for a much smaller share of the total... and are, additionally, either means of payment or very easily transformable into the means of exchange itself... Thus the flow of non-pecuniary income... is lower on a bank time deposit and still lower on other financial assets. In particular, this implies that relative shifts in interest yields paid by non-bank financial intermediaries will quickly entail considerable substitution between them on the part of asset holders, while this happens to a significantly lesser extent for monetary assets... Since it is very costly to foresee and consequently adjust the timing of flows of receipts and payments, the demand for money is to some extent 'impervious to economic incentive' in the form of interest rate movements.

It follows that, contrary to what Tobin thinks, the ultimate cause of the existence of the margin is to be found precisely in the monetary nature of deposits with banks." (74)

While no general consensus has been reached as to the method of approach, and the magnitude of the Euro-currency multiplier, it would appear that the size is likely to be fairly low, but subject to variation. The Euro-market has, as Bell has stated earlier, tended to increase the interest-rate linkage among the industrialized countries. A low multiplier value (of approximately one) doesn't rule out the possibility that the market can affect total world demand. Its credit expansion potential may be limited but it still can exert a powerful influence on the domestic economic policies of individual nations, through the granting of credits to residents of a single country.

CHAPTER 4 - The Interdependence Between Euro-Currency and
National Interest Rates.

Euro-currency interest rates, have attained some degree of independence from the other national interest rate structures. Although the interest rates in the Euro-market are influenced by both the U.S. and, to a lesser extent, European interest rates, there is also a reciprocal influence running from Euro-rates to both Europe and U.S. (to a smaller extent) rates.

The separate existence of Euro-rates is evidenced by the fact that Euro-rates can differ markedly from those rates in the U.S. or European markets over a prolonged period of time. This situation may come about because the forces behind the adjustment of discrepancies between each market's rates are not strong enough to prevent their separate existence. Paul Einzig agrees with the proposition that the interest rates in the Euro-market have some degree of independence from other national interest rates, and states:

"The growing influence of international interest rates is indicated by the fact that forward exchange rates, which in the past tended to adapt themselves to their interest parities based on national interest rates now tend to adapt themselves to the interest parities based on foreign currency deposit rates. Thus the forward sterling-dollar rate tends to adapt itself to the differential between Euro-dollars and Euro-sterling rates and to fluctuate largely in sympathy with that differential. Even though the relationship is reciprocal - as indeed is the relationship between forward rates and their conventional interest parities- the fact that the curve forward rates now tends to desert that of interest rates based on national interest parities and to run more closely to their international interest parities has further enhanced the latter's separate existence." (1)

(1) Einzig - The Euro-Dollar System . P. 77-78

Robert Aliber (2) has presented some statistical evidence to support Einzig's claim that forward exchange rates tend to adapt themselves to the interest parities based on foreign currency deposit rates, rather than on national interest rates. The evidence is presented in the table below.

(2) Aliber, Robert - "The Interest Parity Theorem: A Reinterpretation" Journal of Political Economy (Nov/Dec) 1973. P. 1451 - 1458.

TABLE - X
 COMPARATIVE DEVIATIONS OF PREDICTED FORWARD RATES
 FROM ACTUAL FORWARD RATES
 (Percent Per Annum)

Interest Agio (1)	Mean Deviation (2)	Median Deviation (3)	Minimum Deviation (4)	Maximum Deviation (5)	Range of Deviation (6) = (5) - (4)	Standard Deviation of Mean (7)
U.S. - U.K. treasury bills	1.94	1.348	-0.25	8.40	8.65	1.93
London dollars - Paris sterling....	0.273	0.168	-0.51	1.72	2.23	0.40

Source: R. Aliber - "The Interest Rate Parity Theorem: A Reinterpretation"
 Journal of Political Economy (Nov/Dec) 1973 P. 1455

(i) - The Determination of the Euro-Currency Interest Rates

The model employed in illustrating how the Euro-currency interest-rates are established, differentiates between the Euro-dollar interest rate and the other Euro-currency interest rates. This separation is made in order to gain a clearer understanding of the various factors that enter into and exert an influence over the respective Euro-market rates.

Because the forward exchange rate has remained at interest parity with respect to the Euro-currency interest rates, the model employed shows how transactions in both the Euro-currency and forward exchange markets interact to determine both the forward exchange rate and the Euro-currency interest rate. The model followed here was developed by Richard Herring and Richard Marston (3), who state:

" we present an analysis of the Euro-currency operations of banks, and integrate this analysis with the traditional model of forward exchange transactions in order to show how Euro-currency interest rates are jointly determined with forward exchange rates ... Our analysis implies that the Euro-currency and exchange markets are so integrated that they effectively constitute one market." (4)

In their model showing the determination of the Euro-currency interest rates (for all currencies other than the U.S. dollar), Herring and Marston assume that all interest arbitrage transactions are carried out by foreign residents in

(3) Herring, Richard and Marston, Richard - National Policies and International Financial Markets

(4) Ibid. - P. 80

the forward market and Euro-currency market, that is, it is assumed that the money market in the home country is closed to all international transactions except those connected with international trade. The U.S. is referred to as the foreign currency. The authors specify that they "identify the mark as the home currency, and the Euro-dollar and Euro-mark as the two Euro-currencies." (5) Therefore, the model has two interest rates on foreign currency assets - the U.S. interest rate (i_f) and the Euro-dollar interest rate (i_d). The authors assume that the U.S. rate is exogenously given. In addition, it is assumed that the Euro-dollar rate is kept equal to the U.S. rate through a flow of funds between the two markets.

Banks in the Euro-market are assumed to offer both Euro-dollar and Euro-mark deposits and loans at interest rates i_d and i_m . The demand for Euro-mark deposits is denoted as M^d , and the supply of Euro-mark loans as M^l . All assets and liabilities are assumed to be "gross substitutes", such that, "the nonbank demand for Euromark deposits is positively related to the covered ($i_m - F_p$) and uncovered ($i_m - S_p$) returns on Euromarks and negatively related to the Eurodollar rate." (6)

If the Euro-banks simply match deposits and loans in each Euro-currency, then the Euro-mark interest rate is determined solely by the interaction between the demand for Euro-mark deposits and the supply of Euro-mark loans. Figure I shows the determination of the Euro-mark rate under these conditions.

(5) Ibid. - P.81

(6) Ibid. - P.82

89a.

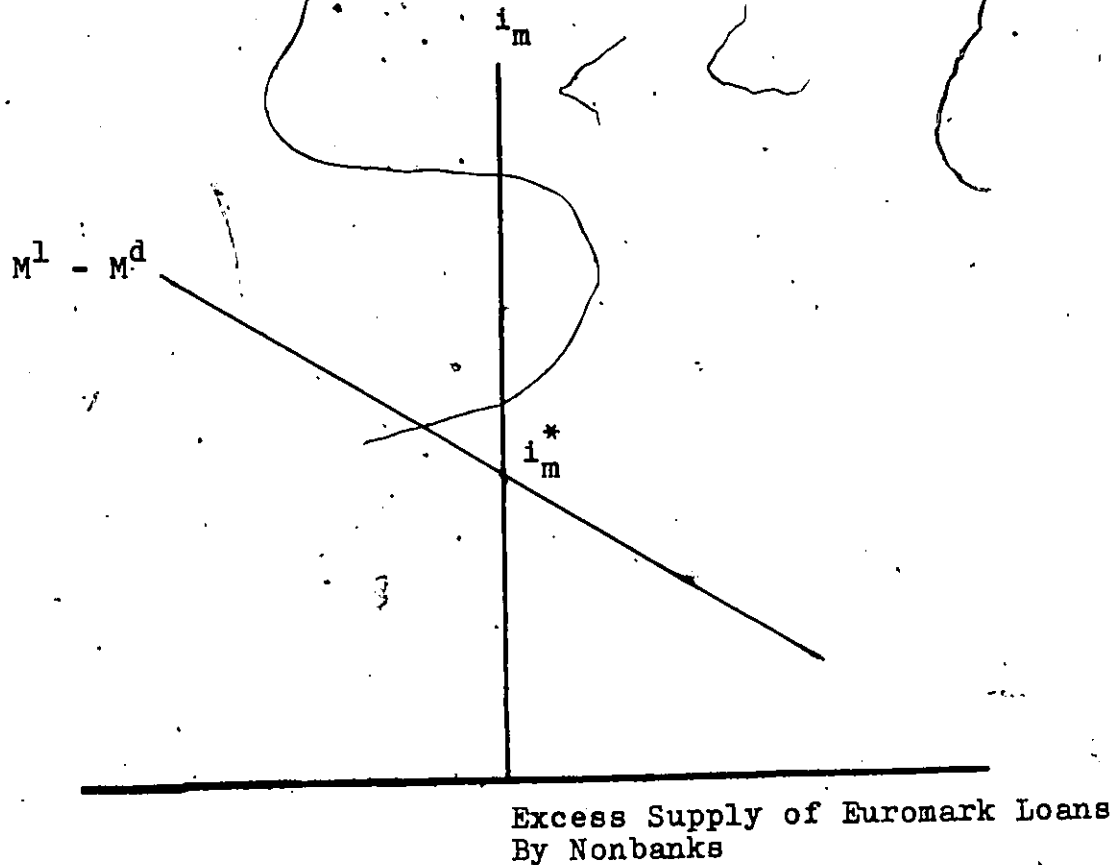


Figure I - Nonbank Behaviour In The Euro-Currency Market

The rate of interest on Euro-marke is determined when nonbank excess supply of Euro-mark loans is zero.

$$M^l - M^d = 0$$

It is assumed that the Euro-banks take a more active role in the market, taking a net loan position in one currency through the conversion of funds obtained in another Euro-currency market. For example, Euro-banks may convert Euro-dollar deposits into marks in order to increase Euro-mark loans. These conversions will result in an increase in the Euro-banks' net mark loan position (NMP). Therefore, Euro-banks have two sources of funds from which they can make Euro-mark loans - from Euro-mark deposits, and from marks converted from dollars.

Equilibrium in the Euro-mark market requires that the total of the Euro-mark loans equals the sum of Euro-mark deposits and the net Euro-mark position of the Euro-banks.

$$M^l = M^d + NMP$$

Table XI gives the expected signs of the behavioural functions which determine equilibrium in the Euro-mark market.

Table XI - The Nonbank And Bank Behavioural Functions

	i_m	$i_{\$}$	Fp	S \ddot{p}
M^l	-	+	+	+
M^d	+	-	-	-
NMP	+	-	-	-

Source: Herring and Marston - National Monetary Policies And International Financial Markets New York, 1977 P.83

The result of the conversion from dollars to marks is to tie the Euro-mark interest rate to the Euro-dollar rate. This linkage between the two rates occurs because when such a conversion is effected, the Euro-banks will normally cover their net mark positions with an equivalent purchase of forward dollars to avoid the exchange risk. This conversion from dollars to marks is profitable as long as the interest rate on Euro-mark loans, adjusted for the forward premium is greater than the interest paid on Euro-dollar deposits.

$$i_m - FP = i_{\$}$$

where; FP is the forward premium on dollars.

Herring and Marston state that competition between Euro-banks will keep the interest rate on Euro-mark loans at a

constant markup over the Euro-dollar rate, with the markup reflecting only the cost of forward cover. The Euro-banks maintain the Euro-mark rate at an interest rate at an interest parity level.(7)

$$i_m = i_{\$} - FP$$

If the Euro-dollar rate and the forward premium are taken as given, then the Euro-mark rate is determined as well. The Euro-banks are willing to offer Euro-mark loans and deposits at an interest rate of $i_m = i_{\$} + FP$, and the NMP schedule is horizontal at this rate. Equilibrium in the Euro-mark market is attained when the nonbank excess supply schedule intersects the NMP schedule at the interest parity rate.

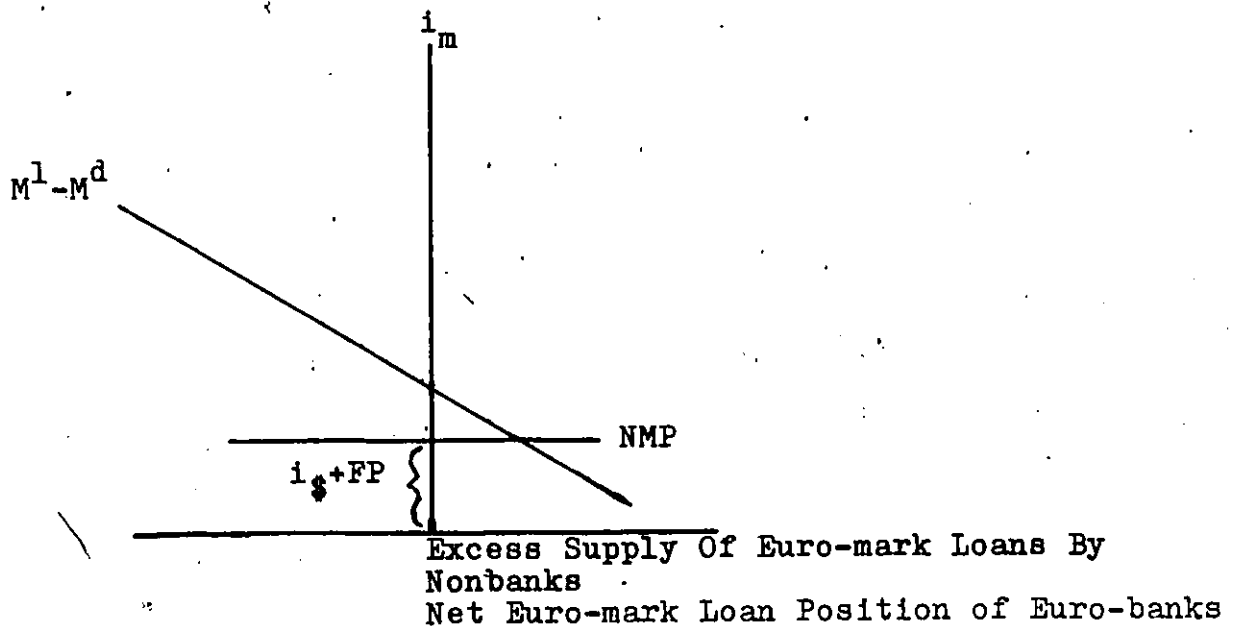


Figure II - Equilibrium In The Euro-Mark Market

The forward premium, however, is not simply given, but must

(7) Ibid. - P. 84

be determined as well. Under the traditional analysis of the forward exchange market, a distinction is drawn between the excess supply of forward exchange (dollars) provided by speculators and traders, and the excess demand of forward exchange provided by arbitrageurs. The excess supply of traders and speculators (ST) is a function of exports (X), imports (I) and the forward and speculative premium expressed in terms of the mark price of the dollar. Therefore:

$$ST = ST(X, I, FP, SP)$$

ST will increase with any increase in X or FP , and decrease with any increase in I and SP .

Foreign purchasers of domestic bonds (H^{fd}) gives rise to a demand for forward dollars if the purchases are covered in the forward market. In addition, purchases of foreign (dollar) bonds (F^{pd}) by domestic residents creates a supply of forward dollars if the purchases are covered. Therefore denoting the covered purchases of bonds (both foreign and domestic) by \hat{H}^{fd} and \hat{F}^{pd} , the excess demand for forward dollars by arbitrageurs, A , is given by:

$$A = \hat{H}^{fd} - \hat{F}^{pd}$$

If all assets and liabilities are gross substitutes, then increases in the domestic interest rate will raise the covered holdings of domestic assets by foreigners, and in addition, it will lower the covered holdings of foreign assets by domestic residents. An increase in foreign interest rates will lower foreign holdings of domestic assets.

In equilibrium, the excess supply of forward dollars by speculators and traders (ST) must equal the excess demand for forward dollars by arbitrageurs:

$$ST = \hat{H}^{fd} - \hat{F}^{pd}$$

Equilibrium is shown in the diagram below. It assumes that both foreign (dollar) and domestic interest rates are given.

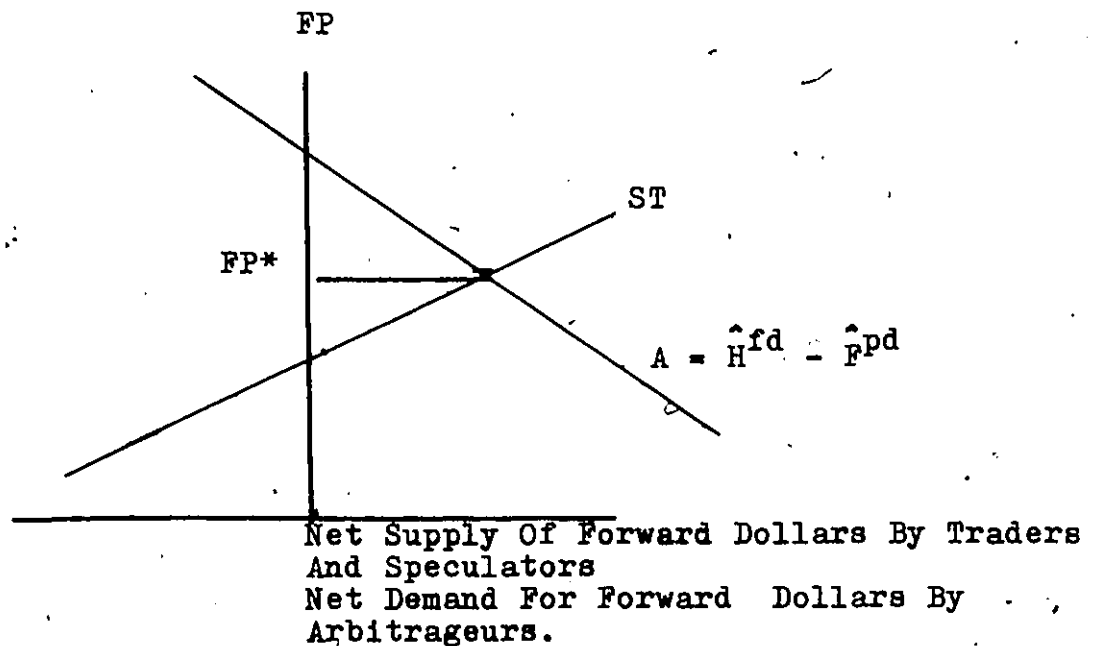


Figure III - Equilibrium in The Forward Market

The model of the forward market employed by Herring and Marston to apply to the Euro-currency market, differs from the above analysis because of their assumption that the home market is closed to foreign investment. Consequently, there is no excess demand for forward dollars arising from arbitrage transactions between the home and foreign national markets. This arbitrage demand is filled by the Euro-bank's demand for forward dollars for covering purposes. The authors state that since the Euro-mark rate and the forward premium are tied together by near

perfect arbitrage, the interest parity relationship implies that once the forward premium is determined, the Euro-mark interest rate is also determined, as well. Herring and Marston state that they:

"analyze the joint equilibrium of the forward and Eurocurrency markets in a single diagram. Excess demand and supply curves determine an equilibrium forward premium, with the interest parity relationship determining the Euro-mark interest rate."(8)

In the forward market, speculators and traders have an excess supply of forward exchange (ST). Euro-banks demand forward exchange to cover their conversions into marks. Under the assumption that the Euro-banks fully cover their their net Euro-currency positions, the excess demand for forward dollars is given by NMP (the net mark loan position). The NMP must equal the excess supply of Euro-mark loans by nonbanks, $(M^l - M^d)$. This comes about because the Euro-banks are willing to accept whatever Euro-mark deposits or loans offered, at the prevailing interest parity rate, and the "excess demand for forward dollars by the Euro-banks must reflect the excess supply of Euro-mark loans $(M^l - M^d)$ by nonbank borrowers and investors."(9) The Euro-banks set the Euro-market rate, while the nonbanks determine the size of the net mark loan position.

In equilibrium, the excess supply of forward dollars of both speculators and traders must equal the excess demand for forward dollars by Euro-banks.

$$ST = M^l - M^d$$

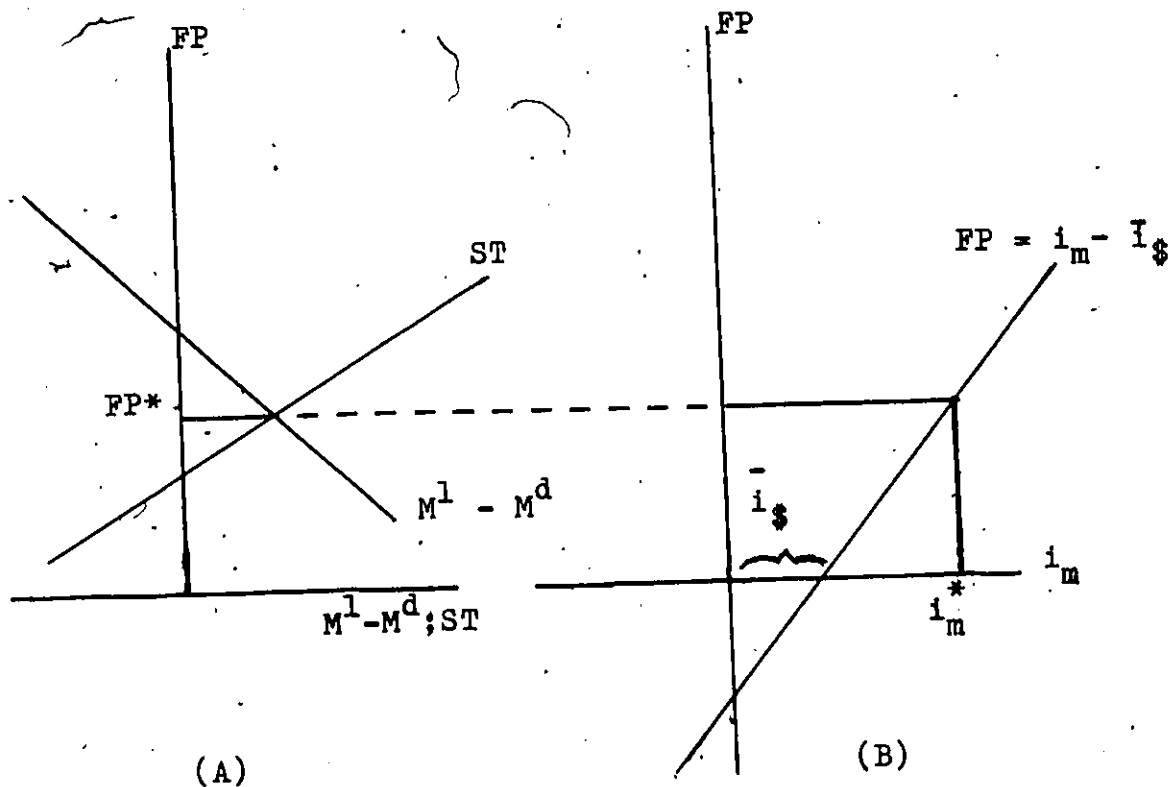


Figure IV - Equilibrium In The (A) Forward, and (B) Euro-Mark Markets.

Therefore, given the Euro-dollar rate ($I_{\$}$), the forward market is in equilibrium at a forward premium of FP^* . Once the forward premium is determined, the Euro-Mark interest rate is implicitly determined as well through the interest parity relationship.

(ii) The Determination of the Euro-Dollar Interest Rates

The Euro-market is, as has been already pointed out, a very competitive market whose interest rates are highly sensitive to the forces of supply and demand. Since both the United States and Euro-dollar markets are dealing with the same currency, there is no exchange risk associated with the movement of funds between the two markets. Therefore, there should be a fairly close linkage between the two markets. Wayne Clendenning states that:

"the U.S. short-term capital market, because of its immense size, undoubtedly has high elasticities of supply and demand for arbitrage funds vis-a-vis the Euro-dollar market. This means that there would be a large increase (decrease) in the supply of short-term capital moving from the U.S. to the Euro-dollar market and a large decrease (increase) in the U.S. demand for short-term capital from the Euro-dollar market if Euro-dollar rates rose (fell) relative to U.S. rates. As a result, U.S. influences could potentially have a substantial impact on Euro-dollar rates because of the high elasticity of U.S. supply: while the impact of the Euro-dollar influences on U.S. rates could be off-set by the highly elastic U.S. demand. It seems then that although Euro-dollar rates are highly dependent on U.S. rates, the impact of Euro-dollar rates on the U.S. rates is relatively small." (10)

While this linkage is fairly close, a differential between Euro-dollar and U.S. rates, can be maintained because of Aliber's 'political risk' factor which is defined as:

"the probability that the authority of the state will be interposed between investors in one country and investment in other countries. Political risk need not reflect any dramatic political events; rather investors need only be

concerned that the authorities might apply exchange controls between the date a foreign investment is made and the date when repatriation is expected. Thus political risk is associated with the legal jurisdictions in which the various financial assets are issued."(11)

Herring and Marston have stated that it is the presence of this political risk that has led some investors, notably American, to place a premium on investment in the Euro-dollar market because they feared that, "exchange controls which several European countries maintained on transactions by residents, might be extended to include Euro-currency by residents and non-residents alike." (12)

In addition to the impact that the U.S. interest rates can have, the Euro-dollar rates may also be influenced, though to a much smaller degree, by European interest rates. Clendenning states that while:

"there is no direct link between Euro-dollar deposits and other currency deposits as there was between Euro-dollar deposits and U.S. dollar deposits. This results in a lower elasticity of supply of arbitrage funds in the Euro-dollar market and less freedom of movement...than in the U.S. case. For similar reasons the elasticity of demand for arbitrage on the part of the Euro-dollar market would be lower vis-a-vis other countries than it was vis-a-vis the U.S..

The short-term capital markets in countries other than the U.S., ... are much smaller than the U.S. market and, hence, have a lower elasticity of supply and demand for arbitrage funds." As a result, their impact on the Euro-dollar rates and their ability to off-set the impact of the Euro-dollar market would be both smaller than in the U.S. case." (13)

(11) Aliber - P. 1453

(12) Herring and Marston, - P. 276

(13) Clendenning - P. 87

Victor Argy and Zoran Hodjera (14) have developed a model for the determination of the Euro-dollar interest rates. These authors state that they assume a model with only three capital markets, - the U.S., the European and the Euro-dollar markets. It is assumed that the Euro-dollar market serves only to channel funds between the U.S. and the European markets. Both the U.S. and European rates are assumed to exogenously given, in the sense that they can influence the Euro-dollar rate, while they themselves are insensitive to changes in the Euro-rate. This assumption is contrary to the earlier statement about the reciprocal nature of the influence between Euro-dollar rates and U.S. and European rates. However, in the present context it does no serious damage to our model because it is designed to show the influence that these rates have on the Euro-rates. This assumption will be removed later to determine the impact that the Euro-market may have on domestic monetary policies.

(ii-a) The Demand for Funds

U. S. borrowing, or demand for Euro-dollar funds, comes predominately from the U.S. commercial banks. The borrowing behaviour of the banks varies according to the monetary conditions prevailing in the U.S. economy. Under normal conditions, whenever the banks suffer some loss, or run down their free

(14) Argy, Victor and Hodjera, Zoran - "Financial Intergration and Interest Rate Linkages In Industrial Countries, 1958-1971 " IMF STAFF PAPERS (March) 1973 P. 1 - 77

reserves, the time deposit rates (notably the time certificates of deposits - CD's) can be raised to secure additional funds. In this period of normal monetary conditions, borrowing in the Euro-market represents an alternative to an expansion of CD's. However, the cost of Euro-dollars, relative to the cost of obtaining additional CD's, will keep these borrowings to a minimum. Therefore, under normal monetary conditions, Euro-dollar borrowings by the U.S. banks will be determined by the cost of borrowing in the Euro-market relative to the cost of borrowing in the domestic market. Representing the cost of borrowing in the domestic market will be a composite interest rate for U.S. domestic funds. (i_{us}).

Under a condition of monetary restraint, the U.S. banks' borrowings will tend to rise dramatically. When free reserves are run down, the banks cannot raise the CD rates to attract additional funds because Regulation Q prohibits this. Consequently, the banks will be forced to secure their funds from alternative sources - of which, the Euro-market becomes an important source. The higher the market rate of interest rises above the ceiling rates established by the regulation, the greater will be the loss of CD's and loanable funds by the banks, and the greater will be the Euro-dollar borrowings by the commercial banks. Therefore, Regulation Q can represent an independent variable in the demand for Euro-dollar funds. This variable can be represented by the difference between the U.S. domestic rate and the ceiling rate imposed by the regulation

on CD's. $(I_{us} - I_q)$. The greater this differential the larger should be the demand for Euro-dollars.

Relative interest rates between European capital markets and the Euro-dollar market, as well as other factors will determine the European demand for Euro-dollar funds. Expectations of exchange rate changes should also influence the demand, because if one country, say Germany, is expected to revalue its currency, then speculative borrowings should accelerate. Interventions in the forward market should also have some influence on the incentive to borrow. Regulations of a European government, in relation to the extent the market can be used as a source of funds, should exert a dampening effect on the volume of borrowings, as will any increase in the reserve requirement for foreign liabilities.

The final element in this demand function is the net autonomous demand in the market on the part of governmental departments, international agencies and central banks.

Therefore, the demand function can be represented as;

$$S_i = a(I_{us} - I_e) + b(I_{us} - I_q) - cQ_{us} + dSp + A + eR_e + f(I_o - I_e); \quad (15)$$

where : S_i = Demand in the Euro-dollar market

I_{us} = Short-term interest rates in the U.S. (

I_e = Short-term interest rates in the Euro-dollar market

I_o = Short-term interest rates in Europe

- Q_{us} = Reserve requirements imposed on U.S. banks against Euro-dollar borrowing
 I_q = Interest rate ceilings on U.S. certificates of deposits (regulation Q ceilings)
 Sp = Speculative index (a larger Sp implies greater expectation of a revaluation of the European currency)
 A = Net autonomous demand for Euro-dollars
 R_e = European interventions influencing the use of the Euro-dollar market.

(ii-b) The Supply of Funds

The supply of funds from the U.S. will be influenced by the interest differential that opens up, or widens, in favour of the Euro-dollar market. Similarly, the supply from Europe will also be more or less determined by the interest rate differential between the two markets. Again, other factors such as speculation and intervention and autonomous factors such as the U.S. Balance of Payments Foreign Credit Restriction Program, will have an impact over the volume of funds supplied to the market. Stanley Black, in his supply function, included both the speculative variable - "the supply is related to the profitability of using Euro-dollars ... to speculate ." (16) - and the autonomous factor of the U.S. balance of payments programs. Argy and Hodjera, however, do not include the speculative, intervention, and auto-

(16) Black, Stanley - "An Econometric Study Of Euro-Dollar Borrowings By New York Banks And The Rate Of Interest On Euro-Dollars."
Journal Of Finance 1971 P.84

onomous factors in their supply equation on the grounds that "the net effect of these variables have already been allowed for in the equation representing the demand." (17)

Therefore, the supply equation, using Argy and Hodjera's model, can be represented as simply the interest differentials between the Euro-dollar rate and the U.S. and European rates.

$$S_a = g (I_e - I_{us}) + h (I_e - I_o) \quad (18)$$

where, S_a = the supply of funds

Combining the supply and demand equations, and solving for the Euro-dollar interest rate, we obtain the equation which determines the Euro-dollar interest rate.

$$I_e = m I_{us} + (1-m) I_o + \frac{b}{k} (I_{us} - I_q) - \frac{c}{k} Q_{us} + \frac{dSp}{k} + \frac{1}{k} A + \frac{e}{k} R_e$$

where: $k = (a + g) + (f + h)$

$$m = \frac{(a + g)}{k} \quad (19)$$

The equation is explained by seven exogenous factors, - The European rate, the U.S. rate, the differential between the U.S. market rate and the Regulation Q ceiling rate, the reserve requirement in the U.S., the speculative variable, autonomous demands, and regulations in Europe.

Any increase in the U.S. rate will tend to induce increased borrowings in the Euro-dollar market, thereby raising the Euro-

(17) Argy and Hodjera - P.3

(18) Ibid. - P. 6

(19) Ibid. - P. 6

rate. This in turn will encourage an increase in the supply from Europe, and a decrease in European demand. Increasing the reserve requirement on Euro-dollar borrowings in the United States should lower their Euro-dollar demand, which will work to lower the Euro-dollar interest rate. Any expectation of a revaluation of a European currency should increase Euro-dollar demand, thereby pulling the Euro-dollar interest rate upwards. At the same time, the expectation of such a revaluation, will stimulate an increase in the supply from the United States. Any increase in the autonomous demand or the interventions on behalf of European nation will reduce the supply and push the Euro-rates up.

Argy and Hodjera have attempted to estimate the values of each of the variables explaining the Euro-dollar interest rate. Their equation was modified to take account of the fact that some of the variables were of statistical significance, or because they could not be quantified (Q_{us} , A , and R_e were dropped for these reasons). Therefore the modified equation was given as:

$$I_e = mI_{us} + (1-m)I_o + \frac{b}{k} (I_{us} - I_q) + \frac{d}{k} Sp \quad (20)$$

where: $I_{us} - I_q$ = the three-month U.S. commercial bill rate less Regulation Q ceiling rate on time deposits.

I_o = three-month German interbank rate (I_g) and the three-month U.K. Treasury bill rate (I_{uk})

The two authors took first differences of the above equation and the initial results came out as:

$$I_e = 0.005 + 0.622 dI_{us} + 0.231 d(I_{us} - I_q) + 0.216 dI_g + 0.125 dI_{uk} + 0.218 dD_{S1}^G \quad (21)$$

where: D_{S1}^G = Speculation in favor of the German Mark.

The equation shows that for any one percentage point that the market rate exceeds the Regulation Q ceiling rates, the Euro-dollar interest rate rises by 23 base points. The co-efficient for the interest rates in Germany and the United Kingdom were used as proxies for the "European" rate, and the co-efficients computed for these rates were

(21) Ibid. - P.11

found to be significant but low. The computed co-efficients for the U.S. rate was 0.622, but the authors ran off a number of other equations and found that the co-efficient ranged from 0.8 to 1.0. (22)

These results are fairly consistent with other studies. Patric Hendershott, using the U.S. Treasury bill rate as the sole determinant of the Euro-dollar rate, found that the Euro-dollar rate would rise by 1.04 percentage points in response to a one percentage point rise in the U.S. Treasury bill rate. (23) Sung Y. Kwack, extending Hendershott's analysis to include non-U.S. interest rates in the equation determining the Euro-dollar rate, estimated that the Euro-dollar rate rose by 0.808 in response to a one percentage point rise in the U.S. bill rate. (24) Richard Marston, using a reduced form expression for the Euro-dollar rate found that a one point rise in the U.S. rate raised the Euro-rate by 1.202 percentage points whenever Regulation Q ceiling rates are in effect. When the Regulation Q ceilings are not binding, the Euro-dollar rate response declines to 0.720.

(22) Ibid. - P. 10

(23) Hendershott, Patric - "The Structure of International Interest Rates: The U.S. Treasury Bill Rate and the Euro-Dollar Deposit Rate." Journal of Finance 1967 P. 462

(24) Kwack, Sung Y. - "The Structure of International Interest Rates: An Extension of Hendershott's Tests." Journal of Finance 1971 P. 899

A rise of one percentage point in the Swiss and German rates produced a rise in the Euro-rate of roughly 0.240. (25)

Argy and Hodjera assumed that the adjustment of the Euro-dollar rate to changes in any of the variables (particularly the U.S. rate changes) would be "rapid." The two authors attempted to determine if there were any lags in the response of the Euro-rate to changes in any of the variables, and concluded that if there were any lags, they were insignificant. However, Hendershott claimed that adjustment to changes in the U.S. bill rate would be complete, but the adjustment would take roughly one year. Hendershott estimated that the Euro-rate responses for the first three months to be 0.23, 0.14 and 0.11 percent respectively. (26)

Stanley Black's estimates of the speed of adjustment was much closer to that postulated by Argy and Hodjera. Black estimated that "about 75 percent of the total effect" (27) was completed in the first weekly period.

If Argy and Hodjera's rapid adjustment estimate is correct, then clearly the two rates - the Euro-dollar and U.S. rates - should move fairly closely together, with the turning point of each rate coinciding. The authors concluded that this hypothesis

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- (25) Marston, Richard C. - American Monetary Policy And The Structure of the Euro-dollar Market. Princeton Studies in International Finance No. 34
Princeton, N.J. 1974 P. 26-27
- (26) Hendershott - P. 463-64
- (27) Black - P. 87

is "consistent with the finding that the U.S. rate is the dominant variable explaining the Euro-dollar rate." (28)

(iii) The Impact of Euro-Currency Interest Rates on National Interest Rates.

As noted previously, there is a reciprocal relationship between the Euro-currency and national interest rates, in the sense that while Euro-rates are influenced by the national rates of various countries (most notably the U.S. rates), there is also a reverse influence running from the Euro-market to national interest rates. With respect to the influence that the Euro-market may exert over U.S. interest rates, this influence is admittedly much weaker than the U.S. influence over the Euro-currency interest rates. Yet, as Paul Einzig points out, "even though Euro-dollar deposits amount to a bare fraction of the total dollar deposits, the experience of 1969 conclusively proved that Euro-dollar rates are liable to affect American national interest rates to a considerable extent." (29)

While the impact on the U.S. rate may be somewhat tenuous, the influence that the Euro-market rates exert on the national interest rate structures of countries other than the U.S. (notably Europe) is much more pronounced. This will result because these countries have much smaller short-term capital markets than that

(28) Argy and Hodjera - P. 14

(29) Einzig - P. 95

in the U.S., and therefore, using Clendenning's terminology, they have smaller elasticities of supply and demand for arbitrage funds than the corresponding elasticities in the U.S. market. In fact, most European countries have smaller capital markets than, the market for Euro-currencies, and therefore, have smaller elasticities than the elasticities existing in the Euro-market. Consequently, as Clendenning states, the "Euro-dollar influences would have a greater impact on national rates, than national influences on Euro-dollar rates." (30)

(iii-a) The Impact On European Interest Rates

Argy and Hodjera's study gives a good indication of the impact that changes in the Euro-rate may exert on European Interest rates. The model focuses on the effect that interest rate differentials may have on the forward premium/discount, with the differential defined to be the difference between the European rate and the Euro-rate. The influence of the Euro-rate, or to use the authors choice of words, "the degree of financial intergration", is revealed through the strength of response of the forward premium/discount to changes in the interest differential. A rise in the differential will induce a movement of arbitrage funds which will either increase or reduce the forward premium/discount on the domestic currency - depending on whether the rise is in favour of the domestic currency or the Euro-market.

In effect, the authors tried to obtain some measure of the degree of interest sensitivity of the forward premium.

Argy and Hodjera begin with the specification of the demand and supply functions for forward exchange. The supply of arbitrageur's forward foreign currencies is stated to be a function of the difference between the forward premium (FP) and the interest differential, $(\frac{4}{R}F - R - (I_h - I_f))$. Where F and R are the three month forward and spot rates, and $(\frac{4}{R}F - R = FP)$ is the forward premium. I_h and I_f are the three month domestic and foreign (Euro-dollar) interest rate, and $(I_h - I_f)$ is the interest differential. The marginal opportunity cost of holding foreign short-term assets (z), - of which risk of interference by governmental intervention in the freedom of capital movements is the major factor; - and the size of past commitments by arbitrageurs $(\sum A_f)$. The final two elements simply represent the constraints of the function, with the difference in the forward premium and the interest differential being the "key variable defining the motive for activity by arbitrageurs ." (31) Therefore:

$$A_f = A_f(\frac{4}{R}F - R - (I_h - I_f), z, \sum A_f). \quad (32)$$

The demand for foreign exchange by speculators and traders is a function of the difference between the expected spot premium- $(R^eP - FP)$ with R^eP representing the expected

(31) Argy and Hodjera - P. 37

(32) Ibid - P. 36

spot premium in three months; - exports and imports financed by short-term capital $-(X \text{ and } M)$ - the marginal opportunity cost of present speculative forward commitments (consisting mainly of exchange risk $-p$); - and finally, total past commitments of speculation (ΣS_f) .

$$S_f = S_f((R^eP - FP), X, M, p, \Sigma S_f). \quad (33)$$

The key variable in the demand function is the difference between the expected spot premium and the forward premium. The export and import variables stand simply as parameters, since traders' participation in the market will be limited by the size of their short-term contracts. The two speculative commitment variables act as constraints to any further speculative activity.

Therefore, combining the two equations and solving for the forward premium:

$$FP = \frac{a_1}{a_1 + b_1} (I_h - I_f) + \frac{b_1}{a_1 + b_1} (R^eP) + \frac{b_2}{a_1 + b_1} (X-M) + \frac{b_3}{a_1 + a_2} (p) - \frac{a_2}{a_1 + a_2} (Z) - \frac{a_3}{a_1 + a_2} (\Sigma A_f) + \frac{b_4}{a_1 + b_1} (\Sigma S_f). \quad (34)$$

where the interest differential, the trade balance, and arbitrageurs and speculators' opportunity costs are exogenous variables, while their past commitments are predetermined variables.

To give a specific example, using the German experience of 1967-1970, the authors modified their equation of the forward

(33) Ibid. - P. 37

(34) Ibid. - P. 38

premium to more accurately reflect the conditions in Germany existing then.

$$FP = .658 + .469I_d + .413I_d \cdot D + .094SWA - .075 RR \\ - .667D_{s1} + .074D_{s2} \quad (35)$$

where, FP = the forward premium or the discount on the U.S. dollar in terms of the mark.

I_d = the differential between the German interbank loan rate and the Euro-dollar interest rate.

SWA = the three month preferential forward rate on the dollar granted to the German banks by the Bundesbank.

D_{s1} = the dummy variable for speculative inflows.

D_{s2} = the dummy variable for speculative outflows.

D = the dummy variable reflecting an upward shift of the interest differential in June 1967.

RR = the percent of reserve requirement against domestic liabilities.

The interest differential had a coefficient of .9 (after June 1967) which suggests that there is a close relationship between the German/Euro-dollar interest rate differential and the forward premium.

The authors ran a series of tests to determine the impact of each variable on the forward premium for a number of countries. In each case, the dominant variable was the interest differential. The predominance of this variable suggests that if speculator's expectations about exchange rate movements and the resulting destabilizing capital flows come into play, then clearly a country cannot maintain the increase in their interest differential

between their own national interest rates and the Euro-rates, but must, sooner or later, conform more closely to the pattern of interest rate levels set in the Euro-market.

The findings of Argy and Hodjera are fairly close to the results of Michael Porter's modified stock adjustment model of capital flows. (36) Porter attempted to determine whether a country - West Germany in 1970-71 - could maintain its interest rates at levels which are out of line with other national and international interest rates.

Porter found that a one percent change in the covered differential (between German and Euro-dollar rates) in favour of Germany would produce a new capital inflow of D.M. 3.8 billion over a six month period, with 38 percent of this inflow recorded in the first month. A one percent fall in the Euro-dollar rate (with the German rate constant) produced a D.M. 5.3 billion inflow in the following six months, with 46 percent flowing in during the first month. (37)

The basic conclusion that Porter came to, was that the attempt to pursue an independent monetary policy which is out of line with external conditions, is rapidly offset by heavy capital inflows. In fact, in late 1970, in the face of these large inflows, Germany was forced to sharply reduce its interest

(36) Porter, Michael - "Capital Flows as an Offset To Monetary Policy: The German Experience." IMF Staff Papers (July) 1972. P. 395-424

(37) Ibid. - P. 412

rates to conform more closely to those existing in the Euro-market. (38)

(iiib) The Impact On U.S. Interest Rates

While the influence of the Euro-market interest rates on U.S. interest rates is admittedly small, Paul Einzig has noted several different ways in which the Euro-market may influence the interest rates in the United States,

- "(1) Through competition of Euro-dollar facilities with American market facilities.
- (2) Through changing the volume of domestic credit.
- (3) Through providing additional and alternative facilities for speculation against the dollar.
- (4) Through providing facilities for inward or outward arbitrage.
- (5) Through influencing the relationship between various maturities within the national interest structures.
- (6) Through influences of official policies." (39)

The Euro-banks compete for funds with the American banks, and, when the U.S. banks are prevented from raising their rates to levels compatible with the Euro-rates, they suffer a decline in the volume of funds they are able to attract and hold.

Regulation Q is one measure whereby U.S. banks were prevented from maintaining competitive interest rates with the Euro-market. In the 1969 credit squeeze, this restriction came into play with a vengeance, as the U.S. banks suffered a huge decline in deposits. Consequently, there were calls for the abolition of this regulation. Einzig states that, should "the Washington

(38) The German discount rate fell from 7.5% to 6% by Dec. 1970. The German 3-month rate fell from 9.44% to 8.2% by Dec. as well. IMF. International Financial Statistics Vol. XXIV. No. 1 Jan. 1971. Washington D.C. P. 141

(39) Einzig. - P. 96

Administration yield eventually to this pressure in given situations Euro-dollar deposit rates might force up deposit rates in the United States." (40)

The Euro-market represents a source of additional funds available for speculative purposes against the dollar. If the Euro-rates were forced up by heavy borrowings for use in these speculative purposes, it might then become profitable for these speculators to borrow dollars in the U.S. market instead of in the Euro-market. Therefore, under such a condition, the U.S. authorities might be forced to raise the U.S. domestic rates as a counter-measure.

In addition, the Euro-market may serve to act as a conduit through which interest rate changes in other foreign countries may be transmitted to the U.S. market.

Jay H. Levin has developed a model that demonstrates the theoretical possibility of how the Euro-market's interest rates may exert some influence over the interest rates in the U.S. (41)

Levin states that the interest rates of one country (A) may respond positively to changes in the interest rates of another country (B), if A's bank liabilities are a substitute for an asset whose yield fluctuates in sympathy with foreign (B's) security rates. Under such a condition, a rise in B's security

(40) Ibid. - P. 97

(41) Levin, Jay H. - "The Euro-dollar Market and the International Transmission of Interest Rates." Canadian Journal of Economics (May) 1974 P. 205-214.

rates will induce an asset switch in country A, (from the bank deposits to the assets whose yield has risen in response to the rise in the foreign security rates), resulting in a loss of bank reserves and a consequent rise in the interest rates on A's bank deposits. Levin states that "Euro-dollar deposits are an example of an asset that substitutes for the bank liabilities of one country and whose yield responds to the security rates of another." (42) In his model, Levin makes the assumption that Euro-dollar deposits are the only asset commonly held by residents of both the U.S. and the "outside world," and which serve as a substitute assets for time deposits and securities in each.

Under certain conditions, Levin finds that the U.S. interest rates may react positively to changes in the Euro-dollar rates, but that the likelihood is small. Clearly, the influence that the Euro-rates may have on the U.S. rates directly, is likely to be limited, with the main influence coming during times of monetary stress, and then only indirectly.

(42) Ibid. - P. 207.

CHAPTER 5 - THE EURO-MARKET'S INFLUENCE OVER NATIONAL ECONOMICS

The Euro-currency market has the potential to undermine, or to exert a disrupting influence over a variety of economic policies pursued by the national authorities. Policies such as exchange-rate, monetary, balance of payments and international reserve policies may all be influenced, to varying degrees, by the pressures emanating from the Euro-market.

(i) The Impact on Exchange-Rates

The Euro-market has the power to influence exchange-rates both directly and indirectly. Euro-market transactions that exert a direct impact require a "conversion into or out of a domestic currency in accordance with domestic financing needs or conversions into or out of a third currency for the purpose of financing international trade or investment."⁽¹⁾

In addition to exerting this direct impact, the Euro-market may also have an indirect influence over national exchange-rates. Wayne Clendenning states that spot exchange rates may be influenced indirectly because the market has "stimulated" the holdings of private U.S. dollars balances, thereby:

"preventing the conversion of these balances into other currencies. The main effects of this on the U.S. spot rate has been to strengthen the dollar vis-a-vis other currencies by preventing the conversion of these dollar balances at the time they were accumulated by non-residents of the U.S. or spent abroad by residents of the U.S. In other words, it has made many private individuals and institutions more willing to hold their liquid funds in the form of U.S. dollars rather than in other currencies."⁽²⁾

(1) Clendenning - The Euro-Dollar Market. P. 152

(2) Ibid. - P. 153

Therefore, the Euro-market has the ability to exert an influence, both directly and indirectly, on exchange rates. Indeed, Paul Einzig has listed nine separate ways in which the Euro-dollar market can affect exchange rates:

- (1) through the actual process of increasing or decreasing the volume of Euro-dollars;
- (2) through the existence of large Euro-dollar deposits;
- (3) through swapping such deposits into local currencies or into third currencies;
- (4) through the use of Euro-dollars for financing foreign trade;
- (5) through their use for covering;
- (6) through their use for hedging;
- (7) through their use for arbitrage;
- (8) through their use for speculation;
- (9) through changes in the Euro-dollar rate. (3)

The conversions of dollar deposits held in U.S. banks into Euro-dollars has no immediate impact on exchange rates. This transaction simply represents a flow of dollar deposits from the U.S. into the Euro-market, and as such, is of no particular concern to the foreign exchange authorities. However, Euro-dollars may be created through the purchase of dollars in the foreign exchange market. The effect of this transaction on the exchange rates varies according to whether these dollars are acquired through a spot or swap transaction. If the dollars are acquired through a swap transaction (the purchase of spot dollars accompanied by a simultaneous sale), the effect on the forward exchange rates will be to depress the non-dollar currency, and

(3) Einzig. - The Euro-Dollar System. P. 87

to strengthen the dollar rate somewhat. If the dollars are acquired through a spot purchase, then the dollar spot rate is augmented accordingly.

Einzig notes that there may be an indirect influence on the exchange rates, if the conversions of dollars into Euro-dollars are undertaken as an alternative to selling spot dollars. The rationale for his argument is that; "the absence of sales of dollars which would have taken place otherwise tends to affect the dollar rate favourably in a negative sense"(4) This is in essence Clendenning's argument that the existence of the market has stimulated the increase in the holdings of U.S. dollars.

The existence of large Euro-dollar deposits may serve as a potential source of selling pressure on the dollar, or on other currencies. Einzig states that the market may exert a disrupting influence on exchange-rate policies because of its ability to mobilize a large volume of funds. He states:

"One of the reasons why the system is a potential disturbing influence . . . is because it carries the possibility of duplication of selling pressure on the dollar when under attack. The same Euro-dollar deposit can be sold over twice over at the same moment - by its original owner who can sell them forward for delivery on the date when the deposit is repaid if he does not wish to wait with the realization of his holdings until he has recovered possession of his dollars and by the borrower who can sell the spot dollars either immediately or at any time before repayment."(5)

Rinaldo Ossola concurs with Einzig's above analysis.

(4) Ibid. - P.88

(5) Ibid. - P.89

Ossola states that there is a danger that the market may induce changes in the official exchange parities which are not based on real values, such that;

"(the) official exchange rates, in a system where the dollar is used as intervention currency on the foreign exchange market, are exposed to upward pressures not based on real value shifts. In sum, in a system where a market mechanism can create unlimited monetary means denominated in dollars; this currency will flood the market and the other currencies will implicitly rise in value" (6)

Such an alteration in the official exchange parities, not based on real values, could conceivably come about, as Guido Carli points out, by a shift in the behaviour of holders of international liquidity. Carli states that such exchange-rate pressures may arise, on one hand, due to a switch of preferences or expectations on the part of private operators, and on the other hand because of a change in the behaviour of monetary authorities with respect to the depositing of their dollar reserves in the Euro-market. Carli concludes by stating;

"Therefore, the abandonment of parities due to a build-up of international liquidity in dollars to the point at which the disutility area was reached and, thereby, an alteration in the terms of trade, could be the result of transactions unrelated to current account disequilibria or to the basic balance of payments disequilibrium of the United States, but related to the behaviour of

(6) Ossola, Rinaldo - "Central Bank Interventions and Euro-currency Markets. "Banca Nazionale del Lavoro Quarterly Review" (March) 1973. P. 40-41 (addition added)

holders, both private and official, of international liquidity." (7)

The usage of Euro-dollars for financing foreign trade will lead to increased upward pressure on the dollar, if it is used to finance a net increase in this trade. However, once the rate of increase in international trade levels off, the upward pressure in the dollar will also be eased.

The Euro-market may also impact on both forward and spot rates by providing another channel through which covered arbitrage, hedging and speculation can take place. Both Ossola and Clendenning recognize the importance of this market in providing facilities for these forms of activities. Ossola states:

"The unregulated operation of the Euromarket presents a very real threat when a speculative attack against a currency is being mounted. Where there no Euromarket, the distablizing attitude of the speculators and arbitrageurs could only be fed by the domestic monetary markets which are able to react and block financing. Instead, the existance of the Euromarket gives these operators greater freedom of action." (8)

Clendenning's view is similar to Ossola's, and states that;

"This has had the effect of increasing the scope for covered arbitrage and of providing another method by which speculation and hedging can be conducted through the spot exchange market rather than the forward market. To the extent that this has occurred then the volume of conversions between U.S. dollars and other currencies has increased. In particular, the impact of speculative and hedging operations would have been shifted from the forward to the spot market - which would have the effect of increasing the pressure...on the spot rate while decreasing it on the forward rate." (9)

(7) Carli, Guido - "The Euro-dollar Market and Its Control" In: A Debate on the Euro-dollar Market Op. Cit. P. 14-15

(8) Ossola - P. 40

(9) Clendenning - P. 152

With respect to the arbitrage transactions, because of the large volume of funds available for such purposes, the use of Euro-currencies will tend to keep the forward rates much closer to their interest parity between the Euro-currency deposit rate and national interest rates. Einzig states that arbitrage transactions "arising from discrepancies between the Euro-currency interest rates and other interest parities tend to adjust forward rates to their conventional national interest parities." (10)

(ii) The Impact on the U.S. Balance of Payments

It is sometimes asserted that the emergence and growth of the Euro-market is dependent upon the U.S. balance of payments deficits. Ira O. Scott has stated that "the supply of dollars to foreigners through past deficits in the balance of payments has made an important contribution to the development and growth of the Euro-dollar market." (11) A similar argument relating the U.S. payments deficits to the growth of the market is that the "liquidity deficits represents the maximum supply of new dollar balances to non-residents, and therefore sets an upper ceiling on the amount that non-residents may place in the market." (12) Herbert Christie has expressed this "maximum supply" point of view, stating;

(10) Einzig - P. 91

(11) Scott, Ira O. - The Euro-Dollar Market and Its Public Policy Implications Joint Economic Committee; U.S. Congress, 91st Congress, 2nd Session (1970) P. 29; As Quoted from J. Owens - The Growth of the Euro-Dollar Market P. 96

(12) Owens - P. 97

"The volume of Euro-dollars need not increase if the U.S. remains in deficit for all the new dollars coming into foreign hands could be held directly in the U.S. or exchanged for gold. Equally, the volume of Euro-dollars need not fall if the U.S. moves into surplus, for the surplus could be taken in gold or foreign currencies or in a reduction in liquid dollar balances that foreigners hold directly in the U.S. However, except to the extent that they are reflected in changes in U.S. reserves of gold and convertible currencies, U.S. deficits and surpluses respectively increase or decrease the potential for Euro-dollar holdings." (13)

On the other hand, both Jane S. Little and Fritz Machlup have refuted the argument that a U.S. payments deficits is needed for Euro-market growth. Both authors point to the growth of the Euro-mark market and the concurrent large German payments surpluses in recent years as evidence to support their arguments. Little states;

"Foreigners do not need a U.S. balance-of-payments deficits in order to acquire dollars, for they can generally buy them at the foreign-exchange market regardless of the U.S. payments position. Moreover, the Euro-dollar market is not the only dumping ground for surplus dollar balances, since the foreign-exchange market and a variety of assets in the United States provide many alternatives. Thus the growth of the Euro-dollar market does not depend on a U.S. payments deficits, but on the Euro-dollar attractions relative to those of other investment media. The recent German experience should clarify this point. Although the Germans accumulated more than \$14 billion in balance-of-payments surpluses between 1970 and 1972, the Euro-mark deposits in European banks rose almost 200 percent in that period." (14)

Fritz Machlup states;

"The point at issue is whether these deficits were the the "cause" of the growth of the Euro-dollar system. It

(13) Christie, Herbert - "Euro-Dollars and The Balance of Payments." The Banker 1967 P. 39

(14) Little, Jane S. - Euro-Dollars: The Money Market Gypsies, New York 1975.

can be shown, however, that net deposits are necessary nor sufficient causes of increases in Euro-dollar deposits. In 1968, for example, the United States had surpluses on current account, on private capital account in the basic balance, in the liquidity balance, and in the official settlements balance; yet the volume of Euro-dollar deposits increased that year. . . the growth of the Euro-dollar deposits over a period of years in which Western Germany had large surpluses in its balance of payments with only relatively minor deficits during relatively brief periods. The rate of increase of Euro-mark deposits was even larger than that of Euro-dollars." (15)

Manfred Willms illustrates how a balance of payments surplus country may contribute to the growth of the market, and why the growth of the market is independent of a country's payments position. He states:

"One reason is that a large part of the deposits transferred from domestic banks to Euro-banks end up in the foreign branches of domestic banks and therefore do not influence the balance of payments at all. The same is true for loans taken by domestic companies in the Euro-market. These transactions constitute only a relocation of the banking activity from the domestic market to an international market.

The other reason is that the Euro-currency market can be provided with funds not only from a balance of payments deficit country, but also from a . . . surplus country . . . A current account surplus does not prevent an outflow of domestic currency. For instance, if the accumulation of foreign currency assets by domestic economic units exceeds the surplus in the trade account, an outward movement of assets denominated in domestic currency occurs. These assets can be deposited in the Euro-currency market. As a result, the growth of the . . . market in a specific denomination is relatively independent of the balance of payments situation of that specific country." (16)

Table XII below, does not reveal any relationship between the market's rate of growth and the U.S. deficits.

(15) Machlup - "The Euro-Dollar System And Its Controll"
P.7-8

(16) Willms, Manfred - "Money Creation In The Euro-Currency Market"
Weltwirtschaftliches Archiv 1976 P.6-7

Table XII U.S. Balance-Of-Payments And The Growth Rate
Of The Euro-Dollar Market

Year	Size of U.S. Balance- Of- Payments Deficits (millions of U.S. dollars)		Rate of Growth of Euro-dollar market. (percent per annum)
	Official Settlements Balance	Net Liquidity Balance	
1967	- 3,418	- 4,683	19
1968	- 1,641	- 1,611	36
1969	- 2,739	- 6,081	47
1970	- 9,839	- 3,851	30
1971	- 29,753	- 21,965	31
1972	- 10,354	- 13,829	29
1973	- 5,308	- 7,651	45
1974	- 8,397	- 18,940	34
1975	- 4,615	na	16
1976	- 10,555	na	22

Source: Dufey and Giddy - The International Money Market
Englewood Cliffs, N.J. 1978 P.114

While the U.S. balance of payments deficits do not set an "upper ceiling", they may indirectly contribute to the growth of the market in several ways. First, the U.S. deficits allow a number of countries to run a payments surplus. These surpluses contribute to a nation's foreign exchange reserves, and many countries have deposited their surplus foreign exchange reserves in the Euro-currency market. The depositing of roughly \$25 billion in 1974 by the OPEC nations provides a good example of such depositing. The surpluses experienced by a number of European countries may have contributed to the reduction in controls on international financial transactions, thereby facilitating the exchange of international capital. Finally, the U.S. capital controls program, designed to limit

access to the New York money market, was a response to the continuing U.S. balance of payments deficits. All these factors have led, indirectly, to an increase in the growth of the Euro-currency market.

The most important factor in the market's growth is its highly efficient credit allocation process. Because the market is virtually free of all forms of controls and regulations, the Euro-banks are able to operate profitably on narrower spreads between the lending and depositing rates. It is the existence of the narrower spreads which enables the Euro-banks to attract funds and grow.

A more important question regarding the Euro-market and the U.S. balance of payments, is just what has been the impact on the U.S. payments position exerted by the Euro-market.

The Euro-market has both a positive and negative impact on the payments position of the U.S.. A positive influence results, according to Helmut Mayer, "only to the extent that funds which in any event would not have been in the United States. . . are shifted into the Euro-dollar market and used for additional lending to residents of the United States or as a substitute for American credits to non-residents."(17)

A negative impact may be produced, to the

(17) Mayer, Helmut - Some Theoretical Problems Relating To The Euro-Dollar Market
Princeton Essays in International Finance. 1970 No.99 P.23-24

extent that "funds which would not otherwise have been held outside the United States are deposited in the Euro-dollar market ... and are used either as a substitute for other foreign credits to residents of the United States or for additional lending to residents of other countries." (18)

Mayer estimates that approximately 32 percent of the flow of credit through the Euro-market has had a beneficial impact on the U.S. external payments position, while 12 percent of the credit flows exerted a detrimental impact. The impact of the remaining 56 percent of the credit flows was postulated to have had a neutral impact. Mayer estimated, that on a capital accounts basis, the overall net impact of the market, on the U.S. external position has been positive - in 1968 alone, the flow of credits through the market was computed to have exerted a beneficial impact of roughly \$3.2 billion on the U.S. balance of payments position. (19)

On an official settlements basis - defined as the increase (or decrease) in reserves of gold, Special Drawing Rights, foreign exchange, and the U.S. position in the International Monetary Fund plus the decrease (increase) in liabilities to foreign central banks, the Bank for International Settlements

(18) Ibid. - P. 24.

(19) Ibid. - P. 24 - 25

and the European Fund. (20) - the impact of the Euro-market seems to be rather ambiguous. Jane S. Little states that the existence of the market has led to an improvement (21), while Jeffrey Owens claims that the market's impact has been indeterminate. (22) This ambiguity in the determination of the Euro-market's impact on an official settlements basis is caused by the fact that the market produces offsetting deficit and surplus creating items. Whether the Euro-market produces a positive or negative influence on this balance depends upon the relative magnitudes of the surplus creating and deficit creating items. As yet, there is insufficient data with which any definitive statement can be made.

The Euro-market's impact on a liquidity balance basis - defined as the increase (decrease) in official reserve assets and by the decrease (increase) in short-term and liquid liabilities to all foreigners and international institutions (23) - has been negative, reducing this balance's surplus or pushing it into deficit. This negative impact results from the fact, as

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- (20) Bernstein, Edward M. - "Euro-dollars: Capital Flows and the U.S. Balance of Payments" In: Prochnow (Ed.) - The Euro-Dollar. P. 131
- (21) Little, Jane S. - "The Euro-Dollar Market: Its Nature and Impact." Federal Reserve Bank of Boston, New England Economic Review (May-June) 1969 P. 21
- (22) Owens, J. - P. 101
- (23) Bernstein - P. 131

Jeffrey Owens explains, that: "the only two flows which affect this balance are both deficit creating." (24) The two flows that Owens refers to are a "round-trip" flow involving a U.S. bank borrowing dollars from a U.S. resident via the Euro-dollar market, and secondly, a movement of funds from a U.S. resident to another country via the Euro-market.

Finally, the U.S. basic balance - defined as the balance on current account and long-term capital, and designed to measure imbalance by changes in reserves (the official settlements balance) and also by a group of transactions including capital movements that are short-term but not highly liquid, and the measure of unrecorded transactions (25) - may also be influenced by the existence of the market, but once again the market's impact is difficult to discern. Raymond Miksell and Herbert Furth state that: "it is impossible to provide satisfactory evidence either way; we can only speculate as to what the casual relationships might be, if any." (26)

The most significant aspect of the Euro-dollar market, in relation to the U.S. concept of the basic balance, may have been to induce an expansion of world trade by providing additional

(24). Owens - P. 101

(25) Caves, Richard and Jones, Richard - World Trade and Payments: An Introduction Boston 1973. P. 98

(26) Miksell, Raymond and Furth, Herbert - Foreign Dollar Balances and The International Role of the Dollar. New York 1974. P. 80

international liquidity. As Miksell and Furth note, this trade expansion may have contributed to a growth in U.S. exports. The Euro-market may have contributed to an expansion in world trade, and in U.S. exports in particular, by effecting a redistribution of international liquidity, with surplus nations depositing their excess reserves in the market, and deficit nations borrowing reserves from the market. The consequences of this redistribution is that the deficit nations may have increased their imports from the U.S. (or at least would have maintained the same level) because with recourse to the Euro-market, these deficit countries would not feel the need - arising from reserve losses - to cut back on their imports. Therefore, in terms of the basic balance concept, the U.S. may have benefited from the existence of the Euro-market.

(iii) - The Impact on National Monetary Policies

(A) The Impact on U.S. Monetary Policy

Euro-market transactions may have the ability to undermine the Federal Reserve Board's monetary policies, if no counter-measures are taken to offset their impact. Prior to October 1969, the greatest problem for the effective implementation of a tight U.S. monetary policy were the large borrowings in the Euro-dollar market on the part of the commercial banks. The effect here,

according to Warren McClam (27) is that such borrowings represented a "substitution" of Euro-credit for U.S. domestic credit. The imposition of the U.S. tight money policy shifted the "demand for funds...from the United States to the Euro-currency market." (28)

In December 1968, the U.S. government introduced a fairly tough anti-inflationary policy, which was designed to "slow down the rapid expansion of demand...(which was seen to be) the driving force of inflation." (29) Both monetary and fiscal tools were employed, with primary emphasis placed on the tight money policy. The U.S. economy up to 1968 was experiencing a relative boom, having a real growth rate averaging 4.9% for the five preceding years, and relatively low unemployment rates of 3.8% in 1967 and 3.6% in 1968. The problem in the U.S. economy was the rate of inflation, which had jumped from the relatively low rate of 1.9% in 1967 to 5.5% in 1968. (30)

- (27) McClam, Warren D. - "Credit Substitution and The Euro-Currency Market" Banca Nazionale del Lavoro Quarterly Review (Dec) 1972 and; "Monetary Growth and the Euro-currency Market" In National Monetary Policies and the International System P. 152-176. R.Z. Aliber (Ed) Chicago. 1974
- (28) Idim - "Credit Substitution" P. 350
- (29) United States - Economic Report of the President Thirteenth Annual Report of the Economic Advisors, Washington 1970. P. 6 (addition added)
- (30) I. M. F. - International Financial Statistics, Volume XXIV Number 1 January, 1971. P. 35 Washington 1971

The main restrictive impact of the anti-inflation program felt in the economy came from the tight money policy, which was again further tightened in 1969. The rate of growth of the money supply was cut from 7% in 1968 to 4.4% in the first half of 1969, and then to 1% in the last half of 1969. (31) The discount rate was increased in December 1968, by 1/4%, raising it from 5.25 to 5.50%. In April 1969, both the discount rate and the minimum reserve requirement on demand deposits were raised by 1/4%. (32) This increase in the discount rate made it the highest it has been in forty years. Although it had been customary to raise the Regulation Q ceiling rates on time deposits along with any increase in the discount rate, this was not done here. The Regulation Q ceiling rates were used as an additional tool to ensure the success of the program. The effect of holding the ceiling rates constant, while the treasury bill rates rose sharply from 5.58 in December 1968 to 7.32% in December 1969 (33) was that the commercial banks could not bid competitively for an important traditional source of funds - the certificates of deposits - and as a result the banks lost a large

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- (31) O. E. C. D. - Economic Outlook
July, 1971 P. 11
- (32) I. M. F. - P. 344 - 345
- (33) Ibid. - P. 344 - 45

volume of their time deposits - \$11.7 billion in the first nine months of 1969 alone. (34) The impact on the banks of the loss of their time deposits was not that they suffered an overall loss of deposits, but rather there was a shift from time to demand deposits as the recipients of the proceeds from the sale of other higher yielding assets deposited these funds in a commercial bank. But, since the reserve requirement on demand deposits was roughly three times as large as the reserve requirement on time deposits, the banks had to find additional funds to serve as reserves if they were to avoid any contraction in their loans and investments. To avoid this reduction, the banks looked to the Euro-market as a potential source of funds. The table below gives an indication of the magnitude of the borrowings made by the U.S. banks.

(34) O. E. C. D. - Economic Outlook
December, 1969. P. 32

TABLE XIII-U. S. BANKS' EURO- DOLLAR BORROWINGS

Liabilities to Foreign Branches (billions)

<u>Date</u>	<u>Level</u>
December 1968	6,039
March 1969	9,621
June 1969	13,269
August 20, 1969	14,700
27, 1969	14,600
September 3, 1969	14,400
10, 1969	14,700
17, 1969	14,500
24, 1969	14,300
October 1, 1969	14,100
8, 1969	14,600
15, 1969	15,000
22, 1969	14,300
29, 1969	13,600
November 5, 1969	14,400
12, 1969	14,400

Sources: G. Bell - The Euro-Dollar Market and the International Financial System, New York 1973. P. 63; and, Organization for Economic Cooperation and Development - Economic Outlook December 1969 . 37

William Gibson (35) states that this borrowing in the Euro-market would not by itself, provide the U.S. commercial banks with additional reserves, and consequently, such borrowings would have no impact on the U.S. monetary policy. Richard Cooper (36) however, points out correctly that the borrowings did increase

(35) Gibson, William - "Euro-dollars and U.S. Monetary Policy" Journal of Money, Credit and Banking (Aug) 1971 P. 649-665

(36) Cooper, Richard - "Implication of the Euro-Dollar for Monetary Policy and the U.S. Balance of Payments Deficit" In: National Monetary Policies and the International System R.Z. Aliber (Ed) Chicago 1974 P. 139-151

the reserves of the banks in three ways:

"(1) by forcing or inducing other central banks to sell gold to the United States (amounting to nearly \$1 billion in 1969, mostly from France and Germany and only indirectly connected with American borrowings in the Euro-dollar market); (2) by forcing or inducing other central banks to activate or draw on their swap arrangements with the Federal Reserve (relative small amounts in 1969); and (3) by increasing the Federal Reserve float, a possibility that was skillfully exploited by banks taking advantage of the time difference and differences in settlement conversions between the United States and Europe." (37)

In addition, because Euro-dollar borrowings were not subject to any reserve requirement, the "round-trip" borrowings of the U.S. banks from U.S. residents, via the Euro-market, served to increase the volume of credit in the U.S. Helmut Mayer provides a good explanation of how this mechanism operates:

"This means that a shift by non-banks of their deposits from other banks to their Euro-dollar banks in London will now be a way of circumventing reserve requirements and will amount on an international basis to an increase in the overall credit-granting potential. As illustration, we may take a situation in which the banks of a given country (country A) are fully loaned up. If there is now a shift of deposits from the banks of country A to the Euro-banks in London; the re-lending of these funds by the Euro-dollar banks to banks or non-bank residents of country A will increase the amount of credit available in country A without any actual net capital inflow taking place."(38)

(37) Ibid. - P. 140

(38) Mayer, Helmut - Some Theoretical Problems - Op. Cit. P. 14. This is essentially the same thing that Ann-Marie Mulendyke stated earlier.

Otmar Emminger (39) states that the Federal Reserve Board in 1969, was fully aware of the commercial banks borrowings in the Euro-dollar market, and in fact depended upon these borrowings in the implementation of their monetary policy, because they "provided a needed safety valve for American banks - which enabled the Federal Reserve to pursue a more vigorous policy of monetary restraint than it otherwise would be able to do." (40) But by July 1969, these borrowings had ceased "to be a safety valve and were becoming an obvious escape route around a national policy of credit restraint." (41)

In order to eliminate the banks' ability to circumvent the tight monetary policy, the Federal Reserve Board introduced a special reserve requirement to be applied to the foreign borrowings of the commercial banks. Donald Hodgman (42) states that the effect of the new requirement was to reduce the incentive for the banks to borrow in the market. He states:

"Initially the exemption from any reserve requirement of deposits at their home offices by foreign branches provided an incentive for major U.S. banks to use this channel in the Euro-dollar market. This special incentive

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- (39) Emminger, Otmar - "The Euro-market: A Source of Stability or Instability" In: Prochmore-The Euro-dollar P. 104-121
- (40) Ibid. - P. 117
- (41) Ibid. - P. 117
- (42) Hodgman, Donald - Euro-Dollars and National Monetary Policies. An Irving Economic Study, Irving Trust Co. New York Undated

was reduced but not removed when, effective October 16, 1969, the Federal Reserve Board put a ten percent reserve requirement on any increase in amounts of Euro-dollars borrowed by member banks relative to the benchmark levels in May 1969. In December 1969, the Federal Reserve Board received authority ... to apply reserve requirements of up to 22 percent on Euro-dollar borrowings of member banks." (43)

Similarly, these Euro-dollar transactions can also be used to blunt a policy of easy money by, "leading to U.S. gold sales or to U.S. use of swap facilities or repayments of swaps by foreign central banks, by reducing the float, and by leading to repayment of reserve-free non-deposit liabilities, all of which occurred to some extent in 1970 and 1971." (44)

While the Federal Reserve Board can offset any change in the commercial banks' reserve positions resulting from Euro-market transactions - and this is the conclusion of both Gibson and McClam - by using their traditional monetary tools, Euro-dollar market borrowings as Hodgman states: "have given major money market banks a channel for reducing the impact of Federal Reserve measures designed to focus the incidence of a credit squeeze on them and their customers." (45)

(B) The Impact on European Monetary Policies

The growth and development of the Euro-currency market has,

(43) Ibid. - P.23

(44) Cooper - "Implications" P. 140

(45) Hodgman - P. 30 (addition added)

as Milton Gilbert (46) observes, reduced the ability of a European country to pursue an independent monetary policy.

Gilbert states this comes about because;

"As funds tend to move more easily from one country to another in response to smaller interest rate incentives, a consequence of the Euro-market has been to reduce the autonomy of national monetary policy for purely domestic objectives. Movements of short-term have always put limits of this kind on domestic monetary policy but the Euro-market has intensified them." (47)

The Bank of England and Wayne Clendenning (48) have provided a good framework showing how such capital inflows may exert an undermining influence on the national monetary policies of nations. Their analysis is based on the institutions and practices of the U.K. credit system, and assumes that any excess supply or demand of foreign exchange is caused solely by an inflow or outflow of foreign exchange.

An excess supply of foreign exchange flowing into the U.K. must be purchased by the foreign exchange authorities if the sterling exchange rate is to remain at its pegged value. This is effected by a payment to the owner of the foreign currency

(46) Gilbert, Milton - "The Euro-Currency Market"
In: The European Capital Market
Federal Trust Report, Special
Series No. 2 Federal Trust for
Education and Research. London,
1967 P. 11-23

(47) Ibid - P. 20

(48) Bank of England - "Inflows and Outflows of Foreign
Funds" Quarterly Bulletin Vol. 2
1962 P. 93-102; and, Clendenning
The Euro-Currency Market
Chapter 7

of an equivalent amount in sterling. As a result, there will be an increase in the deposit liabilities and cash reserves of the commercial banks.

The banks, now may "react to the increase in deposits and liquid assets by buying more investments or making more advances, with secondary effects on the bank deposits of U.K. residents.(49) The secondary effects referred to is a multiple expansion of deposits and credit.

The impact of such a capital inflow on domestic credit conditions depends, according to Clendenning, on how the authorities finance the additions to the foreign exchange reserves, with the "critical factor in determining the impact...is...who holds this additional government debt and, hence, finances the additions to foreign exchange reserves." (50)

There are three possibilities open here. The first is that the authorities borrow the whole amount of the inflow at current interest rates from the foreign owner. The effect of such a transaction is to make the inflow self-financing without any direct effects on the country's credit conditions. Secondly, the foreign investor may decide to invest his funds himself, by transferring his deposit to a domestic resident in exchange for a U.K. security. Such a transaction, by affecting the relative returns on various securities, may induce a shift in preferences

(49) Bank of England - P. 95

(50) Clendenning - P. 123

on the part of domestic investors, towards larger holdings of government debt. If such a shift is effected, then the inflow will be financed by the foreign exchange authorities who will borrow from domestic investors. The domestic investors' bank deposits will fall correspondingly as they purchase the government debt. However, if the transaction induces domestic investors to shift out of government securities, then the inflow must be financed by "borrowing on Treasury Bills from the banks and discount houses." (51) Consequently, the equal increases in the deposit liabilities and liquid assets caused by the inflow, remain in the banks, enabling them to effect a secondary expansion of credit.

The third possibility open for the foreign resident is to leave his deposit with the banks, who in turn will employ the funds - after switching them into sterling. Two options are open to the banks in the employment of these funds. The banks can either shift out of Treasury Bills and into government stocks, or they can lend to the local authorities or the private sector. The impact of such transactions may lead to:

"a sequence of reactions in the preferences of domestic investors for one security against another, with the same kind of consequences (mentioned above in the second possibility). In both cases, however, foreign-owned bank deposits will remain higher by the amount of the inflow: and in the second case only there may be an increase also in domestic deposits." (52)

(51) Bank of England - P. 95

(52) Ibid. - P. 95-96

Therefore, the crucial factor determining the impact of the capital inflow on domestic credit conditions is, as Clendenning states, the degree to which the non-bank public absorbs the government debt in response to changes in relative yields for different securities. This in turn depends upon three elasticities - "(1) the elasticity of demand for government securities on the part of the non-bank public; (2) the elasticity of demand for non-government securities... and (3) the elasticity of supply of non-government securities." (53)

If the demand elasticity for government securities is high and there is a low demand elasticity for non-government securities, then the inflow will be self-financing with no direct effect on the country's credit conditions. If the opposite holds, and the elasticity of supply of non-government securities is also high, then the inflow will induce a disturbance in the country's credit conditions.

Euro-dollar flows have an even greater potential for creating a disturbance in the U.K. than normal capital inflows involving treasury bill arbitrage, because such inflows are "almost always invested in non-government securities...(which) makes the inflow self-financing." (54) In order for a Euro-currency inflow to be offset, there must be a shift in the

(53) Clendenning. - P. 125.

(54) Ibid. - P. 131 (addition added)

domestic investors preferences towards government securities. But any such shift that may come about is unlikely to be so complete as to fully offset the impact of the inflow.

In addition to disrupting domestic credit conditions, the Euro-market may act as a conduit through which U.S. monetary policy may be transmitted to European countries. Since the U.S. exerts a strong influence in the determination of the Euro-market's interest rates - Friedrich Lutz states that the U.S. interest rates, set a lower limit for the Euro-dollar rates (55)-and similiarly, since the Euro-rates enter into in the determination of the European interest rates, it follows that the Euro-market may act as a conduit through which the U.S. monetary policies may be transmitted to Europe.

The transmission, or the degree of influence the U.S. may exert over European monetary policies, will vary over time, depending on the monetary conditions prevailing in the United States. Herring and Marston have provided some evidence concerning this influence, which is given in the table below. The authors estimated the U.S. influence in "normal periods" when the Regulation Q ceiling interest rates were not binding, and for periods of credit stringency when the Regulation Q ceilings became effective.

(55) Lutz, Friedrich - "The Euro-Currency System" Banca Nazionale del Lavoro Quarterly Review (Sept) 1974. P. 199

TABLE XIV - THE IMPACT OF A 100 BASE POINT INCREASE IN THE U.S.
INTEREST RATE (after four quarters)

U.S. Commercial Paper Rate	Normal Period 100	Credit Restraint Period 100
Euro-dollar Rate	83	152
French	48	88
German Rate	30	55
Italian Rate	25	45
Netherlands Rate	76	138
Swiss Rate	28	52
British Rate	33	60

Source: Herring and Marston - National Monetary Policies and International Financial Markets. New York, 1977. P. 289

The results show that during a "credit crunch", the U.S. influence over European monetary conditions would be intensified. The results are consistent with the actual conditions that prevailed during the 1968-69 period of credit restraint in the U.S. which forced the U.S. banks to borrow \$15 billion from the Euro-market. Eric Chalmers states that these borrowings "(were) the major factor in forcing up the Euro-rates... and diminishing the

supply of this form of international capital for the rest of the world." (56) In effect, the U.S. banks, and the Federal Reserve - by not taking any action to offset or stop the borrowings - were successfully exporting \$15 billion of its tight money policy to the rest of the world. Richard Marston also shares this view, and states:

"Conditions in the Euro-dollar market are of major concern because this market plays a pivotal role in the international system. By mobilizing a large volume of short-term capital and distributing it world-wide, the Euro-dollar market has a disproportionate effect upon the distribution of international financial resources...In the absence of an integrated European money market, the Euro-dollar market has considerably increased the efficiency of international financing and investment. It was upon this market that U.S. banks imposed their enormous demands in the 1966 and the 1968-69 periods of credit restriction. The market's role in the international economy spread the strain caused by such borrowings far beyond the confines of the market itself." (57)

Therefore, monetary authorities must take into account conditions existing in the Euro-currency market when they plot their strategies for national monetary policies. The German experience in the early 1970's shows how difficult it is for national authorities when their domestic monetary conditions are out of synchronization with the conditions existing in the Euro-market.

(56) Chalmers, Eric - International Interest Rate War London, 1972, P. 187 (Emphasis in original, addition added)

(57) Marston, Richard - American Monetary Policy and the Structure of the Euro-Dollar Market. P. 37.

CHAPTER 6 - The Problem of Control

The Euro-currency market has the potential to exert a disrupting influence over a variety of national economic policies—such as monetary, exchange-rate, balance of payments and international reserve policies. Consequently, there have been repeated calls for steps to be taken in order to eliminate or minimize the market's potential for influencing or undermining domestic economic policies.

In contrast to those favouring the application of controls and regulations on the market, other Euro-market analysts have claimed that the market has provided the world economy with significant benefits which, in the presence of controls, would not be available. Such benefits cited are the provision of additional liquidity with which world trade and investment can be financed, the provision of badly needed liquidity to the developing countries, and by serving as an international conduit for funnelling capital from surplus to deficit countries, as experienced after the formation of the OPEC oil cartel in 1973-74.

In addition to the question of whether or not controls should be placed on the market, there is the additional problem—assuming that some form of regulation is needed—of the type and method of application of the controls. Defensive regulations, designed to protect and insulate domestic economies from the international capital market may not be the proper way of achieving the desired results, because, "if all countries did that at the same time, they could simply paralyze the market." (1)

(1) The Banker - "Controlling the Euro-money Market"
(March) 1973 P. 1562

One group holds the view that the proper method of regulation must be at the international level, involving the cooperation of all countries concerned. Another group holds the view that international cooperation is unlikely to be realized, and even if it were to be achieved, the best way of proceeding would be on an individual basis because of different conditions existing in the different countries.

(i) The Argument For Controls

The existence of the Euro-market brings with it additional risks and dangers, that are, according to Wayne Clendenning, felt at three different levels - "the individual bank, the individual country, and at the level of the international financial system as a whole." (2)

At the level of the individual bank, loans in the Euro-market are effectuated on a "name basis" and usually of an unsecured nature. Consequently, the individual Euro-bank has very little control over how the funds lent out are to be employed. While the Euro-banks are subject to the normal banking risks of loan default, this risk is greatly increased. Unlike the domestic commercial banks, who maintain both close contact and adequate information on the financial positions of their clients, the

(2) Clendenning, E. Wayne - "Euro-Dollars: The Problem of Control." The Banker 1968. P. 321

Euro-banks very often can not, for several reasons. The Euro-market is characterized by a large volume of inter-bank lending, and therefore it is difficult for an individual bank to determine where the final destination of his funds will be, and just who is in fact the end-user of the funds. The result of this, as Clendenning states, is that, "the individual bank must rely on the financial standing of the borrower which it directly lends and hope that, if a breakdown does occur through a default somewhere in the chain, the borrower will still be able to meet his Euro-currency obligations." (3) In effect, the danger lies in the practice of lending on a name basis without an adequate investigation into the credit worthiness of the borrower.

Related to the above problem, is the fact that a large volume of loans are granted to multi-national corporations. This lending involves risks that domestic banks, when making loans to national corporations, do not incur. George Blunden states that some of the problems involved here are:

"the difficulty for banks of discovering the total liability of a multi-national company to them, when loans may have been made to any number of the company's subsidiaries by many different banks throughout the world in a variety of currencies; the susceptibility of such companies' long-term plans to disruption by political caprice;

(3) Idim. - The Euro-Currency Market Op. Cit. P. 57-58

their overall exchange-rate exposure; and the effect on corporate cash flow of changes in national taxation and foreign-exchange controls." (4)

A similar problem encountered by the Euro-banks involves their increased willingness to lend to the developing nations, Kevin Pakenham and Josslyn Booth state that there was a rapid growth in the borrowings by developing nations in the period around 1971-74, because:

"A reduction in traditional loan demand forced Euro-currency banks to broaden the base of their activities. Simultaneously, sophisticated monetary officials in several developing countries asked themselves why they should not make use of this relatively new source of private capital for development. It was not long before the coincidence of these two tendencies resulted in several bank credits being granted in the richer less developed countries. Since then this activity has expanded enormously to become the chief source of private capital which less developed countries may tap." (5)

Using the Euro-market as a source of capital may be a positive development in itself, but as Pakenham and Booth point out, in addition to being unsecured, these loans are usually consumed in financing foreign debt contracted in the past, rather than for investment purposes. (6) The risks that the

(4) Bank of England - International Co-operation in Banking Supervision." Abridged Text of a Talk Given to the International Banking Summer School held in Stockholm in June 1977, by Mr. George Blunden, Quarterly Bulletin 1977, P. 325

(5) Pakenham, Kevin - "Eurocurrency Markets as a Source and Booth, Josslyn of Funds" Far Eastern Economic Review (April 4) 1975 P. 20

(6) Ibid, - P. 21

Euro-banks incur here, is the risk of the economic failure of a country, and the consequential inability of that country to repay its loan to the Euro-bank.

Some measures have already been taken to alleviate these risks. Several European countries have established a "central bureaux" for which "all loans by financial institutions of a certain size are reported, and from which banks can discover the total borrowings of individual companies." (7) In addition, the Bank for International Settlements, in conjunction with the Group of Ten countries and Switzerland, have developed a more complete set of statistics concerning the Euro-market borrowings of countries. While both these measures are a needed development, the coverage is as yet incomplete and both multi-national companies and individual nations complete debt positions are unavailable to the Euro-banks.

The Euro-banks themselves have developed methods designed to reduce their risk exposure. Consortium and loan syndication are both measures designed to reduce the risk exposure of any single Euro-bank.

At the level of the individual country, there are two principal dangers associated with the Euro-market;

"(1) the danger that domestic banks involved in the market may overextend themselves and thereby place demands on the official foreign exchange reserves; and (2) the fact that the existence of the Euro-dollar market has provided another channel through which short-term capital can flow internationally and, hence, has tended to increase the volume of short-term capital moving into or out of any particular country." (8)

(7) Bank of England - P. 329

(8) Clendenning - "Euro-dollars: the Problem of Control" P. 322

The first problem may arise if a domestic commercial bank had converted a large volume of Euro-currencies into domestic currency, or if the foreign borrowers of Euro-dollars default on their loan to the bank of the country concerned. The impact here on the foreign exchange market of either of these actions would be to depress the exchange value of the domestic currency, and to cause a depletion of that country's foreign exchange reserves. Clendenning states that such an action might induce a bout of speculation against the domestic currency if such conversions were of a sufficiently large scale and if the foreign exchange reserves were relatively small. This round of speculation would have the effect of further reducing the country's reserves. (9)

The second of the above two problems is the one that represents the more serious danger. The Euro-market provides a huge pool of capital that speculators and arbitrageurs can mobilize to effect an international flow of funds. Flows emanating out of the Euro-market can seriously undermine the monetary policies of many nations, if these policies go "counter-current to Euro-market trends." (10)

Fritz Machlup has identified several areas in which the Euro-market may present additional problems for individual countries:

"(1) A very fast rate of increase in Euro-dollar deposits

(9) Idim. - "The Euro-Dollar Market Op. Cit. P. 166

(10) Ossola, Rinaldo - "Central Bank Interventions"
Loc. Cit. P. 40

may involve risks to the economies of several nations in that it

- (a) adds to the excess demand for goods and services and thus accelerates the increase in the price levels;
 - (b) artificially reduces interest rates and invites over-expansion of investment resulting in subsequent painful adjustments of economic activity;
 - (c) may lead to reversals with deflationary consequences.
- (2) Certain developments in the Euro-dollar market may involve risks to the economy of a particular country in that the market
- (a) may attract liquid funds from the national credit market reducing the availability of credit to residents, raising the rate of interest they have to pay, and perhaps exerting a deflationary influence;
 - (b) may furnish liquid funds to the national credit market at a time when the monetary authorities have decided that a policy of credit restraint was indicated by prevailing circumstances;
 - (c) may supply massive support to speculative movements against the maintenance of fixed exchange rates, flooding the central bank of a country whose currency is suspected of becoming harder, and draining the central bank of a country whose currency is suspected of becoming weaker." (11)

The final area of concern is at the level of the international system as a whole. This international banking system is without a lender of last resort, to which the participating nations can turn to in times of emergency. Because of the close connections between banks, brought about by the large volume of inter-bank lending - there is the danger that if one bank suffers massive losses (through loan defaults or badly placed investments)

(11) Machlup - "The Euro-dollar System and its Control" P. 32 - 33. In: International Monetary Problems. A Conference Sponsered by the American Enterprise Institute For Public Policy Research. Washington 1972.

then they may be unable to meet their obligations to other banks in the market. Consequently, there is the danger that if one bank fails, it might bring down with it, large sections of the market. This problem has been alleviated somewhat by several developments mentioned earlier. In addition the Committee on Banking Regulations and Supervisory Practices - composed of the Group of Ten countries plus Switzerland and Luxemburg - agreed in June 1971 that:

"(it is) the duty of central banks to provide lender-of-last-resort facilities to their national banks to support their Euro-currency operations." (12)

(ii) The Arguments Against Controls

The arguments against the imposition of controls usually center on the benefits conferred on the world community by the Euro-currency market - benefits which might not be available if the market were to be shackled by regulations and controls. Stanislas Yassukovich points out that this huge pool of international capital has made a significant contribution to the "enormous growth of world trade and investment" (13) Yassukovich states that the fault of exchange-rate instability - which may be a by-product of the market - lies with the developed nations themselves:

"While recognizing the fact that the growing volume of

(12) Bank of England - P. 326

(13) Yassukovich, Stanislas - "Dilemmas in Euro-market Regulation" The Banker (April) 1973 P. 369

world trade and investment has had to rely on the private sector liquidity afforded by the Euro-currency market, the authorities have been increasingly concerned at the price of this liquidity in terms of exchange stability. Yet surely the fault lies to a large extent in the inability of the developed world to increase international liquidity in terms of credible reserve assets to a level that can sustain the velocity of monetary movement associated with the increase in world business." (14)

The Euro-currency markets were a valuable aid to many nations during the periods following the formation of the OPEC oil cartel and the subsequent quadrupling of oil prices. The sharp rise in the price of the oil imports produced severe strains on the economies of many nations. In the absence of allowing the deflationary structural adjustments that such a price rise would normally entail - a policy that Paola Savona rules out as being "unrealistic" (15) - then if these nations are to maintain the same level of economic activity, in the short-run at least, then the same levels of oil imports will be required. A.N. Assily states that there was no large reduction in the volume of oil imports, as the "demand elasticity of oil in the consuming nations ...were grossly underestimated." (16)

(14) Ibid.

(15) Savona, Paolo - "Controlling the Euro-markets" Banca Nazionale del Lavoro Quarterly Review (June) 1974 P. 168

(16) Assily, A.N. - "The Arab States in the Euro-markets" In: The Euro-markets in 1975. A Conference Organized by the Financial Times in Association with the Investors Chronical. March 5 & 6, 1975. P. 3

Maintaining the same level of oil imports, at the new higher price levels; translates into sizable increases, or the appearance of payments problems for many nations. In the short-run, as Savona states, probably the "best way of dealing with the price increase is by resort of official reserves and international credit ... We thus have to rely on the market (with its Euro-or-xenocredit) and on foreign exchange reserves." (17) The Euro-market was very helpful in financing the deficits caused by the oil price rise, and, in addition, provided a market where the oil exporting nations could place their surpluses. Ronald I. McKinnon states, "The enormous recycling of funds made necessary by the formation of the OPEC oil cartel in 1973 would not have proceeded so smoothly in the absence of the Euro-currency system." (18)

Probably the greatest danger in the attempt to place controls over the Euro-market, is that it might disrupt the process of credit allocation in the market. While the Euro-market may act at times to pose problems for policy makers in individual nations, the market itself is a highly efficient mechanism in the distribution of credit. Gunter Dufey and Ian H. Giddy state that:

"Indeed, probably no other single force has made such a great contribution to the efficient international allocation of credit as have the Euro-currency markets. Quite apart from

(17) Savona, Paolo - P. 168

(18) McKinnon, Ronald I. - The Euro-currency Market
Princeton Essays in International
 Finance No. 125 December, 1977.
 Princeton, N.J. P. 27.

the operational efficiency resulting from the narrow margins on which Euro-banks operate, they increase international capital market efficiency in two ways:

- (1) The Euro-markets increase international capital market integration in general
- (2) As a highly developed system of financial intermediaries, they achieve a liquidity transformation function that contributes on a world-wide scale to the level of savings and investment." (19)

It is argued that the market is the most efficient mechanism for the distribution of international credit, and therefore attempts to control the market would simply introduce distortions into the market's credit allocative function. In addition, there is the danger that the imposition of controls would, as Yassukovich states, "drive activity towards off-shore centers less willing even to impose the disciplines of good banking through a rigorous control of the membership of the banking community as is practiced by the Bank of England." (20)

Both Machlup and Dufey and Giddy state that the market has continued to grow and thrive because of the different sets of regulation applied to the different banking communities the international and domestic banking systems. Dufey and Giddy state:

"As long as countries maintain a reasonable degree of freedom for international financial transactions while continuing to restrict and control the domestic money markets, the Euro-markets will thrive and grow on the basis of freedom from such restrictions." (21)

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- (19) Dufey, Gunter and Giddy, Ian H. - The International Money Markets, Englewood Cliffs, N.J. 1978. P. 193
- (20) Yassukovich, S. - P. 369
- (21) Dufey, G. and Giddy, I.H. - P. 205

Machlup's solution to the problems of the Euro-market is to give equal treatment with respect to regulations. Specifically, Machlup would "abolish regulations on banking operations in domestic currency than to extend them to operations in foreign currencies." (22) Machlup argues that "if competition were restored in domestic banking, the preference for Euro-dollar banking would be much reduced." (23) Such a policy however, doesn't solve the problem of inflows or outflows of "hot" money, and its consequence for independent monetary policy.

(iii) The Types of Controls

Regulation of the Euro-currency market has been proposed at two different levels - at the international level, and at the national level, - in order to insulate the domestic economies from the influence of the Euro-market. Some market analysts have adopted the position that it is only at the international level can the market be effectively controlled, while other market analysts have questioned the ability of the international community to agree on just what types of controls are to be applied. These analysts therefore favour the imposition of controls by individual nations over their domestic institutions.

At the international level, the objective of any regulations,

(22) Machlup - "The Euro-dollar System and Its Control"
P. 34

(23) Ibid. - P. 36

would be the "control of the growth of Euro-deposits" (24) .
 Any action taken at this level would require the agreement of the international community, particularly the developed nations. Some degree of progress has already been made towards developing a spirit of mutual trust and cooperation among these countries, as agreement was reached at the General Meeting of the Bank for International Settlements in June 1971, whereby the central banks "decided for the time being not to place additional funds in the (Euro-dollar) market and even to withdraw funds when such actions is prudent in light of market conditions." (25)

One such proposed form of international joint action would be the;

"systematic implementation of open-market cooperation in one or more of the various forms in which these can be carried out (acting on the indebtedness at Euro-banks, or buying and selling of securities with different maturities). Under this head may also be included actions affecting deposits held by central banks on the Euro-market and purchases and sales of foreign exchange. The purpose of such actions is to control the level of international liquidity held by banks and other private parties inside the area of the participating countries." (26)

Open-market operations would be designed to sterilize the

(24) Carli, Guido - "The Euro-dollar Market and Its Control" P. 16

(25) Speech by Dr. J. Zijlstra, Chairman, to the Board of Directors at the Annual General Meeting of the Bank for International Settlements, Basle, June 14, 1971. As quoted from Machlup; "The Euro-dollar System and its Control" P. 32

(26) Masera, Francesco and Savona, Paolo - "Outlines of a Common Policy For Intervention On The Euro-currency Market." In: A Debate On The Euro-dollar Market Op. Cit. P. 26 (Emphasis in original)

movements of funds into or out of the market. This method of regulating the level of the volume of international liquidity has already been carried out once before. In 1970, the U.S., using the Eximbank at first, and then through the Federal Treasury "carried operations of this kind for an amount equal to circa 3 billion dollars. At the end of 1971 the securities sold to the Euro-banks at the time matured and were cashed in."(27) Crucial to the successful operation and continuation of such a method of regulation, would be the close co-operation and agreement among the industrialized countries, particularly the U.S.. Francesco Masera and Paolo Savona state that if this co-operation and agreement as to the appropriate policy to pursue, then this tool would become ineffective:

"If it is assumed - for agreement's sake - that the United States is not prepared to carry out systematic intervention of this kind; it must be admitted that the open-market operations proposed here can do nothing to control the overall dollar liquidity...Should they, on the other hand regulate the overall volume of dollar denominated money and should the other countries not be satisfied with that volume or with its distribution between the United States and the outside world, the international agency entrusted with the task of carrying out international open-market interventions would have to set itself the aim of controlling the volume of domestic liquidity in the United States as well, if it is to carry out its duties.

In either case it would be unrealistic to speak of effectiveness of the open-market operation and recourse to different instruments of intervention would have to be contemplated." (28)

(27) Ossola - "Central Bank Intervention" Loc. Cit. P. 43

(28) Masera and Savona - "Outlines for a Common Policy" P. 28

Such a program, as the authors above have noted, would require the abdication of independent action with respect to national stabilization policies, - a possibility that is remote at best for the foreseeable future.

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is also sceptical about the ability of the different nations to come to agreement as to the volume of world liquidity needed. He states;

"The achievement of international co-operation and mutual adjustment is beset by many difficulties arising out of divergencies in economic interest and political inhibitions. . . . It is as difficult to organize joint action to deal with trade and payments disequilibria that developed slowly over a period of years, as in recent years it has proved to, it is hard to believe that co-operative action can be improved with sufficient promptness to deal with such sudden and transitory phenomena as disruptive capital flows. . . . International co-operation. . . . But not only is it technically hard to determine what relative structure of international interest rates would be conducive to short term payments equilibrium. . . . it would also be politically difficult, in view of differences in the cyclical situation in different countries, to obtain agreement regarding the absolute level of such rates. Moreover, many countries would be reluctant to divert monetary policy from the pursuit of internal stabilization to that of external balance, and would prefer to preserve the independence of their monetary policies." (29)

Another proposal, which might be implemented in conjunction with the open-market operations or simply alone, is the imposition of reserve requirements on the Euro-banks' deposit taking activities. This type of regulation could either, - when used in

(29) Fleming, J. Marcus - "The problem of Disruptive International Capital Flows" In: Europe and the Evolution of the International Monetary System. Proceedings of the First Conference of the International Centre for Monetary and Banking Studies. Edited by A. K. Swoboda, Geneva, 1973, P. 145-146

conjunction with open-market operations, be of value in controlling the world's supply of international liquidity, or used to add a measure of stability to the individual banks participating in the market. However as Masera and Savona state, the application of such a measure raises three problems;

- "(a) the form of deposit taking activity to be subject to the reserve requirement.
- (b) the instruments to be used for constituting these reserves.
- (c) the remuneration of resources deposited as reserves. (30)

In respect to the first question, Masera and Savona state that if reserve requirements are to be applied, then they should be applied to all classes of Euro-deposits, because, "if, . . . one or more types of deposit-taking are excluded, the banks' operations will be concentrated on the type that are exempt from the reserve requirement and the co-ordinated intervention proposed here will merely have a redistributive effect." (31)

The instruments to be used as reserve assets could be public securities, or deposits at central banks or other specially appointed institutions. Guido Carli states that this would be suitable, "provided that the currency so acquired is held in the country of origin and that these countries do not rechannel it back through imbalances on their external account." (32)

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- (30) Masera and Savona - P. 30-31
 - (31) Ibid. - P. 31
 - (32) Carli - P. 17

In respect to the final question as to whether any remuneration should be paid on the banks' reserve holdings, two views prevail. The first states that no interest should be paid because the market has, through its competition with domestic banks "led to an increase in savings in the form of international money at the expense of savings in national currency. . . (which has) led to a reduction in the amount which, on the basis of compulsory reserves, is used to meet the Treasury's requirements." (33) In addition, the Euro-market has greatly enhanced the mobility of capital, thereby reducing the scope for domestic stabilization policies. Therefore, it is argued that by not paying any interest on the reserve holdings, the Euro-banks' lending and borrowing margins would be reduced, thereby lessening the market's attractiveness.

On the other side, the argument for the payment of interest on the reserve holdings states that in the first place, "this type of action, by not affecting in practice bank intermediation margins, is close, from the viewpoint of convenience and of observance of market mechanism, to that of the intervention on sources." (34) Consequently, the efficiency of the intermediation function would not be as greatly disturbed as might be if no remuneration were paid to the Euro-banks' reserve requirements.

(33) Masera and Sovona - P. 32

(34) Carli - P. 17

The imposition of reserve requirements on Euro-banks is an attempt to reduce the Euro-market's credit potential, and an attempt to eliminate the privileges enjoyed by the Euro-banks (ie: equal treatment for all those engaged in the same functions). Both open-market operations and reserve requirements are an attempt to "contain the global supply of Euro-currencies with the desired limits." (35) However, even if the global supply of credit is contained within some desired limits, by these regulations, the market may still cause problems for domestic authorities because, as Carl Stem points out, "it is not the overall volume of Euro-dollar credit which creates problems for individual countries, but the distribution of that credit. This is the reason measures may be taken by national authorities to influence the lending or borrowing of their non-bank residents vis-a-vis the Euro-dollar system." (36) Consequently, Stem favours the actions taken by individual countries designed to "insulate, only when necessary, their economies from the expansion or contraction of Euro-dollar credit." (37)

The controls that may be applied by individual nations (ie: these are defensive regulations) are varied and may take the form of two-tier markets to neutralize the exchange rate

(35) Ibid. - P. 18

(36) Stem, Carl - "Discussants On Professor Machlup's Paper" In: International Monetary Problems. P. 52

(37) Ibid. - P. 51

pressures, penal or negative interest charges on foreign deposits designed to limit the inflow of funds from the market, and most importantly, reserve requirements on both banks and non-bank (of the Bardepot type) external liabilities.

However, even at this national level, the regulation of their nationals' participation in the market is unlikely to be fully effective. Reserve requirements, for example may be circumvented by both domestic banks and non-banks alike. Milton Gilbert and Warren McClam state that:

"Reserve requirements, as they concern foreign-currency borrowings from non-residents provide in most countries little impediment and often a positive incentive, to borrow in foreign currencies either from non-residents or, where exchange controls permit, residents to finance, after switching, domestic lending." (38)

Dufey and Giddy state that with respect to non-bank customers, controls, "if not total and comprehensive, usually result in a loss of efficiency in the economy, without obtaining the desired effects the controls were originally imposed for." (39)

Both at the international and national levels, the attempt to control the market and its influences on domestic economies, have serious weaknesses with respect to their application. The problem stems from the absence of a close harmonization of monetary

(38) Gilbert, Milton and McClam, Warren - "Regulations and Practices Relating to the Euro-currency Market" In: The Euro-dollar Op. Cit. P. 355

(39) Dufey and Giddy - P. 202

policies among the developed world. It is the absence of this harmonization that gives rise to the international capital movements. The Euro-market simply responds to the differences in these policies among the individual nations, and doesn't induce them, (with respect to the market's role in exchange rate instability-which, in turn, may cause the national authorities to adopt a different monetary strategy,- it can be argued that the market has once again exploited the difference between what the currency is actually worth and what it is pegged at; it doesn't cause the problems that lay behind the surface). The market serves to intensify these flows, but cannot establish policies that initiate them. Carli also recognizes this point:

"I would reiterate that only harmonization of economic policies and uniformity of anti-cyclical measures can provide effective guarantee against the de-stablizing movements of funds, and in particular against the possibility that a large part of the Euro-money supply should be discharged on a single market, with the obvious consequences." (40)

In summary, there are valid arguments for both in imposition and the exclusion of the Euro-market from controls and regulations. Clearly the market has the potential to exert a large disrupting influence over a variety of national economic policies, and consequently, the demands for controls, in order to reduce this impact, must be taken seriously. But even if the argument for the application of controls is accepted, there is the additional problem of the method of application - whether at the international level or through independent national action. It would appear that a comprehensive set of controls applied at the international level is likely to prove difficult to achieve, due to different national interests and outlooks. If, on the other hand, it is believed that the insulation of domestic economies could be more effectively achieved through independent national action, then, as Dufey and Giddy have pointed out, such controls must be comprehensive if they are to achieve any degree of success. In the event that such a system of controls could be established, there is the risk that, if all countries pursued such a course of action, world trade and investment might suffer a decline. In a world characterized by such a high degree of economic interdependence, it seems almost paradoxical that national authorities would be willing to take actions that would reduce this interdependence in order to reduce the impact of short-term capital flows on economies. A more realistic policy would be the closer harmon-

ization of economic policies among nations, particular the developed nations.

There appears to be some scope for action that might be taken with regards to the lending practices and the mismatching of liabilities and assets by the Euro-banks. Greater coverage with respect to the credit-worthiness of a potential customer seems in order, as well as greater coverage of the debt positions of customers. In addition, because of the large volume of inter-bank lending, and the low reserve ratios existing in the market, the failure of a single bank, either through loan defaults or through a liquidity crisis, could adversely affect a significant portion of the market. Some action has been taken to lessen this danger, through the requirement that the parent institutions of the Euro-banks act as lender of last resort, but this measure doesn't eliminate the danger. Some action should be taken requiring the achievement of a closer matching of assets and liabilities on the part of the Euro-banks should be taken.

CHAPTER 7 - Conclusions

The Euro-currency market has been found to be a highly efficient market for the acceptance and disposition of international capital. The market's competitive nature has raised some concern about the lending practices of the Euro-banks. This intense competitive atmosphere has, at times, forced the Euro-banks to extend loans to less creditworthy customers at rates which do not adequately reflect the extra degree of risk involved. In addition, the liability asset ratios of the Euro-banks has changed during the 1970's. The latest figures show that the Euro-banks are borrowing short and lending long. This practice could have serious ramifications in the event of a liquidity crisis. The credit and deposit multiplication powers of the Euro-market has proved to be the most contentious area of debate. Most Euro-market analysts have formed the deposit and credit creation powers of the market in terms of an Euro-market analogue to the fractional reserve system. Such an approach, however, encounters difficulties with respect to the specification of reserves, demand functions and the rate of leakages out of the system. In addition, the conceptual basis, which makes such an approach applicable to a domestic banking system, is not appropriate for the Euro-currency banking system. An alternative to the fractional reserve system was the "larger banking network" which postulated that because the Euro-market deals predominately in Euro-dollars, then Euro-banks were part

of the U.S. banking system. No mention was made regarding the other segments (other than Euro-dollars) of the Euro-currency market. A final method of determining deposit multiplication was the portfolio approach, based on the portfolio choices of the market participants. This approach is particularly relevant to such a market as the Euro-currency system, because it is ruled by the conditions of supply and demand. Consequently, portfolio choices can be made explicitly on yield considerations.

While no general consensus has been established as to the size of the market's deposit creation potential, most observers estimate it to be fairly low (lying in the range of unity). The existence of a low deposit multiplier doesn't lead to the proposition that the Euro-market can have no impact on national monetary policies. The market can, and has, exerted an undermining influence on a country's monetary policy. This influence is greatly increased if the country in question attempts to pursue a policy that is out of step with the monetary policies of the rest of the world. In addition, the market has the ability to affect exchange rate and international reserve policies of individual nations.

There have been repeated calls for controls and regulations to be applied to the Euro-currency market in order to insulate national economies from the markets' influences. The attempt to insulate domestic economies from extraneous forces runs counter to the post-war spirit of fostering the development of

international trade and investment. The enormous growth of trade since the war has led to a much higher degree of interdependence among nations, and consequently, there should be a much closer harmonization of economic policies.

With respect to the lending practices and the mismatch of assets and liabilities of the Euro-banks, it was recommended that more careful scrutiny of the creditworthiness, and greater coverage of the debt positions of potential customers should be effected. In addition, because of the large volume of interbank lending, and the low reserve ratios existing in the Euro-market, the failure of one Euro-bank, due to a large loan default or liquidity crisis, could seriously jeopardize a significant portion of the market. Therefore it was recommended that a much closer matching of Euro-bank assets and liabilities should be required.

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ABSTRACT OF
The Euro-Currency Market

The Euro-currency market, since its inception in 1958, has led to an increase in the degree of economic interdependence among nations - particularly the developed nations. The Euro-market's contribution to this trend toward increased interdependence, is due to its ability to serve as a highly efficient conduit for the acceptance and disposition of international capital. In effect, the market has served to increase the degree of financial intergration among countries..

Through its network of interest-rate linkages and by increasing the opportunity for the movement of international capital, the Euro-market has tended to decrease the scope for independent national monetary policies. This feature of the market is particularly relevant for countries attempting to persue a monetary policy which is out of step with the policies persued in the rest of the world. In addition to having a potential for undermining national monetary policies, the Euro-currency market may also exert an influence over a variety of other national economic policies such as exchange-rate, balance of payments, and international reserve policies.

There has been considerable controversy surrounding the Euro-market's deposit and credit multiplication powers. Three separate frameworks have been erected - the fractional reserve analogue, the larger banking network approach, and the portfolio choice model - to explain how the process of deposit and credit multiplication takes place in the Euro-market. It was found that because interest rates in the market are determined by conditions of supply and demand, and because of the competitive nature of the market, the portfolio choice approach is best suited to explain the process of Euro-market creation.

Most observers have estimated the Euro-deposit multiplication powers to be fairly modest - usually lying in the range of unity. With such a low value for deposit creation, the explanation for the growth of the market has been attributed to the the Euro-market's ability to offer more attractive lending and deposit rates than other capital markets. However, several analysts have dissented from this viewpoint of a small multiplier, claiming that the market has the ability to effect a sizable deposit creation process. These authors therefore claim that a significant portion of the Euro-market's growth has been accomplished by the deposit multiplication process.

There have been demands on the part of some authors for the application of controls to the Euro-currency market in order to insulate national economies from the market's influences, and to regulate the activities of the Euro-banks. It was argued that, while the Euro-market can indeed exert a disrupting influence over national economic policies, the market has provided the international community with significant benefits - such as financing international trade, serving as a ready source of funds for the financing of balance of payments deficits, and providing badly needed liquidity to the developing nations. In addition, there is the problem of how to implement any controls. At the international level, it is evident that agreement on the type of weapon and the timing as to the appropriate implementation of the measures would be difficult to achieve, while at the national level, it was argued that only a closer harmonization of national economic policies among the industrialized countries could solve the problems stemming from international flows of "hot money".

With respect to the activities of the Euro-banks, it was recommended that a closer scrutiny of the creditworthiness and a greater coverage of the debt positions of potential customers should be implemented. In addition, because there is no central lender of last resort in the Euro-market, and because of the very low reserve holdings on the part of the

Euro-banks, it was recommended that a much closer matching of assets and liabilities with respect to maturities be achieved in order that the risk of bank failure be reduced.