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GOVERNMENT

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HEARING

BEFORE THE

COMMITTEE ON

BANKING, HOUSING, AND URBAN AFFAIRS

UNITED STATES SENATE

NINETY-FIFTH CONGRESS

SECOND SESSION

ON

**AN INQUIRY INTO THE OPERATIONS OF THE FOREIGN
EXCHANGE MARKETS**

DECEMBER 20, 1978

Printed for the use of the Committee on Banking,
Housing, and Urban Affairs

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U.S. GOVERNMENT PRINTING OFFICE
WASHINGTON : 1979

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TRADING IN FOREIGN EXCHANGE MARKETS

WEDNESDAY, DECEMBER 20, 1978

U.S. SENATE,
COMMITTEE ON BANKING, HOUSING, AND URBAN AFFAIRS,
Washington, D.C.

The committee met at 10:10 a.m. in room 5302 of the Dirksen Senate Office Building, Senator William Proxmire, chairman of the committee, presiding.

Present: Senators Proxmire, Heinz, and Lugar.

OPENING STATEMENT OF CHAIRMAN PROXMIRE

The CHAIRMAN. The committee will come to order.

This morning the committee opens hearings on trading in foreign exchange markets. We have a very distinguished group of expert witnesses to help us understand the exotic world of foreign exchange trading. In a little more than a year between the summer of 1977 and November 1, the dollar dropped 35 percent in value against the German mark, 55 percent against the Japanese yen, and an incredible 67 percent against the Swiss franc.

At one point, in October of 1978, the dollar dropped 10 percent in 1 week against other major currencies. The exchange markets became extremely disorderly. The spreads between bids and offers widened, and the market became a one-way street. Everyone was dumping dollars, but nobody seems to know why.

The dollar is not the only currency to be hit by sudden speculative attacks in recent years. The British pound sterling has been through several spectacular nosedives. The Italian lira and the Canadian dollar have seen their exchange rates drop several points overnight.

On the upward side, the Swiss franc went through a period in which it was running away from the German mark and the Japanese yen as well as all other currencies. Both the yen and the mark have had buying pressure of panic proportion.

It's hard to see economic justification for such extreme currency gyrations. There may be sound underlying reasons for the behavior of exchange markets, but on the surface it looks like Alice in Wonderland. You'll recall that Alice came upon a mushroom. A bite from one side caused her to shoot up taller than the trees; a bite from the other side caused her to shrink right down into her socks. Foreign-exchange traders must be nibbling magic mushrooms along with those three-martini lunches.

There's nothing funny, however, about the effects of exchange rates that act like yo-yos. Trade and investment are encumbered and we

suffer inflation and slow growth as a result. Exchange markets are not solely to blame, of course. Government intervention in markets and an attempt to manipulate exchange rates are partly responsible.

Little more than a year ago Treasury was talking down the dollar. Now they're mortgaging America to foreign bondholders in an attempt to prop it up. Since 1973 the world's central banks have used \$300 billion in foreign-exchange market intervention, mostly in wasted efforts to peg currencies at unrealistic levels.

The \$30 billion which the Treasury has marshaled for the defense of the dollar would dwindle quickly unless we take steps to convince the world in general and foreign exchange markets in particular that the United States can conquer inflation without falling into a deep recession. I believe we can.

The President's anti-inflation program is a big step in the right direction, but the single most important step we can take to bring down inflation and restore confidence in the dollar is to balance the Federal budget. The psychological benefit of a balanced Federal budget for next fiscal year would be enormous. If we can get our economic house in order, the exchange market should respond favorably. But there are some special factors which can influence exchange rates. I asked Chairman Miller, of the Federal Reserve Board, the other day about the Eurodollar market, which he sees as a potentially disruptive element. He estimated the market at between \$400-\$500 billion. Others are saying \$700 billion. No one seems to know how large the Eurodollar market is or just what its effects on inflation and exchange rates may be.

The Eurodollar market is essentially unregulated, so is the foreign-exchange market. Traders and brokers, at least in the United States, are not licensed and not subject to public scrutiny or supervision. Federal regulatory agencies don't even know what the daily volume is in foreign exchange in New York, let alone in Europe. We know very little about how the foreign exchange markets actually work. There are plenty of theories but very little data.

Finally, there have been accusations made, and the SEC is looking into the possibility that banks or others are manipulating exchange markets. The banks do seem to enjoy handsome exchange trading profits, even when markets are disorderly. Some banks are so huge that a few working together perhaps could—that's one of the questions we want to ask this morning of our experts—perhaps could push the rates in a chosen direction and, of course, profit a great deal from that.

Now, there may be nothing to the allegations that have been made, but we owe the public as well as the banks and other market participants a thorough and careful inquiry into the operations of the foreign exchange markets. Today's hearing is a step in that direction. There will be more.

I am delighted that we can open our hearings with the testimony of one of the world's great financial statesmen and a brilliant central banker, former head of the Bank of Italy, Dr. Guido Carli.

Dr. Carli, for those who are more domestically oriented, has been the "Arthur Burns" or the "William McChesney Martin" of Italy, and he comes, of course, with magnificent experience and with a fine record. We are very anxious to hear him.

Dr. Carli, the committee is honored by your appearance here today. We appreciate very much your making the transatlantic trip for this purpose. We are eager to hear your views.

First, let me ask if my colleagues have any statement.

OPENING STATEMENT OF SENATOR HEINZ

Senator HEINZ. Mr. Chairman, I want to commend you for scheduling this hearing on the little understood but vitally important subject of trading in the foreign exchange markets. As you know, I wrote to Senator Stevenson last September to express my deep concern regarding allegations that U.S. banks have deliberately driven down the value of the dollar in the foreign exchange markets for their own profit and to request that he initiate a subcommittee investigation into this matter. Senator Stevenson agreed that the allegations warranted a prompt investigation and I understand several committee staff members have been looking into the matter and the issue of bank dealings in foreign exchange. It was also revealed in October that the Justice Department, the Securities and Exchange Commission, and others were examining certain aspects of major banks' foreign exchange dealings. Considering the interest in this subject, the seriousness of the charge, and the continued decline of the dollar and its negative impact on our economy, I wrote to you, Mr. Chairman, as you recall in early November requesting the Banking Committee to hold hearings on the whole matter at the earliest possible date, and I want to thank you again for scheduling this hearing today.

I fear few of us truly understand how the exchange markets function nor do we fully appreciate the impact that disorderly conditions in these markets have on our daily lives. We are, though, all aware of the much-publicized plight of the dollar of the past 1½ years. From October 1977 through the end of October 1978, the dollar declined about 22 percent against the currencies of the other major industrial nations, resulting in an erosion of confidence in our economy abroad and a significant upsurge in domestic inflation. The particularly sharp dollar declines of this past October against virtually all the major currencies forced the President to take draconian measures in early November to support the dollar—such restrictive measures will have a significant impact on all of us and may well lead us into a recession next year.

Though our massive trade deficit and our inability to control inflation may be the primary reasons for the dollar's plight, it seems apparent that extreme volatility in exchange markets has resulted in exchange rates moving faster and farther, up or down, than can be justified by the underlying economic factors.

Consequently, I think a few basic questions that need to be addressed in this hearing are: What are the reasons for the volatility in the exchange markets that has resulted in such substantial and rapid movements in the exchange rates of the major currencies?

What is the role and influence of the private and central bankers, the foreign exchange brokers, and the multinational corporations in determining market conditions?

Can we realistically expect the foreign exchange markets, under floating exchange rates, to behave rationally—that is, adjusting smoothly to underlying economic factors?

Answers to these questions should give us a much clearer understanding of the functioning of and influences exerted upon the foreign exchange markets.

In addition, I hope our witnesses today would address the matter I find most disturbing—that is, the possibility, as has been alleged, as I stated previously, that U.S. banks have deliberately manipulated the exchange markets to drive down the value of the dollar for their own profit. Is this type of manipulation possible, and, if so, what steps can we take to control and discourage such action?

Mr. Chairman, the knowledge we obtain today should greatly assist us in formulating policies in response to the problems created by disorderly foreign exchange markets and accordingly I look forward to the testimony of our distinguished witnesses.

The CHAIRMAN. Why don't you go ahead.

**STATEMENT OF GUIDO CARLI, FORMER GOVERNOR OF THE BANCA
d'ITALIA AND PRESIDENT OF CONFINDUSTRIA, ITALY**

Dr. CARLI. Mr. Chairman, I feel deeply honored by your invitation. I received your letter and a list of questions last Thursday. I have had not much time to answer. I have sent concise answers. It is my intention to add a few considerations which are partly based on my previous experience.

The problem of the size of the Eurodollar market and its influence on the exchange market was discussed at length at the end of the 1960's and the beginning of the 1970's. At that time discussants took two opposite positions. On the one side, those who believed that reserve requirements had to be extended to the Eurodollar markets in order to keep the expansion under control. On the other side are those who felt that if such action was taken, the consequence would have been to move the markets offshore. The conclusion was to do nothing.

In 1974, the increase in the price of oil had the effect of splitting the world in two major groups: a group of oil-exporting countries earning foreign exchange receipts by far exceeding their ability to spend them, whatever course they would follow; and the rest of the world.

The first group was inclined to keep substantial portions of their receipts in liquid form. Therefore, the problem was to replace liquidity absorbed by countries which for a number of years were to be in the position of structural surplus countries.

If I can quote myself, at that time I am reminded that similar experience in Europe at the end of the epoch of Charlemagne, when gold moved from Europe into the Islamic world to the effect of a major depression in Europe. In the absence of concerted action oriented toward reconstitution of liquidity absorbed by structural surpluses, the world would have been condemned to a major depression in the 1970's. Therefore, the suggestion was made to generate special drawing rights in the amounts needed to replace the liquidity necessary to satisfy the needs of surplus countries. The suggestion was met by the combined oppositions of the Americans, of the Germans, of the French, of the Arabs. The opposition by the Americans because perhaps the administration at that time thought it desirable to make of the dollar a unique reserve currency, intervention currency, transaction currency.

The Germans were opposed because they feared creation of a financial instrument by an international body influenced by political considerations might have the effect of creating an exorbitant amount of international liquidity.

The French were opposed, probably because they still wanted the possibility of bringing gold back to the center of the system.

The Arabs were opposed because they had no experience, and they probably did not understand correct what the special drawing rights meant.

For all these reasons, a decision was taken, involving amounts of only 6 or 7 billion SDR's. The consequence was that the function of launching the bridge between deficit countries and surplus countries was taken by the banking system and, in so doing, the banking system provided the instruments necessary to finance a large deficit and the equivalent surpluses of oil-importing countries of oil-exporting countries.

This, I do believe, is the origin of the exceptional expansion of the Eurodollar market, of the Euro-currencies market, of the offshore markets. You may know them in different forms.

The consequence of this process was that the amount of liquidity created was out of the control of the authorities, and at the same time its composition did not, as well as does not, meet entirely the propensities of the holders.

I do not believe that at present the problem is to bring under control the increments to the outstanding stock of international liquidity.

You mentioned, Mr. Chairman, the figure of \$400 billion, maybe more. I have attached to my short statement some educated guesses, and they indicate a figure of this order of magnitude.

The problem is how to manage the existing stock, more than how to limit its increments. Therefore, it seems to me, it has to be considered what kind of financial instrument could be provided to those who intend to diversify their reserves. At present the process of diversification of the reserves takes the form of sales of dollars and purchases of other currencies—Deutsche marks or Swiss francs or Dutch guilder.

The consequence of this process is that more and more exchange rates in the market do not necessarily reflect the conditions, the fundamental conditions, of the various economies in real terms.

I would like to mention that the history of the international monetary system is characterized by substitution of certain assets for other assets. Originally, this was based on gold. Subsequently, to gold were added foreign currencies: sterling, dollar. Sterling was replaced by the dollar. Gold was phased out of the system, which was probably a mistake.

The problem today is to find alternative assets to the dollar. It seems to me that it is in the interest of the world that the position of the dollar as the key currency be protected.

I wish to make a short excursion on the problems generated by the establishment of a European monetary system and its impact on the dollar. What is the origin of the European monetary system? On one hand, the desire of countries like Germany, pursuing a policy of stability, whose effect is that the central bank has to observe certain limits in creating a monetary base and, therefore, not under all circumstances is able to intervene in the market to support the dollar-

Deutsche mark exchange rate, the consequence being a constant appreciation of the Deutsche mark in terms of the dollar, which starts to be felt by German industrialists and has some effect on their external competitiveness. On the other hand there is the desire to reconcile the necessity of maintaining control on a monetary base and establishing a wider area of market stability.

One answer is to establish an area of stability inside the European Economic Community, and this is the suggestion of having exchange rates among the currencies of the countries, of the member countries of the European Economic Community, fixed and fluctuating within margins, 2 to 5 percent for certain currencies, 6 percent for other currencies.

Will the establishment of a European monetary system contribute by itself in the absence of concerted action with the outside world, to more stability?

If I am allowed to express my personal opinion, I doubt it very much. It seems to me that to establish an area of stability in the world without concerted action with the outside world might have the effect of exacerbating the attraction of European currencies and therefore might induce countries desiring to diversify their reserves to move into the currencies of an area which is being—if the experiment would prove to be successful—of an area which is being considered an area of stability.

This might have the effect of forcing the currencies of the European monetary system upwards. And the consequence will affect member countries to a different extent because certain countries have a higher proportion of their international trade outside the community, and therefore they are more adversely affected by an appreciation of their currencies in terms of dollars.

I believe that one of the reasons why the United Kingdom did not join the system is that it does not appear that the system provides adequate guarantees of agreeing on a common policy vis-a-vis the dollar.

For all these reasons I do believe that it is essential to move in the direction of more orderly conditions, not only inside the European economic community, but in the world.

To that end, two provisions have been taken in the resolution adopted by the European council, both mentioning the necessity of a concerted action with third countries and their currencies. By "third countries," I assume the United States is meant.

If I can make recourse to an image, it seems to me that the necessity of such an action becomes more and more acute in view of the increased pressures which have been enhanced by the recent announcement of increase in the price of oil.

My image is this: The European monetary system is like a balloon, with a crew of eight. And if the balloon is forced upward by inflowing funds and will reach a level in the atmosphere in which the internal pressure is not balanced by external pressure, the balloon will explode, and the members of the crew do not have a parachute of the same efficiency.

For all these reasons, I believe that we have reached a point which necessitates that a worldwide action be taken.

I must add that the increase in the price of oil necessarily has the effect of worsening the conditions of the exchange markets to the extent that it has the effect of increasing the deficit of the United States. It has the effect of increasing increments of dollars circulating in the world.

To the extent that it has the effect of increasing the dollar assets of oil-exporting countries, and to the extent that they insist in pursuing a diversification policy, additional pressure is put on the dollar.

These are additional reasons to come to a generalized agreement; otherwise, the world will be constantly confronted by actions which will lead to less expansion or depression or more confusion in the exchange market.

The measures announced November 1 by the United States are certainly in the right direction, but to the extent that the balance of payments deficit is reduced by restrictive fiscal and monetary policy, it has the effect of transforming the United States from the locomotive, which is what was asked by several Europeans a few moments ago, will transform it into a locomotive which moves in the opposite direction.

The drawing on IMF and the issue of foreign currencies, denominated bonds, are devices which operate in the direction of an alternative financial instrument, but it seems to me that we should get out of the schizophrenia which has characterized the attitude of many among us. I am now speaking of Europeans asking at the same time a strong dollar and an expansionist policy inside the United States.

I think that these two objectives at present are conflicting with each other.

My conclusion, Mr. Chairman, is that it is highly desirable that the world finds again the kind of imagination that in 1944 brought to the establishment of the Bretton Woods agreement. The monetary problems of the world, are so strong interrelated that it is a great mistake to believe in the possibility of establishing an area of stability in a vast region like Europe, irrespective of what happens in the outside world.

And my sincere hope is that as soon as possible action will be taken by Europe, the United States, and possibly Japan in order to define more orderly conditions which—I repeat it again—should be aiming at maintaining the present system which despite all its imperfections has permitted to the world to survive in the most difficult conditions like those which have arisen since the increase in the price of oil at the end of 1973.

Thank you, Mr. Chairman.

[Complete statement of Dr. Carli follows:]

STATEMENT BY GUIDO CARLI, FORMER GOVERNOR OF THE BANCA d'ITALIA;
PRESIDENT OF CONFINDUSTRIA, ITALY

For the purpose of logically framing my replies to the 8 points on which the Chairman of the Committee kindly wishes to hear my opinion, I would like beforehand to make a brief statement on my interpretation as to the ways in which the international exchange markets function and which inspired my replies.

After 200 years of debate between the "monetary" and the "banking schools," the former was successful in demonstrating that the banking system, by granting credit, is able to multiply the monetary means; it follows as a consequence that, in the absence of any intervention of an authority, the amount of money and its rate of change would only accidentally turn out to be the right amount needed to control the trend of prices and the volume of business. The act of monetary crea-

tion therefore was brought under the control of the authorities in every country with the "victory" of the "monetary school", though it must be admitted it was not always successful.

The "Radcliffe Report on the Working of the Monetary System" and the "Report of the U.S. Commission on Money and Credit" set forth the historical experience in this sector.

The "banking school", thrown out of the door within the various domestic markets, "organized" itself on an international level within the foreign currency markets (also named xenocurrencies by Prof. F. Machlup), such as the Eurodollars, the Asia dollars, off-shore dollars, etc., thus returning to the domestic banking systems through the back door. The proposition that there is no credit multiplier in these foreign banking markets, or more specifically in the Eurodollar market—a theme already heard for 200 years with regards to the domestic banking markets—was the prime determinant of the authorities' attitudes and choices vis a vis this international portion of the banking system.

The Eurodollar market, and more generally the Eurocurrency or xenocurrency market, is nothing else than that portion of the banking system's balance sheet (deposits and credits) denominated in currencies different from those of the country in consideration (dollars in the United Kingdom, dollars in Italy, German marks in France, French francs in Germany, foreign currencies in Switzerland, etc.).

It is difficult to seriously give consideration to the idea, shared by some people, that whereas a banking system can, maneuvering its own country's money, multiply it, when it carries out the same question in dollars it loses this ability.

The international currency markets are certainly more complicated and as such more difficult to understand. It is comprehensible therefore that the lack of knowledge played a decisive role in allowing their unchecked expansion, with an increase from about 25 to 400 billion dollars in the 1969-1978 decade.

I have been in favor, in the past, towards an extension of domestic monetary regulations to the banks' foreign assets and liabilities, whatever kind of money was used, because I thought that the banking system's choice between different currencies should not be determined by more favorable administrative regulations in certain currencies (for example, the absence of required reserves) but by mere market convenience.

The dimension reached by the volume of dollars and other currencies circulating outside the country of origin today advises against the extension of domestic monetary regulation in order to avoid the reemergence, in the reverse direction if not in a new territorial direction, of the imbalances observed or suffered so far.¹ There is no technical certainty of a successful outcome if attempts are made to bring the rolling mass of foreign dollars and other currencies (it is known that the proportion is 3 to 1) under control through the usual monetary instruments and maneuvers.

A more direct commitment by the authorities is now required to reabsorb these uncontrolled monetary flows but by relying on the convenience of market operators rather than on the authorities' regulatory powers.

In my opinion, it is necessary to strengthen the already existing instruments or to create an official alternate financial instrument which can be suitable to market operators so as to induce them to convert dollars and other currencies existing outside the country of origin into such instrument. If this international operation is not implemented, it would transform every and any expedient pinpointed for the solution of these problems and would turn out to be a mere "cosmetic" nature for the market. I would not run the risk of becoming a false prophet in predicting that the trends observed from 1971 up to now in the foreign exchange markets could continue to take place with increasing frequency and intensity.

I would add that the reenactment of monetary maneuvers and of substitutive administrative rules designed to regulate the xenocurrency markets would continue to introduce in the foreign exchange markets elements of distortion with regards to the convenience to operate and therefore would impair its capacity to

¹ For an easy and logical reference the attached table shows information concerning international liquidity. It differs from others in existence as it breaks down dollars (and some other currencies) held by non-residents into two parts: (1) "high-powered" money or International Monetary Base, and (2) dollars—mostly deposits in the Euromarket, which must be considered as the product of deposit multiplication. The "high-powered" dollars are also broken down by holders, for the purpose of allowing an analysis of the multiplication of the international means of payment.

reflect the underlying "real" phenomena. The market would be no longer able to perform its institutional task as efficient allocator of the international monetary resources arising from the exchange of goods and capital, with serious consequences for the Western growth mechanism.

To conclude, the following replies, in principle, to the 8 points under examination and are derived from the general lines of my interpretation of the market :

The foreign exchange market is hurt by the existence of masses of rolling dollars and to a lesser degree, other currencies, which magnify small movements in foreign exchange which arise from "real" phenomena ; these masses of currencies cannot be dealt with by means of traditional methods, at the risk of an acceleration in their destabilizing action on the foreign exchange markets ;

It is necessary to offer an official financial instrument which the market operators would find convenient to switch into from dollars and other currencies held outside the country of origin ;

Growing regulation substitutive of the aforesaid control must be avoided so as to not further distort the efficient allocation functions of the foreign exchange market ;

Every public or private action which alters the efficient allocator function of the market must be condemned.

Starting from the more general analysis and the principles I indicated, the following replies can be addressed to the single points revised by the Chairman of this Committee.

1. The origin of the wide gyrations in the foreign exchange markets and in the quotations of the main currencies finds its real roots in the existence of structural surpluses in the balance of payments of three oil-producing countries (Saudi Arabia, the Arab Emirates, Kuwait) and of industrialized countries such as West Germany, Japan and Switzerland. Since the official authorities have not arranged to provide the market with an official financial instrument which would allow for the settling of these surpluses and deficits, the function was carried out by the free market. Since the international money market is not regulated by the authorities and since this market has the ability to multiply the international means of payment the movements in the exchange rates were determined by impulses more than proportional to the changes in the underlying real phenomena.

2. "Monetary disorder" or a "disorderly exchange market condition" can be defined as a condition in which uncontrollable monetary flows exist. The disorder is highlighted when there are speculative impulses originating from a real event. To put it into common language, it is like approaching an oil tank (uncontrolled liquidity) with a lit match (the real event).

3. The Eurocurrency market and more generally the market for foreign currencies tends to establish currency rates which are different from those which would prevail if they only reflected the terms of trade, that is for simplicity, the ratio between prices of export goods. I insist in pointing out that it would be appropriate not to allow a differential treatment of deposits and credits in domestic currencies versus deposits and credits in foreign currencies ; however, the dimension reached today by the foreign currencies' market advises against resort to imposition of required reserves, in order to avoid further destabilizing international movements of funds.

4. Banks must be allowed to carry out those operations permitted to intermediary and non-intermediary private operators. If these can take positions in the foreign exchange market for reasons other than their customers' account or their own business, the banks must also be able to do it, so as to allow for the maximum competitiveness on the market and to allow it to perform its own best allocator functions. I do not rule out the need for limitations in the size of the positions of market operators in the foreign exchange markets, but at the same time hold that if these limitations were permanently maintained they would determine conditions that would cause black and off-shore markets to develop. Given the size reached by the stock of foreign held dollars and other currencies these market controls would be equivalent to "tickling the elephant's foot". These controls very often reward speculation, benefitting the unscrupulous rather than the more scrupulous operators.

6. and 8. The intermediaries in the exchange markets, whether they are banks, financial companies or private operators must submit to the same rules, whether they be for supervisory or regulatory purposes, otherwise their conduct or their advantages in carrying out certain operations are influenced not by market parameters but by the discriminatory will of the authorities. They should, nat-

urally, also be subjected to the same rules that forbid resorting to false or distorted news, such as in the stock exchanges.

Let me conclude my remarks on the ways in which the international money and foreign exchange markets function by recalling an important opinion of Keynes, who together with Mr. White, laid the foundations for an international system at Bretton Woods which led to the exceptional surge in foreign trade but not to monetary stability, leaving a legacy to our generation which so far we have not been able to exploit or to make fruitful. He said "once we allowed ourselves to disobey the criterion of profit, we began to change our civilization". We must decide today which road we intend to follow.

INTERNATIONAL MONETARY BASE
[End of period stocks in millions of dollars]

	1971	1972	1973	1974	1975	1976	1977	1978, 1st quarter
1.1 IMF position.....	13,347	16,402	18,241	22,160	26,203	31,478	34,821	34,879
1.2 Unused swaps at the New York Federal.....	9,020	10,281	17,557	19,520	19,697	21,120	20,335	1 20,841
1.3 United States short-term liabilities.....	51,606	54,180	62,534	87,723	84,832	99,771	117,230	129,734
1.4 United Kingdom short-term liabilities.....	9,975	9,152	9,132	13,017	11,228	7,310	9,813	10,122
Total international monetary base (IMB) (1.1+1.2+1.3+1.4).....	83,948	90,015	107,464	142,420	141,960	159,679	182,199	195,576
2.1 IMB held by official authorities.....	61,786	67,259	80,333	98,672	96,341	103,759	115,939	129,60
2.2 IMB held in banks.....	7,853	9,327	12,316	24,711	24,045	32,193	37,482	37,277
2.3 IMB held by private sector.....	14,309	13,429	14,815	19,037	21,574	21,574	23,727	28,699
3.1 Eurodollar deposits (estimated):								
(a) Gross.....	100,200	156,000	222,650	288,600	354,900	442,400	514,800	NA
(b) Net.....	64,600	85,800	116,800	167,700	195,000	244,900	296,400	NA
3.2 Eurocurrencies deposits (estimated):								
(a) Gross.....	145,000	200,000	305,000	370,000	455,000	560,000	660,000	70,000
(b) Net.....	85,000	110,000	160,000	215,000	250,000	310,000	380,000	390,000
4.1 Ratio between IMB held by banks and Eurodollars:								
(a) 3.1 (a)/2.2.....	14.03	16.73	18.08	11.68	14.76	13.74	13.73	NA
(b) 3.2 (b)/2.2.....	8.23	9.20	9.48	6.79	8.11	7.61	10.30	NA
4.2 Ratio between IMB held by banks and Eurocurrencies:								
(a) 3.2 (a)/2.2.....	18.46	21.44	24.76	14.97	18.92	17.40	17.61	17.97
(b) 3.2 (b)/2.2.....	10.82	11.79	12.99	11.29	10.40	9.63	10.14	10.46

¹ At April 1978.

Note: For the methodology of the table, see: M. Fratianni-P. Savona, "International Liquidity: An Analytical and Empirical Reinterpretation" in Ente L. Einaudi, "A Debate on the Eurodollar Market", Rome 1972.

Sources: I.M.F., "International Financial Statistics"; U.S. Department of Commerce, "Survey of Current Business"; Bank of England, "Quarterly Bulletin"; Federal Reserve Bank of New York, "Monthly Review"; Board of Governors, Federal Reserve System, "Federal Reserve Bulletin"; U.S. Treasury Department "Treasury Bulletin"; Morgan Guaranty Trust Co., New York, "World Financial Market."

The CHAIRMAN. Thank you, Dr. Carli.

Dr. Carli, I wanted to find out what specific recommendations you could make along certain lines. You view the Eurodollar market, as I understand it, as creating money and therefore as a source of inflationary and monetary expansion.

In view of that, do you favor placing reserve requirements on the Eurodollar market? Are there other ways to control the Eurodollar market than placing reserve requirements on it?

Dr. CARLI. Yes. I view the Eurodollar market as a market creating money, not necessarily creating inflation. I do believe that to a very great extent, inflation is homemade in various countries.

The CHAIRMAN. Let me just interrupt to say, would you view it as creating inflation if the creation of money is sharp and substantial?

Dr. CARLI. If my analogy is correct, to the extent that the Euro-dollar market has provided the money necessary to replace the money which has been shifted from deficit countries into the holdings of surplus countries, this money is not spent immediately, and therefore does not exercise any pressure on prices.

The CHAIRMAN. I understand that. What I'm getting at is there may be circumstances under which the Eurodollar market by creating money creates it to such a rapid extent that the effect might be inflationary.

In view of that possibility, that prospect, and the likelihood that that may have happened over the past few years, do you think it would be wise to place reserve requirements on the Eurodollar market or try to do so?

Dr. CARLI. I do believe that under the present circumstances I have been one of those who strongly has advocated reserve requirements at the end of the sixties, beginning of the seventies.

Now, I am very much doubtful, because we have to take into consideration that the structure of exchange of trade and payments today is characterized by the existence of structural surplus and therefore structural deficits.

The major oil-exporting countries are in surplus and the two major trading parties are in surplus, and the rest of the world, has to be in deficit.

Therefore, somebody has to provide the necessary financing of it.

The CHAIRMAN. Now, when Chairman Miller, the present Federal Reserve Board Chairman, testified before this committee last month, I asked him what he was doing to bring the Euromarket under control.

He said it would take a cooperative international effort.

Do you detect in Europe a willingness to take cooperative action to bring the Eurodollar market under control?

Dr. CARLI. I believe that it is likely that the intention, the disposition to cooperate, is to be found in Europe.

I am not sure that it is to be found in the rest of the world, and therefore the problem will rise again according to what extent markets will move from regulated areas to nonregulated areas.

The CHAIRMAN. So, you say that this willingness is in Europe, but it is not worldwide, and you probably need some kind of worldwide cooperation to make it effective.

Is that right?

Dr. CARLI. I do believe that what is needed is worldwide cooperation. And to complete the answer to your question, I must say that as far as the monetary position of the business circles inside Europe, they are opposed to the introduction at this moment of restrictions on the Eurodollar market.

The CHAIRMAN. The business circles are opposed but in the government circles there's some disposition to cooperation. Is that right?

Dr. CARLI. Yes.

The CHAIRMAN. Now, the International Monetary Fund has new authority under the new article 4 of the Fund's articles of agreement to exercise firm surveillance over the exchange rate policies of members and to adopt specific principles for the guidance of members in regard to their exchange policies.

How should this authority be used? Should the IMF collect information from member governments on intervention in the exchange markets?

Dr. CARLI. I do believe that the first area in which this action should be taken is the area inside the European market system, and I have mentioned two paragraphs: One is paragraph 3, subparagraph 2, and one is paragraph 5, subparagraph 1, both dealing with the problems of the maintenance of orderly conditions in the exchange market.

And orderly conditions in the exchange market mean mainly, as far as the European monetary system and the dollar are concerned, a concerted policy vis-a-vis the dollar, and therefore what is needed is that the European monetary authorities agree among themselves on what kind of a policy they intend to pursue vis-a-vis the dollar.

I believe that the opinions which are widespread in certain countries—certainly in Italy—that a concerted, a common policy vis-a-vis the dollar is needed.

Half of the trade to Italy is outside the community and therefore I do not believe that an expanding economy can accept that the rate of exchange be at the mercy of the movement of funds which are on various occasions determined by noneconomic decisions.

The CHAIRMAN. Now, article 4 of the IMF articles of agreement prohibits members—and I quote:

from manipulating exchange rates of the international monetary system in order to prevent effective balance of payments adjustments or to gain an unfair competitive advantage over other members.

Have all members fully lived up to that obligation in your opinion?

Dr. CARLI. It is hard to give an answer without phasing it in different periods. There are periods in which these obligations have not been observed.

The CHAIRMAN. Take the present period.

Dr. CARLI. In the present period, it seems to me that the policy followed by the Europeans is to leave the exchange rates at the mercy of the movement of funds, which are not necessarily related to the underlying conditions. I believe that the spirit of this position has not been observed.

The CHAIRMAN. To what extent has dollar divestiture by central banks contributed to disorderly market conditions?

Dr. CARLI. I have not understood the question.

The CHAIRMAN. Well, I'm asking: To what extent has dollar divestiture—in other words, central banks that have been getting rid of dollars—to what extent has that contributed to disorderly market conditions, if it has?

Dr. CARLI. I do believe that it contributes much. It is hard to quantify the answer, but it is a fact that after the announcement of the establishment of European monetary systems, and after the announcement of the decision taken by the Italian Government to join the system, when the market received relative certainty that the system would be put at work, large movements of funds, of dollar funds, extended into Europe.

It means that there are central banks taking whatever occasion is offered to them to diversify their reserves. And I do believe that what is now the international order can't be reestablished without agree-

ments as to the policies to be followed by central banks. We have historical precedents. Central banks during the 1950's or during the 1960's agreed on common dollar policy to a certain extent. Not all of them.

In 1971, the consequence of the pressure of the gold reserves of the United States was the increase in the dollar reserves of certain countries and their decision to transform the increases, the increments into gold.

I have to add to my consideration that the problem is made more difficult not only by the fact—by the dimension of the international liquidity in the form of dollars, but by the fact that transfer of dollars from country A to country B may increase the pressure if dollars have been transferred by a central bank of Europe into a central bank outside Europe. Probably this has the effect of increasing the pressure, because I do believe that most of European banks keep dollars in their reserve and do not diversify their reserves, whereas other banks follow this policy. And therefore, a settlement of the balance of payments deficit and, correspondingly, a balance of payments surplus in dollars has the effect, or might have the effect, of moving dollars to the place in which the tendency to diversify is greater.

The CHAIRMAN. Now, you said some European countries were not following appropriate exchange rate policies. Which countries?

Dr. CARLI. I believe that—to be more explicit, I believe that an exchange rate policy is appropriate or not appropriate in function of the objectives. There are countries giving priority to the objective of the control of their monetary base.

The CHAIRMAN. Can you give me an example of two or three countries that are not following appropriate exchange rate policies vis-a-vis the dollar?

Dr. CARLI. I do believe that the problem is not of being appropriate or not appropriate in absolute terms, it is a function of the objectives, and therefore I will answer your question giving you the example of two countries having two different objectives and the possibility of a clash of the objectives.

Bundesbank gives priority to the objective of keeping the monetary base under control, and therefore cannot give priority to the objective of stabilizing exchange rates. A country like Italy has to consider at the same time the monetary base and the exchange rate vis-a-vis the dollar, and therefore not necessarily the two policies are converging.

The CHAIRMAN. I see. But then would you conclude that the Bundesbank, under those circumstances, was not following appropriate policies?

Dr. CARLI. It is following an appropriate policy in view of its aims. It is not following an appropriate policy in view of the aims of other countries.

[Laughter.]

The CHAIRMAN. Is it consistent with article 4 of the IMF agreement that I read a moment ago, manipulating—that is, prohibiting members from manipulating exchange rates in the international monetary system in order to prevent effective balance-of-payments adjustment or to maintain an unfair trade advantage over other members? Would you

say that the Bundesbank is violating that provision? May I read that over more slowly?

Dr. CARLI. If I understood you correctly, you mentioned the provisions preventing the manipulation of currencies for the purpose of having an influence on trade.

The CHAIRMAN. To prevent effective balance-of-payments adjustments or to gain an unfair competitive advantage over other countries.

Dr. CARLI. Well, in this sense I do believe that the policy of a large surplus country like Germany, to leave its exchange rate appreciating in terms of dollars, is a policy in the right direction. What I am contending is that not necessarily this policy can be followed by other countries. In other words, inside the European monetary system we have countries in different positions, and therefore we have countries with competing objectives. But to the extent that the surplus countries let the exchange rates appreciate, I think that this country behaved properly.

The CHAIRMAN. Let me ask you one other question that concerns us especially. One of the reasons for holding this hearing was because we had heard rumors or allegations that some banks, including American banks, had been responsible for trying to manipulate the markets to their advantage and the disadvantage of the dollar. In your experience at the Bank of Italy, were you aware of rings of private banks trying to manipulate foreign exchange rates?

Dr. CARLI. I believe myself that what is being considered manipulation very often is simply an error made by the foreign exchange dealers of banks. If I can review what happened in 1974, I think the major exchange losses made by exchange dealers were the consequence of a behavior which in rational terms probably was rational. They thought that by increasing the price of oil, the consequence could be Europe weak, United States strong, and therefore dollar strong, European currencies weak. And they made a mistake.

But I believe that more than manipulation, it was a question of mistakes.

The CHAIRMAN. Well, perhaps. But what I'm trying to get at is whether or not you think—and you're a great expert in this area. You've had a remarkable opportunity to observe whether this could be the case or might be the case—whether you think it is possible—I'll put it that way—that some of the very large banks combined in order to modify the market in a way that would profit their own account, and at the same time have an adverse effect on the dollar.

Dr. CARLI. I believe that such behavior might have had or might have an adverse effect in the short run. I do not believe that they had an adverse effect in the long run, and I am skeptical on the position of introducing stronger regulation, because perhaps the ultimate effect will be to promote black markets, and therefore to expand the areas out of control.

I think that when there is a market, there is always the possibility of nonproper behavior. But I think that this is the price which has to be paid to the institutions based on the market economy.

The CHAIRMAN. I think you're correct that exchange controls could be much worse than the disease they're designed to cure. But how about securing information reports so we know what the situation is?

Dr. CARLI. As far as the information is concerned. I am strongly on this side.

The CHAIRMAN. The position taken on the volume of trade, that kind of thing.

Dr. CARLI. I am strongly on the side of those who believe that the proper function of the market economy requires the highest possible information.

The CHAIRMAN. One final question.

Dr. CARLI. It requires the highest possible extension of both information and publicity.

The CHAIRMAN. In your statement you suggest, and I quote: "It is necessary to offer an official financial instrument which the market operators would find convenient to switch into from dollars." Now, how would such a financial instrument be created, who would back it, what features would it need in order to attract switchover from dollars?

Dr. CARLI. Yes. What I have in mind is that under the present conditions, it is less necessary to introduce limitations to the expansion of the market, but at the same time it's probably necessary to introduce in the market system some alternative instruments, as it was done by the decision of issuing foreign exchange denominated bonds. In other words, it seems to me that what is needed today is, in the absence of a more concerted action to offer to those who intend to diversify their reserves, to those who substitute the dollar with something else, to offer something else. Inside the International Monetary Fund, this problem was discussed for years, and it was called the problem of the substitution account.

I think that something of that sort should be taken into consideration. Again, I repeat myself. I do not believe, under the present circumstances, of the opportunity of introducing limitations to the expansion of the Eurocurrencies, the Eurodollar markets. I do believe that in order to stabilize the foreign exchange markets alternative instruments should be offered. Foreign exchange denomination bonds are alternative instruments.

The CHAIRMAN. Thank you.

Senator LUGAR?

Senator LUGAR. No questions.

The CHAIRMAN. Thank you very much, Dr. Carli, for a most distinguished statement and for your very, very helpful responses. We do appreciate it.

Our next witnesses are a panel consisting of Prof. Robert Z. Aliber, University of Chicago, Graduate School of Business Administration; Prof. Robert M. Dunn of George Washington University Department of Economics, and Dr. Robert Solomon of the Brookings Institution.

If you gentlemen will come forward to the witness table, we would appreciate it.

We're very honored to have you gentlemen before us this morning. In view of the fact that we have another panel following you, we'd appreciate it if you confine your oral remarks to 10 minutes or less. We'll be happy to have your full statements printed in the record.

Dr. Aliber?

STATEMENT OF PROF. ROBERT Z. ALIBER, UNIVERSITY OF CHICAGO, GRADUATE SCHOOL OF BUSINESS ADMINISTRATION

Dr. ALIBER. Thank you, Senator. I'm pleased to be invited to testify. It is certainly an honor to be at a set of hearings in which Guido Carli has been a witness. There is no central banker for whom I have greater respect.

My comments today are in four sections, and I will briefly summarize the major issues in the sections.

In the first section, I deal with the organization of the foreign exchange market, currently the largest market in the world, organized around two principal axis. The first is that most foreign currencies are traded bilaterally vis-a-vis the U.S. dollar. The second is that the principal center in which most foreign currency trading occurs is the non-U.S.-dollar center. Most trading in dollar-sterling occurs in London. Most trading in dollar-mark occurs in Frankfurt.

The axis for the organization of the market follow the pattern of trade financing. Paradoxically, because such a large volume of foreign trade is denominated in U.S. dollars, most of the trading in the U.S. dollar occurs outside the United States. The foreign importer and the foreign exporter have to take the initiative in foreign exchange transactions.

Transactions costs in the foreign exchange markets are extremely small. It's probably the most efficient market in the world. Transactions costs are smaller; the less volatile the currency. Transactions costs on forward transactions are somewhat larger than those on-spot transactions.

Transactions costs in the interbank transactions are smaller than those that commercial customers face.

Now, one of the apparent incongruities between the large volume of foreign exchange trading each day, some estimates would have it as much as \$100 billion. An average estimate might be \$50 billion.

There are banks in London which are prepared to deal as much as \$5 or \$6 billion a day—billion not million.

One of the apparent incongruities is between the volume of foreign exchange trading each day and the volume of trade and commercial transactions to be financed. The implication from those two estimates—the volume of foreign exchange trading is probably 5 to 10 times larger than the volume of trade, services and finance—is that most trading is interbank trading.

In the statement I discuss various reasons why banks trade among themselves. One reason is that they want to secure commercial business. Securing commercial business puts them in a less favored exposure position, and they try to undo that position in the interbank trading.

This is exactly like trading in the Federal funds market.

One should notice that in the course of a day, the pattern of movements in the exchange rate—let us say that the exchange rate moves by 1 percent. Perhaps yesterday it moved by 1 percent.

But if we have the time sequence of trades, we would notice that there were 10 to 20 to 30 reversals or changeovers, if I can use the football analogy, where changeover occurs when the possession of the ball changes hands.

In the exchange market, the direction of movement of the exchange rates changes. Yesterday, the mark went up, the mark went down, the direction of movement in mark-dollar rate changed 15 to 20 times yesterday.

This pattern is pervasive across currencies, although changeovers may be somewhat less volatile in the yen and in the Canadian dollar.

The second part of the statement deals with the variability of the exchange rates in this most recent period.

Some data on the frequency distribution of the range of movements of exchange rates are shown on pages 11, 12, and 13 of my prepared statement. A movement of 1 percent a day is very infrequent.

Because transactions costs are very small, banks are likely to want to reverse their exposure positions almost as often as the exchange rate changes. But what we should expect to find would be that a bank with perfect foresight would reverse its exposure as frequently as there are changeovers in the direction of movement in the exchange rate. A bank would make money by being able, even on a day like yesterday, to continually try to anticipate the hour-to-hour, minute-to-minute movements in the exchange rate, buying low and selling high. A bank would make far less money if it were to maintain a buy-and-hold strategy in periods when there are so many changeovers in the direction of movement in the exchange rate.

On pages 14 and 15 of the statement, I discuss the very sharp decline, especially the last 2 years, in the foreign exchange value of the dollar. This has very little to do with these day-to-day movements.

We need to understand how anticipations of future exchange rates are developed. The summary of this section of the statement is that today's exchange rate reflects an anticipated future exchange rate discounted to the present by the interest rate differential. If we could better understand how the anticipations are formed, we would better understand why exchange rates move so volatily.

The volatile movements reflect that anticipations change frequently, which in turn reflects the monetary environment, and changes in that environment, and changes in the anticipations of the environment. If I may use an analogy, we ought not to blame the thermometer for the weather. So, we should not blame the foreign exchange market for the pattern of movements that we see in the exchange rate. These movements reflect the underlying uncertainties in the system.

In the third part of the statement I deal with bank transactions and variability of exchange rates; the general theme of this section is that banks generally take short-term, day-to-day positions, and so transactions of banks cannot explain the long-term swings in the exchange rates.

In the concluding paragraphs of this section, I respond to your questions on Eurodollar transactions. By and large, the foreign exchange rate will change by a given amount, regardless of whether the dollar is coming from the Euros or whether they come from domestic dollars. I would like to plug one of my hobbyhorses here and suggest that I think we ought to have uniform reserve requirements on offshore deposits and domestic deposits.

Here I differ with Guido Carli, and I recognize there's a high probability that I'm likely to be wrong. I believe that the Federal Reserve Board should apply the same reserve requirements to offshore

dollar deposits of U.S. banks as it does to the domestic dollar deposits. Differential reserve requirements have caused the U.S. banks to conduct a very large part of their banking business offshore. The differential reserve requirements put a very large part of the dollar banking business into the hands of non-U.S. banks.

I do not believe in conspiracy theories, but on the basis of facts, it would not be difficult to come up with a set of conspiracy theories.

One of mine is that the growth of the Euro-currency market reflects that the Bank of England and the Fed have a conspiracy to push up the price of real estate in the city of London. [Laughter.]

Nothing else makes sense.

In the concluding section, I deal with questions concerning the regulation of foreign exchange markets. I approach this by using standard Harvard and Chicago arguments for when should a market be regulated. Markets should be regulated when there are monopoly suppliers. A market should be regulated when the buyers have inadequate information. A market should be regulated when there are externalities, such as smoke and other forms of pollution.

Are there reasons to believe that any of these arguments apply to the foreign exchange market?

I see no reason to believe that the foreign exchange market is not competitive. Indeed, in terms of all the stated economic criteria, it is the most competitive market in the world.

Do the buyers have an adequate knowledge of the consequences of their transactions? Again, I see no reason to believe that the market should be regulated on the basis of inadequate information. The buyers and sellers know the consequences of their purchases and their sales. This is not a market in which there are babes, even though many corporations—some in your State and some in mine—have reported massive foreign exchange losses these last few weeks.

Finally, is there a case for regulating the market in terms of the externalities? I see no evidence.

If we tie this question together with the comments in the first part of the statement, attempts to regulate the foreign exchange markets will mean that even more of the foreign exchange business, only a minor part of which is done in the United States, will be done completely outside of the United States.

Thank you, Mr. Chairman, for your patience.

The CHAIRMAN. Thank you, Professor Aliber.

[The complete statement follows:]

Statement of Robert Z. Aliber

Professor of International Economics and Finance,
Director of the Center for Studies in
International Finance, Graduate School of Business
University of Chicago

Before the Committee on Banking, Housing, and Urban Affairs,
U. S. Senate, December 20, 1978

I am pleased to testify before this distinguished Committee on the topic, "Trading in Foreign Exchange Markets." My comments are in four sections. The first section discusses the organization of the foreign exchange market. The sharp movement in exchange rates and the dramatic changes in the foreign exchange value of the dollar, especially within the last two years, are considered in the second section. In the third section, the impacts of the transactions of commercial banks on the exchange rates, and the charges that the exchange rate can be manipulated, are assessed. In the final section, various proposals for regulatory reforms are evaluated.

Section 1 The Organization of the Foreign
Exchange Market

The foreign exchange market is the most ubiquitous market in the world--it is a telephone/telex market in which banks located in the principal financial centers transact with each other and with their commercial customers. In effect, there are two markets--one is the interbank market, the second, the commercial market. Moreover, banks can be grouped by whether they are market-makers or brokers in particular foreign currencies, with the distinction based on whether they inventory the currency and are willing to quote and buy or sell a reasonably large amount at their quoted prices, or whether they obtain their price quotes from other banks. The commercial market can be further subdivided by the groups of customers, with distinctions among them based on volume and/or size of transactions, ranging from the large multinationals to the smaller firms engaged in importing and exporting.

The foreign exchange market is organized along two principal axes--the first is that most foreign currencies, such as the mark, the Swiss franc, the yen, and the Canadian dollar, are primarily traded against the U.S. dollar. Once the exchange rates for two currencies, such as sterling and the mark, have been set relative to the dollar, the price of sterling in terms of the mark, the cross-rate, is determined by interpolation.

The second is that the principal center in which each pair of currencies is traded is the foreign, non-U.S. center. Thus, the principal center for sterling-dollar transactions is London; New York is the secondary center. Tokyo is the principal center for yen-dollar transactions, Paris for French franc-dollar transactions; again, New York is a secondary center for trading in each currency pair. Thus Paris is a tertiary center for trading in the dollar relative to all currencies other than the French franc, while Zurich is a tertiary center for trading in the dollar relative to the mark, sterling, and the French franc.

banks in each center specialize in trading their domestic currency. The large banks are market-makers in the currencies in which they specialize; they act as brokers in other currencies. Within the major financial centers--London, Frankfort, Zurich, New York--there may be upwards of a hundred or more banks who participate actively in the foreign exchange market. Only a much smaller number of banks qualify as market-makers.

Because New York is a secondary center for so many foreign currencies, the volume of daily transactions is probably larger than in any single foreign center.

The axes for the organization of the foreign exchange market follow the pattern of trade financing. Most international trade transactions are denominated or invoiced in the U.S. dollar. Thus, in U.S.-Canadian trade, the Canadian exporters and importers are much more likely to undertake the foreign exchange transactions than are the U.S. importers and exporters they deal with. The Canadian importers and exporters prefer to undertake their foreign exchange transactions because they hold their Canadian dollar balances primarily in banks close to home--in Canada rather than the United States. So more U.S.- in Canada. Canadian dollar transactions occur in Toronto than in New York. This example can be readily expanded to transactions in other centers and denominated in other currencies. Because the volume of foreign exchange transactions in each currency pair is so much larger in the centers outside the United States, the markets may be modestly more competitive and the rates quoted by banks to commercial customers somewhat more favorable than the rates in the United States. Hence, it is paradoxical

that, because such a large volume of foreign exchange transactions are denominated in the U.S. dollar, most foreign exchange trading involving the U.S. dollar occurs outside the United States.

Transactions costs to the commercial customers are measured by the bid-ask spread--the difference between the prices at which they could buy and sell a relatively large amount--\$3 to \$5 million--of a particular currency at any moment. The costs encountered by commercial customers in using the foreign exchange market are substantially smaller than those they would incur with transactions of equivalent value in most other markets--the government securities market or the stock market. Depending on the currency, the time, and the maturity of the forward contracts, the cost of a transaction of \$1 million would be \$100 to \$500, or in the order 1/100th of 1 percent to 1/20th of 1 percent. Transactions costs are smaller, the less volatile the currency; thus, bid-ask spreads in the Canadian dollar have generally been lower than those in the European currencies. For a long time, transaction costs in the Japanese yen were lower than those in the European currencies, apparently because more-or-less continuous intervention by the Bank of Japan smoothed the daily movements in the exchange rates. Transaction costs on distant forward maturities--those longer than six months--have generally been larger than those on shorter maturities; transaction costs on the spot transactions are below those on forward transactions. That transactions costs are so small reflects both the technical efficiency of payments, the virtually riskless character of the transactions, and the large size of the transactions.

Transactions costs on interbank transactions in the foreign exchange market are generally smaller than those on the transactions between banks and customers--the transactions are larger, and, despite failure of Herstatt bank, less risk is associated with interbank transactions.

The volume of forward exchange transactions is large relative to the volume of spot transactions. Most of the forward positions are offset by currency, if not exactly by date of maturity: a bank will have both long and short forward contracts in sterling. Moreover, some banks have virtually no capital committed to their foreign exchange operations; if they are obliged to deliver on a maturing foreign contract or on a spot contract, they deliver and buy the currency they need in the spot exchange market.

A contrast can be made between the exposure and transactions of banks and their commercial customers. In comparison with their commercial customers, the banks enter into a much larger volume of foreign exchange transactions and maintain much smaller exposures in foreign currencies.

One of the apparent incongruities is that the volume of foreign exchange transactions in a particular currency on a daily or yearly basis is so much larger than the volume of trade and investments in that currency during a comparable time period. On a busy day, the global volume of foreign exchange trading may reach \$100 billion. If trading on an average day is \$50 billion and there are two hundred trading days a year, the annual volume of foreign exchange transactions is \$10,000 billion, or \$10 trillion. In contrast, the annual volume of international trade, services, and investment transactions might be \$2,000 to \$3,000 billion on a global basis.

Both estimates are somewhat rough, yet they suggest the volume of foreign exchange transactions is three to ten times larger than the volume of trade and investment transactions. The clear implication is that the majority of transactions--probably sixty to ninety percent--are interbank transactions.

The large volume of interbank transactions is partly a response to currency exposures incurred by banks to meet commercial demands for foreign exchange. Most commercial transactions in the foreign exchange market involve forward transactions; importers and exporters frequently seek to match the maturity of a forward contract with the date when a payment or a receipt in a foreign currency must be made.

The foreign exchange departments of the banks are caught between two objectives--each bank seeks to attract commercial customers on the basis of its ability to offer the best possible buying and selling rates, in part because foreign exchange transactions are profitable in themselves, and in part because they may attract profitable deposit balances. Each bank also has a preferred exposure in the currencies in which it specializes; each will prefer a long position if it anticipates the currency will appreciate. Once a bank enters into a transaction with a commercial customer, it gives up its preferred exposure. The bank must then reverse the impact of the transaction on its preferred exposure. While the bank might be able to enter into an offsetting transaction with another commercial customer, it is more likely that it will be able to offset by transactions with other banks. In this case, the interbank transactions, like those in other interbank markets such as the Federal Funds market, provide a way for banks to reconcile their transactions undertaken with their commercial customers with their own preferred exposures. Interbank transactions provide a way to "unwind" particular commercial transactions. Interbank transactions enable banks to close out their exposed positions at the end of each business day or week at low cost.

Banks want to limit exposures in particular areas and countries; interbank transactions facilitate attainment of such objectives. Part of the income that banks receive from their transactions with commercial customers is distributed to other banks to induce them to undertake interbank transactions.

The large volume of interbank transactions also represents an effort by banks to profit from short-term movements of exchange rates. In the course of a day, the range of movement in exchange rate peak-to-trough or mid-day to mid-day--may be one or even two percent. During the day, the mark may appreciate and then depreciate; using the football metaphor, there may be fifteen or twenty changeovers, where a changeover is reversal of the direction of the movement of the exchange rate. Such changeovers appear somewhat less frequent in the yen and the Canadian dollar than in the mark, Swiss franc, and sterling. Banks, in their trading activities, seek to profit from these reversals in the direction (of movement in the exchange rate, and so they alter their exposure in response to these short-term movements in exchange rates. A bank which is able to anticipate changes in the direction of movement in the exchange rate would earn profits many times larger than investor who follows a "buy-and-hold" strategy applied to positions in the same currency. These movements of the

exchange rates in the course of a day or an hour are usually substantially larger than the transactions costs incurred by banks. Banks engage in much larger volume of foreign exchange trading than non-banks because they encounter lower transaction costs; in this sense, the banks have the advantage of being insiders. As a group, banks cannot profit from correctly anticipating these short-term movements in exchange rates. To the extent individual banks profit, it is at the expense of other banks.

While government authorities have applied exchange controls to the banks dealing in foreign exchange, and limits have been placed on the exposures of banks, competitive pressures have provided much of the regulatory pressures. Banks have limited their transactions with banks believed to have foreign exchange exposures too large relative to their capital. Similarly, they have limited their transactions with banks not prepared to quote and deal either side of the market.

Section II The Variability of Exchange Rates

One of the surprises of the experience with floating exchange rates since 1973 has been the range of movements in the foreign exchange value of the dollar. The period since the end of December 1976 is especially interesting, since the price of the dollar fell by 40 percent in terms of the Swiss Franc, 37 percent in terms of the yen, 25 percent in terms of the mark until the end of October 1976. (The mirror statement is that the price of the Swiss Franc increased by 65 percent, the price of the yen by 60 percent, and the price of the mark by 33 percent.) The changes in exchange rates have been much sharper than could be explained by changes in relative price levels, and the dollar became substantially undervalued. Moreover, the depreciation of the dollar cannot be explained by the increase in oil imports. While cyclical factors--the much more rapid business expansion in the United States than in most other countries--are relevant, the extent of the depreciation is large relative to the differential movement in national incomes or industrial production.

The distribution of changes in exchange rates from one week to the next from the beginning of the experience for the first 210 weeks with floating rates is shown in Table 1. Eighty to ninety percent of the changes are less than one percent. Only two percent of the changes are greater than four percent. Inclusion of more recent weeks may affect the distribution slightly in percentage terms; there may be a significant increase in the number of relatively large weekly changes. Yet what appears in retrospect as a large swing in the exchange rate consists of a string of reasonably small week-to-week changes, and then not always in the same direction.

The frequency distribution of monthly changes is shown in Table 2; because the interval of observation is longer, there are relatively more large changes than in Table 1. Nevertheless, at least ninety percent of the observed changes are smaller than five percent for each currency. In relatively few months has the change in the exchange rate exceeded five percent.

The frequency distribution of magnitude of changes for overlapping intervals of three months duration is shown in Table 3. Again because the interval is longer, there are relatively more large changes. Yet half of the observations show a percentage change of less than three percent; only five to ten percent of the changes are greater than ten percent.

Two factors should be explained. One is the large movements in the market exchange rates relative to their long-run trend values. The second is the large movements in exchange rates relative to values for exchange rates inferred from changes in relative national price levels. Both factors have led to the concept of "overshooting"

During a few intervals, the exchange market can be characterized as disorderly. Disorderly market conditions also were observed during the late 1960's and the early 1970's as the Bretton Woods system was breaking down. While there is no formal definition of a disorderly market, an operational meaning is that the market-makers in a currency are reluctant to buy or sell the standard amounts at the bid-ask spread ^(comparable to those) that had prevailed in the previous weeks. The banks wish to maintain as non-exposed a position as possible, for they are concerned that political factors--either changes in parities under the Bretton Woods system or changes in intervention practices under the Bretton Woods system--may

TABLE 1
 FREQUENCY DISTRIBUTION OF WEEKLY PERCENTAGE
 CHANGES IN EXCHANGE RATES

	Changes					
	1% ≤	2% ≤	3% ≤	4% ≤	5% ≤	6% ≤
Canadian Dollar	99	99	99	100		
British Pound	89	98	99	100		
Belgian Franc	82	95	98	99	100	
French Franc	85	95	97	98	100	
German Mark	81	94	97	98	99	100
Italian Lira	85	95	98	98	99	100
Dutch Guilder	84	94	99	99	100	
Swiss Franc	79	94	97	99	99	99
Japanese Yen	93	98	99	99	100	

SOURCE: Harris Bank Tape.

TABLE 2
 FREQUENCY DISTRIBUTION OF MONTHLY PERCENTAGE
 CHANGES IN EXCHANGE RATES

	Changes					
	1% ≤	2% ≤	3% ≤	4% ≤	5% ≤	6% ≤
Canadian Dollar	86	95	96	97	98	98
British Pound	52	73	84	94	100	
Belgian Franc	52	66	84	90	94	97
French Franc	58	69	82	89	94	97
German Mark	44	66	87	92	97	97
Italian Lira	63	79	89	89	91	94
Dutch Guilder	47	65	82	92	95	95
Swiss Franc	39	65	78	88	93	98
Japanese Yen	71	81	89	91	96	98

SOURCE: IFS Tape.

TABLE 3
 FREQUENCY DISTRIBUTION OF QUARTERLY PERCENTAGE
 CHANGES IN EXCHANGE RATES

	Quarterly Changes					
	1% ≤	2% ≤	3% ≤	5% ≤	10% ≤	15% ≤
Canadian Dollar	59	82	93	100		
British Pound	26	41	56	76	98	100
Belgian Franc	35	49	57	67	95	100
French Franc	35	45	55	76	94	99
German Mark	32	42	51	68	91	97
Italian Lira	34	48	63	76	93	97
Dutch Guilder	36	52	57	69	94	100
Swiss Franc	25	45	60	72	91	99
Japanese Yen	45	65	74	90	99	

SOURCE: Harris Bank Tape.

lead to very sharp movement in the exchange rate. In this sense, the number of days on which markets have been disorderly in the last five years has been very small--probably less than ten; it would be a mistake to confuse the extended appreciation of the yen and the major European currencies with a disorderly market. Similar swings are observable in other financial markets--in the stock and the bonds market and in commodity markets like those for wheat, soybeans, and gold.

Prices in any speculative market can be considered to be the discounted values of anticipated future values. In the foreign exchange market, the discount factor is the difference between the money-market interest rates on similar securities denominated in different currencies. If the anticipated values are unchanged, then each week and month the exchange rates should change by the amount of the interest rate differential. Since the changes in exchange rates on a weekly or monthly basis are many times larger than the difference in interest rates, it can be inferred that the sharp movements in exchange rates reflect sharp movements in anticipated exchange rates.

There are several different stories on the formation or development of anticipations in the exchange market. Usually they involve either the anticipated inflation rates or the money supply growth rates; sometimes they involve political factors. One story is that participants in the exchange market extrapolate recent changes in domestic and foreign price levels to obtain estimates of the future relative price levels, which they use to infer future exchange rates. Another story is that changes in money supply growth rates can be used to generate estimates of the future price levels, which in turn can be used to generate an estimate of the future exchange rates. A third story is that views on the political

processes, including the budget deficits and their financing, might be used as a basis for generating estimates of future price levels.

One model with some explanatory power is that the dollar depreciates when U.S. monetary policy becomes more expansive relative to monetary policy abroad (or its dual, when German monetary policy becomes more contractive). When the interest rate differential changes, the exchange rate changes sharply.

If participants focus on spot rates anticipated in several years, then the change in exchange rates may be substantially larger in percentage terms than the change in the interest rate differential. The story is that the change in monetary policy is associated with a change in the anticipated price levels, and in anticipated exchange rates.

Because the changes in anticipated rates are so large, spot exchange rates differ from that suggested by current price levels or recent changes in domestic and foreign price levels. Thus during the summer of 1976, sterling became greatly undervalued when it appeared that the government would not be able to maintain limits on wage increases. Sterling became greatly undervalued; in six months the sterling price of the dollar increased by nearly twenty-five percent. Then sterling subsequently appreciated, so that by the end of 1977, exchange rates were back to the 1976 levels. Similarly in 1977 and the first ten months of 1978, the dollar became substantially undervalued.

One concern is whether these sharp changes in exchange rates represent tape-watching--whether the currency movements develop their own momentum, and feed on themselves. At issue is whether the anticipated spot rates are independent of recent movements in exchange rates.

Just as the exchange rate system is not independent of price level movements, so the movements in exchange rates reflect the lack of investor confidence in monetary and price stability. When the environment becomes more stable, the movements in exchange rates will be much smaller.

Section III Bank Transactions and the Variability of Exchange Rate

The first section of the testimony emphasized the role of banks as intermediaries in the exchange market. Banks also invest in foreign exchange, very much like non-banks; they acquire liquid assets denominated in currencies in which the sum of the anticipated returns from interest, capital appreciation, and exchange rate appreciation is relatively high. Such investments reflect that banks have substantial liquid funds to invest, and they can invest in several currencies (assets denominated in); they seek to maximize their anticipated returns on these investments. In general, the foreign exchange trading and the liquid investment activities of the banks are segmented both in function and in organizational terms.

The transactions of banks, like those of all other buyers and sellers of foreign exchange, have an impact on the exchange rates. If banks have better knowledge than non-banks of the future trend of the exchange rates or of the political factors that lead to very large shifts in exchange rates, they may be "quicker-off-the-mark"; they may cause exchange rates to get to their anticipated values more quickly. The volume of foreign exchange by banks for their investment account is much smaller than the volume of foreign exchange transactions of non-bank investors.

The activities of banks may affect the exchange rates indirectly through the advice they give their corporate clients. There is no evidence that banks have forecasting skills about future changes in

exchange rates superior to those of non-bank forecasters. And there is little if any convincing evidence that the professional forecasting services have skills at predicting future changes in exchange rates which are consistently superior to using the forward rate as a predictor of future spot rates.

From time-to-time, assertions appear that various participants "gang up" upon the exchange rate. A relatively modest size transaction--\$50 million--can cause the exchange rate to move. But the movement is miniscule in percentage terms, even though the return to the investor may not be insubstantial. These modest efforts to push the exchange rate should be distinguished from the magnitude of the exchange rate changes observable over the last two years. The large movements in exchange rates are a reflection of the monetary environment, and cannot be attributed to the transactions of any one group of participants.

Changes in exchange rates primarily reflect changes in anticipations. A buyer of marks or Swiss francs may finance his purchases by drawing on a dollar deposit in a New York bank or ⁱⁿ a London bank; ^{(the} exchange market impacts are identical. To the extent the dollar money supply is larger because of the growth of offshore dollar deposits, the dollar may be somewhat weaker in the exchange market. However, the Swiss franc and the mark money suppliers are also larger because of the growth of offshore deposits denominated in these currencies, and so the impacts ^{(of the growth in external deposits denominated in the} are largely offsetting. ^{major currencies}

Strong arguments can be presented for applying identical reserve requirements to the offshore dollar deposits of U.S. banks (more precisely, to all their offshore deposits); the same arguments can be applied to the offshore deposits of banks based in other countries. These arguments involve issues of efficiency, of monetary control and equity among banks; they have nothing to do with the level of exchange rates or changes in exchange rates.

Section IV. Regulation of the Foreign Exchange Market

Several different arguments used as a basis for government regulation (can be applied to the proposals for regulating) foreign exchange market transactions. One is that competition is inadequate to protect consumer interests, perhaps because the producers or suppliers are insufficiently competitive. A second is that consumers (and perhaps producers) have inadequate knowledge about the consequences of buying or using particular products⁴ or services; in this case the government might play a role in facilitating consumers to realize better their own interests. A third rationale is that the production or use of a product has consequences for the community beyond its immediate impacts on producers or consumers; the externality argument for regulation is applicable to smoke and water pollution, and to measures which might protect the financial system from collapse.

Even if an argument can be made to provide the basis for regulation of foreign exchange transactions within the United States, the consequence of regulation would be that a larger share of the transactions involving the dollar would occur outside the United States. One analog is the impact of the Interest Equalization Tax of 1963 in diverting dollar bond transactions to Europe, indeed in providing the basis for the growth of the Euro-bond market. A second analog is the impact of higher reserve requirements on domestic deposits of U.S. banks in fostering the growth of the Euro-dollar market.

If regulations of foreign exchange transactions were applied to U.S. banks on a worldwide basis rather than to banks which are located within the United States, the consequences are readily predictable; U.S. banks would incur a cost attributable to regulation that would not apply to non-U.S. banks, and the share of U.S. banks in the worldwide market for

foreign exchange transactions would decline, perhaps drastically.

Assume, however, that regulation is feasible on a worldwide basis, perhaps because the U.S. authorities are successful in convincing their foreign counterparts to follow their initiatives. Would regulation then be desirable? It would be difficult--if not foolish--to attempt to develop a case for regulation because competition is inadequate. In terms both of the numbers of competing suppliers and the costs of effecting transactions, the foreign exchange market is among the most competitive in the world. Moreover, it would be equally difficult to justify regulation in terms of the need to protect customers; virtually all the buyers and sellers of foreign exchange recognize that the exchange rate is a random variable, and the probability that the exchange rate will appreciate in the near future is about as large as the probability that it will depreciate. Finally, the argument that foreign exchange transactions should be regulated to protect the banks or banking system (as opposed to individual banks) might have some merit if there were compelling evidence that the banks were at substantial risk in their foreign exchange transactions. Despite the failures of Herstatt and Franklin National, no such evidence exists.

An argument could be made for regulation in terms of the costs of the large movements in exchange rates; the pro-regulators might argue that regulation would reduce the amplitude of exchange rate movements. For the United States, the sharp swings in exchange rates may result in modest upward pressure on the price level, where modest is measured in tenths of one percent; if the authorities were concerned with measures to limit inflation regulation of foreign exchange transactions would not rank high among the effective measures. More importantly, the impact of regulating the foreign

exchange transactions of banks on the amplitude of movements in exchange rates is almost certain to be modest, for these movements are determined by the anticipations.

There are no compelling arguments for limiting the positions of banks in foreign exchange.

The greater the number of participants in the market and their ability to take positions, the greater the depth, breadth, and resiliency of the market. To dampen movements in exchange rates, more participants should be encouraged to enter the market.

Efforts at regulating the exchange market are almost certain to be counter-productive if the monetary environment is unstable--if rates of inflation are five to ten percent or more, and if there are significant differences among major countries in the inflation rates.

The CHAIRMAN. Dr. Dunn?

**STATEMENT OF DR. ROBERT M. DUNN, GEORGE WASHINGTON
UNIVERSITY, DEPARTMENT OF ECONOMICS**

Dr. DUNN. Mr. Chairman, I'm honored to be here. I provided a statement earlier, which I hope can be entered in the record.

What I would like to do with my time is to briefly summarize some of the points in that statement and then to cover verbally some points which I did not deal with in the written statement but which were mentioned in the letter of November 29.

With regard to the sharp decline of the exchange rate of the dollar since mid-1977, I think there are a couple of points to be made.

First of all, downward pressure on the dollar hardly a new phenomenon. We have had balance-of-payments problems for a long time. Our current account deteriorated in the late 1960's. We had a series of foreign exchange controls, such as the Voluntary Credit Restraint programs (which was not voluntary), the interest equalization tax and the foreign direct investment program in the late sixties.

Despite these programs, there was intense downward pressure on the dollar in 1970-71, and the currency was devalued in August 1971. The Smithsonian exchange rate schedule of December 1971 only lasted a year before intense downward pressure on the dollar caused a further decline in early 1973.

This is hardly something that is new.

When looking for causes for the downward pressure on the dollar in recent months, I think there are both some long-term forces at work which could undermine confidence in the dollar as a stable financial asset and also some short-term events which may have triggered the recent decline.

First, the long-term element: In my opinion, this economy went through some basic and not terribly happy changes in the middle of the 1960's.

From 1950 through 1964 the consumer price index averaged an increase of just under 2 percent a year, 1.9 percent to be exact.

From 1965 through 1977, that average rate of inflation almost tripled to 5½ percent.

This year we're looking at almost 10 percent.

In looking for causes of this acceleration, changes in the Federal budget are rather striking. During 1950 through 1965 the average Federal deficit was \$2.6 billion. During 1966 through 1978 the average was just under \$23 billion.

This year, 3½ years into a strong cyclical recovery, the deficit will apparently be about \$39 billion.

These deficits are not only inflationary in and of themselves, but also in my opinion make it difficult for the Federal Reserve System to restrain the growth of the money supply to a noninflationary level without producing extremely high interest rates which cripple capital markets.

There is a brief piece from the Washington Post appended to my statement which deals with this issue. This is the so-called crowding out problem late in the cyclical recovery when private demands for credit are very strong.

If the Treasury is also borrowing large amounts at that time, the central bank is caught in a difficult choice between either trying to hold the money supply down to a reasonable rate of growth, thus producing very high interest rates as borrowers fight for funds, or being more accommodating which makes inflation worse.

U.S. productivity growth seems to have worsened rather dramatically in the middle of the 1960's. During 1950 through 1965 productivity growth averaged 3.4 percent. During 1966 through 1977 it averaged under 2 percent. It will be about 1 percent this year. For the last 12 or 14 years this economy has performed in ways which hardly increase confidence in the dollar. The dollar has increasingly been viewed as a rather weak financial asset.

With this background, there are some recent events, beginning last year, which I think led to the decline of the dollar starting in the middle of 1977.

One, there were administration comments to the effect that the dollar should decline if the floats were cleaner. Such comments obviously encourage people to sell.

I think that floating exchange rates probably did become a bit cleaner after the middle of 1977. There were a number of countries which had been supporting their currencies until then.

But I do think it was unfortunate that public comments were made by the administration to the effect that currency should be expected to decline.

Canada went through this experience in 1960-61. It was a disaster. The Government was unhappy with the high level of the exchange rate for the Canadian dollar, and public comments were made to that effect. It was like everybody running for the door. And the Canadian dollar fell far more sharply than Ottawa wished.

There has also been the appearance of some differences of opinion within the Open Market Committee as to what monetary policy should be. Money being a coward, it runs from uncertainty. I believe there were also comments in the middle of this summer by the chairman of the Federal Reserve Board to the effect that the interest rates should peak by year end. This would have been taken as a prediction of easier monetary policy, and that obviously is hardly encouraging for the dollar.

The October White House anti-inflationary statement, when combined with a very expansionary fiscal policy, and some implication that monetary policy was going to get easier, looked like a repetition of 1971-73. At that time expansionary macro-policies were applied, and price and wage controls were undertaken to restrain short term inflationary effects. Eventually the controls have to come off, and you get a burst of inflation.

I think all of these factors encouraged people to sell dollars. Once the selling got going, there was undoubtedly a bandwagon aspect to it that probably became excessive.

The underlying market forces, however, certainly did encourage people to move out of dollars and into stronger currencies.

With regard to the question of who sold the dollars and whether or not U.S. banks and corporations took short positions, I have to admit I am not sure exactly what happened here. It's hard to know

who sold without detailed balance sheet data for the end of the third and fourth quarters which I have not seen yet.

For large multinational companies, it's very hard to know when hedging ends and speculation begins, because it's very hard to calculate the exact exchange exposure that a complex firm faces. What may look like speculation, may in fact, just be hedging, that is, covering what the company views to be outstanding risks.

The accounting firms have ways to handle this. It's not clear that the accountants' rules match economic realities, but we will have annual statements for 1978 which have data on what the accountants think the companies did last year.

I have talked to some people who are involved in these markets in New York and I have some impressions. I have to label them as impressions. One, is that the heavy selling of dollars did not start predominantly in the United States, either in New York or in large multinational corporations. It came, instead, from Europe, quite a bit of it from Switzerland, as well as some from some other countries.

With regard to Swiss selling, you always have the problem of whom the Swiss banks are representing. They can be selling for their own account or they can be selling for somebody else.

It also appears that there was quite a bit of selling of dollars by foreign central banks, particularly those in some of the larger developing countries. They apparently decided, for reasons that were implied by my comments of a moment ago, that they wanted to diversify their foreign exchange reserve holdings out of dollars and into other currencies. Some of these larger developing countries now have really rather large foreign exchange reserves at this point. If they start diversifying their foreign exchange reserves out of dollars and into other currencies, this can be the source of quite a bit of heavy selling.

Again, however, the problem is not who sold dollars, but why. I'm afraid the answer is because many people came to view the dollar as a rather unattractive way to store purchasing power. The current inflation rate of almost 10 percent is a reason for that. I think to blame the speculators or the bankers for this is to blame the messengers for the message, or as Professor Aliber said the thermometer for the temperature.

With regard to the issue of whether the markets were disorderly, this is not a yes or no question. You could argue, at one extreme, that any market in which a price changes is disorderly. At the other extreme, you can argue that as long as the market is functioning it's orderly. People are buying and selling.

If one wanted to measure the degree of disorderliness, one element would be the amplitude of price changes. Another would be a widening of bid-ask spreads. Another indication would be if it became difficult for people to complete transactions quickly, that is if banks refused to make large trades from their own books and will only trade when they can find an offset. There was apparently some widening of the bid/asked margins for the Deutsche marks this summer, although it remained very tiny, and there was a somewhat greater increase in margins for the Swiss franc. I have not heard that anyone had any difficulties completing transactions this summer and fall.

With regard to the Eurocurrency market, my own view is its role in this was as a source of credit from which foreigners or others could

borrow in Europe to sell dollars, either to hedge existing risks or to speculate.

I don't know of anything the United States can do by itself that would solve this. But it probably would be desirable if there were standard reserve requirements everywhere. That would require that foreign governments adopt reserve requirements on dollar deposits similar to those on their own currencies.

I have almost used all of my time. Let me just say in closing that I see no reason for increased regulation of banks or of other financial institutions. If the Federal Reserve or other regulatory agencies feel that the degree of bank speculation has put the capital of the banks in excessive risks, they are free to act. I do not know if that's true.

As I indicated earlier, I do not think the U.S. banks were big sellers of dollars. As long as the dollar is a convertible currency, I do not see how we can stop foreign banks from selling dollars when they decide that it is in their interest to do so. In general, I do not think there is any reason to impose another layer of regulation on our financial institutions.

I think what we need is for U.S. fiscal policy to change; that is, to return to its old pattern of large deficits only in real recessions. This will make it easier for monetary policy to be managed soundly. If that happens, inflation will slow, the dollar will again be viewed as a sound store of value, and our foreign exchange problems will be greatly reduced or even disappear.

The CHAIRMAN. Thank you very much, Dr. Dunn.

[The complete statement of Dr. Dunn and an additional submission follow:]

Prepared for:

Hearings of the Committee on Banking, Housing, and Urban Affairs
United States Senate
Ninety-fifth Congress

December 20, 1978

Instability in Exchange Markets: Causes and Potential Remedies

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Although the sharp depreciation of the dollar during the summer and early fall of 1978 undoubtedly came as an unhappy surprise to many Americans, it represents a continuation of a long period of downward pressure on the dollar rather than a new phenomenon.

The U.S. current account began an uneven but serious deterioration in the middle of the 1960's. Our overall balance of payments position became weak enough in that period to require a series of controls on capital account transactions which reached a peak with the January 1968 program. For capital account purposes the dollar almost became an inconvertible currency in the late 1960's and early 1970's. Despite these controls and other attempts to improve our payments position, confidence in the dollar continued to decline, and our currency was devalued in 1971. The Smithsonian schedule of exchange rates lasted just over a year. Poor 1972 trade results and a variety of other problems led to intense pressure against the dollar in early 1973, and the fixed exchange rate system collapsed. The dollar declined sharply during the first half of 1973, stabilized for a period, and recovered somewhat in late 1975 and early 1976. The recent downward pressure began in mid-1977 and accelerated during the summer of 1978. Our recent difficulties are not new, but instead represent the continuation of an unfortunate trend which began over a decade ago.

The dollar has been widely viewed as a weak asset for a long time, and a number of recent events probably worsened that attitude during the last 18 months. Public comments in mid-1977 by administration officials to the effect that the dollar might be expected to depreciate, obviously encouraged investors to sell dollars for stronger currencies. The arrival of a new Chairman of the Federal Reserve Board who did not have a long history of involvement in financial markets and whose views were unknown may have encouraged some uncertainty. Later public impressions that a division of opinion existed within the Open Market Committee probably encouraged this uncertainty. The July 1978 statement by the Chairman of the Federal Reserve Board that he expected interest rates to peak by year end was almost certainly interpreted as a suggestion of a more expansionary monetary policy and hence of more inflation. The October 1978 White House statement on inflation was hardly encouraging since it implied a move toward wage and price controls, and a possible repetition of the 1971 - 1973 experience. At that time wage and price controls were used to temporarily repress the effects of expansionary macroeconomic policies when the economy was already close to full employment. Eventually the controls had to be ended, producing a burst of pent-up inflation. During the 1977-1978 period, announcements of large trade deficits and worsening inflation further weakened confidence in the dollar.

The short-term behavior of this economy during 1977-78 provided a number of reasons for investors to move out of dollars and into stronger currencies such as the DM, Swiss franc, and Japanese yen. The November stiffening of the anti-inflationary policies of the Administration and the Federal Reserve System produced a short-term recovery in market attitudes toward the dollar, but it is far from certain that this recovery will be permanent.

Although the timing of the 1977-78 decline of the dollar was probably affected by recent events, underlying market attitudes toward the dollar are the result of difficulties in U.S. economic policy which have existed since the middle of the 1960's. From 1950 through 1964, U.S. inflation averaged 1.9 percent per year. During the next twelve years, the average rate almost tripled to 5.5 percent. It appears that the total for 1978 will be close to 10 percent.

Although this acceleration of U.S. inflation has a number of causes, the dominant factor has been the management of the federal budget. During the 1950-1965 period, U.S. federal deficits averaged \$2.6 billion. In the 1965-1978 period, the annual average was almost \$23 billion, which is nine times the average deficit for the previous fifteen years. Current estimates suggest that this year's deficit will be about \$39 billion, and we are being told that heroic efforts are now under way to hold the fiscal 1980 deficit to a mere \$30 billion. For reasons which are discussed in an attached article from the November 22, 1978 Washington Post, such deficits make it very difficult for the Federal Reserve System to maintain a non-inflationary rate of growth of the money supply. Monetary policy is not totally independent of fiscal policy, and large deficits in periods of strong economic growth put the central bank in an almost impossible position as it tries to restrain inflation without producing interest rates which are high enough to cripple capital markets and private investment.

In looking for reasons for the massive increase in the federal deficit, one is struck by the growth of transfer payments. In 1964 these expenditures provided Americans with \$37 billion, which was 8.6 percent of U.S. personal disposable income. In 1977, the total was \$207 billion, which was about 16 percent of such incomes. Americans now receive one out of every 6.3 dollars of disposable income from transfer payments, and since taxes have not been increased enough to pay for these transfers, the result is what

appears to be a permanent and huge federal deficit. If investors believe that these deficits and the resulting inflation will continue, they quite reasonably conclude that the dollar is not an attractive asset.

There are other aspects of U.S. economic performance which have not been encouraging. We seem determined to regulate almost every productive activity in the economy. The goals of such regulation are often desirable, but the costs have been huge. Productivity is reduced and further inflation is encouraged. Labor productivity growth averaged almost 3.4 percent per year from 1950 through 1965. Since then it has averaged just under 2 percent per year. This year it will apparently be 1 percent or less. Plant and equipment investment has been discouraged by the regulatory climate and by the uncertain availability of funds in U.S. capital markets, and has been a smaller percentage of GNP in this country than in almost any of our major competitors during recent years. As a result our capital stock is older and less efficient than that existing elsewhere.

If exchange market participants think that the trends of 1965-1978 are likely to continue, they have obvious reasons to sell dollars for stronger currencies. Portfolio managers in many financial institutions have apparently taken that view during recent months, and downward pressure on the dollar has been the predictable result. To blame speculators for the decline of the dollar is to blame the messenger for the message. The dollar was not ambushed by bankers from New York or ^{knomes} from Zurich. Our injuries are self-inflicted. During the last twelve to fourteen years economic policies have been adopted in this country which have had the predictable effect of reducing the value of the dollar as a financial asset. The loss of confidence in the dollar worsened after mid-1977, again for reasons which begin in Washington rather than in New York or Zurich.

The response of the United States government to these unhappy events should not be to worry about speculators or the mechanics of foreign exchange trading by banks, but instead to worry about a budget deficit of \$39 billion more than three years into a strong cyclical recovery. The Congress and Executive should also worry about regulatory and other policies which inflate costs, discourage plant and equipment investment, and generally weaken the ability of this economy to compete in world markets. If internal economic policies in this country improve, our exchange market problems will be resolved quickly. Managers of banks and multinational enterprises are not fools, and they are not going to sell a currency which is becoming stronger.

With regard to the question of why exchange markets become "disorderly", the most obvious reason is a large recent exchange rate change, and the uncertain prospect of further changes in the same direction or a reversal of the recent change. Large recent movements create the distinct possibility of further changes, but great uncertainty as to their direction. This increases the risk associated with holding any uncovered position and causes both a widening of bid/asked margins and a reluctance of banks to undertake large transactions. Markets become less liquid and less efficient. There apparently was a slight widening of bid/asked spreads in New York for the DM in mid-August of this year, and a somewhat greater widening of margins for the Swiss franc. It does not appear, however, that market participants encountered difficulty in completing transactions during this period.

The current situation does not require or justify increased regulation of U.S. banking or foreign exchange trading. Since the turmoil in exchange markets has been the result of policies adopted in Washington, it makes little sense to deal with the problem by trying to regulate bankers in New York. As long as the dollar is a convertible currency attempts to restrict speculative activity are likely to be frustrated. The U.S. govern-

ment cannot regulate foreign banks, which means that major sources of speculative activity would be untouched by regulations written in Washington. Many U.S. banks have foreign branches and subsidiaries, and it would be difficult or impossible to control the activities of these entities without interfering with the sovereignty of the host governments. The German government would almost certainly oppose U.S. attempts to regulate German banks which happen to be U.S. owned. The same argument holds for foreign subsidiaries of U.S. industrial firms. Their exchange market activities cannot be regulated without imposing on the sovereignty of foreign governments. Countries such as Canada are very touchy about attempts to apply U.S. laws inside their borders, and can be expected to oppose attempts by Washington to regulate Canadian firms which are U.S. owned.

Exchange markets and financial institutions do not need more regulation. They need fiscal and other economic policies in Washington which will make the dollar a more stable and hence a more attractive financial asset.

Robert M. Dunn Jr.

Inflation: It's Not the Fed's Fault

Since the mid-1960s the U.S. economy appears to have suffered a permanent shift toward higher rates of inflation. Price increases averaged less than 2 percent from 1950 through 1964, but this average rate of inflation almost tripled to 5.5 percent in the next 12 years. In 1978, it will be around 10 percent.

It is very popular in some circles to place the blame for this change squarely on the shoulders of the Federal Reserve System. Adherents to the theory of economic growth, however, whom I have been lecturing at the University of Chicago, typically suggest that there is only one important cause of U.S. inflation: The Fed has allowed the money supply to grow too fast.

The cure for our ills, according to the monetarists, is equally simple: The Fed must adopt a policy of allowing the money supply to grow at a stable rate of about 6 percent and stick to that policy. The adoption of a slow and steady rate of monetary growth will reverse the recent acceleration of inflation.

But I am puzzled by the example, why hasn't the Federal Reserve accepted this approach, and solved our problems? The major flaw in the monetarist argument is that it fails to explain why

our central bank has found it to be almost impossible to hold the rate of monetary growth to the desired level. It is too often assumed that the Fed is free to adopt a rate of monetary growth without reference to the rest of the government, and consequently the failure to contain inflation can be blamed solely on the Fed. Unfortunately, the process is more complicated

The writer is a professor of economics at The George Washington University.

than that, and fault does not lie primarily with the Federal Reserve but instead with the federal budget.

Excessive money-supply growth may be a proximate cause of inflation, but the major ultimate cause has been massive federal deficits during recent years, which have made it increasingly difficult to restrain monetary growth to noninflationary rates.

During the 1967-68 period, the federal deficit averaged only \$26 billion a year. Large deficits occurred during recessions, but the budget moved back toward balance or even to small surplus in per-

iods of prosperity and rapid growth. That meant that the Treasury was a major borrower in U.S. capital markets only when the economy had considerable slack and when private demand for credit was consequently weak.

In periods of prosperity, when the private demand for credit was strong, the Treasury made only slight demands on credit markets. This meant that the Fed could restrain the rate of growth of the money supply by means of the open market producing interest rates that were high enough to depress capital markets and discourage private investment.

After the mid-1960s all that changed. Federal deficits became much larger, and the budget usually did not move back to balance or surplus during upswings in the economy. Federal deficits averaged \$23 billion a year in 1965-78, which is almost 9 times the average deficit for the previous 15 years. During the current fiscal year, when the economy is more than three years into a strong recession, it will be about \$50 billion—a \$39 billion in off-budget borrowing—\$12 billion in off-budget borrowing. The Treasury will have to borrow that amount in U.S. capital markets.

The new role of the Treasury as a massive borrower during all stages of the business cycle has put the Federal Reserve in a difficult, if not impossible position as it attempts to restrain inflation during upswings in the economy.

If the Fed follows the monetarist approach of holding money-supply growth down during such periods, the effect of massive Treasury borrowing is to crowd out private borrowing. The Fed's open market sales fill its role for borrowed funds, leaving very little for housing industry and other private borrowers. The crowding out occurs through high interest rates, which depress capital markets, cripple the housing industry and discourage private investment.

U.S. financial markets went through modest financial crunches twice in the early 1970s. The results were not pretty. Otherwise sound companies came close to bankruptcy because their short-term debt could not be rolled over. Declines in common stock prices and pension fund assets, and made new equity financing impossible for most companies. Mortgage money dried up, and the housing industry collapsed.

If the Federal Reserve wants to avoid

these unhappy results or worse, it adopts a policy that is more accommodating to Treasury needs. The money supply is allowed to grow fast enough to provide funds for both Treasury and private-credit needs during upswings in the economy. The rapid growth of the money supply leads to a predictable acceleration of inflation, and the wrath of the monetarists descends on the Fed.

The monetarists descend on the Fed, and the Fed is obliged to raise interest rates. The Fed's open market sales for the Federal Reserve. Either it stays with a target rate of money-supply growth that produces interest rates high enough to depress capital markets and cripple private investment or it allows the money supply to grow fast enough to avoid such a crunch. The latter approach is inflationary, but it is not fair to blame the Fed for the result.

The real problem is the lack of a responsible and disciplined fiscal policy. There is no excuse for a federal deficit that large. The only way to avoid a strong recovery. A successful fiscal strategy on inflation without a collapse of U.S. capital markets will be possible only when the federal government returns to its previous pattern of running sizable deficits only during recessions.



THE
GEORGE
WASHINGTON
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Washington, D.C. 20052 | Department of Economics

December 29, 1978

Senator William Proxmire
Chairman
Committee on Banking, Housing, and Urban Affairs
United States Senate
Dirksen Office Building
Washington, D.C.

Dear Senator Proxmire:

Due to a shortage of time during the hearings of December 20 I did not get to a couple of issues which deserved attention. First, I was somewhat surprised to hear one of my colleagues argue that there was no relationship between the rate of inflation and the state of the U.S. business cycle. In particular it was suggested that a recession would not produce a decline in the rate of inflation. I am enclosing a Xerox copy of the page from the Economic Report of the President which lists the U.S. annual rates of inflation since 1948. The effects of the 1954, 1958, and 1960-61 recessions are fairly clear. In all cases the rates of inflation declined. A similar decline also occurred in 1970-71, while there are undoubtedly a large number of causes of inflation, including elements of monopoly in labor and goods markets, and government regulatory policies such as increases in the legal minimum wage, the level of aggregate demand in the economy remains important if not dominant.

During the hearings you suggested that you hope that the federal budget deficit can be eliminated during fiscal 1980. While I agree strongly with your view that the deficit is too large and ought to be reduced, I am not sure that such a rapid shift would be wise. One of the unhappy lessons of the 1974 OPEC experience is that this economy does not respond well to large sudden shocks. A movement from a deficit of \$39 billion to a balanced budget in one year is probably more than the economy should be asked to absorb. It has taken us 12 or 14 years to get the current Federal budget to its current condition of large deficits at all stages of the business cycle, and it will probably take a few years to fully reverse this situation. The performance of this economy in general and the exchange markets in particular would be improved greatly if it became clear that the Congress is firmly committed to shifting the budget back to balance over a period of 4 or 5 years. By 'balance' I mean that the budget would show no deficit or a modest surplus when the economy is operating at a high level of capacity utilization. The budget will, and should, move into deficit in periods of real recession.

I am avoiding the term "full employment budget" because published unemployment figures currently give a very poor indication of the state of the U.S. economy. For a number of reasons the U.S. labor market has changed during

Senator William Proxmire
Page: Two
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the last decade, so that unemployment rates of 6 or 7 per cent are consistent with strong cyclical recoveries and real capacity constraints. The definition of high capacity utilization cannot be tied to a 3 or 4 per cent unemployment rate until our labor market changes, which means until the causes of structural unemployment are dealt with. To some degree this problem will ease automatically as the entry of the baby boom into the labor force is completed. As the number of annual new entrants into the labor force falls and the average age of the labor force increases during the next decade or so, the unemployment rate will automatically decline in all stages of the business cycle. At the moment, however, attempts to reduce the unemployment rate to 4 per cent through macroeconomic policies can only produce an overheated economy and inflation.

Finally, I would like to express my agreement with Professor Aliber's comments to the effect that manipulative conspiracies are very unlikely in the exchange markets for major currencies. Such manipulative arrangements work for narrowly traded assets or commodities, for which a sizeable number of unsophisticated buyers exist. Before SEC was created such manipulation sometimes occurred when a small group of traders would drive up the price of an equity through heavy buying and the creation of rumors that the firm was a great buy. Unsophisticated buyers would then push the market still higher, and the original group would sell out their position. The equity had to be narrowly traded for the group's purchases to succeed in pushing the price up, and the outside purchasers had to be stupid enough to fall for the bait. Neither of these conditions hold in the exchange market for the dollar, the DM or the Swiss franc. The markets are huge, and virtually all of the participants are far too sophisticated to fall for such a ploy. We need SEC to protect widows and orphans from such manipulative games. There are very few widows and orphans in exchange markets.

In closing I would like to thank you for your invitation to testify before the Committee last week. It was extremely enjoyable, and I hope that the hearings were of some use in your work. Please feel free to call on me again if I can be of further help.

Sincerely yours,



Robert M. Dunn, Jr.
Professor of Economics

Reprinted from the Economic Report of the President

TABLE B-54.—Percent changes in consumer price indexes, major groups, 1948-77

[Percent change]

Year or month	All items		Food		Commodities less food		Services	
	Dec. to Dec. 1	Year to year	Dec. to Dec. 1	Year to year	Dec. to Dec. 1	Year to year	Dec. to Dec. 1	Year to year
1948	2.7	7.8	-0.8	8.5	5.3	7.7	6.1	6.3
1949	-1.8	-1.0	-3.7	-4.0	-4.8	-1.5	3.6	4.8
1950	5.8	1.0	9.6	1.4	5.7	-1	3.6	3.2
1951	5.9	7.9	7.4	11.1	4.6	7.5	5.2	5.3
1952	.9	2.2	-1.1	1.8	-5	.9	4.6	4.4
1953	.6	.8	-1.3	-1.5	-1.2	-1.2	4.2	4.3
1954	-5	.5	-1.6	-2	-1.4	-1.1	1.9	3.3
1955	4	-4	-9	-1.4	0	-7	2.3	2.0
1956	2.9	1.5	3.1	7	2.5	1.0	3.1	2.5
1957	3.0	3.6	2.8	3.3	2.2	3.1	4.5	4.0
1958	1.8	2.7	2.2	4.2	.8	1.1	2.7	3.8
1959	1.5	.8	-8	-1.6	1.5	1.3	3.7	2.9
1960	1.5	1.6	3.1	1.0	-3	.4	2.7	3.3
1961	.7	1.0	-9	1.3	.6	.3	1.9	2.0
1962	1.2	1.1	1.5	.9	.7	.7	1.7	1.9
1963	1.6	1.2	1.9	1.4	1.2	.7	2.3	2.0
1964	1.2	1.5	1.4	1.3	.4	.8	1.8	1.9
1965	1.9	1.7	3.4	2.2	.7	.6	2.6	2.2
1966	3.4	2.9	3.9	5.0	1.9	1.4	4.9	3.9
1967	3.0	2.9	1.2	.9	3.1	2.6	4.0	4.4
1968	4.7	4.2	4.3	3.6	3.7	3.7	6.1	5.2
1969	6.1	5.4	7.2	5.1	4.5	4.2	7.4	6.9
1970	5.5	5.9	2.2	5.5	4.8	4.1	8.2	8.1
1971	3.4	4.3	4.3	3.0	2.3	3.8	4.1	5.6
1972	3.4	3.3	4.7	4.3	2.5	2.2	3.6	3.8
1973	8.8	6.2	20.1	14.5	5.0	3.4	6.2	4.4
1974	12.2	11.0	12.2	14.4	13.2	10.6	11.3	9.3
1975	7.0	9.1	6.5	8.5	6.2	9.2	8.1	9.5
1976	4.8	5.8	.6	3.1	5.1	5.0	7.3	8.3
1977	6.8	6.5	8.0	6.3	4.9	5.4	7.9	7.7
Change from preceding month								
	Un-adjusted	Seasonally adjusted	Un-adjusted	Seasonally adjusted	Un-adjusted	Seasonally adjusted	Un-adjusted	Seasonally adjusted
1976: Jan	0.2	0.6	0.1	0.1	-0.3	0.4	1.0	1.1
Feb	.2	.1	-.4	-.9	.3	.3	.7	.7
Mar	.2	.2	-.7	-.6	.4	.3	.6	.7
Apr	.4	.4	.3	.5	.3	.3	.5	.5
May	.6	.7	.4	.8	.8	.6	.4	.6
June	.5	.4	.5	.2	.6	.4	.6	.6
July	.6	.5	.7	.1	.4	.4	.7	.7
Aug	.5	.5	.2	.2	.6	.6	.6	.6
Sept	.4	.3	-.4	.1	.6	.3	.8	.5
Oct	.4	.3	0	.2	.4	.4	.5	.4
Nov	.3	.3	-.3	-.3	.4	.4	.5	.4
Dec	.3	.4	-.3	.1	.2	.6	.4	.4
1977: Jan	.6	.8	.9	.9	.0	.7	.9	.8
Feb	1.0	1.0	2.3	2.0	.6	.7	.7	.7
Mar	.6	.6	.5	.6	.6	.4	.7	.8
Apr	.8	.8	1.2	1.5	.6	.4	.6	.8
May	.6	.6	.4	.7	.7	.4	.6	.6
June	.7	.6	1.0	.8	.4	.2	.8	.8
July	.4	.4	.5	.1	.1	.1	.8	.8
Aug	.4	.3	.3	.3	.2	.3	.5	.5
Sept	.4	.3	-.4	.1	.4	.3	.4	.4
Oct	.3	.3	-.1	.1	.4	.3	.4	.4
Nov	.5	.5	.6	.6	.4	.5	.5	.4
Dec	.4	.4	.4	.2	.2	.5	.5	.5

1 Changes from December to December are based on unadjusted indexes.

Source: Department of Labor, Bureau of Labor Statistics.

The CHAIRMAN. Dr. Solomon?

STATEMENT OF DR. ROBERT SOLOMON, THE BROOKINGS
INSTITUTION

Dr. SOLOMON. Thank you, Mr. Chairman. I appreciate the opportunity to testify at this hearing on trading in foreign exchange markets. I shall do my best to respond to the questions in your letter.

I begin with the large movements in foreign exchange rates in the past year. After holding relatively stable for 2 years, the trade-weighted average value of the dollar, or the effective exchange rate of the dollar, began to fall in September 1977. It declined 5 percent in the fourth quarter of 1977 and 3½ percent in the first quarter of 1978. After stabilizing this spring, it fell again, by 5½ percent in the third quarter of this year.

Thus, from late September 1977 to late September 1978, the effective exchange rate of the dollar decreased 15 percent. It then dropped precipitously in October, before turning around with the aid of the November 1 policy program of the U.S. Government.

In the course of the 12 months beginning September 1977, the consensus view on the causes of the dollar's depreciation shifted. And you've heard some of these views already this morning. In the autumn of 1977, much of the blame, if that is the right word, was placed on remarks made by Secretary Blumenthal, who was accused of, quote, "talking down the dollar," unquote.

Then market talk focused on the voracious American appetite for oil, for in 1977 our oil imports increased in value by \$10 billion, accounting for half of the increase in the U.S. trade deficit in that year. More recently, the blame has shifted to the U.S. inflation rate, which has worsened in 1978 while inflation abated in other industrial countries.

There could be some degree of merit in all of these alleged explanations for the decline of the dollar. But what was not adequately appreciated was that sluggish expansion in Europe and Japan was holding down U.S. exports. For a while in 1977, industrial production was actually falling in Western Europe and Japan. From the fourth quarter of 1976 to the fourth quarter of 1977, the volume of imports declined in five of the six major industrial countries other than the United States. The single exception among those five countries was Germany, where imports in real terms increased only 3 percent during that 1-year period. Meanwhile, U.S. import volume rose 8½ percent, as the U.S. economy expanded.

In the circumstances, the U.S. trade deficit increased. The perception of the large U.S. deficit engendered expectations, what Bob Aliber called anticipations, of a movement in exchange rates, and such expectations tend to be self-fulfilling. Thus the dollar fell in foreign exchange markets, despite the fact that U.S. interest rates were rising in 1977-78.

Apparently the expectation about exchange rate changes outweighed the attraction of high interest rates and capital did not flow to the United States in sufficient volume to finance the current-account deficit. Hence the dollar fell. That is one way of looking at the causes of the exchange rate movement.

An alternative viewpoint starts not with the downslide of the dollar, but with the upward movement of other currencies. While the trade-weighted average value of the dollar fell about 15 percent from September 1977 through September 1978, the corresponding upward movement of other currencies was far from uniform. Thus the effective exchange rate of the French franc and the pound sterling were unchanged over the year. The Italian lira fell more than 5 percent, while the Canadian dollar's effective exchange rate decreased about 20 percent. The average value of the German mark increased about 6 percent while the dollar went down 15 percent. The really large appreciations in effective exchange rates corresponding to the U.S. dollar's depreciation were in the Swiss franc, which rose more than 33 percent, and the Japanese yen, which went up 28 percent.

It is no coincidence that, apart from one or two OPEC countries, Switzerland and Japan are the countries with the largest current account surpluses, relative to their economic size. In the first half of this year, Japan's current account surplus was equal to 18 percent of its exports and Switzerland's surplus was equal to 21 percent of its exports. In the case of Germany, the current account surplus was less than 6 percent of exports.

Thus it is not surprising that the yen and the Swiss franc rose so much more than the Deutsche mark. And with these currencies rising in value, other currencies had to fall, by arithmetic necessity. One of those that fell was the U.S. dollar. Thus, Mr. Chairman, there is more than one way to look at the exchange rate movements of the past year.

Going on to your other questions, I am not in a position to answer the question to what extent have exchanges positions taken by U.S. banks and corporations contributed to the wide fluctuations in exchange rates. But the data that I have seen, published by the U.S. Treasury Department, on the positions of U.S. banks do not indicate that they played an important role. In fact, the banks appear to have reduced their net positions in marks and yen between early January and late March of this year, when the value of those currencies rose. And the same thing seems to be true of nonfinancial corporations.

I would caution, Mr. Chairman, against a search for culprits. If fundamental economic forces were conducive to an exchange rate movement, as I've tried to indicate they were, we should not be surprised to find that private parties are taking positions in a manner that is perfectly legal.

As to what constitutes a disorderly market, I suppose it is one in which all or most transactors wish to be on the same side of the market, either as buyers or sellers. Clearly, expectations play an important influence in the appearance and disappearance of disorderly markets.

The effect of the Eurocurrency market on exchange rates is, in my view, impossible to determine. I believe personally that its importance has been exaggerated in the financial press. By this, I mean that even if the Eurocurrency markets did not exist, the dollar and other currencies would be susceptible to large swings.

U.S. trade amounts to almost \$300 billion a year or \$25 billion a month. Thus, a decision by traders to change the timing of payments for exports and imports by 1 month could cause a flow of \$25 billion into or out of dollars. Such leads and lags can have a big impact on exchange rates.

Whether Eurodollar holdings should be subject to reserve requirements is a monetary rather than an exchange rate question, in my view. I see no objection to such requirements if they can be imposed on all offshore markets, but I doubt that they would change the world very much.

I see no reason to preclude banks from taking positions for their own account in foreign currencies, just as they do with domestic financial assets. There is no reason to think that banks' position-taking is destabilizing rather than stabilizing.

As for the daily closing of bank positions and the licensing of brokers, I don't feel qualified to give an opinion. And that too goes, I'm afraid, for questions regarding regulation and monitoring. Once again, though, I would caution against a conspiracy theory of foreign exchange markets. It may well be that a herd instinct prevails at times, as often occurs in markets. When this happens, prices move by large amounts.

I doubt that limiting the activities of intermediaries—that is, brokers and bankers—would reduce such movements when the entire herd is headed in the same direction, for then the principal transactors—the traders, et cetera—would be acting anyway.

I should say I have no reason to be defending or protecting the interests of these intermediaries, Mr. Chairman. They can take care of themselves. I'm simply trying to advise the committee against pursuing what could well be a will-of-the-wisp, if I may put it that way.

Thank you.

[Complete statement of Dr. Solomon follows:]

Statement of Robert Solomon

Senior Fellow, The Brookings Institution *

before the Senate Committee on Banking, Housing, and
Urban Affairs

December 20, 1978

Mr. Chairman, I appreciate the opportunity to testify at this hearing on "Trading in Foreign Exchange Markets." I shall do my best to respond to the questions in your letter.

I begin with the large movements in foreign exchange rates in the past year. After holding relatively stable for two years, the trade-weighted average value of the dollar (or effective exchange rate) began to fall in September 1977. It declined 5 percent in the fourth quarter of 1977 and 3-1/2 percent in the first quarter of 1978. After stabilizing in the spring, it fell again, by 5-1/2 percent in the third quarter of this year. Thus from late September 1977 to late September 1978, the effective exchange rate of the dollar decreased 15 percent. It then dropped precipitously in October, before turning around with the aid of the November 1 policy program of the U.S. government.

In the course of the 12 months beginning September 1977, the consensus view on the causes of the dollar's depreciation shifted. In the autumn of 1977, much of the blame, if that is the right word, was placed on remarks made by Secretary Blumenthal, who was

* The views expressed in this statement are the sole responsibility of the author and do not purport to represent those of The Brookings Institution, its officers, trustees, or other staff members.

accused of "talking down the dollar." Then market talk focussed on the voracious American appetite for oil, for in 1977 our oil imports increased in value by \$10 billion, accounting for half of the increase in the U.S. trade deficit in that year. More recently, the blame has shifted to the U.S. inflation rate, which has worsened in 1978 while inflation abated in other industrial countries.

There could be some degree of merit in all of these alleged explanations but what was not adequately appreciated was that sluggish expansion in Europe and Japan was holding down U.S. exports. For a while in 1977, industrial production was actually falling in Western Europe and Japan. From the fourth quarter of 1976 to the fourth quarter of 1977, the volume of imports declined in five of the six major industrial countries, other than the United States. The single exception was Germany, where imports in real terms increased about 3 percent. Meanwhile U.S. import volume rose 8½ percent, as the U.S. economy expanded vigorously.

In the circumstances, the United States trade deficit increased. The perception of the large U.S. deficit engendered expectations of a movement in exchange rates and such expectations tend to become self-fulfilling. Thus the dollar fell in foreign exchange markets, despite the fact that U.S. interest rates were rising. Apparently the expectation about exchange rate changes outweighed the attraction of high interest rates and capital did not flow to the United States in sufficient volume to finance the current-account deficit. Hence the dollar fell.

That is one way of looking at the causes of the exchange rate movement.

An alternative viewpoint starts not with the downslide of the dollar but with the upward movement of other currencies.

While the trade-weighted average value of the dollar fell about 15 percent from late September 1977 to late September 1978, the corresponding upward movement of other currencies was far from uniform. Thus the effective exchange rate of the French franc and the pound sterling were unchanged over the year. The Italian lira fell more than 5 percent, while the Canadian dollar's effective exchange rate decreased about 20 percent. The average value of the German mark increased only 6 percent. The really large appreciations in effective rates corresponding to the U.S. dollar's depreciation were in the Swiss franc, which rose more than 33 percent and the Japanese yen, which went up 28 percent.

It is no coincidence that, apart from one or two OPEC countries, Switzerland and Japan are the countries with the largest current-account surpluses, relative to their economic size. In the first half of this year, Japan's current account surplus was equal to 18 percent of its exports and Switzerland's surplus was equal to 21 percent of its exports. In the case of Germany, the current-account surplus was less than 6 percent of exports. Thus it is not surprising that the yen and the Swiss franc rose so much more than the D-mark. And with these currencies rising in value, other currencies had to fall. One of those that fell was the U.S. dollar.

Thus, Mr. Chairman, there is more than one way to look at the exchange rate movement of the past year.

I am not in a position to answer the question to what extent

have exchange positions taken by U.S. banks and corporations contributed to the wide fluctuations in exchange rates. The data I have seen on the positions of U.S. banks do not indicate that they played an important role. In fact, banks appear to have reduced their net positions in marks and yen between early January and late March 1978 when the value of these currencies rose. But I would caution against a search for culprits. If fundamental economic forces were conducive to an exchange rate movement, we should not be surprised to find that private parties are taking positions in a manner that is perfectly legal.

As to what constitutes a disorderly market, I suppose it is one in which all transactors wish to be on the same side of the market, either as buyers or sellers. Clearly, expectations have an important influence in the appearance and disappearance of disorderly markets.

The effect of the Eurocurrency market on exchange rates is impossible to determine. I believe its importance has been exaggerated in the financial press. By this I mean that even if the Euro-markets did not exist, the dollar and other currencies would be susceptible to large swings. U.S. trade amounts to almost \$300 billion a year or \$25 billion a month. Thus a decision by traders to change the timing of payments for exports and imports by one month could cause a flow of \$25 billion into or out of dollars. Such leads and lags can have a big impact on exchange rates. Whether Eurodollar holdings should be subject to reserve requirements is a monetary rather than an exchange rate question. I see no objection to such requirements if they could be imposed

on all offshore markets but I doubt that they would change the world very much.

I see no reason to preclude banks from taking positions for their own account in foreign currencies, just as they do in domestic financial assets. There is no reason to think that banks' position-taking is destabilizing rather than stabilizing.

As for the daily closing of bank positions and the licensing of brokers, I do not feel qualified to give an opinion. The same goes for the remaining questions regarding regulation and monitoring. Once again, however, I would caution against a conspiracy theory of foreign exchange markets. It may be that a herd instinct prevails at times, as occurs in many markets. When this happens, market prices move by large amounts. I doubt that limiting the activities of intermediaries--brokers and bankers--would reduce such movements when the entire herd is headed in the same direction, for then the principal transactors--traders etc.--would be acting in any event.

I have no reason to protect the interests of these intermediaries. They can take care of themselves. I simply am trying to keep the Committee from pursuing what is likely to be a will-o-the-wisp.

The CHAIRMAN. Thank you, Dr. Solomon. Dr. Solomon, let me follow up on that last point you made. I want to call your attention to a book by Professor Aronson, who will testify right after you gentlemen do—he's on the next panel—entitled "Money and Power," a paperback book. Professor Aronson points to exchange market manipulation by rings of banks located principally in Germany. Professor Aronson states, and I quote: "Speculation by banks, acting alone or in unison, was one factor contributing to the volatility and the lack of predictability of markets between 1973 and 1974." End quote.

Now, let me ask: When you were working for the Federal Reserve Board, did you have any information about the operation of so-called rings of banks in Europe or in the United States attempting to manipulate foreign exchange markets?

Dr. SOLOMON. The answer is no, I had no such evidence, Mr. Chairman. I didn't look for such evidence. There's nothing in my experience—

The CHAIRMAN. I'm not talking about evidence. I know you say you didn't look for it. I'm talking about whether there was any talk, any rumor, any suggestion, any information?

Dr. SOLOMON. Well, I should say, first of all, I have not seen Professor Aronson's book, so I can't comment at all on that. There were periods when I headed the international staff of the Federal Reserve when large reserve or exchange rate movements occurred, and we members of the staff were asked by the Chairman of the Federal Reserve—who became very exercised, naturally—to make an investigation, to carry out surveys using the Federal Reserve banks. These were surveys among American financial institutions, not German or other foreign banks, trying to find out just who was moving the money that was causing either the large exchange rate movements or the large reserve movements. And we never turned up anything, except the possibility of leads and lags, which I have stressed in my statement. We could never find large amounts of money having been moved by American banks or American corporations, even though there had been enormous movements in exchanges.

That's the only experience I've had.

The CHAIRMAN. Would you say that that's about the most comprehensive way you could determine it? And would you say also that these surveys you conducted in all likelihood would have exposed this kind of concerted action if it were in fact operating?

Dr. SOLOMON. We were not looking for a concerted action or a conspiracy. All we were able to do—or we did—was to look at the positions that were taken by financial institutions and nonfinancial institutions to see whether or not they hadn't been moving funds at a time when there was a large movement, say, into deutschmarks, which was the most common event.

The CHAIRMAN. Did you do it with European banks?

Dr. SOLOMON. I think we confined it to American banks; I'm not sure we had the authority.

The CHAIRMAN. Just the American banks.

I would like to ask each of you gentlemen—I think the question may go along with the answer, in this case:

You are all professional economists with distinguished reputations. I want to test your faith in your profession, so let me ask you this: If

you were asked by a corporation treasurer to predict exchange rates for the next few months, would you rely on economic factors such as interest rate differentials, relative inflation rates, balance of payment flows, and reserve asset positions, and the like? Or, would you chart past exchange rate movements, and try to develop technical decision rules to predict future rates from past rates?

Mr. Solomon?

Dr. SOLOMON. I would do neither. I would do more than that, Mr. Chairman. As my statement indicated, I would try to predict what's going to happen to economic activity and imports in the major countries of the world.

From my observation and analysis, much of the exchange rate movement can be attributed to that.

The CHAIRMAN. Well, that's fine. You say you'd rely on economic factors, and I didn't mean to make these inclusive. I'm just saying inflation rates, differentials, balance of payments, et cetera. That was just a suggestion.

Dr. SOLOMON. I have enough faith in my profession, still, Mr. Chairman, that I would rely on economic factors rather than technical charting, if that's what you meant.

The CHAIRMAN. All right, fine.

Dr. Aliber?

Dr. ALIBER. Mr. Chairman, I'm asked this question very often. Usually in my answer I submit a very high bill [laughter] as I did yesterday.

The CHAIRMAN. Maybe we'd better skip you, Dr. Aliber. [Laughter.] We already have a deficit of \$38 billion.

Dr. ALIBER. Yesterday I did send a report to one firm. The covering letter said that if they had used my services a year ago, and followed the recommendations, they would not have reported \$15 million loss last year.

I believe the best source of information for future exchange rates is the Wall Street Journal and the New York Times. And the first thing I would do is to look at the forward rates, which reflect the views of everyone in the world about what the spot rates will be on the days when the forward contracts mature.

I've done a substantial amount of work, as have a number of my students, asking the question: Can you beat the forward rate?

I was once on a panel with a seller of commercial forecasting services. He said: If you exclude the two currencies we find most difficult to predict, we can beat the forward rate half the time. [Laughter.]

The CHAIRMAN. So you'd rely on the technical?

Dr. ALIBER. No. I think all the information is in the market, and all I would ask is: Is there anything that I know that isn't in the market?

The CHAIRMAN. I wouldn't deny that it's not all on the basis of the market, but that's what the technical operation does; it follows the market.

Why do you shake your head?

Dr. ALIBER. Everyone knows all about technical information. I have no monopoly: you have no monopoly on it: and all the information about past rates is already reflected in today's spot rate and today's future rates.

There's one question I would ask, and I have been asking this: Is there any reason to believe that the forward rate may underpredict what the spot rate will be because of the recent past changes?

I think—and have thought for some time—that the dollar has been greatly undervalued, and that when a certain constellation of forces occur, the dollar would begin to appreciate very sharply, and it has.

The CHAIRMAN. All right.

Professor Dunn?

Dr. DUNN. I certainly would try to depend on economic forces, rather than charts. I have seen attempts to apply filter rules, which is a kind of chartist analysis, to exchange rates and I do not know of any papers that show you can consistently make money using a filter rule.

If I were going to predict these rates, I would much rather do so for the longer run than the short run. For the longer run, I would be inclined to look at relative rates of money supply growth relative to economic growth, which is a proxy for the demand for money.

I suspect that the forward markets are probably the best summary of what the market thinks exchange rates will do in the short run. I would start there and then ask myself if I had firm reason to believe that the forward market was wrong, that is, if there was some reason to disbelieve what the forward market said.

The CHAIRMAN. Well, let me then give what is one answer different from what I think—it's close to what Mr. Aliber suggested, perhaps.

Let me call your attention to an article entitled "No Better Than the Toss of a Coin." by Mr. Stephen Goodman, the director of treasury planning for the Singer Co. The article appears in the December issue of *Euromoney*.

Mr. Goodman compared the accuracy of econometric-oriented forecasters of exchange rates with technically oriented forecasters during the January-June 1978 period.

Goodman finds that econometric-oriented services only got the direction of the spot exchange rate for the next 3 months right 50 percent of the time. In other words, a two-sided coin would be as good a forecasting tool as an econometric model would be.

Let me quote Goodman's conclusion and ask you to comment:

The predictive accuracy of most, but not all, econometric-oriented foreign exchange rate forecasters is so poor that they are likely to be of little use for corporations trying to manage their exposure. The technically oriented forecasters, however, with their consistently very strong predictive performance support the view that speculative runs do occur in the exchange market. A currency that is rising particularly at an accelerated rate is likely to continue to rise, and a currency that is falling will continue to fall.

Now what do you have to say to Mr. Goodman?

Dr. DUNN. I've heard of people who knew how to make money on roulette wheels, and who had periods of an hour or so in which the rule worked, and they looked like geniuses. All they had to do was come back the next night and they would lose it all.

Maybe these technicians did well during this particularly unsettled period of a few months—

The CHAIRMAN. You may be right about that—

Dr. DUNN [continuing]. But I would bet they do badly next year.

The CHAIRMAN. On the other hand, I know of people maybe at the

University of Chicago or some other place who actually did go out and they followed what happened to the wheel. They found that they were defective. None of them were perfect. They did have a tendency to repeat, and they beat the system.

They beat it so often that they got kicked out of the gambling places where they went. This has been done.

Now this is the kind of technical approach that I'm talking about, where you follow it closely enough to determine the defects in the system, and then use that.

Dr. DUNN. If the technician's views are sound, that is, work well, they will become widely known, and they will self-destruct. Once everybody is aware of the rules and acts on that understanding, the gains will disappear instantly. Any system that seems to work cannot last, once it is widely understood.

Dr. ALIBER. Mr. Chairman, I have not seen that version of Steve Goodman's paper, but I would offer two comments.

The first is that Goodman does not have enough confidence in his own findings to begin to leave Singer.

I did see a version of the Goodman paper presented at the meetings of the American Finance Association in Chicago in September, and I commented on that paper. That paper has many technical defaults, and I would be happy to submit his paper and my comments for the record.

The CHAIRMAN. I wish you would. We would appreciate that.
[Information referred to follows:]

FOREIGN EXCHANGE RATE FORECASTING TECHNIQUES:
IMPLICATIONS FOR BUSINESS AND POLICY

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Paper presented at the
American Finance Association 1978 Annual Meeting

INTRODUCTION

Foreign exchange rate forecasting is a growth industry. At least 23 commercial services throughout the world, employing a variety of techniques, now provide foreign exchange rate forecasts.

The purpose of this paper is to review and evaluate these techniques and services and to consider the implications of the findings for business and policy. The paper first considers whether foreign exchange rate forecasting is futile in light of the evidence that the foreign exchange market is an efficient market. Ten major forecasting services that rely in whole, or in large part, on formal models or decision rules are then evaluated on the basis of their predictive accuracy. Finally, the implications of the findings are considered for corporations trying to manage their foreign exchange exposure and for policy makers concerned about exchange rate stability.

FUTILITY OF FORECASTS

It is often argued that it is futile to attempt to forecast foreign exchange rates because the foreign exchange market is an efficient market. The market is efficient in that the major participants are believed to have access to, and have digested, all current information that may impact on price and, consequently, this information is already reflected in the price (strong efficiency) or that -- at the very least -- the historical record of exchange rates contains no information which

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can be used by market participants to accurately forecast future spot exchange rates (weak efficiency). The foreign exchange market, in effect, is a fair game; no trading rule, including one based on foreign exchange rate forecasts, can be profitable.

Most empirical studies of exchange market efficiency have not examined the profitability of specific trading rules but rather have used spectral analysis or more sophisticated Box Jenkins models in an effort to uncover any systematic pattern in the historical exchange rate data. These studies have consistently concluded that the exchange rate data appear to be white noise (there is no significant pattern). Spectral analysis and Box Jenkins models are not especially powerful tests of market efficiency, however, they will simply identify time dependent patterns in the historical exchange rate data, not demonstrate that the foreign exchange market is an efficient market.

A few studies have found evidence of profit-making opportunities -- albeit only marginally profitable -- in the exchange market (as well as in the stock market, which is also generally thought to be efficient, see Alexander (1)), based upon the concept of speculative runs; a currency that has risen significantly is likely to continue to rise and a currency that has fallen significantly will continue to fall. Logue and Sweeney (8) in their study of the Franc/Dollar spot rate in the January 1970 - March 1974 period found that while the data seemed to be white noise using spectral analysis, there were a number of simple trading rules which yielded at least marginal profits. The trading rules used by Logue and Sweeney were k percent rules -- buy a currency after it has risen k percent from its previous low and sell it after it has fallen k percent from its previous high. A more recent study by Logue, Sweeney and Willett (9) for a later period, including a larger

number of currencies but the same trading rules, apparently comes to a very different conclusion -- that the foreign exchange market is now at least weakly efficient. An examination of their results, however, shows most k percent rules yielding substantial profits as compared with a buy and hold strategy.¹

Tests of market efficiency in the foreign exchange market (and in other markets) should clearly be directed against specific trading rules, including rules more complex than those examined by Logue and Sweeney. If rules can be found which are consistently profitable over a reasonable period, then the market is not efficient. Only if consistently profitable rules cannot be found, may the market be assumed to be efficient, although this conclusion has to be reconfirmed as new decision rules are developed and tested.

This paper, in evaluating the predictive accuracy of ten major foreign exchange rate forecasting services using a variety of techniques, some quite sophisticated, provides a good test of market efficiency in the foreign exchange market -- probably the best test to date.

A frequent (but not necessary) corollary to the view that the foreign exchange market is efficient is the claim that the forward exchange rate is a good and unbiased predictor of the future spot rate. Forward exchange rates, however, fundamentally reflect the total demand and supply for a currency in both the spot and forward markets, linked by interest rate parity, not simply the net demand for open positions in a currency based on speculator's expectations about future spot rates.

1. A one percent rule, for example, was more profitable over the entire period than a buy and hold strategy for six of the seven currencies studied; over the most recent period a one percent rule was more profitable for all currencies.

The ratio of the forward to spot rate between two currencies will be equal to the ratio of their interest rates for equivalent borrowers/lenders and instruments in the same political jurisdiction.

Empirical studies of the relationship between the forward rate and the future spot rate have generally found the forward rate to be a poor predictor. Cornell (4), for example, found the best simple auto-regressive models generally provided a more accurate indication of the future spot rate than did the forward rate. Ciddy and Dufey (6), similarly, found the forward rate was outperformed by a number of simple models, with martingale and submartingale models generally doing the best.

DESCRIPTION OF THE SERVICES

Foreign exchange rate forecasting services may be divided into three broad groups: 1) those that rely on an overall subjective evaluation of economic and/or technical factors to predict future spot exchange rates, 2) those that rely in whole, or in large part, on economic models, and 3) those that rely fully, or almost so, on technically-oriented decision rules such as the k percent or persistence type rules described previously. The predictive accuracy of the forecasts provided by services in the first group -- which includes 13 of the 23 services -- are not evaluated in this paper as the predictions of these services are not tied to any replicative formal model or decision rule, but rather, reflect the subjective judgment of a potentially changing group of individuals.

Six of the foreign exchange rate forecasting services rely in whole, or in large part, on formal economic models. (See the Appendix for a description of four of these services, two of the services chose not to be identified). The models include factors such as interest rate differentials, relative inflation rates,

balance-of-payments flows and reserve asset positions; one service also includes as a key explanatory variable a measure of the sentiment of foreign exchange market participants as reflected in their portfolio asset composition.

Five of these economics-oriented services provide each month point estimates, generally of quarterly average exchange rates, for the major currencies, typically for the next six quarters. The sixth service provides forecasts in the form of graphs highlighting the turning points for the major currencies for the next year. All of the economics-oriented services stress their potential contribution for planning, not their use in managing a hedging program.

Two of the foreign exchange rate forecasting services rely exclusively on technically-oriented decision rules using mathematical momentum models (a form of persistence type rule) to relate the historical record of exchange rates to the future trend in rates. A third technically-oriented service also uses a mathematical model and the fourth (described in the Appendix) a chartist approach in relating past market movements and the underlying fundamentals to the future trend in rates. All of the technically-oriented services provide indications of exchange market movements rather than point estimates of future spot exchange rates. They are intended to be useful in helping manage a hedging program not in planning.

EVALUATION OF THE SERVICES

The ten services (the six economics-oriented services and the four technically-oriented services) are evaluated on the basis of their predictive accuracy for six currencies against the dollar -- the Canadian dollar, French franc, German mark, Japanese yen, Swiss Franc and U.K. pound -- in the January 1976 - June 1978 period.² Different evaluation protocols are followed for the economics-oriented services and the technically-oriented services reflecting the difference in the type of forecast they provide.

2. For some currencies and services it was necessary to use a shorter period or exclude the service entirely but in no case are results reported for a period shorter than 18 months.

The economics-oriented services are evaluated using three measures -- accuracy in predicting trend, accuracy of their point estimates, and speculative return on capital at risk -- for forecasts three and six months ahead (two common market trading intervals). The first two measures will suggest how useful the services may be for planning over a three- to six-month horizon, the third measure will suggest how useful these forecasts may be in managing a hedging program or in speculating.

Accuracy in predicting trend, is defined as the share of each month's forecasts for which the spot exchange rate moves in the predicted direction in the three-month period following the forecast (for the three-month forecast) or in the six-month period following the forecast (for the six-month forecast). Accuracy of the point estimate, is defined as the share of each month's forecast for which the predicted rate is closer to the spot rate, three and six months later (for the three-month and six-month forecasts, respectively) than is the three-month and six-month forward rate at the time of the forecast.

Speculative return on capital at risk -- the most important measure in assessing market efficiency -- is defined as the return, at an annual percentage rate, on the total open position in a currency if a speculator each month blindly followed the services' recommendations.³ The speculative return on capital at risk is equal, given interest rate parity, to the incremental return above the US dollar interest rate a speculator would earn if he blindly altered the currency composition of his assets based on the forecasted change in exchange rates relative to the forward market premium and discount. The actual return on capital employed for the speculator using the forward market would be substantially larger depending on the margin

3. The speculator would buy the currency forward three months in the interbank market paying the associated premium or discount when the three-month forecast is above the three-month forward rate at the time of the forecast, and would sell the currency when the forecasted rate is below the comparable forward rate, reversing these purchases or sales three months later.

requirement, and would be infinite where there is no margin requirement.

To evaluate the services relative to these measures, it was necessary to make some simplifying assumptions. First, most of the economics-oriented services provide point estimates of quarterly average exchange rates. Through interpolation of successive quarterly forecasts, we converted the average quarterly forecasts to a set of point estimates of the future spot exchange rate three and six months following the forecast. These point estimates are used in the evaluation. Second, the different forecasts are available at different times during the month and the same forecast may not even be available on the same day each month or on the same day for each consumer. It was conservatively assumed that all of the forecasts are available only on the last day of the month in which they are published. The evaluation consequently was undertaken on the basis of the forward and spot exchange rates (New York opening) at the end of each month.⁴

The technically-oriented services are evaluated using only one measure -- speculative return on capital at risk. Because the technically-oriented services generally do not provide point estimates of future spot exchange rates it was not possible to evaluate them using the other evaluation measures employed for the economics-oriented services

The speculative return on capital at risk is calculated in a similar manner as for the economics-oriented service. It is the return at an annual percentage rate if a speculator each time an indication was given blindly followed the services' recommendations, buying the currency (and closing any outstanding forward sales) when the service gave a "buy" signal and selling the currency (and closing any outstanding

4. While this may bias the results somewhat against the forecasts, some of which are generally available about mid-month, the bias does not appear to be significant based on a spot check of the forecasts and of exchange rate movements between the middle and the end of the month.

forward purchases) when the service gave a "sell" signal. If there is no change in signal during a three-month period, the contract is rolled over at maturity. The evaluation was undertaken on the basis of the forward and spot exchange rates (New York opening) at the time an indication was given. Where a forward contract was closed prior to maturity (because of a change in signal) the appropriate forward premium or discount for the remaining maturity was interpolated from the premium and discount data for standard maturity contracts.

RESULTS OF THE EVALUATION

The results of the evaluation for the economics-oriented services are presented in Tables 1 through 5. The results for accuracy in predicting trend and providing point estimates of future spot exchange rates are shown in Tables 1 through 4 for the total January 1976 - June 1978 period and separately for three equal sub-periods -- January 1976 - October 1976, November 1976 - August 1977 and September 1977 - June 1978. Also shown is the accuracy of the forward rate in predicting trend. The results are presented separately for the three month and six month forecasts.

The speculative return on capital at risk is shown in Table 5 for all transactions and for purchases and sales separately. The separate purchase and sale results should provide an indication of the performance of the forecasts both in rising and falling markets. Also shown is the speculative return on capital at risk for a buy-and-hold strategy (consistently purchase a currency three months forward).

On average the economics-oriented services do rather poorly over the relatively short-time horizon considered in this study. They accurately predict the direction of trend for the spot exchange rate only 50% of the time over a three month forecast horizon (Table 1) and only 61% of the time over a six month forecast horizon (Table 3).

In both cases the forward rate provides a somewhat better -- albeit still not very reliable -- indication of the direction of trend.

The best performance is by the Berkeley Consulting Group, who on average outperform the forward rate. Two of the services -- the two that chose not to be identified -- are more often wrong about the direction of trend than they are right. None of the services, nor is the forward rate, a particularly consistent indicator of the direction of trend; the performance of a given service for a particular currency may vary from always providing a correct trend indication in one sub-period to never providing a correct trend indication in another. The pattern of results does not vary significantly by currency.

The economics-oriented services similarly do poorly in their point estimates of future spot exchange rates. On average the forecast rate is further from the future spot rate than the comparable forward rate for the three month forecast (Table 2) and is only as accurate as the forward rate for the six month forecast (Table 4). Forex Research outperforms the forward rate over a three month forecast horizon while Forex Research, Berkeley Consulting and DRI all outperform the forward rate over a six month forecast horizon.

Both the absolute performance of the services and their performance relative to the forward rate, both in predicting the direction of trend and providing point estimates of future spot exchange rates, improves as the forecast horizon lengthens from three to six months.

Blindly following the economics-oriented services' forecasts is profitable, but only marginally so. It is generally less profitable than a buy and hold strategy,

reflecting the general weakening of the Dollar against most currencies during the period. The speculative return on capital at risk averages 1.12% annually before transactions costs (Table 5); assuming costs of .05% per transaction, representing the spread between the bid and ask price in the interbank market or the brokerage commission in the currency futures market (IMM), the speculative return on capital at risk average .92% per annum. In contrast, the speculative return on capital at risk for a buy and hold strategy averages 2.86% per annum before transactions costs and 2.46% per annum after transactions cost.⁵ Blindly following any of the economics-oriented services' indications or a buy and hold strategy would have led to intermittent periods with considerable losses for most currencies (periods that would dishearten, if not bankrupt, most individual speculators).

The results of the evaluation for the technically-oriented services are presented in Table 6. Also shown is the average number of transactions per year if each service's indications are blindly followed.

All of the technically oriented services do remarkably well. The speculative return on capital at risk for each of the services averages between 7.28% and 10.46% annually before transactions costs, compared with a 2.86% return for a buy and hold strategy.⁶ The average performance of the poorest technically-oriented services is far better than the average performance of the best economics-oriented service.

5. The return on capital employed after transactions costs averages a remarkable 18% for the economics-oriented services and 49% for a buy and hold strategy when positions are established on the currency futures market, assuming an average margin of 5%.
6. The return on capital employed after transactions cost averages a phenomenal 156% for the technically-oriented services on the currency futures market. Blindly following any of the services' indications, however, would have led to intermittent periods with considerable losses for most currencies.

Service 4 has the best average performance, but the results are influenced by the failure to forecast the French franc for which the average performance of the other services is relatively low. The service is extremely sensitive to shifts in the exchange market, averaging 22 transactions annually or almost a transaction every other week (which considerably reduces the service's usefulness for corporations trying to manage their foreign currency exposure). Including transactions costs the speculative return on capital at risk for Service 4 averages 9.36%, still the best performance for the technically-oriented services. Service 3 is the second best performer of all of the technically-oriented services, hurt by a relatively poor showing for the Japanese yen. After transactions costs the speculative return on capital at risk averages 9.15%.

Services 1 and 2 -- the two services that rely exclusively on the historical record of exchange rates and exclude all fundamental factors in predicting the future trend in rates -- do the poorest of the technically-oriented services but they still considerably outperform a buy and hold strategy. The results for Service 1 are hurt by a poor performance for the French franc and the results for Service 2 are hurt by a poor performance for the Swiss Franc. Service 2 is more sensitive to shifts in the exchange market averaging 13 transactions annually compared with 5 transactions per year for Service 1, but this fails on average to improve the return even before transactions costs. After transactions costs the speculative return on capital at risk averages 7.58% for Service 1 and 6.63% for Service 2.

IMPLICATIONS FOR BUSINESS AND POLICY

The implications of the findings differ for the economics-oriented and the technically-oriented services reflecting the substantial difference in the results. The predictive accuracy of most -- but not all -- of the economics-oriented foreign exchange rate forecasting services is so poor that they are likely to be of little use for corporations trying to manage their foreign exchange exposure. The performance of

these services clearly does not provide evidence to refute the view that the foreign exchange market is an efficient market.

The results are quite different for the technically-oriented services. Their consistently very strong predictive performance supports the view that speculative runs do occur in the exchange market and that the foreign exchange market is not efficient.

This has clear implications for corporations trying to manage their foreign currency exposure. It suggests they might wish to subscribe to one or more of the technically-oriented foreign exchange rate forecasting services. It also suggests they should hedge outstanding short positions when a currency is rising, particularly if it is rising at an accelerating rate, and hedge outstanding long positions when a currency is falling, particularly if it is falling at an accelerating rate. Unfortunately, the technically-oriented services generally do not provide point estimates of future spot exchange rates and would be of little use in planning.

The finding that speculative runs are prevalent in the exchange market also has implications for policy makers. It suggests that exchange rates, if allowed to fluctuate freely, will consistently overshoot -- and may never reach -- equilibrium. It also suggests that intervention to be successful in preventing overshooting must come at the right time in terms of the technical forces in the market and must be of sufficient magnitude and duration to decisively break the momentum in a currency's movement.

TABLE 1
EVALUATION OF ECONOMICS-ORIENTED SERVICES
ACCURACY OF PREDICTION OF DIRECTION OF TREND
THREE-MONTH FORECASTS
(SHARE OF FORECASTS IN WHICH THE SPOT EXCHANGE RATE MOVED IN THE INDICATED DIRECTION)

CURRENCY	FORWARD RATE	BERKELEY CONSULTING GROUP	D.R.I.	FOREX			SERVICE 5	SERVICE 6	ARITHMETIC AVERAGE (SERVICES ONLY)
				RESEARCH	PREDEX	RESEARCH			
Canadian Dollar	20	90	40 ^P	NA	20	40	NA	48	
	100	100	60	NA	40	30	NA	58	
	67	60	60	NA	30	22	NA	43	
	62	83	53	NA	30	31	NA	50	
French Franc	90	100	100 ^P	50	70	70	NA	78	
	20	90	30	20	60	10	50 ^P	43	
	0	0	0	20	90	0	0	18	
	37	63	43	30	73	27	25	46	
German Mark	40	70	80 ^P	60	50	50	80	65	
	80	50	60	70	80	30	90	63	
	80	50	90	50	90	56	20	59	
	67	57	77	60	73	45	63	62	
Japanese Yen	33	90	80 ^P	80	40	80	NA	74	
	40	60	90	50	30	20	NA	50	
	89	0	30	70	70	10	NA	36	
	34	50	67	67	47	37	NA	53	
Swiss Franc	90	NA	NA	NA	20	NA	NA	20	
	60	NA	NA	NA	50	NA	NA	50	
	90	NA	NA	NA	70	NA	10	40	
	80	NA	NA	NA	47	NA	10	37	
U.K. Pound	90	70	100 ^P	90	60	50	NA	74	
	20	60	50	30	20	20	17 ^P	33	
	40	50	40	60	50	40	40	47	
	50	60	63	60	43	37	29	51	
Arithmetic Average Total	58	63	61	54	52	35	32	50	

P = based on part period data
Totals for arithmetic average column represent vertical sum

TABLE 2
EVALUATION OF ECONOMICS-ORIENTED SERVICES
ACCURACY OF POINT ESTIMATES OF FUTURE SPOT RATES
THREE-MONTH FORECASTS
(SHARE OF FORECASTS IN WHICH PREDICTED RATE WAS CLOSER TO SPOT THAN WAS COMPARABLE FORWARD RATE)

CURRENCY	BERKELEY CONSULTING GROUP	D.R.I.	FOREX		SERVICE 5	SERVICE 6	ARITHMETIC AVERAGE (SERVICES ONLY)
			RESEARCH	PREDEX			
Canadian Dollar	I	0P	NA	0	80	NA	40
	II	50	NA	30	10	NA	40
	III	30	NA	10	22	NA	23
	Total	60	NA	13	37	NA	34
French Franc	I	40P	30	40	40	NA	64
	II	50	70	20	40	83P	61
	III	0	10	44	33	30	30
	Total	57	33	48	40	38	45
German Mark	I	80P	70	50	50	60	55
	II	10	40	50	20	20	80
	III	43	70	50	30	30	41
	Total	24	63	57	41	33	46
Japanese Yen	I	60P	60	0	30	NA	40
	II	60	90	60	20	NA	52
	III	0	30	67	60	10	33
	Total	37	60	62	30	20	42
Swiss Franc	I	NA	NA	0	NA	NA	0
	II	NA	NA	50	NA	NA	50
	III	NA	NA	40	NA	NA	25
	Total	NA	NA	30	NA	NA	25
U.K. Pound	I	20P	60	40	30	NA	42
	II	100	40	60	40	66P	56
	III	50	40	50	30	30	43
	Total	70	33	47	47	40	47
Arithmetic Average Total	50	43	54	34	34	42	40

P = based on part period data
Totals for arithmetic average column represent vertical sum

TABLE 3
EVALUATION OF ECONOMICS-ORIENTED SERVICES
ACCURACY OF PREDICTION OF DIRECTION OF TREND
SIX-MONTH FORECASTS
(SHARE OF FORECASTS IN WHICH THE SPOT EXCHANGE RATE MOVED IN THE INDICATED DIRECTION)

CURRENCY	FORWARD RATE			BERKELEY CONSULTING GROUP		D. R. I.	FOREX RESEARCH		PREDEX	SERVICE 5		SERVICE 6	ARITHMETIC AVERAGE (SERVICES ONLY)
	I	II	III	I	II		I	II		I	II		
Canadian Dollar	I	10	80	20 ^P	NA	NA	10	80	NA	NA	48		
	II	100	90	90	NA	70	40	70	NA	NA	73		
	III	100	60	10	0	NA	0	10	NA	NA	30		
Total		70	77	53	NA	27	43	NA	NA	NA	50		
French Franc	I	90	100	NA	43 ^P	100	80	80	NA	NA	81		
	II	50	100	60	50	30	20	50	NA	NA	52		
	III	0	0	0	0	100	0	0	NA	NA	20		
	Total	47	67	30	31	77	33	33	NA	NA	51		
German Mark	I	80	60	NA	71 ^P	80	70	70	NA	NA	70		
	II	100	60	70	80	100	50	70	NA	NA	72		
	III	100	50	90	80	100	60	60	NA	NA	76		
	Total	93	57	80	77	93	60	60	NA	NA	73		
Japanese Yen	I	20	100	71 ^P	100 ^P	20	70	70	NA	NA	72		
	II	20	90	90	100	0	50	50	NA	NA	66		
	III	60	0	60	100	80	0	0	NA	NA	48		
	Total	33	63	74	100	33	40	40	NA	NA	62		
Swiss Franc	I	100	NA	NA	NA	70	NA	NA	NA	NA	70		
	II	40	NA	NA	NA	80	NA	NA	NA	NA	80		
	III	100	NA	NA	NA	100	NA	NA	NA	NA	100		
	Total	80	NA	NA	NA	83	NA	NA	NA	NA	83		
U. K. Pound	I	100	89	NA	86 ^P	50	70	70	NA	NA	74		
	II	40	80	40	40	20	20	20	NA	NA	38		
	III	10	50	33	30	30	20	20	NA	NA	33		
	Total	50	73	37	49	33	37	37	NA	NA	48		
Arithmetic Average Total		62	67	55	64	58	43				61		

p = based on part period data

Totals for arithmetic average column represent vertical sum

TABLE 4
 EVALUATION OF ECONOMICS-ORIENTED SERVICES
 ACCURACY OF POINT ESTIMATES OF FUTURE SPOT RATES
 SIX-MONTH FORECASTS
 (SHARE OF FORECASTS IN WHICH PREDICTED RATE WAS CLOSER TO SPOT THAN WAS COMPARABLE FORWARD RATE)

CURRENCY	BERKELEY CONSULTING GROUP			FOREX RESEARCH			D. R. I.			SERVICE 5			SERVICE 6			ARITHMETIC AVERAGE (SERVICES ONLY)				
	I	II	III	Total	I	II	III	Total	I	II	III	Total	I	II	III	Total	I	II	III	Total
Canadian Dollar	100	100 ^P	NA	100	0	100	NA	100	0	100	NA	100	NA	NA	NA	75	NA	NA	NA	75
	II	60	NA	60	0	60	NA	60	0	60	NA	60	NA	NA	NA	53	NA	NA	NA	53
	III	40	NA	40	0	40	NA	40	0	40	NA	40	NA	NA	NA	20	NA	NA	NA	20
Total	67	73	NA	67	20	73	NA	67	37	73	NA	67	NA	NA	NA	49	NA	NA	NA	49
French Franc	70	NA	29 ^P	70	60	60	29 ^P	70	60	60	NA	60	NA	NA	NA	52	NA	NA	NA	52
	II	100	90	100	20	90	90	100	20	90	NA	90	NA	NA	NA	65	NA	NA	NA	65
	III	40	10	40	30	80	80	40	30	80	NA	80	NA	NA	NA	44	NA	NA	NA	44
Total	70	39	66	70	37	53	66	70	37	53	NA	70	NA	NA	NA	54	NA	NA	NA	54
German Mark	30	NA	43 ^P	30	50	50	43 ^P	30	50	50	NA	50	NA	NA	NA	41	NA	NA	NA	41
	II	10	50	10	100	100	50	10	100	100	NA	100	NA	NA	NA	52	NA	NA	NA	52
	III	30	80	30	56	90	80	30	56	90	NA	80	NA	NA	NA	37	NA	NA	NA	37
Total	23	65	53	23	80	80	53	23	80	80	NA	65	NA	NA	NA	50	NA	NA	NA	50
Japanese Yen	70	67 ^P	100 ^P	70	0	60	67 ^P	70	0	60	NA	60	NA	NA	NA	59	NA	NA	NA	59
	II	80	100	80	10	100	100	80	10	100	NA	100	NA	NA	NA	66	NA	NA	NA	66
	III	0	40	0	90	80	40	0	90	80	NA	80	NA	NA	NA	42	NA	NA	NA	42
Total	50	62	97	50	30	40	97	50	30	40	NA	62	NA	NA	NA	56	NA	NA	NA	56
Swiss Franc	NA	NA	NA	NA	10	10	NA	NA	10	10	NA	10	NA	NA	NA	10	NA	NA	NA	10
	II	NA	NA	NA	60	60	NA	NA	60	60	NA	60	NA	NA	NA	60	NA	NA	NA	60
	III	NA	NA	NA	90	90	NA	NA	90	90	NA	90	NA	NA	NA	90	NA	NA	NA	90
Total	NA	NA	NA	NA	53	53	NA	NA	53	53	NA	53	NA	NA	NA	53	NA	NA	NA	53
U.K. Pound	80	NA	57 ^P	80	40	40	57 ^P	80	40	40	NA	40	NA	NA	NA	57	NA	NA	NA	57
	II	60	50	60	40	40	50	60	40	40	NA	40	NA	NA	NA	44	NA	NA	NA	44
	III	60	33	60	20	20	33	60	20	20	NA	20	NA	NA	NA	27	NA	NA	NA	27
Total	67	42	39	67	33	33	42	67	33	33	NA	42	NA	NA	NA	43	NA	NA	NA	43
Arithmetic Average Total	55	56	64	55	42	42	64	55	42	42	NA	42	NA	NA	NA	51	NA	NA	NA	51

P = based on part period data
 Totals for arithmetic average column represent vertical sum

TABLE 5
EVALUATION OF ECONOMICS-ORIENTED SERVICES
SPECULATIVE RETURN ON CAPITAL AT RISK
THREE-MONTH FORECASTS
(PERCENT)

CURRENCY	BUY AND HOLD		BERKELEY CONSULTING GROUP	FOREX RESEARCH		FREDEX	SERVICE 5	SERVICE 6	ARITHMETIC AVERAGE (SERVICES ONLY)
	Buy	Sell		D. R. I.	RESEARCH				
Canadian Dollar	Buy	(15.12)	2.52	(2.88)P	NA	(4.96)	(.60)	NA	(1.48)
	Sell		6.88	5.16 P	NA	(2.08)	3.52	NA	3.37
	Total	(15.12)	4.40	1.64 P	NA	(3.60)	.28	NA	.68
French Franc	Buy	3.20	7.32	5.76 P	2.40	7.20	3.24	10.08P	6.00
	Sell		2.28	(.64)P	(3.16)	3.68	(2.68)	13.80P	(2.39)
	Total	3.20	4.20	1.40P	.02	5.92	.08	2.60P	2.37
German Mark	Buy	6.80	5.72	13.00 P	6.52	7.56	16.08	10.84	9.95
	Sell		(13.92)	(1.96)P	(7.00)	(4.40)	(4.04)	(4.88)	(6.03)
	Total	6.80	(1.56)	5.80 P	(1.60)	4.68	.64	.36	1.39
Japanese Yen	Buy	12.52	7.36	15.56 P	12.92	21.08	4.80	NA	12.34
	Sell		(16.40)	(13.68)P	(8.92)	(9.56)	(15.76)	NA	(12.86)
	Total	12.52	(5.32)	3.88	6.16	(2.40)	(7.96)	NA	(1.13)
Swiss Franc	Buy	9.64	NA	NA	NA	18.80	NA	NA	18.80
	Sell		NA	NA	NA	(6.12)	NA	NA	(6.12)
	Total	9.64	NA	NA	NA	.52	NA	NA	.52
U. K. Pound	Buy	.12	14.04	4.56P	8.40	2.76	2.16	6.20 P	6.35
	Sell		10.48	(12.40)P	4.68	2.44	1.12	(9.32)P	(.50)
	Total	.12	12.04	(2.24)P	6.04	2.60	1.52	(2.52)P	2.91
Arithmetic Average	Total	2.86	2.75	2.10	2.66	1.29	(1.09)	.15	1.12

p = based on part period data
Note: Brackets indicate a negative.

Total is the return on all transactions both buy and sell; it is equal to the weighted average of the return on buys and on sells where the weights are the share of transactions which are buys and sells respectively.

Totals for arithmetic average column represent horizontal sum; arithmetic average for arithmetic average column represents vertical sum of Totals.

TABLE 6
EVALUATION OF TECHNICALLY-ORIENTED SERVICES
SPECULATIVE RETURN ON CAPITAL AT RISK
(PERCENT)

CURRENCY		SERVICE 1	SERVICE 2	SERVICE 3	SERVICE 4	ARITHMETIC AVERAGE
<u>Canadian Dollar</u>	Buy	.99	2.50	.51	4.61	2.15
	Sell	4.60	6.22	5.40	5.19	5.35
	Total	5.59	8.72	5.91	9.80	7.51
No. of Trans.		5	11	6	17	10
<u>French Franc</u>	Buy	(2.42)	3.82	3.10	NA	1.50
	Sell	(3.66)	.53	1.12	NA	(.67)
	Total	(6.08)	4.35	4.21	NA	.83
No. of Trans.		5	15	8	NA	9
<u>German Mark</u>	Buy	10.49	7.53	6.82	8.78	8.41
	Sell	2.46	1.19	4.03	3.02	2.68
	Total	12.95	8.72	10.85	11.80	11.08
No. of Trans.		5	13	12	25	14
<u>Japanese Yen</u>	Buy	12.42	11.78	3.86	10.95	9.75
	Sell	(1.73)	(1.52)	(2.10)	(1.63)	(1.75)
	Total	10.69	10.26	1.76	9.32	8.01
No. of Trans.		5	12	7	21	11
<u>Swiss Franc</u>	Buy	9.52	2.76	11.11	12.99	9.10
	Sell	2.07	(10.28)	11.38	3.11	1.57
	Total	11.60	(7.52)	22.49	16.10	10.67
No. of Trans.		5	14	11	22	13
<u>U.K. Pound</u>	Buy	6.70	9.24	7.68	2.62	6.56
	Sell	5.55	9.93	4.40	2.64	5.63
	Total	12.25	19.17	12.08	5.26	12.19
No. of Trans.		4	12	6	24	12
<u>Arithmetic Average</u>	Total	7.83	7.28	9.55	10.46	8.38
	No. of Trans.		5	13	8	22

Note: Brackets indicate a negative

Total is the return on all transactions both buy and sell.

No. of Trans. is the average number of transactions per year.

Totals for arithmetic average column represent horizontal sum; arithmetic average for arithmetic average column represents vertical sum of Totals

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APPENDIXDESCRIPTION OF THE SERVICESTHE BERKELEY CONSULTING GROUP

The Berkeley Consulting Group provides approximately every six weeks, forecasts of exchange rates for between one and nine currencies including the Canadian Dollar, Japanese Yen and seven European currencies. The forecasts are in the form of graphs showing the daily exchange rate of each currency against the U.S. Dollar for the next year; the emphasis is on projecting the level and timing of turning points rather than providing continuous point estimates of exchange rates. The forecasts are prepared by a group of economists and political scientists in the United States based solely on a unique two part model that emphasizes political and speculative pressures in exchange markets. In part one of the model, a measure of the sentiment of foreign exchange market participants is derived based on changes in GNP, liquidity preference and interest rates. In part two, market sentiment is related to the current value of twelve economic variables to produce the exchange rate forecast. The service also includes interpretive consultation to assist in evaluating the forecast and relating it to individual client needs.

The cost of the service is \$4,400 for one currency, \$8,800 for two currencies, \$12,100 for three currencies, \$15,400 for four currencies, \$18,700 for five currencies and \$24,000 for six to nine currencies.

For additional information contact: Mr. Arthur I. Trueger, 400 Montgomery Street,
San Francisco, California 94104
415-982-6790

DATA RESOURCES INC. (DRI)

DRI, as part of its overall Canadian, European and Japanese forecasts, provides monthly forecasts of exchange rates for the Canadian Dollar, the Japanese Yen and eight European currencies. The forecasts include the average quarterly rate for each currency against the US dollar for six quarters and the average annual rate for four years. They are prepared by groups of economists in the United States, Canada, Europe and Japan using-- but not relying exclusively on -- models that include such fundamental factors as: net foreign asset positions, interest rate differentials, trade and current account balances, relative inflation rates and short-term capital flows.

The future values of these factors are derived from DRI's models of the U.S., Canadian, Japanese, and European economies (DRI is one of the largest econometric modeling and forecasting services).

The charge for the service varies considerably depending on the service package and the country coverage.

For additional information contact: Dr. Eric Williams, Data Resources Inc.
29 Hartwell Avenue, Lexington, Mass. 02173
617-861-0165

FOREX RESEARCH

Forex Research provides monthly forecasts of exchange rates for between one and eleven currencies including the Canadian Dollar, Japanese Yen and nine European currencies. The forecasts include the average quarterly rate for each currency against the US dollar and the appropriate key cross rates for six quarters, and the average monthly rate for three and six months out. They are prepared by groups of economists in the United States and Europe using -- but not relying exclusively on -- models that include fundamental economic factors with special emphasis on factors affecting world trade including price competitiveness, money market developments and government policies.

A monthly report for each currency includes the exchange rate forecast and a forecast of important domestic variables and a very detailed discussion of the currency and country's prospects. The charge for the service is \$2,000 for one currency, ranging up to \$13,500 for eleven currencies including a separate report for the U.S. dollar.

For additional information contact: Dr. Michael Cayton, Forex Research,
5827 Columbia Pike, Falls Church, Va. 22041
703-931-5500

PREDEX

PreDEX provides monthly forecasts of exchange rates for the Canadian Dollar, Japanese Yen and eleven European currencies. The forecasts include the average quarterly rate for each currency against the US dollar and five other currencies for six quarters. Separate forecasts are also available of the average monthly rate for ten of the currencies against the dollar for one through six months out. They are prepared by a group of economists and programmers in the United States based solely on models that include such fundamental factors as: cumulative trade balances, money supply, and national income. The future values for these factors are estimated independently.

A monthly report includes a short overview, the forecasts with supporting data and an analysis of financial applications. The cost of the service is \$5,000 annually.

For additional information contact: Dr. Charles Raymond, PreDEX Corporation
680 Fifth Avenue, New York, New York 10019
212-489-6443

DONALD HOFFMAN, SHEARSON, HAYDEN, STONE INCORPORATED (Service 4)

Don Hoffman provides weekly indications of likely exchange rate movements for the Canadian Dollar, Japanese Yen and four European currencies. The indications include specific buy and sell recommendations. They are prepared by an analyst in the United States based solely on a technical model that emphasizes past market movements in relation to the underlying fundamentals.

The indications are communicated through a weekly telephone call. There is no direct hard dollar cost for the service but it is expected that you would do a share of your foreign exchange futures business through Don Hoffman on the IMM.

For additional information contact: Mr. Donald Hoffman, Shearson Hayden Stone Inc.
1415 E. Sunrise Blvd., Ft. Lauderdale, Fla. 33304
800-327-3722

COMMENTS ON

"Foreign Exchange Rate Forecasting Techniques:
Implications for Business and Policy"
by Stephen H. Goodman

by Robert Z. Aliber, University of Chicago

The common theme to the Goodman and the Fisk-Rimlinger papers presented this morning involves the success of competing predictive models. The underlying issue, partly philosophic and partly empirical, involves the types of predictive models which are likely to be more successful in efficient markets and in markets which are not efficient.

Aside from the theme, there are substantial differences between the two papers. The Goodman paper focuses on the foreign exchange market; its intent is to evaluate the 23 commercial exchange rate forecasting services. Twelve of these services are "seat-of-the pants" or "touch-and-feel," six services rely on formal economic models, and four services are technically oriented, and are based on "mathematic momentum models." The Fisk-Rimlinger paper, in contrast, develops one model which is designed to use a computer program to predict the likelihood of debt reschedulings by the developing countries. They briefly compare the results of their model to others; nevertheless the paper is largely concerned with the exposition of a technique. The juxtaposition of the two papers raises the question whether the Fisk-Rimlinger technique could be used to predict changes in exchange rates and how well they would fare relative to the 23 other models available; the counterpart question is whether one of the models reviewed by Goodman relies on the technique which could be used to predict the likelihood of debt reschedulings with greater success than the F-R model.

Most of the comments are directed at the Goodman paper. These comments are in two parts; the first involves whether Goodman's assertions about the

foreign exchange market are empirically supportable, and the second is how good, successful, and fair are his tests of the ten forecasting services.

Goodman believes that the conclusion to be drawn from the previous studies is that the foreign exchange market is not efficient.¹ Moreover, he believes that forward exchange rates are determined by interest rate parity and not by the speculative demands for open positions in a currency based on expectations about future exchange rates. The thrust of his approach is that the economic analyses of the exchange market inefficiency are incomplete, and that it should be possible to get inferences on efficiency by examining the success of the exchange rate forecasting services. Thus if an exchange rate forecasting service outperforms the forward as a prediction of the direction or the level of the future spot rate, it can be concluded that the market is inefficient; apparently if the no forecasting service is more successful than the forward rate, then Goodman would have us believe that the market is efficient.

Each of these basic views can be questioned. Within the last three or four years, there have been ten or fifteen studies on the exchange market efficiency. The thrust of these is that the market is efficient; occasionally, a study leads to the conclusion that the market is inefficient, but then, the authors project that the inefficiency may reflect substantial intervention.

The competing proposition to Goodman's assertion that the forward rate is determined by interest parity is that the forward rate is determined by speculative expectations, and the spot rate is determined by interest parity. In this sense, the forward rate "drives" the spot rate, whereas

¹ Goodman cites only one study which measured efficiency in the French franc during the 51 months from January 1970 to March 1974. The franc was pegged during 34 of these months, and intervention by the Bank of France extensive during many other months.

about half the time. Goodman concludes that one cannot infer the foreign exchange market is inefficient from this set of comparisons.

Goodman finds that the services which use mathematical momentum models--black boxes--do much better in predicting rate movements than those that use formal economic models; the basis for the conclusion that the rates of return to those who follow the recommendations of the technically oriented services are higher than the rate of return from a simple buy-and-hold strategy. This result leads Goodman to conclude that the exchange market is inefficient. The test involves the profit (or loss) on a forward contract, measured as the difference between the forward rate and the spot rate on the maturity of the forward contract. This return in absolute value is converted into rate of return by assuming the initial investment is one hundred of domestic currency.

Frequently, it is assumed that since there is no margin requirement on forward contracts, the investor may obtain virtually unlimited leverage. Then the rate of return on the investor's own capital is a linear function of the amount of leverage. The implicit assumption that the banks will extend unlimited leverage to a buyer of forward contracts, much more than they would if the investor had borrowed from the bank, seems inappropriate. Consequently, the comparison among strategies should involve only owned funds so as to distinguish the skill at forecasting from the impacts of leverage; the benchmark of the buy-and-hold might be an investment in domestic money market assets, or in foreign money market assets. If the difference in interest rates averages to be equal to the rate of change of the exchange rate, the two returns will be approximately equal. The return to a buy-and-hold based on forward contracts will average to the trend value of the rate of change in the exchange rate.

Goodman's approach grossly underestimates the return from the buy-and-hold strategy, which would have been the foreign money market interest rate and the trend rate of appreciation of the foreign currency.

The second question is whether there are systematic differences among the services in their forecasting skills, or whether these differences are random. These services differ in their profit rates and the currencies in which they are successful. One of the services is the most successful in one currency and the least successful in another. The second is the most successful in two currencies and the least successful in one. The third is the most successful in one, and the least successful in one. And similarly for the fourth. No service appears to rank in terms of its ability to perform better than the competing services across more than two currencies.

The ranking of the services reflects the pattern of movements in exchange rates. In designing a rule for when to alter exposure, the forecasting service must avoid too sensitive a trigger; for if the trigger is delicate, then the investor will be continually reversing his exposure, and will incur substantial transactions costs. In contrast, if the trigger is stiff, the investor minimizes transactions costs, but the investor will shift portfolios only after the exchange rate has developed substantial momentum. A delicate trigger will result in a high rate of return if movements of exchange rates involve long swings; it will result in a low rate of return if there are frequent changes in the direction of movement in the exchange rate.

Goodman concludes that the market is not efficient because the rates of return of the services exceed those of a buy-and-hold. The results of the technical services have been misunderstood and are no more impressive than

those of the formal services. In this sense Goodman's conclusions should support the idea of market efficiency, but since the tests are preliminary, it is possible that the markets could find more successful tests to be proven inefficient.

The Fisk-Rimlinger paper describes a very formal technique which is based on precedents in the relations between various debt reschedulings and values of different variables. They may be in a position to say that a country may have to reschedule in the next six years. The key issue is whether it is useful to have economic information once one has the technique, and whether the economic information is additive. Since the "market for debt rescheduling" is likely to be inefficient in that the timing and even the decision about the reschedulings are political, it might seem that formal economic analysis would be more successful than a purely technical approach.

Robert Z. Aliber
University of Chicago

No better than the toss of a coin

Stephen H. Goodman

Director, treasury planning, The Singer Company

Foreign exchange rate forecasting is a growth industry. At least 25 services — and the number continues to grow — are now competing for the business of the corporate financial officer trying to deal with the sharp swings in currency value. (See *Euromoney*, August 1978, for a description of the services; three additional ones are identified here).

The services employ a variety of techniques, differ considerably in size and the breadth of their expertise and charge a wide range of fees, from the free services offered by a number of major banks to services costing \$25,000 to \$50,000 or more annually. They all offer the same promise, however — that of outperforming the market.

Attitudes of corporate treasurers towards the forecasters range widely. On the one extreme are those who believe that forecasting foreign exchange rates is futile and that even if, by chance, a successful forecasting technique were developed it would hardly be marketed widely — rather, it would be used by the inventor to make himself a rich man. No major corporate treasurer is at the other extreme, believing that the forecasters are always right, but a number feel they can contribute significantly to the development of profitable hedging strategies. Most treasurers, however, appear to be somewhere in the middle, sceptical but hopeful, uncertain how good the foreign exchange rate forecasters really are.

Types of forecasters

In assessing how good the forecasters are, it is useful to divide them into three broad groups: 1) those that rely on an overall subjective evaluation of economic, political and/or technical factors — the seat of the pants approach; 2) those that rely in whole, or in large part, on econometric models — the number-crunching approach, and 3) those that rely fully, or almost so, on technically-oriented decision rules such as can be derived from momentum models — the chartist approach.

It is not specially helpful to evaluate the forecasting accuracy of services in the first group — which includes 12 of the 25 services — as their performance is not tied to any replicative formal model or decision rule, but simply reflects the subjective judgement of a potentially changing group of individuals. The forecasting accuracy of nine of the remaining 13 services is evaluated here (the necessary data were not available for the other four services, in two cases because they are new and do not have a long enough track record).

Six of the foreign exchange rate forecasting services evaluated here rely in whole, or in large part, on formal

econometric models. (See the list for a description of four of these services. Two chose not to be identified). The models include factors such as interest rate differentials, relative inflation rates, balance-of-payments flows and reserve asset positions; one service — the Berkeley Consulting Group — also includes as a key explanatory variable a measure of the sentiment of foreign exchange market participants as reflected in their portfolio asset composition.

Five of these econometric-oriented services provide each month point estimates, generally of quarterly average exchange rates, for the major currencies, typically for the next six quarters. The Berkeley forecasts are in the form of graphs highlighting the turning points of major currencies over the next year. In judging how good these services really are it is important to note that the econometric-oriented forecasters do not stress their use in managing a hedging programme, but rather their potential contribution in planning.

Two of the foreign exchange rate forecasting services evaluated here rely exclusively on technically-oriented decision, rules, using mathematical momentum models to relate the historical record of exchange rates to the future trends in rates. (See the list). A third technically-oriented service (also described in the list) uses a chartist approach in relating past market movements and the underlying fundamentals to the future trend in rates. All the technically-oriented services provide indications of likely exchange market movements rather than point estimates of future spot exchange rates. They are intended to be most useful in helping manage a hedging programme, not in planning.

How they are evaluated

The services are evaluated on the basis of their predictive accuracy during the January to June 1978 period, using the forecasts actually made at the time for six currencies against the dollar — the Canadian dollar, French franc, Deutschemark, yen, Swiss franc and sterling.

The econometric-oriented services are evaluated using two measures that will suggest how useful the services may be in planning: accuracy in predicting trend — as measured by the share of forecasts for which the exchange rate moves in the indicated direction in the subsequent three-month period and accuracy of their point estimates — as measured by the share of forecasts for which the predicted rate is closer to the spot rate three months later than is the three-month forward rate at the time of the forecast.

In addition, all the forecasters are evaluated using a third measure: speculative return on capital at risk — the return, at an annual percentage rate, on the total open

The views expressed are those of the author and do not necessarily represent the views of The Singer Company.

Seven who try to look ahead

ECONOMETRIC-ORIENTED FORECASTERS

The Berkeley Consulting Group

The Berkeley Consulting Group provides, about every six weeks, forecasts of exchange rates for the Canadian dollar, the yen and seven European currencies. The forecasts are in the form of graphs showing the daily exchange rate of each currency against the dollar for the next year.

The charge: \$4,400 for one currency, \$8,800 for two currencies, \$12,100 for three currencies, \$15,400 for four currencies, \$18,700 for five currencies and \$24,000 for six to nine currencies.

Data Resources Inc (DRI)

DRI provides monthly forecasts of exchange rates for the Canadian dollar, the yen and eight European currencies. The forecasts include the average quarterly rate for each currency against the dollar for six quarters and the average annual rate for four years.

The charge: varies depending on the service package and the country coverage.

Forex Research

Forex Research provides monthly forecasts of exchange rates for the Canadian dollar, the yen and nine European currencies. The forecasts include the average quarterly rate for each currency against the dollar and the appropriate key cross rates for six quarters, and the average monthly rate for three and six months out.

The charge: \$2,000 for one currency, ranging up to \$13,500 for eleven currencies including a separate report for the dollar.

PreDEX

PreDEX provides monthly forecasts of exchange rates for the Canadian dollar, the yen and 11 European currencies. The forecasts include the average quarterly

rate for each currency against the dollar and five other currencies for six quarters. Separate forecasts are also available of the average monthly rate for ten of the currencies against the dollar for one to six months out.

The charge: \$5,000.

TECHNICALLY-ORIENTED FORECASTERS

Donald Hoffman; Shearson, Hayden, Stone Incorporated

Don Hoffman provides weekly indications of probable exchange rate movements for the Canadian dollar, the yen and four European currencies. The indications include specific buy and sell recommendations and are communicated through a weekly telephone call.

The charge: No direct cost, but it is expected that the client will do some of his foreign exchange futures business through Don Hoffman on the IMM.

International Forecasting Corporation

International Forecasting provides weekly indications of likely exchange rate movements for the Canadian dollar, the yen, eight European currencies and three Far Eastern currencies against the dollar and most of the key cross rates. The indications include specific buy and sell recommendations.

The charge: \$12,000.

Waldner and Company

Waldner and Company provide a daily indication of probable exchange rate movements and a preliminary projection for the Canadian dollar, the yen and five European currencies. The indications include specific buy and sell recommendations and are communicated through twice daily telexes.

The charge: \$30,000.

position in a currency if a speculator blindly followed the services' recommendations. In the case of the econometric-oriented services, the speculator would each month buy the currency forward three months in the interbank market, paying the associated premium or discount, when the forecast rate was above the three-month forward rate, and would sell the currency when the forecast rate was below the forward rate, reversing these purchases or sales three months later. In the case of the technically-oriented services the speculator would buy the currency forward three months in the interbank market (and close any outstanding forward sales) when the service gave a *buy* signal, and would sell the currency forward (and close any outstanding forward purchases) when the service gave a *sell* signal; if there was no change in signal during a three-month period, the contract would be rolled over at maturity.

The speculative return on capital at risk is equal to the *incremental return* above the dollar interest rate a speculator would earn if he blindly altered the currency

composition of his assets based on the forecast change in exchange rates relative to the forward market premium and discount. The actual return on *capital employed* for the speculator using the forward market would be substantially larger depending on the margin requirement. It would be twenty times larger, for example, where there is a 5% margin requirement, and would be infinite where there is no margin requirement.

It was necessary to make some simplifying assumptions in order to do the evaluation. Through interpolation of successive forecasts, the average quarterly estimates generated by most of the econometric-oriented services were converted to a set of point forecasts of exchange rates three months hence; these point estimates are used in the evaluation. It was conservatively assumed that all of the econometric-oriented forecasts are available only on the last day of the month in which they are published and that for the technically oriented services any action is taken at the prices on the next trading day after the forecast is received.

Table 1

The spun-coin syndrome

EVALUATION OF ECONOMETRIC-ORIENTED SERVICES: ACCURACY IN PREDICTING TREND

(Share of forecasts for which the exchange rate moved in the indicated direction in the subsequent three-month period)

Currency	Forward rate	Berkeley Consulting Group	DRI	Forex Research	Predex	Service 5	Service 6	Arithmetic average (Services only)
Canadian dollar	62	83	53 ^P	n.a.	30	31	n.a.	49
French franc	37	63	43 ^P	30	73	27	25 ^P	44
Deutschemmark	67	57	77 ^P	60	73	45	63	63
Yen	54	50	67 ^P	67	47	37	n.a.	54
Swiss franc	80	n.a.	n.a.	n.a.	47	n.a.	10	29
Sterling	50	60	63 ^P	60	43	37	29 ^P	49
Arithmetic average	58	63	61	54	52	35	32	50

^PBased on part-period data, but in no case are results reported for a period shorter than 18 months.

The evaluation was undertaken on the basis of the New York opening forward and spot exchange rates.

The result of the evaluation for the econometric-oriented services are presented in Tables 1, 2 and 3. The forecaster's accuracy in predicting trend, including the results using the forward rate, are shown in Table 1. The accuracy of their point estimates are shown in Table 2.

The speculative return on capital at risk is shown in Table 3 for all transactions and for purchases and sales separately. The separate purchase and sales results should provide an indication of performance, both in rising and falling markets. Also shown is the speculative return on

capital at risk for a buy-and-hold strategy (consistently purchase a currency three months forward).

On average the econometric-oriented services do poorly over the relatively short-term horizon considered here. They accurately predict the direction of trend for the spot exchange rate over the next three months only 50% of the time. A two-sided coin would be as good a forecasting tool and the forward rate a better — albeit still not a very reliable — one.

The best performance is by the Berkeley Consulting Group, who on average outperform the forward rate. Two of the services — the two that chose not to be identified —

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Table 2

The negatively-weighted spun coin

EVALUATION OF ECONOMETRIC-ORIENTED SERVICES: ACCURACY OF POINT ESTIMATES OF FUTURE SPOT RATES

Share of forecasts in which predicted rate was closer to spot than was comparable forward

Currency	Berkeley Consulting Group	D.R.I.	Forex Research	Predex	Service 5	Service 6	Arithmetic average (Services only)
Canadian dollar	60	27 ^P	n.a.	13	37	n.a.	34
French franc	57	33 ^P	48	40	38	57 ^P	46
Deutschemark	24	63 ^P	57	41	33	53	45
Yen	37	60 ^P	62	30	20	n.a.	42
Swiss franc	n.a.	n.a.	n.a.	30	n.a.	10	20
Sterling	70	33 ^P	47	47	40	48 ^P	48
Arithmetic average	50	43	54	34	34	42	43

^P Based on part period data

are more often wrong about the direction of trend than they are right. None of the services is a particularly consistent indicator of the direction of trend; the performance of a given forecaster for a particular currency may vary from always providing a correct trend indication in one period of time to never providing a correct trend indication in another. The pattern of results does not vary significantly by currency.

The econometric-oriented services similarly do poorly in their point estimates of future spot exchange rates. On average the forecast rate is further from the spot rate three months later than is the comparable forward rate at the

time of the forecast. Only Forex Research outperforms the forward rate — but by only 4% — while the Berkeley Consulting Group does as well as the forward rate.

The absolute performance of the forecasters, and their performance relative to the forward rate, both in predicting the direction of trend and in providing point estimates of future spot exchange rates, improves somewhat as the forecast horizon lengthens from three to six months. The accuracy of the trend prediction, for example, improves from an average of 50% correct for a three-month forecast horizon to an average of 61% correct for a six-month forecast horizon. It was not

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NEW ISSUE

October 31, 1978

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Table 3

Very speculative return

EVALUATION OF ECONOMETRIC-ORIENTED SERVICES: SPECULATIVE RETURN ON CAPITAL AT RISK

(Percent)

Currency	Buy and hold	Berkeley Consulting Group	D.R.I.	Forex Research	Predex	Service 5	Service 6	Arithmetic average (Services only)
Canadian dollar	Buy	(15.12)	2.52	(2.88)	n.a.	(4.96)	(0.60)	n.a.
	Sell		6.88	5.16 ^P	n.a.	(2.08)	3.52	n.a.
	Total	(15.12)	4.40	1.64 ^P	n.a.	(3.60)	0.28	n.a.
French franc	Buy	3.20	7.32	5.76 ^P	2.40	7.20	3.24	10.08 ^P
	Sell		2.28	(0.64) ^P	(3.16)	3.68	(2.68)	13.80 ^P
	Total	3.20	4.20	1.40 ^P	0.02	5.92	0.08	2.60 ^P
Deutschmark	Buy	6.80	5.72	13.00 ^P	6.52	7.56	16.08	10.84
	Sell		(13.92)	(1.96) ^P	(7.00)	(4.40)	(4.04)	(4.88)
	Total	6.80	(1.56)	5.80 ^P	(1.60)	4.68	0.64	0.36
Yen	Buy	12.52	7.36	15.56 ^P	12.92	21.08	4.80	n.a.
	Sell		(16.40)	(13.68) ^P	(8.92)	(9.56)	(15.76)	n.a.
	Total	12.52	(5.32)	3.88	6.16	(2.40)	(7.96)	n.a.
Swiss Franc	Buy	9.64	n.a.	n.a.	n.a.	18.80	n.a.	n.a.
	Sell		n.a.	n.a.	n.a.	(6.12)	n.a.	n.a.
	Total	9.64	n.a.	n.a.	n.a.	0.52	n.a.	n.a.
Sterling	Buy	0.12	14.04	4.56	8.40	2.76	2.16	6.20 ^P
	Sell		10.48	(12.40) ^P	4.68	2.44	1.12	(9.32) ^P
	Total	0.12	12.04	(2.24) ^P	6.04	2.60	1.52	(2.52) ^P
Arithmetic Average	Total	2.86	2.75	2.10	2.66	1.29	(1.09)	0.15
								1.12

^P Based on part period data.
Brackets indicate a negative.

The total is the return on all transactions both buy and sell; it is equal to the weighted average of the return on buys and on sells where the weights are the share of transactions which are buys and sells respectively.
Totals for arithmetic average column represent horizontal sum; arithmetic average for arithmetic average column represents vertical sum of totals.

possible to evaluate the services over a longer time period than six months because the track records for many are too short. Nevertheless, it is over this longer time frame that the econometric-oriented forecasters feel they can be most useful.

Blindly following the econometric-oriented services' forecasts is profitable, but only marginally so. It is generally less profitable than a buy-and-hold strategy, reflecting the general weakening of the dollar against most currencies during the period.

The speculative return on capital at risk for the econometric-oriented forecasters averages 1.12% annually before transactions costs. Assuming costs of .05% per transaction, representing the spread between the bid and ask price in the interbank market or the brokerage commission in the currency futures market (IMM), the speculative return on capital at risk averages .92% per annum. In contrast, the speculative return on capital at risk for a buy-and-hold strategy averages 2.86% per annum before transactions costs and 2.46% per annum after transactions costs. The return on capital employed after transactions costs averages 18% for the econometric-oriented services and 49% for a buy-and-hold strategy when positions are established on the currency futures market, assuming an average margin of 5%.

Blindly following any of the econometric-oriented forecasters' indications or a buy-and-hold strategy, however, would have led to intermittent periods with

considerable losses for most currencies. (Periods that would dishearten, if not bankrupt, most speculators.)

All the technically-oriented forecasters do remarkably well, as can be seen from Table 4. The speculative return on capital at risk following their recommendations averages between 7.28% and 10.46% annually before transactions costs, compared with a 2.86% return for a buy-and-hold strategy. The return on capital employed after transactions costs averages a phenomenal 145%, assuming an average margin of 5%. Blindly following their indications, however, would have led, as in the case of the econometric-oriented services, to intermittent periods with considerable losses for most currencies. The average performance of the poorest technically-oriented forecaster is far better than the average performance of the best econometric-oriented forecaster.

Shearson, Hayden, Stone has the best overall performance of the technically-oriented forecasters; but the results are influenced by the general failure of the other services to forecast the French franc. (Excluding the French franc Shearson has the second best overall performance). The service is extremely sensitive to shifts in the exchange market, averaging 22 transactions annually, a turn around in position almost every other week. Including transactions cost, the speculative return on capital at risk averages 9.36%.

International Forecasting and Waldner — the two services that rely exclusively on the historical record of

Table 4

Technically better

TECHNICALLY-ORIENTED SERVICES: SPECULATIVE RETURN ON CAPITAL AT RISK (%)

Currency		International Forecasting	Shearson Hayden, Stone	Waldner	Arithmetic average
Canadian dollar	Buy	0.99	4.61	2.50	2.70
	Sell	4.60	5.19	6.22	5.34
	Total	5.59	9.80	8.72	8.04
Number of transactions p.a.		5	17	11	11
French franc	Buy	(2.42)	n.a.	3.82	0.70
	Sell	(3.66)	n.a.	0.53	(1.57)
	Total	(6.08)	n.a.	4.35	(0.87)
Number of transactions p.a.		5	n.a.	15	10
Deutschemark	Buy	10.49	8.78	7.53	8.93
	Sell	2.46	3.02	1.19	2.22
	Total	12.95	11.80	8.72	11.16
Number of transactions p.a.		5	25	13	14
Yen	Buy	12.42	10.95	11.78	11.72
	Sell	(1.73)	(1.63)	(1.52)	(1.63)
	Total	10.69	9.32	10.26	10.09
Number of transactions p.a.		5	21	12	13
Swiss franc	Buy	9.52	12.99	2.76	8.42
	Sell	2.07	3.11	(10.28)	(1.70)
	Total	11.60	16.10	(7.52)	6.73
Number of transactions p.a.		5	22	14	14
Sterling	Buy	6.70	2.62	9.24	6.19
	Sell	5.55	2.64	9.93	6.04
	Total	12.25	5.26	19.17	12.23
Number of transactions p.a.		4	24	12	13
Arithmetic average	Total	7.83	10.46	7.28	7.90
Number of transactions p.a.		5	22	13	13

Brackets indicate a negative.

Total is the return on all transactions both buy and sell.

Totals for arithmetic average column represent horizontal sum; arithmetic average for arithmetic average column represents vertical sum of totals.

exchange rates and exclude all fundamental factors in predicting the future trend in rates — perform similarly. International Forecasting's results are hurt by a poor performance for the French franc, and may also have been hurt by the assumption that no action is taken until a recommendation is confirmed, which can take up to one additional week. Waldner's results are hurt by a poor performance for the Swiss franc. (A new revised version of the Waldner model yields significantly better results, but there is not yet a sufficiently long track record of forecasts to permit evaluation). Waldner is more sensitive to shifts in the exchange market, averaging 13 transactions annually compared with five for International Forecasting.

The predictive accuracy of most — but not all — of the econometric-oriented foreign exchange rate forecasters is so poor that they are likely to be of little use for corporations trying to manage their exposure.

The technically-oriented forecasters, however, with their consistently very strong predictive performance, support the view that speculative runs do occur in the exchange market; a currency that is rising, particularly at an accelerating rate, is likely to continue to rise and a currency that is falling will continue to fall.

This has clear implications for the corporate treasurer trying to manage his company's exposure. It suggests he may wish to use one or more of the technically-oriented foreign exchange rate forecasters. It also suggests that he should hedge outstanding short positions when a currency is rising, particularly if it is rising at an accelerating rate, and hedge outstanding long positions when a currency is falling, particularly if it is falling at an accelerating rate. Unfortunately, the technically-oriented services generally do not provide point estimates of future spot exchange rates and would be of little use in planning. □

Dr. ALIBER. I have been bothered by the problem of runs in the exchange market in the last few weeks. I would say that, until mid-1978, those of us who have followed the exchange rate movements have not been really able to detect serial correlation in the period-to-period—daily or weekly—exchange rate movements.

On the other hand, I do have the feeling that the data for the most recent period—namely, the summer and early fall—may show some such runs.

I might suggest that there is a historical analogy which goes to the 1920's when there were a few runs in the data.

The CHAIRMAN. My time is up, but if Senator Lugar will permit Dr. Solomon to comment?

Dr. SOLOMON. After what Bob Aliber said, I have very little to say except just this:

I played roulette once and I won, in the sense that I predicted back in early March of this year that the dollar would stabilize, and it did in the spring of 1978. That wasn't based on technical charts; it was based on observation that the German economy had begun to expand in the winter of 1978—1977, I'm sorry, December 1977, and on into the spring of 1978.

Well, that expansion petered out for a while, and the exchange rate also reversed itself. Once again, the German economy has expanded rapidly—relatively rapidly, I should say. It has accelerated. I myself have found a pretty good correlation without using an econometric model, a pretty good correlation between what's happening to the exchange rates of these three major currencies—Japan, Germany, and Switzerland—and the rate of economic activity, and therefore the imports into those countries.

The CHAIRMAN. Fine.

Senator Lugar?

Senator LUGAR. Mr. Chairman, in the questioning and in the testimony, it seems to me that there's unanimity that we should not go into greater control of the currency market. One of the motivations for these hearings may have been a hope that somehow speculation, cabals, or conspiracies were responsible for instability. It seems to me that the panel has testified that there are economic circumstances at home and abroad that offer much better explanations of the workings of the international currency markets than do conspiracy theories.

Attempts to ferret out conspirators, however well motivated, will be unlikely to be productive.

It is important to say that, again and again, because there are many actions taken by the Congress and the President each year that are directly related to the financial instability we're talking about. And I think that, as often as unhappy decisions are made by the Congress, there will be people who will be looking for scapegoats in the markets, or some imperfection there to bring some justice back to what has been injustice in our decisionmaking.

Let me ask this question of the panel: If you do not, as you have said, take a chartist viewpoint but look at economic circumstances, what do you see?

Professor Dunn, in talking about the years roughly from 1950 to the mid-1960's, and from the mid-1960's to the present, highlighted rather

low inflation, in the first period and then a tripling of that rate in the second; highlighted very little deficit financing in the first period, and then deficits that averaged 10 times as much as they were in the earlier period; and highlighted the fact that we are presently suffering great anguish over bringing the deficit down to less than \$30 billion in the fourth year of recovery.

Now, if you were a foreign banker or a client of a foreign banker, and you were looking at that set of circumstances, and furthermore you heard the message that the President gave on October 24, what would you think? If you further heard thoughts that the interest rates may be peaking, and thoughts that in terms of our domestic politics, it may be very difficult or impossible to achieve a \$30 billion deficit budget, what would you think?

In looking at all this, do you believe that there would be confidence on the part of European bankers that the dollar would go up in 1979? If you consider these matters, and if you read the New York Times and the Wall Street Journal, or speeches of politicians would you have confidence in the dollar?

Is it not the case that, quite apart from all the technical movements, most rational people are trying to gage whether or not the anti-inflation policies of the United States will be successful, whether there will be any progress in narrowing the deficit, and whether the political will to act is present?

Do you think that rational people believe we will take the necessary actions to bring our economic situation under control?

Do you not think that these underlying economic problems will force us again and again to undertake short term shoring-up operations such as we did in November?

Dr. DUNN. In response to this question, I am a little more optimistic now than I would have been a few years ago, because I think the quality of the debate over economic policy in this city has vastly improved in the last couple of years. There is a realization that things have not worked at all well. Although we obviously haven't made all the changes in the way the budget is managed that are necessary, the fact that it is being seriously discussed, is encouraging. And so, perhaps, things are going to turn around.

If there were a recession—I hope there is not—in the last half of next year, that would bring down U.S. imports, it would slow inflation, and it would probably cause the dollar to rise somewhat in exchange markets. I would think that would be a poor way to have the dollar go up. Heaven forbid that that's the way we do it.

But I am not as discouraged by the prospects for U.S. economic policy as I was a couple of years ago.

Senator LUGAR. Dr. Solomon, you reacted to that last comment.

Dr. SOLOMON. Let me react first to your question.

If European bankers firmly believe that the size of the U.S. budget deficit is the major determinant of the value of the dollar, if that's what they happen to believe—which, I think, in my own view, would be an absurd theory, but they could well hold it—then the answer to your question is obvious: If they're acting on what I regard as an irrational basis, of course, the dollar will go down when they see a continuing deficit. The fact is that the dollar went up rather considerably from October 30 until recently. And who knows what will happen in

the next few days once the OPEC decision has been absorbed? The dollar went up despite what we know about the budgetary situation.

I happen to disagree rather fundamentally with Bob Dunn's analysis of the impact of the budget deficit. I happen to believe that one should take into account the size of the surplus of State and local governments, which is much, much larger than it was in the past. It has gone down a bit, but it's still somewhere around \$25 billion. I think once you take account of the fact that there is a current account deficit in the balance of payments, which we'd like to see decreased, and as it decreases then it will be appropriate for the budget deficit to decrease. But in analyzing the impact of that budget deficit on the U.S. economy or on aggregate demand, one should take account of those other two factors I just mentioned. And when one does, that budget deficit doesn't look so terribly large to me.

Now, let me just add a word on the effect of a recession. I think Bob Dunn was much too optimistic. Though he doesn't want to see a recession, he said it would bring down the rate of inflation. Question mark. Experience in 1969-70, the last time we had a mild recession, indicates no significant impact of that recession on the rate of inflation, as I analyze it.

Second, the notion that a recession would strengthen the dollar is also questionable. A recession would improve the trade balance, but it's hard for me to believe that interest rates would not fall during the recession, and if they fell here while they were rising in Europe, a recession could possibly weaken the dollar. So, I would not look for that silver lining in a recession.

Dr. ALIBER. Senator, let us imagine we were in this room on January 1, 1978. We would have an estimate of the budget deficit. We would have an estimate of the current account deficit. We would know the U.S. inflation rate or have an estimate of 7 percent for that year. And we know the European inflation rate. So we could have predicted that the dollar should have depreciated 4 or 5 percent a year.

What we need to understand and explain is why the dollar depreciated so much more rapidly than would have been explained in terms of the widely available knowledge about the budget deficit at the beginning of the year. The budget deficit has not increased at a time when the dollar depreciated sharply. The current account deficit did not increase.

I would like to comment on an earlier question about the ring in Germany. In May of 1974, I went into a class and said the day was an unusual day, for two of my friends were in great difficulty one under indictment. Both were foreign-exchange traders of important banks. One was responsible for the loss of \$30 million, and the other was responsible for a loss of \$100 million.

Should we infer that they were not invited into a ring?

Let us remember the losses that banks incurred in 1974 in Germany. These were top-flight bankers. Perhaps they weren't invited into a ring, but are we to believe that they were ignorant of the existence of the ring? Are we to believe that they would have taken positions in the dollar which led to their demise—of their institutions, in one case—if they thought there was a ring? It's incredible.

Senator LUGAR. So, you are saying that these problems occur because people are ignorant or make bad guesses, and not that there is a conspiracy?

Dr. ALIBER. You know, there are an infinite number of conspiracies to explain any economic set of phenomena. [Laughter.]

Senator LUGAR. Thank you.

The CHAIRMAN. Dr. Solomon, you have a remarkable attitude about the recession. None of us want a recession. At least, none of us want a prolonged recession. But did you read the section of Time recently? As you know, Time magazine has a group of eminent economists.

Dr. SOLOMON. Some of my best friends are on it.

The CHAIRMAN. They have a broad sweep. It includes Otto Eckstein. It includes a number of eminent people who are widely respected. And there was an overwhelming consensus that a recession would tend, under most circumstances—not always the same—would tend to reduce the inflation rate. Heaven knows, you refer to 1969–70; I don't know why you ignore 1974–75. There, indeed, was a very sharp reduction in the inflation rate; at least 3 percent was knocked off because of the deep recession at that time. There was a lag there, and it was complicated by the oil price increase.

Dr. SOLOMON. That's why I ignore it, Senator.

The CHAIRMAN. But nevertheless, you did have a situation in which the inflation rate moderated considerably. Heaven knows, it stands to reason when you have growing unemployment, when you have underutilized resources, in spite of the fact that you have very imperfect competitive systems—we have kind of monopolistic competition—nevertheless, there's no question that under those circumstances the supply-and-demand factors do tend to moderate the inflationary pressures.

It's much harder for unions to negotiate higher wages. It is much harder for the 80 percent of people who don't belong to unions to get wage increases under those circumstances. The laborer, the fundamental economic resource, is more available, and, in fact, capacity is more available.

Dr. SOLOMON. If I may, I would say two things: One, I would not claim that in a recession the rate of inflation would not come down by one thin dime or one iota. There might be some slight abatement. I did track through—

The CHAIRMAN. That's just an assertion.

Dr. SOLOMON. I am sorry. I have done some research on this.

The CHAIRMAN. Is it technical or economic? I just made an economic response. Are you relying on the chartists?

Dr. SOLOMON. No, sir, I never do that.

The CHAIRMAN. What is your economic response, then?

Dr. SOLOMON. My economic response is twofold: One, Art Okun has made a series of studies about the trade-off between recession and inflation, and his finding is that for every \$1 decline in nominal GNP, one-fifth of it will be a decline of prices and four-fifths will be a decline in quantity—real GNP. So, he does see some abatement of inflation with recession, but only one-fifth of the drop in GNP. Most of it will be a decline in output and employment. That's one bit of economic evidence which I take from a colleague of mine at Brookings.

The second is: I did examine the 1969–70 recession which seems to be more comparable to what the people on the Time board were expecting. They expect presumably a mild recession rather than a deep one, as in 1974–75. In 1969–70, Senator, the rate of wage advances as measured by average hourly earnings adjusted for shifts in employ-

ment and so on did not come down one iota during that recession. And inflation did not abate in 1969-70.

That was the period, may I remind you, when Arthur Burns was going around this country making speeches recommending an incomes policy to the ire and vexation of the White House because we were not getting abatement of inflation despite unemployment.

So, that 1969-70 recession should not give anybody any hope that a way to cure inflation is to produce a recession.

I hope that's an economic answer.

The CHAIRMAN. Well, it's an economic answer if you take one period, of 1969-70. There are many others. I think the most conspicuous and overwhelming situation, of course, was the disastrous depression we had in the 1930's, when we had a period of deflation that was very, very severe, sharp, and overwhelming. And I don't think anybody who has studied or lived through the period of the 1930's, as you and I did, wouldn't recognize that the depression was a big factor in forcing the very serious deflation that was in effect during that time.

Dr. SOLOMON. I concede the point, Senator. On the depression of the 1930's, you're absolutely right. But if I may say so, I am not sure it has much relevance to today, as you know.

The CHAIRMAN. At any rate, Professor Dunn's arguments appeal to me greatly because I have been trying to make the same argument consistently, and that is that the health of the dollar—and I think Senator Lugar seems to imply the same position—maybe you can disabuse us; maybe we're all wrong on this. But the health of the dollar does depend on fiscal policy, to a certain extent. It does depend on moving more toward a balanced budget than we have. It does depend on doing something about a situation where in the fourth or fifth year of recovery in 1980 we will have a budget deficit of \$30 billion. And that has had psychological consequences, and it seems to me it has a very real effect on the level of prices. And certainly, it has an immediate and direct effect on the level of interest rates. If the Federal Government is \$30 billion more in the market in borrowing funds, it tends to bid up the price of money or interest.

Dr. SOLOMON. I just point out to you that, on the one hand, you tell me that eminent economists are predicting a recession sometime in the near future. Presumably, that means a reduction in aggregate demand is foreseen. But at the same time you want to see the Federal Government reduce aggregate demand even more by reducing the budget deficit. That might make the recession even more likely.

I am not a defender of budget deficits in all circumstances, Mr. Chairman. I am just trying to be a little bit—

The CHAIRMAN. I am not sure it follows so clearly as night follows day that reduction in budget deficits results in a reduction in aggregate demand. There are all kinds of ways in which that can be translated into a different effect.

For example, if the reduction in the budget deficit results in a reduction in the rate of interest, then housing is likely to recover. Every housing start is 2 man-years of work. You have a recovery of one-half million housing starts; that's 1 million jobs.

Dr. SOLOMON. I agree.

The CHAIRMAN. Is it related directly to the level of interest rates?

Dr. SOLOMON. I am sorry, again I have to disagree with my colleague, Bob Dunn. I do not think that monetary policy is determined by fiscal policy. I think that it, in fact, can act quite independently of fiscal policy. And a reduction in interest rates, if that becomes appropriate, does not depend on reduction in the budget deficit or vice versa.

The CHAIRMAN. Let us get back to the general. I am sorry to get off on that tangent, but I feel strongly about it.

Let me ask Mr. Aliber. If the private markets behave rationally, as you say, what purpose does the central bank intervention serve?

Dr. ALIBER. We lived through an unusual period in the last decade, with breakdown of the Bretton Woods system. Prior to the devaluation of sterling in November 1967, Her Majesty's Government was obliged to say that the sterling exchange rate would not change. We have all had the same problem with the French franc following the student riots. We had the same problem in the early 1970's, until the Camp David weekend.

Central bankers were continually obliged to say that their parities would not be changed; and weeks or days later parities were changed.

The point is that central bankers lost credibility.

Now, I believe there is more stability in the system than may be apparent from the exchange rate movements. And I think that if the markets have little confidence in central banks' statements, that central banks, through their exchange market intervention, can limit exaggerated movements in the exchange rates and the proposal I made from time to time is that we define a very wide band around "Purchasing Power Parity rates," and let the central bankers try to limit the deviations from those parity rates.

The CHAIRMAN. How do you feel, apart from this kind of aggressive intervention, providing a great deal more information? For example, do all the players in the foreign-exchange "football games" have adequate information on exchange contracts, volume rates, et cetera. And why shouldn't foreign-exchange transactions be reported like stock market transactions? Are you sure that all the exchange market players have complete and accurate information on exchange contracts, including rates, volumes, and so forth?

Dr. ALIBER. Well, I am not.

The CHAIRMAN. You know they don't. Isn't that right?

Dr. ALIBER. I know they don't. Yes.

I certainly would want more data. But let me point out one difficulty with the first part of my statement: Only a small part of the foreign exchange transactions involving the dollar occur within the United States. If you collect data on transactions from U.S. sources only, we then have the problem of trying to determine about the size of the sample and how the sample relates to the total volume of transaction.

That problem has worried me considerably, and I have no way of, sort of, getting a handle on whether that would be a stable relationship.

The CHAIRMAN. Let me ask Mr. Russell, counsel to our International Finance Subcommittee. He has a question to ask.

Mr. RUSSELL. Gentlemen, I'd like to ask you whether the difference in time of day and volume between the European foreign exchange

market and the New York market creates a problem at midday in New York, when positions from the European market are carried over to New York? Does that contribute to a disorderly condition?

Dr. ALIBER. If I were to ask the number of days in which we had a disorderly condition in the exchange market in the last decade, my guess is the number is less than 20.

We often fail to understand that the free market price changes in the order of one-tenth of 1 percent, two-tenths of 1 percent, three-tenths of 1 percent, are a normal part of a business system. Hence, I think that the changeover problem—and I must admit, I state this to you out of some received truths, a priori views on the problem. I haven't studied it. But the digestion problem with European closings and New York openings strikes me as being on the order of small rather than anything important.

The CHAIRMAN. Thank you very much. This has been an outstanding panel. My questions have meant to be helpful, and I hope that you don't think that I mean to show anything but the greatest respect personally and professionally for you all.

Dr. SOLOMON. The feeling is mutual, sir.

The CHAIRMAN. Thank you.

The next panel to come forward, if you will: Prof. Jonathan Aronson of the University of Southern California, School of International Relations in Los Angeles; and Prof. Aryeh Blumberg, Montclair State College, School of Professional Arts and Sciences, Montclair, N.J.

The CHAIRMAN. Professor Aronson?

STATEMENT OF PROF. JONATHAN ARONSON, UNIVERSITY OF SOUTHERN CALIFORNIA, SCHOOL OF INTERNATIONAL RELATIONS

Dr. ARONSON. I'm pleased to be here today. I probably should explain that I'm not an economist, but a political scientist.

I want to talk about what has happened within the monetary system. I don't believe that markets have ever been self-equilibrating for very long. Through history, international monetary systems, have risen and fallen with great regularity, and see what we are in now as a transition period between systems.

The key question, I think, is: Can we make the transition from the system that prevailed for the 30 years after Bretton Woods to a new system, without crisis or collapse? The normal perspective has been to have a system, it collapses, chaos and economic dislocation follows, and slowly another system grew up in its place. That's much too costly today. We're looking for a transition to a different economic regime which can be accomplished without collapse and depression.

This system clearly would need to be managed on a more international level, we're looking at a system that can cope with the problem of living with scarcity and limits. The United States has now slowed its growth as much as some other nations since the OPEC shock. Some type of belt-tightening inevitably is going to be necessary. Since there are so many dollars outstanding, the balance of payments deficit remains large, and there is very little confidence among traders and among other nations in the leadership of the United States and its willingness to maintain the monetary system.

The monetary traders are likely to continue to buffet the dollar. The dollar is likely to face continuing difficulties in the market.

Let me make three quick points:

One, we have seen a change in the nature of foreign exchange crises in the last decade. Before 1971, the crises involved mostly the movement of reserves. The governments tended to have more than the banks, at least until 1967. The will of the governments usually prevailed, even when the markets believed that the exchange rates were being propped for political reasons. In 1973-74, the governments withdrew from the market. There was a certain amount of volatility. I am told fairly universally that there was a certain amount of exchange rate manipulation by European banks. Those people who indicated this are very careful to indicate it was not the American banks, it was not the British banks.

Today amidst continued doubt in American leadership and in the stability of the system, we are faced with crises which affect both the reserve levels of the countries and the volatility of currencies.

A second point: The roles of banks and multinational enterprises in the markets has changed. There is a tendency on the part of the traders to take a much shorter view of what is happening. Before 1971 the traders tended to look at medium-term economic outlooks. Today they react to the Reuters teletype. To do otherwise would be foolish. Indeed, the problem may be that there's not quite enough speculation by some of the largest banks, rather than there is too little.

When there was confidence in what the Federal Reserve would do, the large banks were willing to take open positions, to hold them for a slight period of time, and then to work them off. They're much less willing to do so today. Testimony given earlier indicates that in many cases you're not seeing large-scale speculation by the large actors, that perhaps in looking at data, concentration on smaller actors.

There have been indications that certain banks still are getting inside information—15 minutes before President Carter's statement on November 1, the Japanese banks, I am told, entered the markets en masse, buying dollars as rapidly as possible. The U.S. banks, claim that they think somebody was tipped within the Japanese banks.

A third point: There's been structural change in the system as a whole. You're looking at both a change in the nature of competition and also in the nature of what the business of certain banks and corporations is. There has been in my profession a bias in the study of multinational enterprises. Scholars have looked primarily at the interaction between these large corporations and either home or host countries. I would suggest that with service industries it may be more important to look at what is the interaction of these corporations with the system itself, what are the limits, what are the limits of its power; that certain other types of institutions beyond banks, perhaps, should be looked at.

For instance, there has been no study, that I know of, of the international impact of the insurance industry. I challenge you to find anyone within the U.S. Government who has given any consideration to what the impact of the flow of millions of dollars of insurance premiums and investments by the insurance industry across national borders, which amounts to the billions, has done. I frankly do not know whether this

is destabilizing or not. I simply cannot find any information as yet. I think that information would be very useful.

At the same time and to conclude briefly, there is a need for regulation, but that need is largely on the international level. I do not believe that at this point the United States has the ability, acting alone, to regulate markets, that the markets are fundamentally reacting to problems both with the confidence and the performance of the U.S. economy. A more likely alternative of trying for the United States to put off exchange regulations, exchange rates and strengths, would be to create distortions in the global economy which would be even harder to control.

Indeed, there are some who claim that the Eurodollar market, or at least the great bulk of its expansion was the result of the U.S. exchange restraints in the 1960's, which forced banks to move abroad, to create a market which grew rapidly out of the control of the central banks of the United States.

What seems to be more immediately necessary is to restore some confidence of the markets in the U.S. economy, to pay more attention to that U.S. economy, and to work well in transition to some kind of international management from the basis of a strong U.S. economy.

Thank you.

The CHAIRMAN. Thank you very much, Professor Aronson.

[The complete statement of Professor Aronson follows:]

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DECEMBER 20, 1978

PRIVATE SECTOR IMPACT ON THE DOLLAR'S EXCHANGE VALUE

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Testimony for the United States Senate Committee
on Banking, Housing, and Urban Affairs
December 20, 1978

ABSTRACT

This testimony makes three main points. (1) The characteristics of foreign exchange crises have changed rapidly in the past decade. Crises under fixed exchange rates tended to be rooted in underlying economic problems within national economies. The volatility of exchange rates has shortened the outlook of traders and sometimes disconnected the value of currencies from the economic prospects of nations. (2) Private banks and corporations' influence over exchange values has also changed dramatically in the past ten years. Equilibrating speculation by large banks has diminished and has been replaced, from time to time, by destabilizing speculation of European banks. Corporations have been forced by volatility and by U.S. government reporting requirements to hedge much more of their activity in the foreign exchange markets. The volume of their hedging, combined with the markets lack of confidence in American leadership, has probably contributed to exchange market volatility. (3) The structure of international competition within the money markets has been altered by the first two changes. Political, psychological, and structural factors have led to destabilizing "over-competition" among banks and later between banks and corporations in the exchange markets. Further competitive changes are underway.

Financial markets are not self-equilibrating and are never likely to be. But it is a mistake for the U.S. government to try to regulate bank speculation or Eurocurrency operations by themselves. Policy must try to deal with the impact of private banks and corporations on the entire international monetary system and not just on a single nation's economy and currency. Indeed, much of the current difficulty was caused by poorly conceived U.S. policy which launched banks and corporations into the foreign exchange markets in force. For now the U.S. should concentrate on putting its own economy in order. That will help restore confidence in the dollar and stability in exchange rates more than any specific regulations aimed at speculators.

I wish to make three points this morning. First, the characteristics of foreign exchange crises have changed rapidly in the past decade. Second, private actors' influence over exchange values of currencies also has changed markedly in the past ten years. Third, the structure of international competition within the international money markets has been altered by the first two changes, making it far more difficult, but also far more important that governments exercise appropriate sway over the international monetary system. In discussing these three points, I hope to build a framework to explain my answers to the written questions submitted to me by this Committee.

I. Foreign Exchange Crises Have Changed

A. Foreign Exchange Crises Under Fixed Rates

Under the Bretton Woods System of fixed exchange rates, foreign exchange crises were spectacles of confrontation between central banks and the market. Central bankers jealously defended their announced currency perimeters against any and all incursions. Bankers and their corporate customers put pressure on exchange rates and the central banks according to their view of the proper underlying economic values of each currency. Leads and lags of payments and not open currency positions tended to provide the pressure on currencies.

Crisis outcomes were a function of the relative will power and of funds available to the adversaries. Until 1965 the central banks were stronger on both counts. Governments refused to adjust their exchange values because they feared reprisals at the polls. They preferred to introduce various internal and external adjustment controls to fortify their economies. Their will was strong and their word was, by and large, believed. The United States, the key to the system, repeatedly pledged to maintain the dollar's convertibility into gold at \$35 per ounce, the value it had held since 1934. Such steadfastness provided confidence and stability to the system. Market actors usually felt that hedging their foreign positions was unnecessary because the dollar's exchange values vis-a-vis other major currencies would be defended. Foreign exchange volume was therefore much lighter than it is today.

Governments also had a head start in terms of funds. Their reserve holdings, the ammunition with which they waged their support of exchange values, was more plentiful than funds readily available to private market actors. After 1960 the central banks maximized their interventionary funds by developing a complex network of swap agreements which provided authorities with access to various currencies during crises. In addition, central banks, led by the Bank of England developed innovative intervention techniques to protect their currencies. Through the mid-1960's the central banks usually won their battles.

But times changed. Market participants grew more and more convinced that certain currencies were out of line. They felt that exchange rates were being defended for political rather than economic reasons and began seeing themselves as "the conscience of the system". Moreover, the Euro-dollar market, inflated by U. S. exchange restraints began providing huge new sources of liquid funds to the market participants in the 1960's. In 1964 the central banks assembled a \$3 billion swap package to salvage sterling when newly elected Prime Minister Wilson, unwilling to devalue. It was becoming obvious that the balance of economic power was beginning to shift. A mere \$3 billion could never have stayed off sterling's devaluation in November 1977.

Sterling served as the shield to the dollar. Since it was weaker than the dollar, market participants knew it would be devalued first. Once that was accomplished, the dollar became vulnerable. After a preliminary test of U. S. will in May 1971, exchange market participants knew that the dollar's devaluation was near and inevitable.

Nonetheless, very few private actors understood the implications of the dollar's devaluation before the fact. They wanted an adjustment in exchange value, not the destruction of the fixed rate Bretton Woods system. After all, that system had served them well and allowed for the return of prosperity in the post war world and the tremendous expansion of international trade and investment.

B. Foreign Exchange Crises: 1972-1973

Fixed rates with wider margins were restored after the Smithsonian accords. The most important change was perceptual. Once the U. S. allowed the dollar to be devalued, confidence in America's willingness as well as its ability to prevent a recurrence vanished from the markets. Backwash crises developed, where capital markets transmitted, massive short-term flows from currency to currency without regard to economic expectations. Before August 1971 traders had used the dollar as a safe rest area to wait for crises in other currencies. Afterwards, traders no longer trusted the dollar or U. S. authorities and treated the dollar like any other currency. Indeed, banks found that flexibility could be profitable and the velocity of trading within the exchange markets accelerated.

Backwash crises did not always need deep underlying economic roots; spurious rumors could set them off. The 1972 sterling float was instigated at a time when Britain had managed to repay its outstanding IMF debt for the first time since 1964 and was running a small balance of payments surplus. U. S. Treasury Under Secretary Volcker, for instance, praise the strength of sterling, concluding the day before the sterling float that "surplus countries are in no position to devalue their currencies".

The second dollar devaluation was also an entirely different beast than its predecessor. Almost everyone within the government agreed with the view that the first dollar devaluation had been insufficient, another one would surely restore our competitive balance. Few remember that in mid-January, 1973, only three weeks before the devaluation the dollar

was stronger than at any time since the Smithsonian accords. Italian and Swiss moves sucked the dollar into a whirl pool. The movements of currency that this set off forced the U. S. to act on February 12, 1973. Modified fixed rates were again restored in the wake of the devaluation.

Three weeks later, the markets spoke. Although every observer on both the government and the private side that I have talked with agreed that the second dollar devaluation was economically sufficient, rumors that the European nations were considering a joint float of their currencies fueled another speculative run on the dollar on March 1, 1973. The Bundesbanks was smothered by an additional \$3 billion in currency, before closing its doors. All European markets closed. They reopened on March 19th to a floating exchange rate system.

C. Floating Exchange Rate Crises

In effect governments and central banks admitted that they could no longer control the markets. In 1972 and early 1973 neither banks nor central banks steered the markets. After March 1973, the governments decided to let the banks and other private actors in the exchange markets run the game. The result was a different kind of crisis. Instead of massive movements of reserves, floating crisis situations were characterized by huge swings in exchange rates. Volatility emerged, forcing central banks to resume limited intervention to smooth the rates.

Most market sources indicate that some European banks working alone or through brokers speculated quite heavily for their own books during 1973 and 1974. Apparently, American, Canadian, British, and Japanese banks and corporations were more conservative. Large banks which normally served as equilibrating speculators may have allowed smaller, European banks to push exchange rates around without much regard for underlying economic forces. Without massive central bank intervention, the markets ran away with themselves. "Small" speculators were out for their own profits. If they thought about it at all, each believed that their own speculation would not upset the functioning of the markets. Together they distorted the markets.

The most blatant speculation was cut back as a result of losses suffered by Franklin National, Herstatt, and others in 1974. Nonetheless, problems for the dollar continued.

D. Foreign Exchange Crises Since 1974

Most market sources constantly intone that without floating rates the monetary system would have collapsed under the flood of petrodollars after 1973. Personally, I doubt that the markets could have equilibrated as well as they have without continual intervention by central bankers "leaning into the wind". In fact, under this supposedly flexible exchange rate system, there has been as much intervention by central banks to defend parities as there ever was before August 1971. Their control is more tenuous and their strategies more secretive today, but their market patrolling has discouraged the most rampant market speculation.

Problems for the dollar would continue even if there was no speculators. There are simply too many dollar floating around. Their supply is growing rapidly, beyond the control of the Federal Reserve. Simple portfolio diversification by a central bank (such as Singapore's) away from dollar's into firmer currencies place a continuous downward pressure on the dollar in the markets. Perversely, we may be fortunate that Saudi Arabia holds so many dollar reserves that it could not possibly diversify its dollar holdings without seriously injuring itself. The issuance of Treasury Bills denominated in foreign currencies announced by the President on November 1 is an important step towards soothing the foreign holders of dollars, but they still lack confidence in the dollar and U. S. As long as this is true, the dollar is vulnerable.

Today we are faced with a worsening structural position. Private institutions, groups, and individuals out for their own protection and profit are not happy holding dollars. They do not believe central bank and governments assurances that everthing will eventually work out. And they hold sufficient funds to undercut the dollar at any time. Crises today combine the attacks on government reserves characteristic of the pre-1971 period with the tremendous volatility of the 1973-1974 period. Market confidence is low and panic is not unthinkable. Indeed, Gustave LeBon's classic study of mass psychology, The Crowd, first published in 1895 may be the best single guide to the dangers of today's exchange markets. Most observers agree that we need to substantially reform the international monetary system, but nobody has really indicated how to make the transition without severe crisis or collapse as the stimulus. Indeed, one banker recently commented to me that another Herstatt was precisely what was needed to inject sanity back into the system.

It is therefore important to realistically assess the scope but also the limits of power of private actors in the foreign exchange markets. The nature of private power is also changing.

II. Private Influence During Exchange Crises

A. Bank Influence During Exchange Crises

Until August 1971 foreign exchange was a service center, not a profit center for most banks. As long as exchange rates were fixed within narrow boundaries, windfall profits could only be generated during exchange crises which culminated in currency adjustments. Although traders could have made greater profits by forcing crises, there is no evidence that this ever occurred. It was senseless to disrupt an international monetary regime which had benefitted them for a quarter of a century to earn a few quick profits.

Under the fixed rate system large market-making banks took open positions to meet their clients hedging needs and thus stabilized the markets. These positions were closed as soon as circumstances permitted. Most of the time, banks equilibrating, speculative activities allowed central banks to stay on the sidelines.

Before 1972 banks influenced the timing of crises, but apparently did not cause crises. When a country's economy looked weak and its currency vulnerable, banks advised their corporate customers. These customers would accentuate their leading and lagging of transactions and start hedging previously unhedged international payments. Taken together, these contracts put major pressure on weak currencies in the forward markets. The banks, acting as equilibrating speculators, assumed these long positions in threatened currencies. They immediately offset their open positions in the spot markets, forcing the central banks to supply funds. American and British banks were often unfairly labeled as speculators because of their activity in the spot markets.

Between August and December of 1971 banks learned that volatility and floating exchange rates could be profitable. They quickly swerved from their allegiance to fixed rates and proclaimed the virtues of free markets. As the volume of foreign exchange activity in the markets increased, so did bank profits. Volatility allowed for wider bid-ask differentials which allowed traders to make money without taking large open positions overnight. Many new banks moving into London in the early 1970's planned to cover their initial expenses through foreign exchange profits until their Eurocurrency business was established. The demand for traders was so much greater than the supply, that young and inexperienced individuals quickly gained huge authority in the euphoria of foreign exchange profits. Certainly there was some sloppiness, but for the most part American, British, and Canadian banks do not appear to have maintained open positions in the foreign exchange markets overnight for speculative purposes.

There were exceptions. At least from mid-1972 some German, Swiss, French, and Italian banks were actively taking open positions, alone or in co-operation with other banks to manipulate exchange rates during the trading day. This speculation and the general volatility of exchange rates led to disparities between the economic prospects of currencies and their exchange rate values. Often, many traders believed the dollar was undervalued but were unwilling to act on that belief because they did not think that the adjustment process was working well in the short and medium term. Large banks therefore refused to act as equilibrating speculators, allowing speculative actions to push exchange rates around without much regard for the underlying economic situation. At times volatility may have been caused by too little rather than too much speculation. Traders became uncertain of the markets' medium-term economic prospects, traders now act mainly on the basis of news flowing over the Reuters teletype.

American banks which speculated usually did so to try to make up losses in other parts of their business. This was not unrealistic, since many banks had made money in the markets. It added even greater instability, however, since volatility is necessary to make big profits. Eventually, the euphoric mania ended and the crash came. Losses by Franklin National, Herstatt, Lloyds' Lugano branch, and others restored some religion to the markets and vanquished a good deal of the most overt manipulations of exchange rates. American and British banks in particular redoubled their internal controls over speculative activity. European speculators only paused for breath.

Apparently, in the past two years a fair amount of bank speculation has crept back into the markets. Again, this seems confined mainly to European banks, often smaller institutions rather than large ones. American banks have not apparently played much in this round of speculation. Indeed, American banks' reported foreign exchange earnings have generally followed a downward trend since their 1974 peaks.

The dollar's volatility on October, however, was caused by more than bank speculation. America's balance of payments problem disturbs the banks, particularly in light of Japanese and German surpluses. The abundance of dollars floating around the system and America's recurrent inflation exacerbate doubts. Market participants simply are not convinced that America has the will to curtail its growth in an era of limits. Without a restoration of confidence in America's vision, leadership, and determination to control its economy and maintain the monetary system, it is rational and prudent to short the dollar. As long as this is seen as prudent by market participants, massive private pressure will continue to overwhelm official reserves. The dollar will drop. The dynamics of the market makes this in uneven lurches rather than one smooth trajectory. The short term, prudent profit pursuits of banks could lead to the fall of the dollar and the monetary system.

B. Multinational Enterprises During Exchange Crises

Corporations probably had more to do with the first dollar devaluation than banks. Banks probably had more impact on the second devaluation than corporations. Corporations moving massive amounts of funds across borders face tremendous foreign exchange exposures. Before 1971 they often would leave many positions uncovered because they trusted the stability of exchange rates. Crises had longish lead times. When a crisis seemed imminent, they would rush to hedge their foreign holdings, creating massive pressure on exchange rates.

The situation is vastly different today. Corporations have been severely burned by flexible exchange rates. Exchange gains or losses can cause yo-yo profit results which upset security analysts and stockholders.

Corporations now must report their foreign exchange earnings or losses on a quarterly basis. This reporting requirement (FASBE) means that corporations often miss their profit projections because of developments outside of their basic business. Indeed, each quarter numerous major U. S. corporations report major foreign exchange losses or profits. Planning has become far more difficult. To minimize this instability, corporate treasurers are hedging whenever and wherever possible. In addition to hedging their international transactions, they have increasingly hedged their overseas fixed investment as well. This has led to tremendous new activity in markets sensitive to rumors and short-term currency developments. In protecting their own position, these corporations may actually turn spurious rumors into self-fulfilling prophecies.

As with European banks, some European corporations apparently are more willing to hold open positions than their American counterpart. It is also reasonable for them to do so since their basic business is often denominated in stronger currencies.

Banks remain steadfast supporters of flexible exchange rates. Many corporations are beginning to wonder whether some greater form of stability and confidence cannot be generated. They would, for the most part, accept any solution which restored stability to the markets and allowed them to get back to their business. They want greater predictability in the functioning of markets. Some even favor a two-tier exchange rate system which would isolate them from the more speculative factors in the markets. Indeed, if the United States can demonstrate for several months a clearly improving economic situation, a plan for reform of the monetary system, and a strategy to achieve that reform, many large corporations would sigh with relief at the return of American leadership.

C. Individuals' Influence During Exchange Crises

Much less is known about individuals' speculation in exchange markets. American banks solemnly proclaim that they will not knowingly accept funds for speculation from individuals (or corporations). Other institutions have no such qualms. Evidently large numbers of Americans started moving their dollar holdings into stronger currencies when the dollar began to sag. Some were trying to safeguard the value of their holdings. Others were out to make a speculative killing. Such diversification was a prudent strategy. Interest rate considerations were of secondary importance. Having assets denominated in strong currencies was more important to these "speculators". Similarly, I assume that organized crime is not quite so patriotic that they have failed to diversify their holdings as well. Taken together, such asset diversification placed and continues to place downward pressure on the dollar.

On a more positive note, the new strong currency denominated Treasury bills should prove very popular. They pay a competitive rate. They allow rich foreigners to place their funds in the politically stable American scene. And they allow the foreigners to bypass the bother of holding dollars. The inflow of funds should help, in a moderate way, the American payments situation and thus eventually help the dollar's strength as well.

III. International Money Market Competition Has Changed

A. Biases of Studies on the Political Impact of Multinationals

Most political science and policy studies on multinational enterprises have focused on the interactions between manufacturing and extractive corporations and home and host country governments. It is logically descended from Raymond Vernon's path breaking studies on 187 U.S. based extractive and manufacturing concerns listed among the Fortune 500. Comparative work on Japanese, European, and developing country based enterprises has begun to appear which reinforces the focus on corporate-government relations.

Political science and policy studies on service industries have been sparse. The best work has been conducted by the Congress on the banking industry. Again, the focus has been on the interactions between banks and governments. The political importance of insurance, construction, and advertising enterprises has been almost totally ignored. Insurance in particular has been a forgotten wasteland which could blow-up in policy-makers faces very soon. I challenge you to find a single individual in the United States government who has begun to consider the political and policy implications of the flows of billion of dollars of insurance premiums and investments across national boundaries.

But service industries such as banks and insurance enterprises require a different framework of analysis than extractive and manufacturing industries. Service industries are the catalysts of the system which maintain the linkages between nations and between multinational corporations thus holding the international economic system together. If banks and insurance enterprises ceased functioning, the trade and monetary systems would stop cold. This is so obvious that it is almost never considered. When examining the functioning of the monetary system, it is necessary to analyze the interaction of service industries with the system as well as with the governments participating in the system. Banks and insurance enterprises are the links which hold the system together and allows it to function. As their roles change, so does the system and its stability.

B. "Over-Competition" and the International Money Markets

Economists become extremely agitated when non-economists speak of over-competition. Still, although not using the term explicitly, Hyman P. Minsky's work on financial fragility and Charles P. Kindleberger's recent review of Manias, Panics, and Crashes strongly suggests that such a state is not only possible, but fairly common. In short, financial markets are not self-equilibrating and are never likely to be. Political, psychological, and structural factors, normally omitted from economic models, almost guarantee that instability will creep in after a time. Government authorities have not only a right but also a responsibility to smooth instabilities and provide transition and confidence through rough spots. (They should not confuse this with intervening in markets so heavily that they prevent adjustments and manufacture instability themselves.)

Actually, the United States government was probably more responsible for structural changes in foreign exchange markets and the changing role of private actors in those markets than any other institution. America's attempt to reverse its balance of payments position through the imposition of the Interest Equalization Tax, the Voluntary Foreign Credit Restraint Program, and the Foreign Direct Investment Program may or may not have delayed the first dollar devaluation. It certainly accelerated the growth of the Eurocurrency market and forced many smaller American banks to move abroad more rapidly, more vigorously, and in greater numbers than otherwise would have been prudent. Smaller foreign banks as well as some previously insular large foreign banks were also prompted to move into a more international stance as a result.

Each bank entering the international market needed to establish an immediate profit base. Since most of the best traditional borrowers were already locked up by domestic or large foreign banks, newcomers had to hustle business or admit defeat and return home. Admission of defeat was, of course, unthinkable. (Remember the maxim of the early 1970s that everyone wanted to be the second bank to call it quits and go home.) Newcomers therefore tried to steal business from the established institutions. In foreign exchange they apparently offered somewhat narrower bid-ask differentials and played with open positions during the course of a day's business. In the Eurodollar markets, newcomers offered slightly lower fees, longer terms, and narrower margins to win new business. The large banks' oligopoly was broken and competition increased. But there really was not any chance that many of the newcomers would fail. They were, after all, branches and subsidiaries of substantial institutions. Instead, the terms of loans lengthened, their size increased, and their margins narrowed. In addition, large banks interested in maintaining their profit margin began to turn to new, less desirable borrowers for the first time. Liquidity choked banks started financing supertankers, North Sea oil developments, socialist countries, and wealthier (Zaire?) developing countries. Safety margins were squeezed in both the Eurocurrency markets and the foreign exchange markets. By mid-1974 tension in both markets was obvious.

The crunch happened to some in the foreign exchange markets with the collapse of Herstatt. It could just as easily have taken place in the Euromarkets. In any event, the linkage was immediately obvious. Large banks reestablished their authority, shook out the markets by moving to a tiered interbank lending rate for a time, and returned to somewhat more conservative approaches. The head of Morgan Guaranty's London exchange operations commented two weeks after Herstatt that "the day of the large speculator is over, which is no bad thing." He was a little over-optimistic. Many banks were still fighting for a large, but finite amount of good business. The fighting was bound to continue as long as dollars continued to flow into the Eurobanks coffers. By 1978 the intense competition for Eurocurrency customers had again driven the margins to paper thin levels and extreme volatility reemerged in the foreign exchange markets. A new factor, however, had been added.

Before 1971 the international financial divisions of most extractive and manufacturing multinationals were quite small. They did not need many people while fixed rates prevailed. Their corporate business was focused on whatever they made or mined and they left most major financial dealings to their commercial or investment banks. Once exchange rate volatility struck, all this changed. They needed more good financial people quickly. Since corporations pay better than commercial banks, they simply stole the best the banks had to offer and went into the foreign exchange markets themselves. The oil companies, the IBMs, and ITTs now have full, modern trading rooms to handle their exchange needs. European and Japanese corporations are following the same pattern. Although these corporate traders hedge far more than they speculate, they are more concerned with fine-tuning their actions and not giving unnecessary profits to the banks. Competition has increased and instability may also have increased as a result.

C. The Growing Service Orientation of Multinational Enterprises

Potentially destabilizing competition is not limited to the international markets. Manufacturing and extractive industries are evolving towards more service dominated functions. They are already beginning to squeeze traditional service industries in many areas and could also make it far more difficult for individual governments to effectively regulate them. Over the next decade it is probable that the impact of corporations of all kinds on the functioning and maintenance of the monetary, trade, welfare, and general economic system will increase rapidly. Growing global interdependence of service industries will make it mandatory for governments to cooperate in dealing with them. Otherwise, the economic system will, of necessity, be managed by the unstable forces of competition. Several developments are indicative:

(1) The new abundance of financial executives in many multinationals has persuaded them to use their finance departments to generate profits and thus alter the composition of their profit mix. Continental Grain and W. R. Grace, for instance, advise other corporations on probable exchange rate developments and possible hedging strategies. Similarly, financial executives in the largest corporations have chosen to bypass the banks when they need to borrow or place funds. They have given the commercial paper market new life, provided themselves with funds more cheaply, and given the banks a smaller profit (and a greater need to find new clients) at the same time.

(2) Most corporations have by now established their own Bermuda captive insurance company to handle their self-insured risks. Why should these corporations pay more than they have to for insurance. Indeed, some of these captives have now become huge, profit generating subsidiaries writing business for many clients beyond their parent. The captives are unlikely to vanish when the new New York insurance market comes into operation.

(3) Even more dramatically, some retail and manufacturing corporations have become huge lenders. The credit card explosion allows new institutions to grant credit and may alter the savings patterns of the population. Sears Roebuck extends more credit than many huge banks each month. General Motors provides credit to its dealers so they can help buyer finance car purchases without ever visiting a bank or savings and loan.

(4) Abroad, similar moves towards greater service orientation is evident. Fears of political risks and instability abroad and union difficulties at home have persuaded many multinationals to borrow their capital in the markets in which they invest. Joint ventures, management contracts, and marketing arrangements are proliferating as never before. The ultimate example may be ARAMCO, a firm which no longer owns any oil. Nonetheless, they continue to make profits through the services and marketing they provide to the Saudis and to other corporations wishing to deal with Saudi Arabia.

Such changes suggest that managing the international economic system will be more important and more difficult in the future. Given the lack of success in the past few years, that's not terrible encouraging. However, the situation is getting even more complex in the traditional service industries. This needs to be briefly touched on before some final conclusions and recommendations are put forward.

D. The Merging of Service Industries

Pressed by the competition of previously non-financial corporations, banks and insurance companies in particular have been forced to seek new ways to make profits. Banks now compete more directly with Savings and Loans and with insurance companies. Insurance companies are beginning to act like banks. International loopholes have allowed some banks to bypass large parts of the Glass-Steagall Act and compete abroad with investment banks. These confusing developments can only make the regulators' task more difficult. Some of the more dramatic movements include:

(1) NOW Accounts and their facsimiles now allow banks to pay interest on checking accounts and are thus squeezing Savings and Loans. Similarly loan generation offices of major banks are competing with local banks in their home markets in the U.S. as well as trying to steal their credit card business.

(2) Insurance companies are becoming more willing to make short-term loans and compete with banks directly.

(3) Both banks and insurance enterprises are becoming more global in perspective. U.S. Banks are faced with a massive influx of foreign competitors which are opening new branches and acquiring established banks. In insurance everybody owns a piece of everybody else. This is actually increasing. U.S., British, European, and to a lesser extent Japanese insurance brokers, direct insurers, and reinsurers are all tied together in a single intertwined network.

(4) Banks are even looking more like insurance agencies internationally. Earlier this year a syndicate of banks lending to Mobil in Indonesia picked up the political risk, in essence insuring Mobil against expropriation without just compensation. A similar deal is being negotiated by Esso in Malaysia.

Granted, these trends are not yet clear. Nonetheless, it is sensible to begin recognizing that global policy is necessary to handle the problems of the dollar. Regulation (or over-regulation?) of corporations by government authorities without due consideration of the impact of their regulations on the international system, are likely to be counter-productive.

IV. Conclusions and Recommendations

Looking back through history, exchange rate systems have seldom survived more than a few decades. Internal contradictions of power and prosperity brought on crises and eventual collapse. Other leaders with other currencies rose eventually to replace the previous system. By these standards the Bretton Woods system was a tremendous success. We should not mourn its passing so much as praise its accomplishments. However, we face one additional cost today when a monetary system falls to dust. Collapse and the chaos which follows is simply too expensive and widespread in today's complex, interdependent world. The sufferings and dislocations of the rebuilding period are too painful. It is therefore necessary to develop sensitive public and private policy-makers with the capacity to manage the transition from one faulty system to another without the stop-over in collapse. Bureaucratic inertia works against such pleasant, necessary solutions, but the attempt is well worth the taking anyway.

To make large scale, relatively smooth transitions from one international regime to another will require international cooperation on a level that is today rarely if ever seen. We need to work towards that goal; but cannot rush in so rapidly as we would like. Indeed, the current mood of neo-isolationism suggests that cooperation may become more difficult before it becomes possible to see breakthroughs.

In the meantime, it seems unwise to me for individual countries to further distort the international markets. Although I firmly believe that private actors are to some extent manipulating exchange rates in ways which do not correspond to the economic prospects of the United States and other nations, I believe that these developments were quite natural and only marginally the fault of the private actors. Unwise government regulations, poorly thought out and rashly instituted induced banks and corporations to find ways around them. Distortions were inevitable. The most serious distortion was the proliferation of the Eurodollar markets which provided too much liquidity in dollars for the system to calmly hold in the teeth of America's continued unwillingness to pull in its belt, accept that it is entering an era of limits, and cut down on its balance of payments deficit. Without evidence of an improving economic balance vis-a-vis the rest of the world, the dollar will continue to be weak no matter what regulations are passed governing foreign exchange speculation.

Thus, given the internationalization of banks and of money markets I do not think it desirable for the United States to try to institute any special controls on banks or corporations' foreign exchange operations beyond watching them closely. I do not believe that the United States acting alone can achieve the affect it desires on foreign exchange markets, but is likely to send further ripples of distortion through the markets which may come back to haunt policy-makers. Almost all of the regulations proposed to handle speculation can be avoided by simply opening a small trading room in Luxembourg. It would be far preferable if the United States turned its undivided attention on putting its own economy in order. Pushing forward dilligently on the steps President Carter proposed to strengthen the dollar and improve confidence in the U.S. economy will be far more effective in stabilizing exchange rates than any specific regulations aimed at speculators and their activities.

The CHAIRMAN. Dr. Blumberg?

STATEMENT OF PROF. ARYEH BLUMBERG, MONTCLAIR STATE COLLEGE, SCHOOL OF PROFESSIONAL ARTS AND SCIENCES, MONTCLAIR, N.J.

Dr. BLUMBERG. Mr. Chairman, I appreciate the opportunity to testify on the stability of the dollar and the role of major U.S. participants in foreign exchange markets, particularly the U.S. banks.

I would like to request that all materials that I have submitted be included in the hearing record (see p. —).

The CHAIRMAN. We're happy to do that. And you can see the light is running. You understand how that works, 9 minutes green, 1 minute yellow.

Dr. BLUMBERG. Yes. In this brief period, I shall highlight the main points.

I believe that the stability of the dollar must be tackled in the wider context of our monetary and fiscal policies. The crucial link between monetary and fiscal policy is the Federal budget deficit. This deficit is largely financed by U.S. Treasury borrowing, accommodated by the Fed, which increases the monetary base. In our recent experience the monetary base, which is the major determinant of the money supply, has expanded at a rate higher than increases in real output, and hence has fueled inflation. This has also generated inflationary expectations and increased the riskiness of investment in real capital.

The causes of the Federal budget deficit, in turn, are ultimately rooted in our society: We want at least 110 percent of a 100-percent pie, and generally for laudable reasons, such as health, education, welfare, and defense. Excessive demands result in an inflation tax that falls primarily on those groups that cannot exert countervailing power, and cause a redistribution of wealth and income that may in the not so long run be injurious to the stability of our body politic by reducing incentives to perform.

I shall deal with the following questions:

Does the U.S. dollar exchange rate reflect fundamentals?

What is the role of the Eurodollar market?

What should be the role of major participants in foreign exchange markets, particularly U.S. banks?

What controls, if any, should be imposed by legislation?

I have submitted foreign exchange parity charts for 30 currencies, covering the period from December 1971 through November 30, 1978, showing the relationship between actual exchange rates and exchange rates determined by economic fundamentals.

An operational criterion for stable foreign exchange rates is a reasonably swift adjustment of actual exchange rates to economic fundamentals. Parity exchange rates reflecting fundamentals are calculated from differentials in the inflation rates among countries, trade-weighted and adjusted for substitution effects in the transactions of other countries.

In fact, the charts show that presently the U.S. dollar's exchange rate vis-a-vis other major currencies, with the exception of the Japanese yen, and to a lesser extent the Swiss franc, reflects the underlying fun-

damentals, and the U.S. dollar is not as undervalued as some policy-makers would like us to believe. The evidence for 30 currencies supports the conclusion that exchange rates adjust to the underlying fundamentals as embodied in parity exchange rates with a variable lag of 1 to 12 months.

This adjustment is fastest in the case of foreign exchange rate regimes that approximate a "pure float," and longest in the case of fixed rates.

The major cause of the depreciation of the U.S. dollar is the lack of political will to control the main economic mechanism that causes inflation. This has been reflected in rising price indexes, and a structure of nominal interest rates that embodies inflationary expectations and hence grossly overstates real interest rates.

Recent increases in the discount rate, official intervention in foreign exchange markets, and gold sales can at best only enable the United States to buy a few months to devise policies that will stabilize domestic performance and expectations. Only policies that will effectively stabilize the U.S. price level will in the long run stabilize the dollar.

Until the Fed desists from pursuing policies that result in increases in the monetary base which significantly exceed the long-run increase in real output, inflation will not abate.

While the Fed's control over the money supply is somewhat limited under a fractional reserve banking system, control of the money supply is further complicated by the Eurodollar market.

My evidence shows that the Eurodollar market added between 6 and 10 percent to the broadly defined U.S. money stock during the period for which I have submitted evidence.

Instead of imposing increased reserve ratios on Eurodollar deposits, which would reduce the competitive position of U.S. foreign branches, it would surely be much more effective to increase the required reserve ratios of U.S. banks, which account for most of the U.S. money stock.

Let me now turn to the behavior of foreign exchange markets. The main participants are multinational corporations, major banks, and foreign exchange brokers. Since banks are the market makers, they necessarily take positions. The role of banks as market makers contributes to efficient markets, and any regulation that would place restrictions on the position that banks may take is likely not only to reduce competition but also to increase the volatility of foreign exchange markets.

If, for example, banks are required to have zero net positions in a currency by the end of a period, say, each day, they could still take sizable positions in the morning and reverse them in the afternoon. The effect would be increased volatility on a daily basis instead of a smoother upward and downward trend over a longer period.

In view of the large number of participants that comprise the market, foreign exchange trading is very competitive. I tend to discount allegations of collusion among banks. Insofar as banks as a group have an advantage over other participants, it's because they are closer to markets and information than other participants.

Banks with foreign branches necessarily have foreign exchange positions, because their equity claims are denominated in foreign curren-

cies, and the magnitude of the equity positions is normally large relative to the position taken in the course of day-to-day trading.

In this kind of game, they're likely to lose as well as to gain. Insofar as there has been speculation, it has been rewarded by recent U.S. intervention: those current holders who bought dollars cheaply in October can sell their dollars at a profit during the temporary recovery of the dollar.

During October of this year, when traders confronted adverse news about the U.S. trade deficit, accelerating inflation, and the perception of the international business community that the U.S. administration was either unwilling or unable to take the difficult and potentially painful steps to control inflation, an excess supply of dollars led to the sharp decline of the dollar against most major currencies.

To some extent, the market may have over-reacted for a short period by more than what fundamentals indicate. I would like to stress, however, that the partial recovery of the dollar in November, resulting from larger intervention by the Fed, higher interest rates, and gold sales, may be short-lived, and we may again see a reversal in the beginning of 1979, unless the underlying causes of inflation are tackled. If the central problem of inflation continues to be dealt with by temporizing measures, so-called voluntary controls—a contradiction in terms—it may generate pressures for legislating mandatory controls.

We could also lose our entire gold stock needlessly by intervention without making too much of a dent on the exchange rate.

Prospective governmental monitoring of foreign exchange transactions is not likely to reduce the volatility of markets because volatility is a symptom, not a cause.

How much information should be provided to the Government is not only a sensitive but, in practice, a rather complex issue. Should the Federal Government establish an additional bureaucracy to control not only U.S. banks but also their foreign branches, agencies, and subsidiaries?

How often should reports be filed—monthly, weekly, daily?

I question the desirability of any such legislation because of its chilling effect on practices that work rather well. First, traders are required to keep records of their transactions for internal control purposes. Banks generally do not give traders the latitude to take large positions without internal monitoring. Second, no transactions are entered into until voice recognition is established. In case of occasional conflict, there is informal resolution.

From a purely technical point of view, it's of course feasible to tape all conversation. But how often are the tapes to be transcribed? How long are records to be kept? How frequently should information be reported?

Banks normally do have internal records by the end of the day, and traders who are too free-wheeling in their practices are subject to internal bank discipline. I therefore do not favor mandating record-keeping by legislation.

Any attempt to subject foreign exchange bids and offers by brokers and banks to regulation in order to assure uniform quotations is a very undesirable and ultimately unenforceable regulation, because I cannot conceive of how legislation can establish criteria that identify false

and self-serving rumors that may occasionally influence short-run quotations.

One person's perception of what is false and self-serving may be another person's correct and even profound insight into economic and political **reality**.

To sum up. Insofar as there has been high volatility of exchange rates, it reflects the riskiness inherent in international transactions.

The most realistic course of action to reduce volatility are policies by the major powers, especially the United States, that would stabilize expectations and **confidence**.

The keystone of such a policy is the pursuit of a dollar of stable purchasing power; that is, a policy which will come to grips with an inflation that has been with us since the sixties.

Given the long duration and intensity of this inflation by historical U.S. standards, the objective of a stable dollar cannot be achieved unless our citizens are educated to accommodate themselves to lower expectations and occasional hardships in an increasingly interdependent world.

This is one of the challenges facing the leaders of the United States.
[Complete statement of Dr. Blumberg follows:]

STATEMENT BY
ARYEH BLUMBERG*
BEFORE
THE COMMITTEE ON BANKING, HOUSING, AND URBAN AFFAIRS
UNITED STATES SENATE
DECEMBER 20, 1978

I appreciate the opportunity to testify before the Committee on Banking, Housing, and Urban Affairs on an international policy issue of major importance - the stability of the dollar and the role of major U.S. participants in foreign exchange markets, particularly U.S. banks.

Presumably, questions concerning the stability of the dollar have sparked the Committee's interest in conducting hearings on "Trading in Foreign Exchange Markets." Before I discuss the specific issues on which these hearings are focusing, I would like to make some brief introductory remarks about the political context within which this policy issue should be discussed.

I believe that the stability of the dollar must be tackled in the wider context of our monetary and fiscal policies, because without reliable performance in these areas, "disorderly conditions" in foreign exchange markets are but a symptom of underlying disturbances. Although it may not always be politically popular, I am convinced that only a policy that deals with causes can be effective.

The crucial link between monetary and fiscal policy is the federal budget deficit. This deficit is largely financed by U.S. Treasury borrowing accommodated by the Federal Reserve, which increases the monetary base. In our recent experience the monetary base, which is the major determinant of the money

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supply, has expanded at a rate higher than increases in real output, and hence has fueled inflation. This has also generated inflationary expectations and increased the riskiness of investment in real capital.

The causes of the federal deficit, in turn, are ultimately rooted in our society: we want at least 110 percent of a 100 percent pie, and generally for laudable reasons, such as health, education, welfare, and defense. Excessive expectations when translated into demands result in an inflation tax that falls primarily on those groups that cannot exert countervailing political power, and cause a redistribution of wealth and income that may in the not so long run be injurious to the stability of our body politic by reducing incentives to perform. The inflationary trend inherent in the economic structure since the Second World War became more pronounced since an ever more comprehensive welfare state gained popular support and was coupled with heavy expenditures on an unpopular war in the 1960's. If inflation of the present magnitude persists, it will continue to erode one of our major institutions - a reasonably competitive market economy, and we will evolve into an even more regulated and bureaucratized society that increasingly subordinates freedom of choice, self-reliance and equality of opportunity to unrealistic demands for equality of condition.

In the above context, I shall now turn to the specific issues concerning the stability of the dollar and trading in foreign exchange. I shall deal with the following questions:

1. Does the U.S. dollar exchange rate reflect fundamentals?
2. What policies are prerequisite for a stable dollar?

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3. What is the role of the Eurodollar market and its effect on exchange rates?
4. What should be the role of major participants in foreign exchange markets, particularly U.S. banks and foreign exchange brokers?
5. What controls, if any, should be imposed by legislation on any group of participants?

In responding to these questions, I hereby submit the following empirical and theoretical evidence:

Appendix I: foreign exchange parity charts for thirty currencies, covering the period from December 1971 to November 1978, showing the relationship between actual exchange rates and exchange rates determined by economic fundamentals.

Appendix II: an article² that explains the theory underlying the parity exchange rate charts presented in Appendix I.

Appendix III: (a) evidence pertaining to the Eurodollar multiplier;
 (b) the effect of Eurodollar transactions on exchange rates;
 (c) the theoretical framework underlying the quantitative results of III (a) and III (b).³

SUMMARY OF CONCLUSIONS DRAWN FROM SUBMITTED EVIDENCE

An operational criterion for stable foreign exchange rates

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is a reasonably swift adjustment of actual exchange rates to economic fundamentals. The parity exchange rate reflecting fundamentals is calculated from differentials in inflation rates among countries, trade-weighted and adjusted for substitution effects in the transactions of other countries. In fact, the foreign exchange parity charts submitted in evidence to this Committee show that presently the U.S. dollar's exchange rate vis-a-vis major currencies, with the exception of the Japanese yen, reflects the underlying fundamentals, and the U.S. dollar is not as undervalued as some policy makers would like us to believe. The evidence for thirty currencies supports the conclusion that exchange rates adjust to the underlying fundamentals as embodied in parity exchange rates with a variable lag of one to twelve months. This adjustment is fastest in the case of foreign exchange rate regimes that approximate a "pure float," and longest in the case of fixed rates, depending on how long the decisive policy makers can "tough it out" before they concede to realities and devalue their currencies.

The major cause of the depreciation of the U.S. dollar vis-a-vis other major currencies since the Smithsonian agreement is the lack of political will to control the main economic mechanism that causes inflation. This has been reflected in rising price indexes and a structure of nominal interest rates that embodies inflationary expectations and hence grossly overstates real interest rates. Until the Federal Reserve desists from pursuing policies that result in increases in the monetary base which significantly exceed the long-run increase in real

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output, inflation will not abate. Recent increases in the discount rate, official intervention in foreign exchange markets, and gold sales can at best only enable the United States to buy a few months to devise policies that will stabilize domestic performance and expectations. Only policies that will effectively stabilize the U.S. price level will in the long-run stabilize the dollar. I also believe that the U.S. should bear the burden of maintaining the dollar as the predominant medium of international exchange. This is an essential ingredient of the leadership role that the United States should continue to hold in the world.

While the Federal Reserve's control over the money supply is somewhat limited under a fractional reserve banking system, the Federal Reserve certainly has more control over the money supply than over the level of interest rates. But the control over the money supply is further complicated by the Eurodollar market. Even though the evidence shows that the Eurodollar market adds to the stock of dollars, this magnitude is small in relation to the broadly-defined U.S. money stock (M_2). My best estimate for the period 1963-1969 is that Eurodollars added between 6 and 10 percent to the U.S. money stock. Although the evidence conclusively shows that Eurodollars are fractional reserve deposits and that there is indeed Eurodollar creation, these findings by themselves do not settle the issue of "the" Eurodollar multiplier.⁴ Controversy concerning this issue is due not only to whether one calculates the reserve ratio exclusive or inclusive of the reserves of monetary authorities - in

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both cases Eurodollars are fractional reserve deposits - but ultimately the conceptual difficulty is rooted in the conventional textbook exposition of the deposit creation multiplier in terms of the inverse of the reserve ratio, adjusted for "leakages."⁵ Instead of imposing increased reserve ratios on Eurodollar deposits held with foreign branches of U.S. banks that would reduce the competitive position of U.S. foreign branches vis-a-vis their foreign competitors, it would surely be much more effective to increase the required reserve ratios of U.S. domiciled banks, which account for most of the U.S. money stock.

Because Eurodollars are fractional reserve deposits, the effect of switching from Eurodollars to other currencies, such as the mark, Swiss franc, yen and other currencies, is dampened for any volume of conversions out of dollars.⁶ These results, however, do not demonstrate that the Eurodollar market per se increases the propensity to switch from dollars into other currencies. In my opinion, one of the problems inherent in any currency that serves as the international medium of exchange - also termed vehicle currency - is that non-resident recipients tend to convert proceeds of the vehicle currency into their respective domestic currencies in order to defray their expenses.

THE ROLE OF FOREIGN EXCHANGE MARKET PARTICIPANTS

Let me now turn to the behavior of foreign exchange markets. It is generally accepted that arbitrage in foreign exchange has a stabilizing effect. Interest arbitrage between U.S. dollars

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and Eurodollars and the interaction between forward exchange markets and Eurocurrency interest rates maintain equilibrium between foreign exchange markets and international short-term capital markets. Whether speculation, as opposed to arbitrage, however, is stabilizing is a question on which there persist differences of opinion. But to consider any position that is not fully balanced or fully hedged as "speculative" is a matter of definition. Consistent with general business practices, a speculator takes greater risk in anticipation of greater return.

The main participants in foreign exchange markets are corporations engaged in international business, major banks in money market centers and foreign exchange brokers. Since banks are the market makers, they necessarily take positions. This role of banks as market makers is, in many respects, similar to the role of specialists in stock markets. One group of transactors must absorb temporary excess supplies or demands for currencies, especially when markets are one-sided, for example, when the amount of dollars offered for sale exceeds the quantity of dollars demanded at prevailing rates. The prevailing exchange rate depends partly on the willingness of market makers to absorb excess supplies.

This role of banks contributes to efficient markets, and any regulation that would place restrictions on the positions that banks may take is likely not only to reduce competition, but also to increase volatility in foreign exchange markets. If, for example, banks are required to have zero net positions in a currency by the end of a period, say each day, they could still

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take sizable positions in the morning and reverse them in the afternoon. The effect would be increased volatility on a daily basis instead of a smoother upward or downward trend over a longer period.

In view of the large number of participants that comprise the foreign exchange market, including foreign banks, foreign exchange trading is very competitive. I tend to discount allegations of collusion among banks because it is not feasible to maintain the requisite communication among the many participants and because the level of trust among competitors is not high enough to sustain collusion. Insofar as banks as a group have an advantage over other participants, it is because they are closer to markets and information than other participants.

Banks with foreign branches necessarily have foreign exchange positions because their equity claims are denominated in foreign currencies and the magnitude of the equity positions is normally large relative to the position taken in the course of day-to-day trading. As long as market participants are guided by the profit motive - and I am not persuaded that there are more equitable alternatives for organizing complex economies than market mechanisms - banks will tend to take positions and incur the attendant risks. In this kind of game, they are likely to lose as well as to gain, especially in the absence of reliable knowledge concerning the actions of foreign central banks and U.S. monetary authorities. Insofar as there has been speculation it has been rewarded by recent U.S. intervention: those current holders who bought dollars cheaply in October can sell their

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dollars at a profit during the temporary recovery of the dollar.

The viewpoint of foreign exchange traders differs from the perspective of the economist primarily with respect to the length of the time horizon. The traders' horizon is necessarily considerably shorter, and the buying and selling decisions of traders are much more influenced by daily developments and the release of current statistics. Traders react readily to figures about trade deficits and inflation statistics because they understand such figures better than the more esoteric data studied by economists. They also react to what is called the "dollar overhang," that is, dollars held by foreigners as a result of trade deficits. In my opinion, the attention paid to non-resident holders of dollars is somewhat misguided because in the absence of exchange controls, which I oppose, it is just as easy for U.S. residents to sell dollars held with banks in New York, Chicago, or San Francisco for foreign currencies as it is for foreigners to sell U.S. dollars or Eurodollars abroad.

During October 1978, when traders confronted adverse news about the U.S. trade deficit, accelerating inflation, and the perception of the international business community that the U.S. administration was either unwilling or unable to take the difficult and potentially painful steps to control inflation, there was an excess supply of dollars, which led to the sharp decline of the dollar against most major currencies. To some extent, the market may have over-reacted for a short period by more than what fundamentals indicate. I would like to stress that the partial recovery of the dollar in November, resulting

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from larger intervention by the Federal Reserve, higher interest rates, and gold sales, may be short-lived, and we may again see a reversal in the beginning of 1979, unless the underlying causes of inflation are tackled. If the central problem of inflation continues to be dealt with by temporizing measures, so-called "voluntary controls" - a contradiction in terms - it may generate pressures for legislating mandatory controls. We could also lose our entire gold stock needlessly by intervention without making too much of a dent on the exchange rate. It is also unlikely that foreign central banks, particularly the Bundesbank, the Bank of Japan, the Swiss Central Bank, and other central banks will continue to make available credit lines of a magnitude that could eventually generate unacceptable levels of inflation in their own countries, as strong currencies are used to mop up a potentially vast supply of dollars and expand the stock of marks, francs, yen, etc.

Let us now consider the role of foreign exchange brokers. Brokers perform important economic functions that contribute to efficient markets. They maintain the anonymity of transactors until transactions are completed; this practice is consistent with that of stock market brokers. Foreign exchange brokers check and match exchange rates quoted by several participants, thus facilitating the flow of information.

There has been dissatisfaction in the banking community about the fixed rate structure of commissions charged by brokers. Because there are approximately ten foreign exchange brokers in the United States, they have had a measure of control over their

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commissions, which has not necessarily been to the banks' liking. This does not mean that brokers influence exchange rates; I do not believe that any particular group of market participants has such power. Banks have begun to consider dealing with each other directly, domestically as well as internationally. But I am not aware of serious complaints about the integrity or honesty of U.S. brokers. Whether licensing can solve problems of honesty is doubtful. Any restrictions that would limit entry by otherwise qualified newcomers would only limit competition even further and hence is undesirable.

Prospective governmental monitoring of foreign exchange transactions is not likely to reduce the volatility of markets because volatility is a symptom and not a cause. How much information should be provided to the government is not only a sensitive but in practice a rather complex issue. Should the Federal Government establish an additional bureaucracy to control not only U.S. banks, but also their foreign branches, agencies, and similar units? How often should reports be filed - monthly, weekly, daily? I question the desirability of any such legislation because of its chilling effect on practices that work rather well. First, traders are required to keep records of their transactions for internal control purposes. Banks generally do not give traders the latitude to take large positions without internal monitoring. Second, no transactions are entered into until voice recognition is established, and are carried out on the basis of such mutual trust as has evolved among participants over time. In case of occasional conflict, there is informal

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resolution. From a purely technical point of view, it is of course feasible to tape all conversations, but such a requirement can operationally become very cumbersome. How often are the tapes to be transcribed, how long are records to be kept, how frequently should information be reported to authorities? Banks normally do have internal records by the end of the day, and traders who are too free-wheeling in their practices are subject to internal bank discipline. I therefore do not favor mandating record-keeping by legislation.

Any attempt to subject foreign exchange bids and offers by brokers and banks to regulation in order to insure uniform quotations is a very undesirable and ultimately unenfor^eable regulation, because I cannot conceive of how legislation can establish criteria that identify false and self-serving rumors that may occasionally influence short-run quotations. One person's perception of what is false and self-serving may be another person's correct and even profound insight into economic and political reality.

CONCLUDING REMARKS

To sum up, insofar as there has been high volatility of exchange rates, it reflects the riskiness inherent in international transactions, exacerbated by the breakdown of a pseudo-fixed exchange rate system that is not feasible in a world where governments do not permit the requisite deflation because of the attendant unemployment effects. The most realistic course of action that may reduce volatility are policies by the major

Page 13: A.B.

powers, especially the United States, that would stabilize expectations and confidence. The keystone of such a policy is the pursuit of a dollar that has stable purchasing power in terms of domestic goods, that is, a policy which will come to grips with an inflation that has been with us since the sixties. Given the long duration and intensity of this inflation by historical U.S. standards, the objective of a stable dollar cannot be achieved unless our citizens are educated to accommodate themselves to lower expectations and occasional hardships in an increasingly interdependent world. This is one of the challenges facing the elected leaders of the United States.

NOTES

* Professor of Finance, Montclair State College
Upper Montclair, New Jersey

1. Appendix I consists of 29 parity exchange rate charts, expressed in terms of the 30th currency, the U.S. dollar.
2. Robert Everett, Abraham M. George, and Aryeh Blumberg, "Appraising Currency Strengths and Weaknesses," forthcoming in Journal of International Business Studies, (Academy of International Business and Rutgers University, Newark, New Jersey). Also treated in Abraham M. George's Foreign Exchange Management and the Multinational Corporation, (New York: Praeger Publishers, 1978).

Please note that parity exchange rate charts submitted for Hearing on TRADING IN FOREIGN EXCHANGE MARKETS, December 20, 1978, differ from the charts included in the article. In addition to updating results from December 1971 through November 1978, charts in Appendix I are based on monthly rather than quarterly data, and also adjust each parity rate by the average divergence of actual rates from parity rates. This method of refining the empirical results is suggested on page 8 of the article.

3. Aryeh Blumberg. Eurodollars and the Balance of Payments, Doctoral Dissertation, University of Chicago, 1973.
- 4,5. Please refer to Tables 13, 14, and 15 of Appendix III for estimates of the Eurodollar deposit ratio and the Eurodollar creation ratio. In somewhat simplified terms, the latter is the ratio between Eurodollar deposits and reserves inclusive of the reserves of the monetary authorities. If that ratio exceeds unity, it demonstrates that the stock of dollars held by the public has increased as a result of Eurodollar transactions.

Building on the work of Milton Friedman and Anna Schwartz in Appendix B of A Monetary History of the United States, 1867-1960, (Princeton, N.J.: Princeton University Press, 1963), I use the term "money multiplier" to refer to the ratio of the stock of money and the monetary base. Their approach avoids the non-measurable concept of "leakage." In the notation of Friedman and Schwartz, this ratio is denoted by $\frac{b(1+p)}{b+p}$, where

b = ratio of deposit to reserves of banks
p = ratio of deposits to currency held by public

Under certain restrictive assumptions that do not generally hold empirically, this concept of the multiplier can be extended to the Eurodollar market, yielding the expression

$$\frac{e_p (1 + p_e)}{e_p + p_e}, \text{ where}$$

e_p = Eurodollar creation ratio

p_e = ratio of Eurodollars to U.S. dollars held by public.

If $e_p = 3$, and $p_e = .1$, the Eurodollar multiplier is 1.06, implying an increase in the stock of dollars of approximately 6 percent.

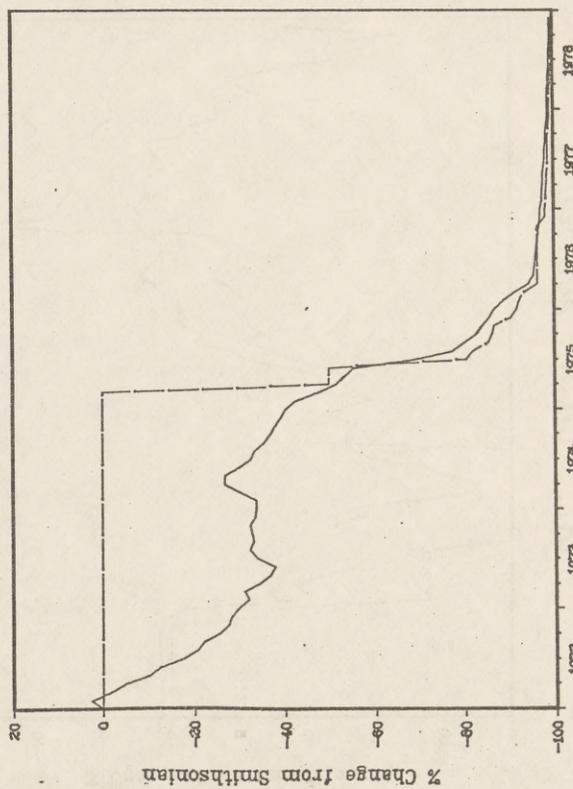
Many of the salient issues were first raised in Milton Friedman's "The Eurodollar Market: Some First Principles," Morgan Guaranty Survey (October, 1969).

The conceptual difficulties surrounding the concept of Eurodollar creation are discussed in Fritz Machlup's "Eurodollar Creation: A Mystery Story," Reprints in International Finance, No. 16, Princeton, International Finance Section, December, 1970.

6. Please refer to Figures 1 through 8, and to Tables 1, 2, and 3 of Appendix III, which present the theoretical essentials and empirical estimates of the Eurodollar effect. My work is an empirical variant of Harry G. Johnson's monetary approach to the balance of payments. The central principle of this approach was first stated in "Towards a General Theory of the Balance of Payments," Chapter 6 of International Trade and Economic Growth (Cambridge, Mass: Harvard University Press, 1961) and further developed in "The Monetary Approach to Balance-of-Payments Theory," Chapter 9 of Further Essays in Monetary Economics (Cambridge, Mass.: Harvard University Press, 1973).

Appendix I-1 to Statement by Aryeh Blumberg before
United States Senate Committee on Banking, Housing, and Urban Affairs, December 20, 1978.

PARITY CHART: ARGENTINA

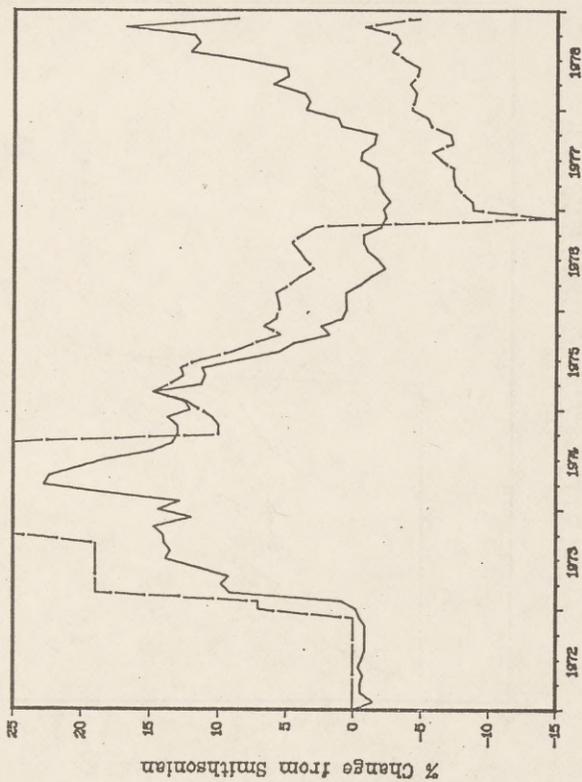


Legend
PARITY
ACTUAL

Dec 1971 to Nov 1978
Parity Charts produced by MultiNational Computer Models, Inc.
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Appendix I-2 to Statement by Aryeh Elumberg before
United States Senate Committee on Banking, Housing, and Urban Affairs, December 20, 1978

PARITY CHART: AUSTRALIA



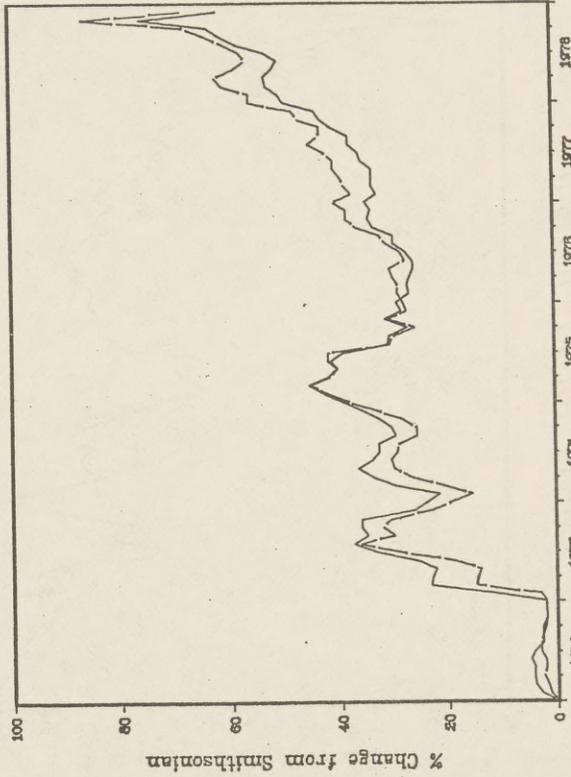
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Appendix I-3 to Statement by Aryeh Blumberg before
United States Senate Committee on Banking, Housing, and Urban Affairs, December 20, 1978

PARITY CHART: AUSTRIA

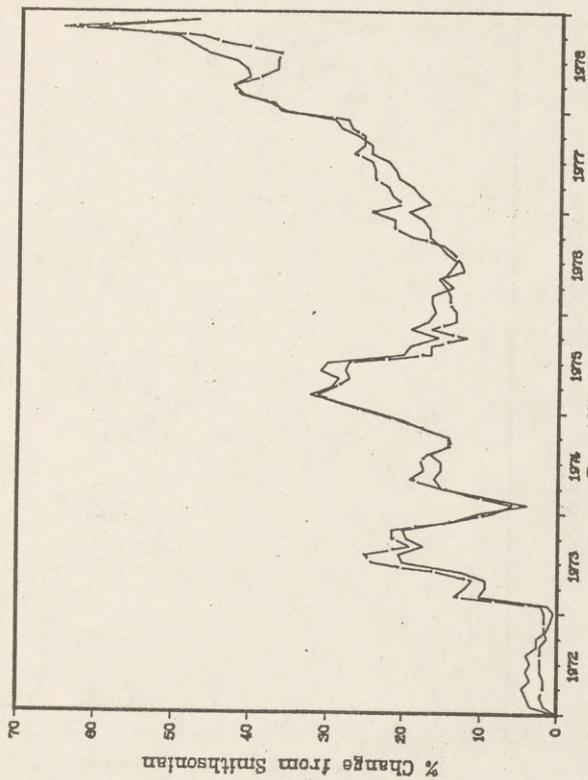


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Appendix I-4 to Statement by Aryeh Blumberg before
United States Senate Committee on Banking, Housing, and Urban Affairs, December 20, 1978

PARITY CHART: BELGIUM

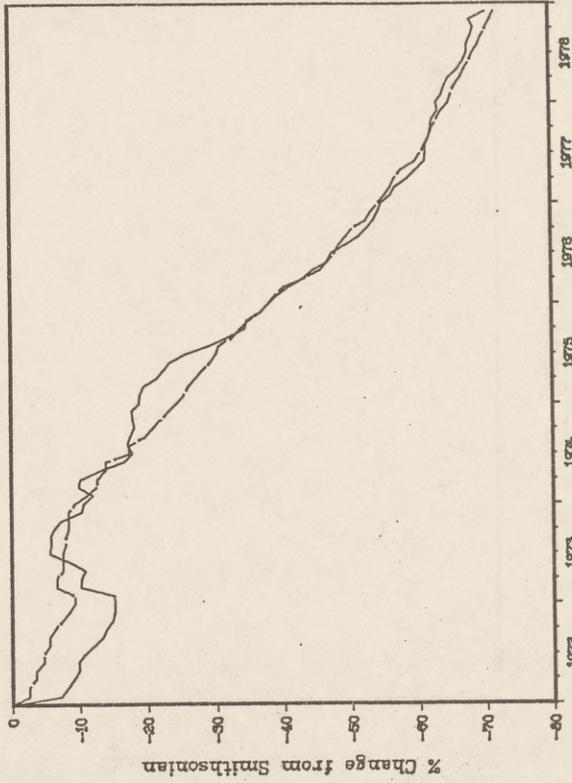


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Appendix I-5 to Statement by Aryeh Blumberg before
 United States Senate Committee on Banking, Housing, and Urban Affairs, December 20, 1978

PARITY CHART: BRAZIL

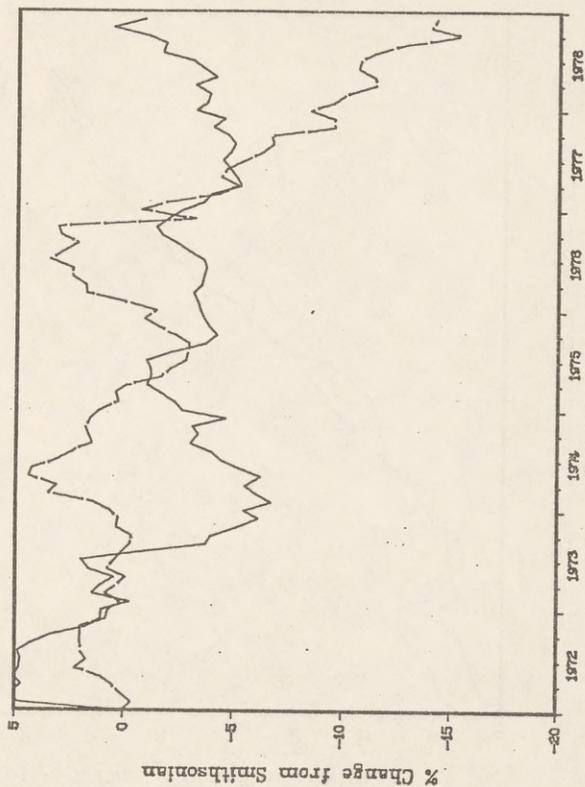


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Appendix I-6 to Statement by Aryeh Elumberg before
United States Senate Committee on Banking, Housing, and Urban Affairs, December 20, 1978

PARITY CHART: CANADA

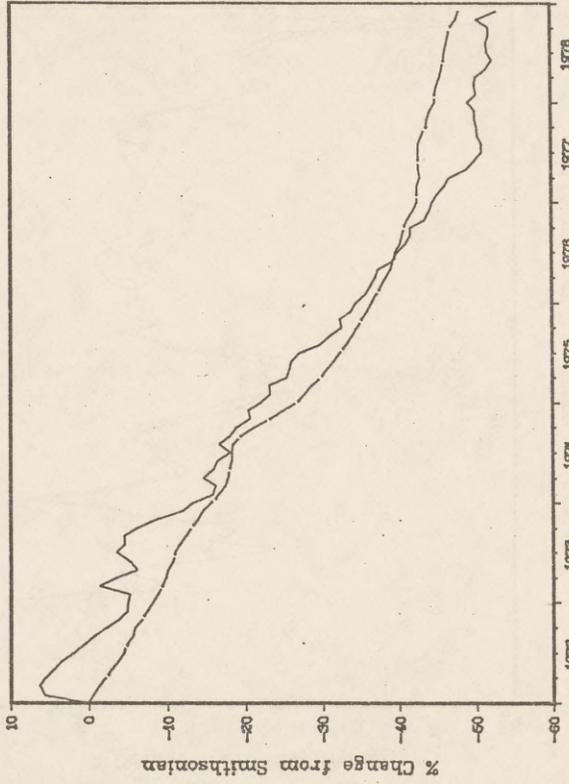


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Appendix I-7 to Statement by Aryeh Blumberg before
 United States Senate Committee on Banking, Housing, and Urban Affairs, December 20, 1978

PARITY CHART: COLOMBIA

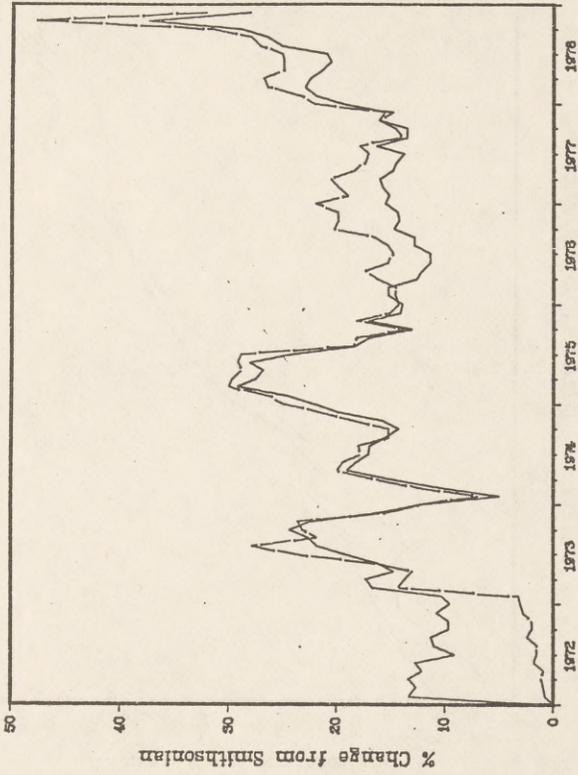


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Appendix I-8 to Statement by Aryeh Blumberg before
United States Senate Committee on Banking, Housing, and Urban Affairs, December 20, 1978

PARITY CHART: DENMARK

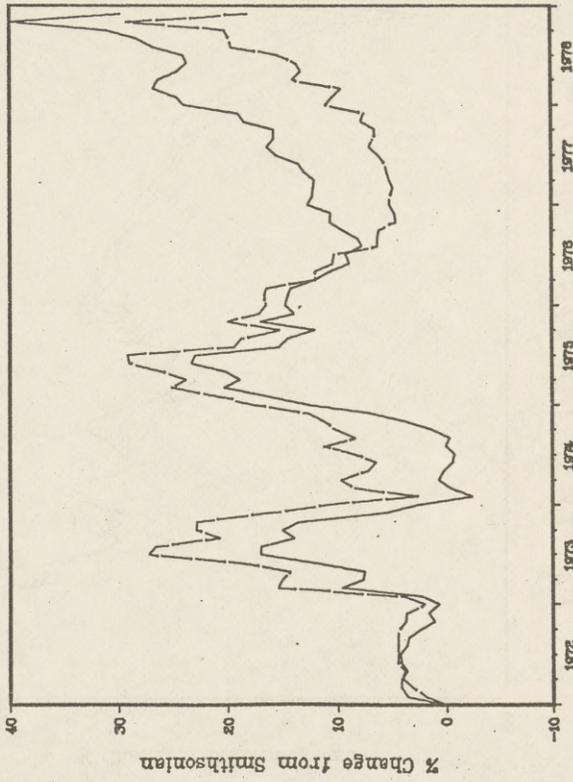


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Appendix I-9 to Statement by Aryeh Blumberg before
United States Senate Committee on Banking, Housing, and Urban Affairs, December 20, 1978

PARITY CHART: FRANCE

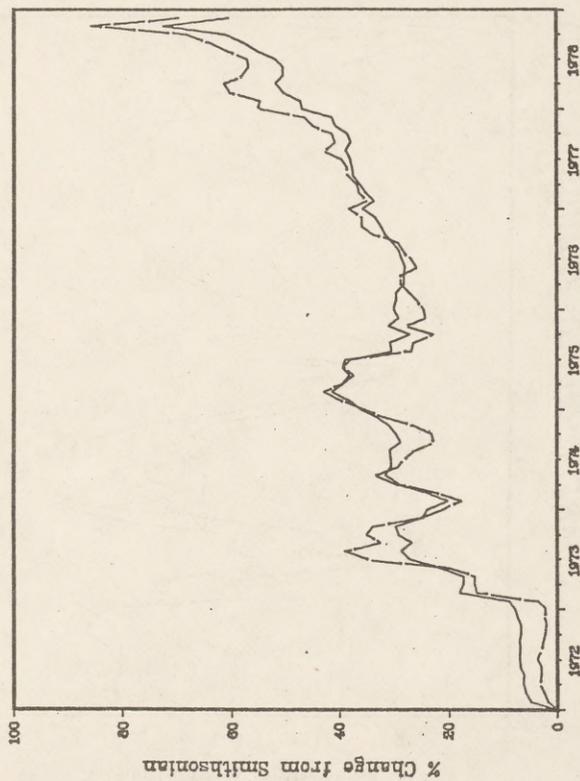


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Appendix I-10 to Statement by Aryeh Blumberg before
United States Senate Committee on Banking, Housing, and Urban Affairs, December 20, 1978

PARITY CHART: WEST GERMANY

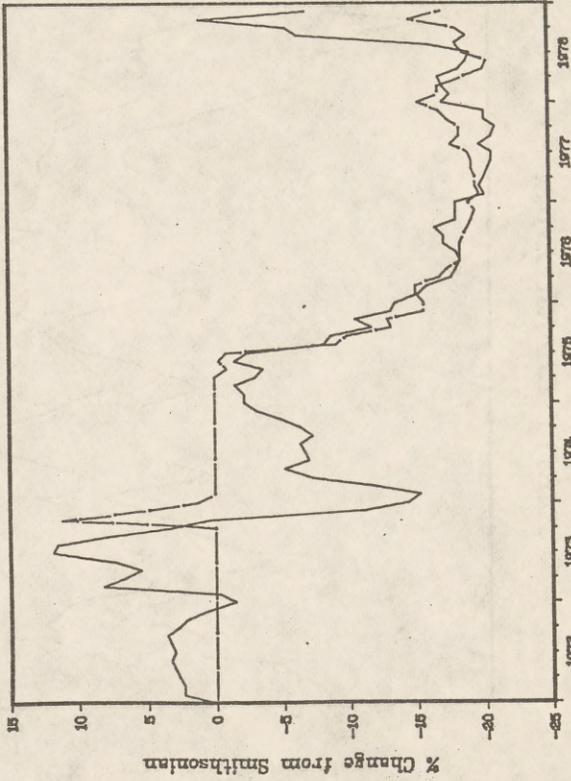


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Appendix I-11 to Statement by Arveh Blumberg before
 United States Senate Committee on Banking, Housing, and Urban Affairs, December 20, 1978

PARITY CHART: GREECE



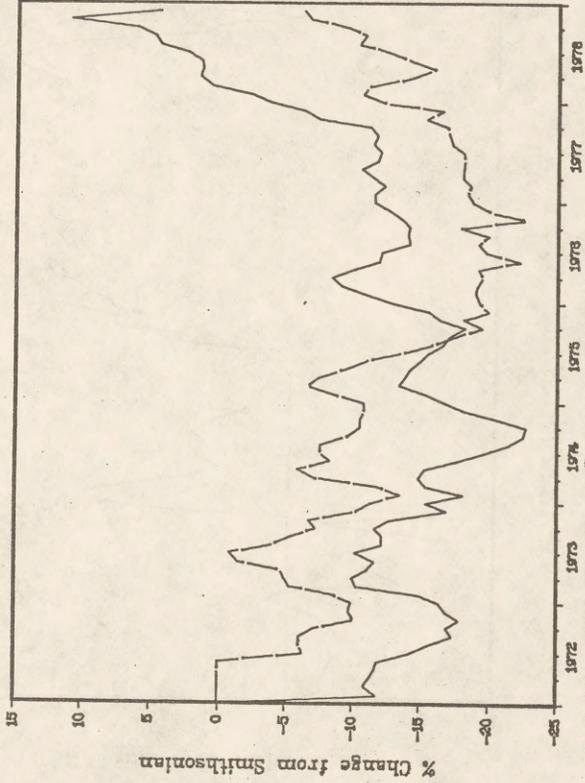
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Appendix I-12 to Statement by Aryeh Blumberg before
 United States Senate Committee on Banking, Housing, and Urban Affairs, December 20, 1978

PARITY CHART: INDIA

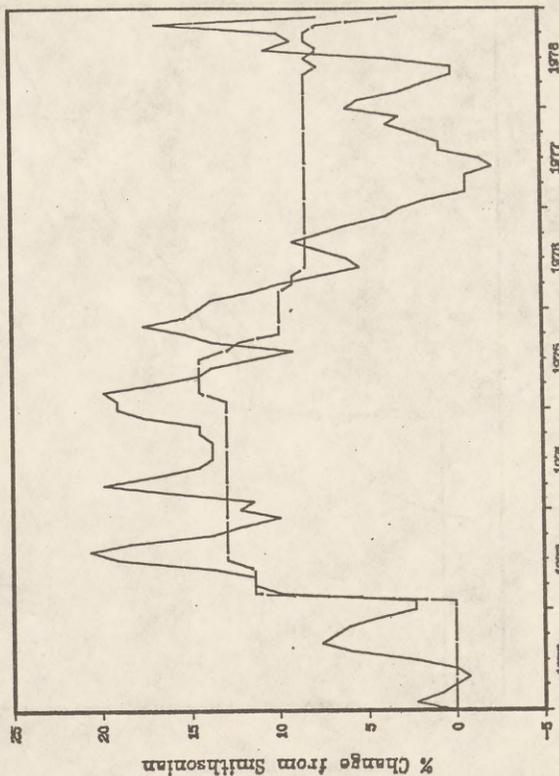


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Appendix I-13 to Statement by Aryeh Blumberg before
United States Senate Committee on Banking, Housing, and Urban Affairs, December 20, 1978

PARITY CHART: IRAN

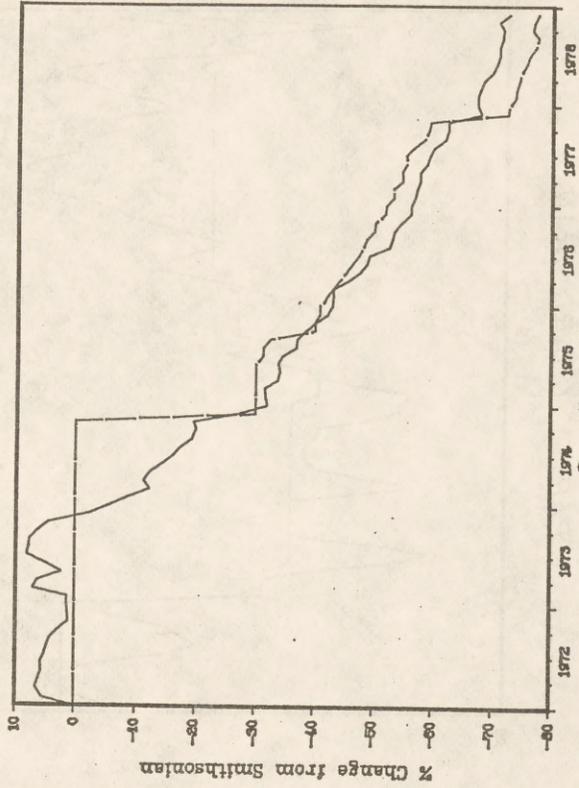


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Appendix L-14 to Statement by Aryeh Blumberg before
 United States Senate Committee on Banking, Housing, and Urban Affairs, December 20, 1978

PARITY CHART: ISRAEL

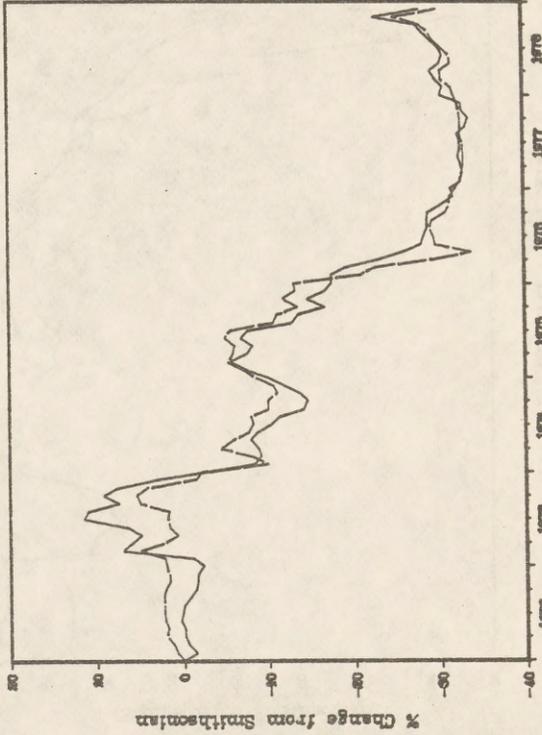


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Appendix I-15 to Statement by Arveh Blumberg before
 United States Senate Committee on Banking, Housing, and Urban Affairs, December 20, 1978

PARITY CHART: ITALY

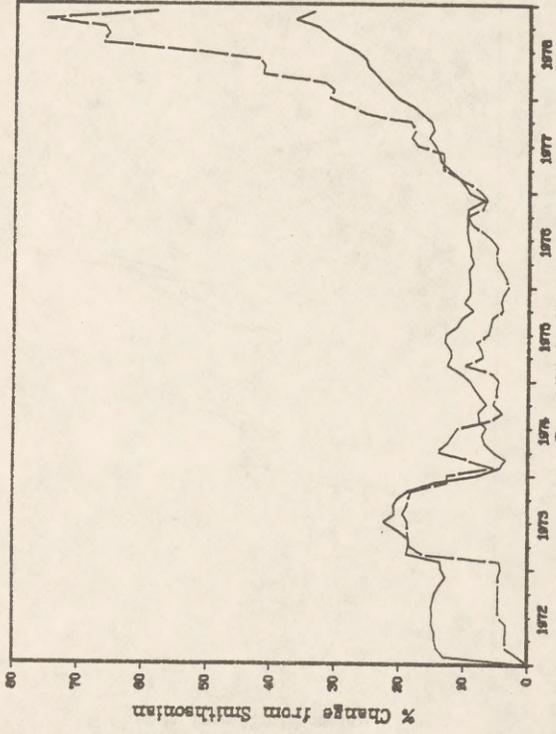


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Appendix I-16 to Statement by Arveh Blumberg before
 United States Senate Committee on Banking, Housing, and Urban Affairs, December 20, 1978

PARITY CHART: JAPAN

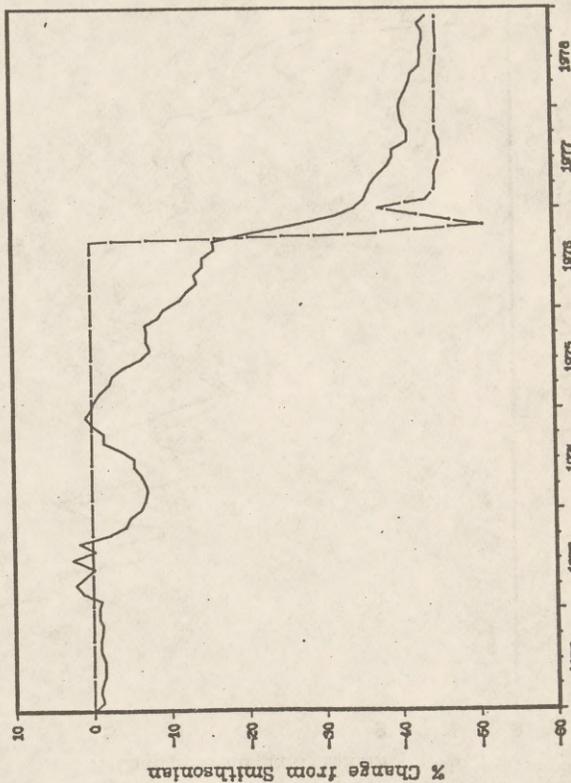


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Appendix I-17 to Statement by Artych Blumberg, before United States Senate Committee on Banking, Housing, and Urban Affairs, December 20, 1978

PARITY CHART: MEXICO



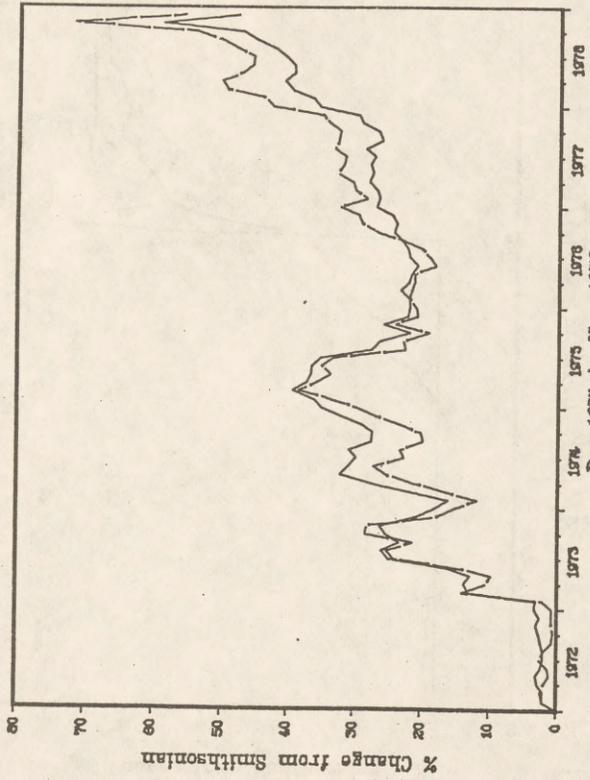
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Appendix I-18 to Statement by Aryeh Blumberg before
 United States Senate Committee on Banking, Housing, and Urban Affairs, December 20, 1978

PARITY CHART: NETHERLANDS



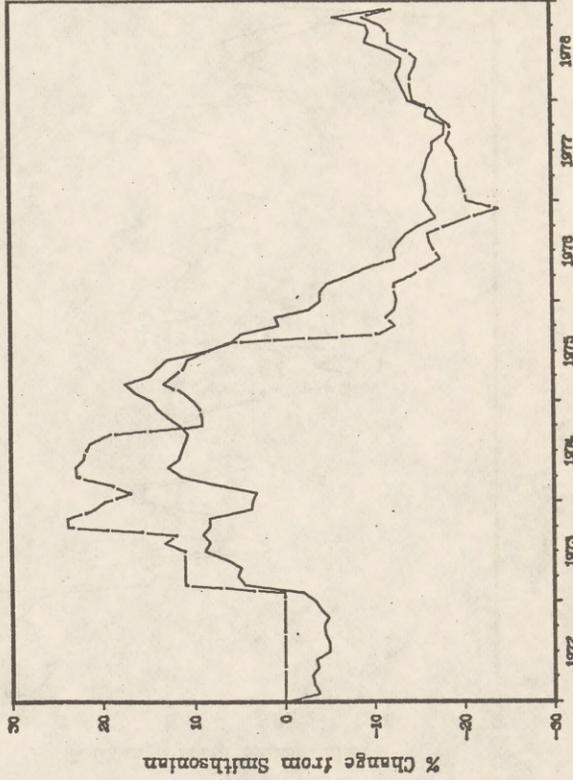
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Appendix I-19 to Statement by Ayeoh Blumberg before
United States Senate Committee on Banking, Housing, and Urban Affairs, December 20, 1978

PARITY CHART: NEW ZEALAND



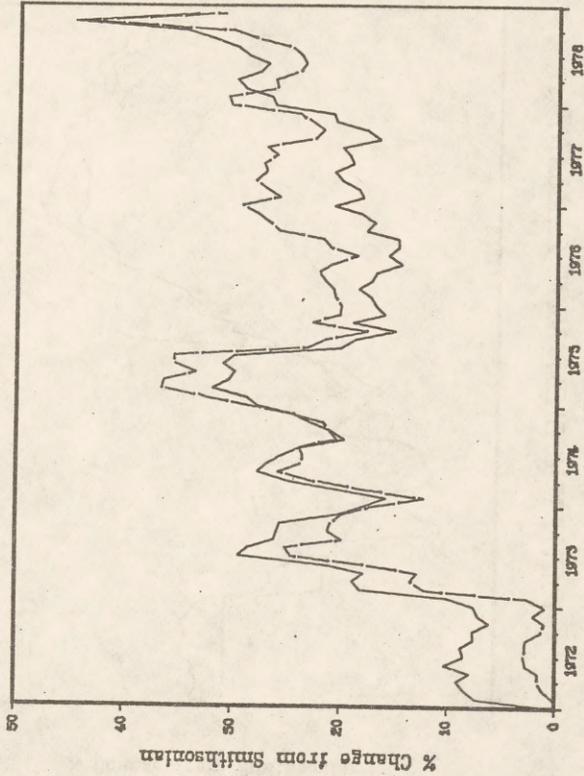
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Appendix I-20 to Statement by Aryeh Blumberg before
 United States Senate Committee on Banking, Housing, and Urban Affairs, December 20, 1978

PARITY CHART: NORWAY

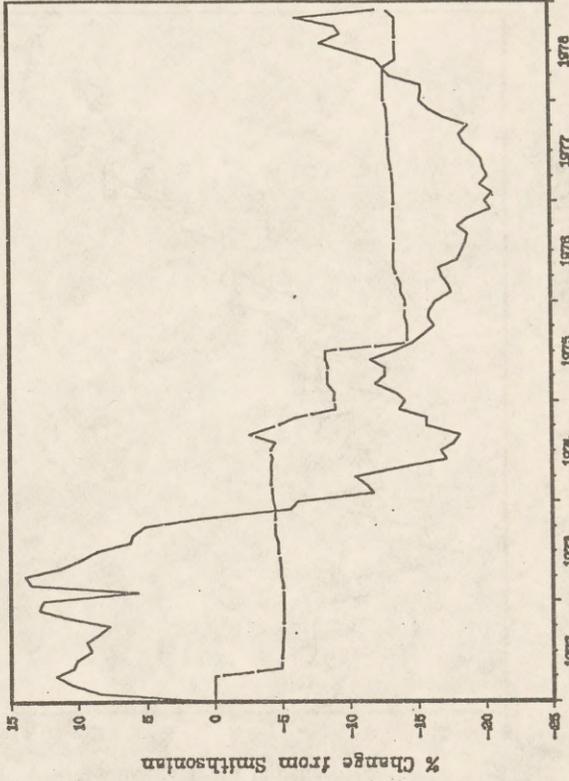


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Appendix I-21 to Statement by Arveh Blumberg before
 United States Senate Committee on Banking, Housing, and Urban Affairs, December 20, 1978

PARITY CHART: PHILLIPINES

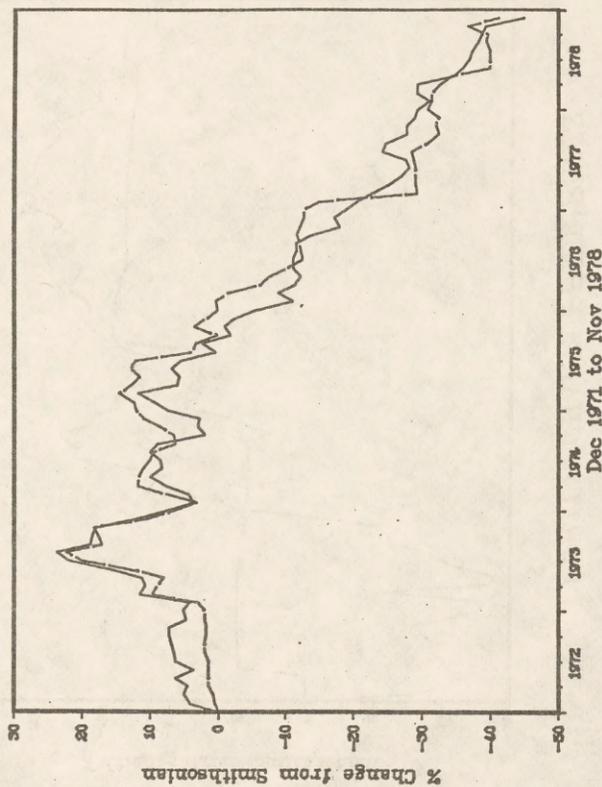


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Appendix I-22 to Statement by Arveh Blumberg before
United States Senate Committee on Banking, Housing, and Urban Affairs, December 20, 1978

PARITY CHART: PORTUGAL

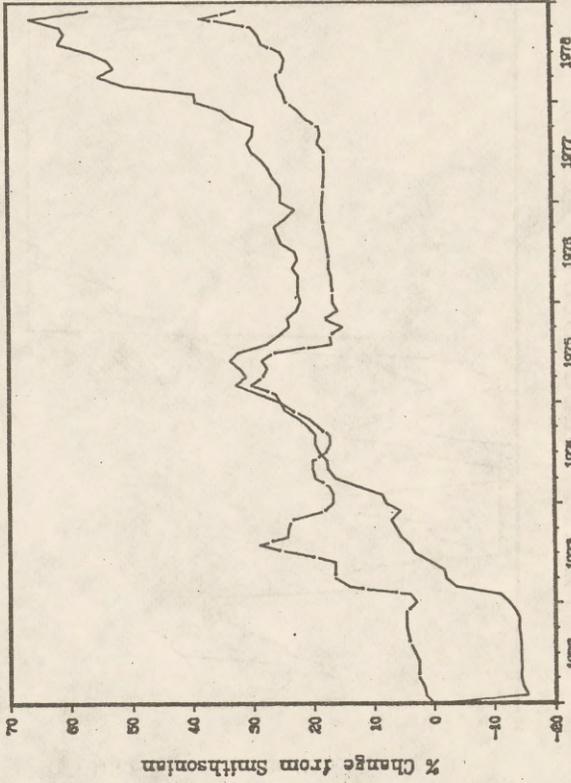


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Appendix I-23 to Statement by Aryeh Blumberg before
 United States Senate Committee on Banking, Housing, and Urban Affairs, December 20, 1978

PARITY CHART: SINGAPORE

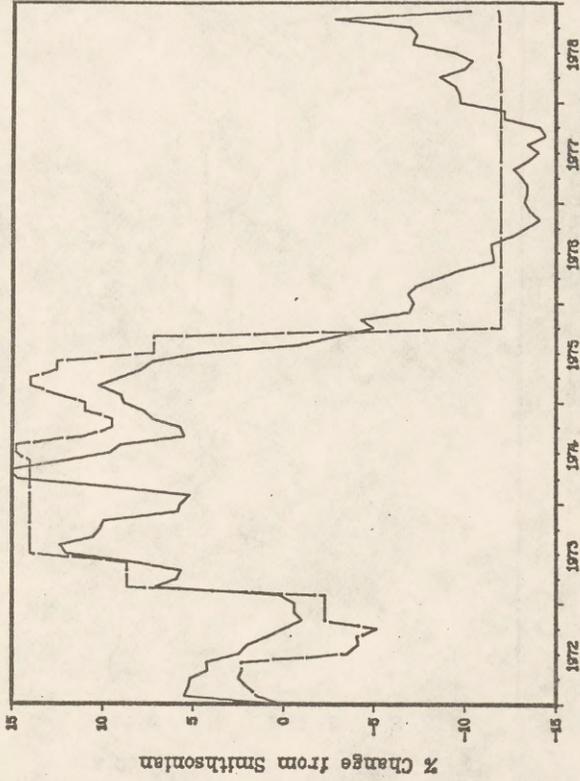


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Appendix I-24 to Statement by Aryeh Blumberg, before
 United States Senate Committee on Banking, Housing, and Urban Affairs, December 20, 1978

PARITY CHART: SOUTH AFRICA

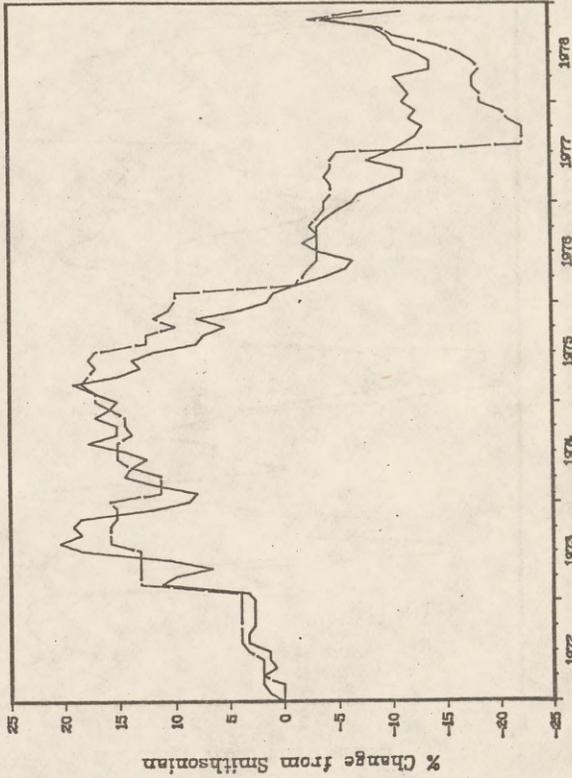


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Appendix I-25 to Statement by Aryeh Blumberg before
United States Senate Committee on Banking, Housing, and Urban Affairs, December 20, 1978

PARITY CHART: SPAIN

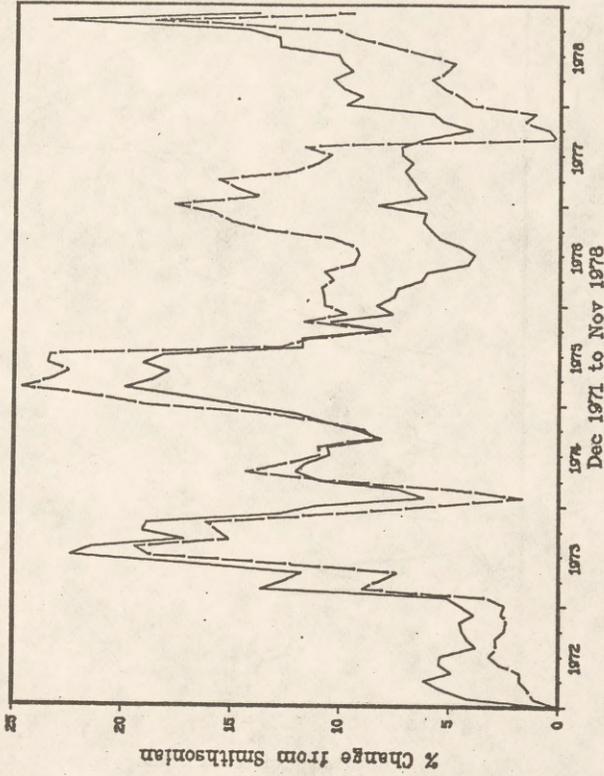


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Dec 1971 to Nov 1978

Appendix I-26 to Statement by Ayrsh Blumberg before
United States Senate Committee on Banking, Housing, and Urban Affairs, December 20, 1978

PARITY CHART: SWEDEN

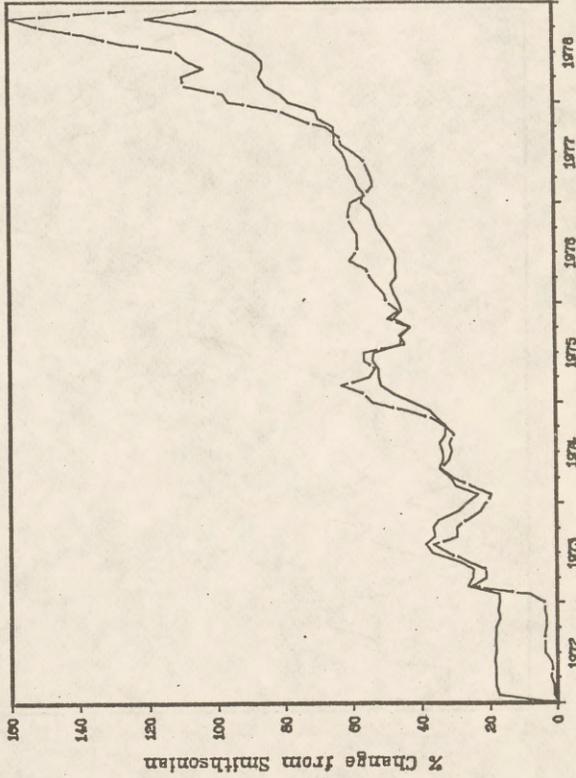


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Appendix I-27 to Statement by Aryeh Blumberg before
 United States Senate Committee on Banking, Housing, and Urban Affairs, December 20, 1978

PARITY CHART: SWITZERLAND

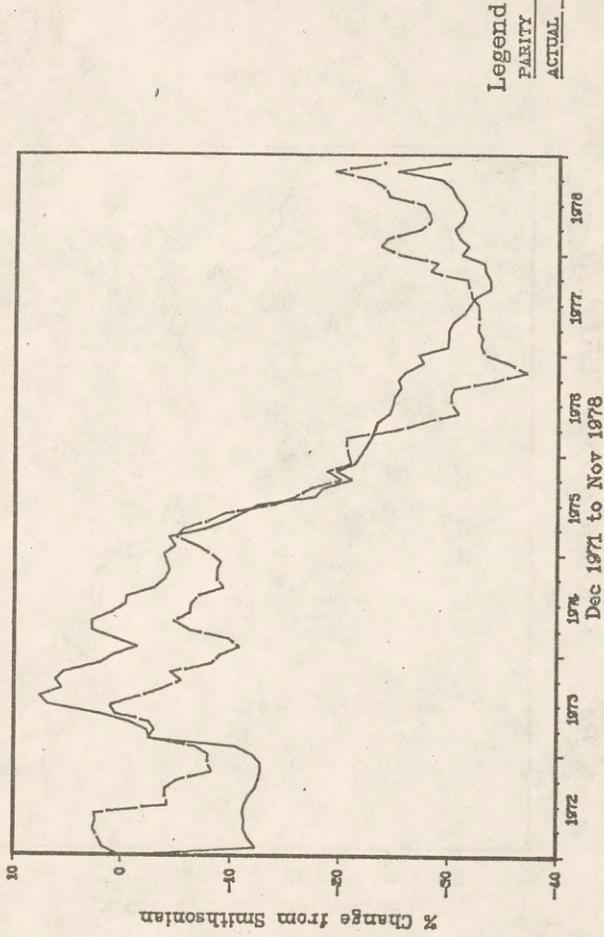


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Appendix I-28 to Statement by Aryeh Blumberg before
United States Senate Committee on Banking, Housing, and Urban Affairs, December 20, 1978

PARITY CHART: UNITED KINGDOM

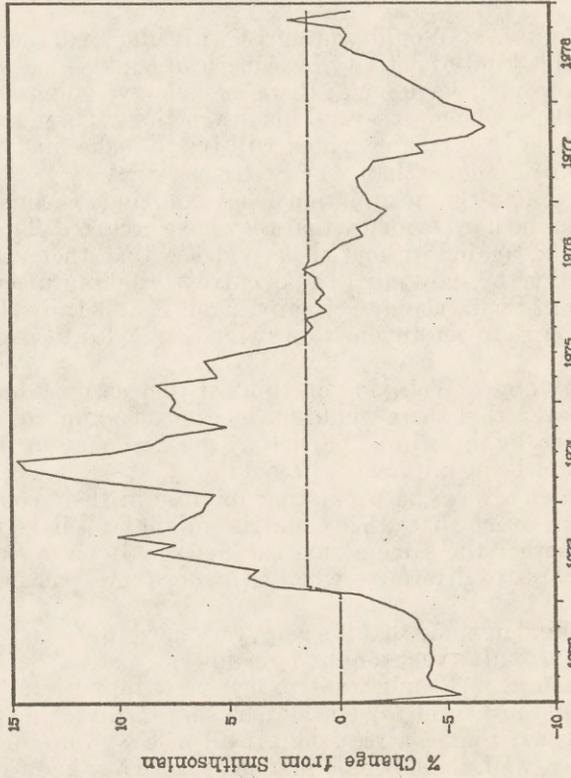


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Appendix I-29 to Statement by Arveh Blumberg before
United States Senate Committee on Banking, Housing, and Urban Affairs, December 20, 1978

PARITY CHART: VENEZUELA



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PARITY
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The CHAIRMAN. Thank you very much, Professor Blumberg.

Professor Aronson, how do you react to the response that Dr. Solomon gave us in his years of experience in the Federal Reserve he had seen no evidence of any action by the banks to manipulate exchange rates either in combination or alone and that they made a survey and had done their best to find whether or not this in fact had been going on?

Dr. ARONSON. I think he answered the question himself when he indicated that his own research focused exclusively on the American banks.

The CHAIRMAN. Would you agree with him that there is not evidence of this kind of activity by American banks?

Dr. ARONSON. I have none; there is obviously going to be a dealer here and there who goes beyond his instructions. There is occasionally a bank which is in trouble which will try to make up for losses elsewhere in the foreign exchange market.

Indeed, I find the information I have on rings is confined to 1973, 1974. I have no hard evidence that they have occurred. There is a great deal of talk, again, without firm evidence that there is some open position taken by individual banks currently taking place in Europe, primarily in Switzerland, Germany, France, and Italy. It's very difficult of course to get anyone to provide detailed information on such activity.

The CHAIRMAN. Well, do you think if that activity had been common, however, that there would have been some kind of action by the Government, by the injured parties, by those who might feel that their currency was being adversely affected?

They can't always be promoting interest in their country, and it would seem to me that other countries might well have taken at one time or another the same action the Federal Reserve Board took in surveying this to determine whether or not there was such concerted action.

It's the kind of thing that it's very, very hard to—

Dr. ARONSON. It's very tough to pin down.

The CHAIRMAN. People want to believe it in a way; I find many, many people just want to believe there's a conspiracy no matter what goes wrong: if there's a recession, if oil prices go up, or whatever it is; they say, well, these people planned that. They know exactly what they're doing. They're making a terrific ripoff of the consumer. They're doing it deliberately.

And you've run across people who have that theme constantly. So we'd like to have it as specific and as well documented as possible.

Dr. ARONSON. The information I got was largely from bankers telling tales on mainly their competition. That, of course, can be problematic as hard evidence. Nonetheless, vice presidents and senior vice presidents in charge of foreign exchange in the Eurocurrency operations in either London or New York consistently make identical claims.

The CHAIRMAN. How do you reconcile that view that there has been this kind of activity that often is perverse with your conclusion that special controls on banks and corporations and foreign exchange operations aren't desirable?

Dr. ARONSON. I don't think that it is a contradiction. While it may be desirable to regulate foreign exchange at an international level, it is not feasible for any country to do so alone.

The CHAIRMAN. Why wouldn't the right step at this point then be to require more detailed information?

Dr. ARONSON. I think more detailed information would be desirable.

The CHAIRMAN. Should we require such things as daily position taking on the volume of transaction?

Dr. ARONSON. I suspect that most of the banks keep that to some extent already.

The CHAIRMAN. Would you require U.S. banks to report their Luxembourg positions? We can do that. Or their Swiss positions or whatever their foreign positions might be.

Dr. ARONSON. Again, I don't think it's largely American banks causing the problem.

The CHAIRMAN. We can work with other countries and try to persuade them to develop the same kind of informational market so that we would have better knowledge.

Dr. ARONSON. I think that's very desirable. I think it's a process that you need to study very carefully, because what I'm very hesitant about is distorting a market through the creation of a system where it becomes burdensome enough to evade; it's likely to go in a direction that those trying to get good regulation, good information had not thought about, not intended.

The CHAIRMAN. Let me ask you, Professor Blumberg; you say on page 5, and I quote: "only policies that will effectively stabilize the U.S. price level will in the long run stabilize the dollar."

I agree with that. I think that's a good sound position. I think we have to be reminded of that.

Then you go on to say this:

I also believe that the U.S. should bear the burden of maintaining the dollar as the predominant medium of international exchange. This is an essential ingredient of the leadership role the United States should continue to hold in the world.

Overall, patriotic; we love our country; we're very proud of our country's leadership. But at the same time, I think that you're asking us to take on quite a burden, and you're asking us, for example, under some circumstances, to slow growth more than we would otherwise in the country; provide and accept a level of unemployment which we otherwise would not.

And I wonder if under those circumstances we should in view of the growth of the economies in other countries, due to the fact that we're not the only developed country in the world, why we should bear the burden, as you say, and have the dollar as the predominant medium?

Why not have an international medium instead of a single national medium?

Dr. BLUMBERG. Mr. Chairman, your second quotation from my statement is clearly in the realm of politics, and I did not make it just as an economist, but as a citizen.

The CHAIRMAN. Well, you're not running for office. That's almost the kind of thing you go out and make a stump speech on: The United States should be the leader of the world. The dollar must predominate.

Now for rational people, does that really make sense?

Dr. BLUMBERG. If it were possible to have an effective medium of international exchange, which presupposes a very high degree of collaboration among the major powers, that would be desirable. Failing that, I think there is really no better alternative to our bearing that burden.

The CHAIRMAN. Why should we just accept this "failing that"? It seems to me that we could move in that direction, we are in a world now in which other economies have grown marvelously with our great help. The German economy, the Japanese economy, the other economies that, by and large, have done that, with all their difficulties, with the inflation and so forth, over the last 20 years, they've recovered very well, and it's a better world because of it.

We ought to encourage it.

Dr. BLUMBERG. Well, they have what has turned out to be a long-run advantage, of having their plants bombed out during the Second World War, and they could start from the beginning.

The CHAIRMAN. Well, that's correct.

I just wonder whether or not we should bear the burden of maintaining the dollar as the predominant medium of international exchange.

And I take it that you say that we may have to. But if we could get an international medium, it might be preferable? Right?

Dr. BLUMBERG. There are burdens, and there are benefits. If we could have a functioning international monetary standard in an increasingly pluralistic world, if this burden could be shared among the major powers, that would in fact be preferable.

The CHAIRMAN. Now given your purchasing-power-parity theory, how do you explain the enormous exchange rate disparities in the Japanese yen and the Swiss franc?

Your parity charts indicate that, since late 1977, the actual rates for the yen and franc have exceeded the hypothetical rates reflecting economic fundamentals by 30 to 40 percent.

Dr. BLUMBERG. I assume you are referring to appendix I-16 and I-27?

The CHAIRMAN. That's right.

Dr. BLUMBERG. The Japanese yen is the only very clear-cut case where the actual rate is overvalued in relation to what the theoretically calculated parity rate indicates. I attribute this divergence of the actual rate from the parity rate to the attempt of major holders, including central banks and major institutions, to diversify their assets and to make the yen a portion of their reserve currencies. These transactions have tended to give an upward boost to the yen. Similar considerations apply to the swiss franc and the mark.

I would like to point out, Mr. Chairman, that I was very surprised when we updated these charts that we did not find that the German mark and the Swiss franc were not more overvalued than they actually are. In the case of the German mark, the disparity between the parity rate and the actual rate is about 5 percent right now and in the case of the swiss franc, about 12 percent.

The CHAIRMAN. The most striking difference is in your Canadian chart. They have a very erratic performance.

Dr. BLUMBERG. I would explain the Canadian results as being due primarily to political factors—namely, the Quebec question. That, in my opinion, is the major reason for the current undervaluation of the Canadian dollar.

The CHAIRMAN. The Quebec question has seemed to become less paramount in the last year or so—at least you haven't read as much about it.

Dr. BLUMBERG. Insofar as I have confidence in these charts, given the trend in the parity line, I would therefore foresee some recovery in the Canadian dollar during 1979 if this issue abates.

The CHAIRMAN. Dr. Aronson, you say in your paper that financial accounting standards, or standard 8, which covers reporting of foreign exchange earnings or losses, has contributed to excessive activity by corporations in the foreign exchange market, and contributed to exchange market volatility.

The question is: Should the accounting standards be changed? And if so, how?

Should we recommend that the private—it's up to them to make the change, but how should they change it?

Dr. ARONSON. My preference would be to have the quarterly figures reported, but not announced. Figures should be announced annually.

Dr. BLUMBERG. May I comment briefly on FAS No. 8?

The CHAIRMAN. Yes, sir. Go ahead.

Dr. BLUMBERG. I think that what has not yet penetrated the consciousness of financial officers sufficiently is that the exchange rate is not just a valuation coefficient. It's not just a number that is used to translate from one currency to another. Exchange rates are also prices.

I therefore think that good accounting practice requires adequate accounting for changes in the exchange rate, just as adequate accounting practice requires changes in financial statements that reflect changes in the price of oil, copper, and aluminum, and so on; rather than the use of fudge factors like "reserves."

The corporations have been concerned because, having taken foreign exchange positions, some have incurred large losses. This is reflected in their financial statements, and since it affects their price-earning ratios, they're disturbed by that.

But I tend to concur generally with the thrust of FAS No. 8.

The CHAIRMAN. Now, Dr. Aronson, you defend the central bank intervention; and, Professor Blumberg, you oppose it. So I would like to ask you gentlemen to discuss what roles should central banks play in the foreign exchange markets?

First, Professor Aronson.

Dr. ARONSON. The role has to be as a smoothing agent. Although exchange markets generally follow economic, as well as psychological and structural factors. But the adjustment process is very unsmooth.

The CHAIRMAN. Why is it so essential that it be smooth?

Dr. ARONSON. I simply find that when you're getting movements of 3, 4, 5 percent in a day, that it creates such a crisis perception within the corporations, within the banks, of always getting on top of what is happening, that we will not be able to get a movement back to our longer range perspective about how should an economy function; that, ideally, it would be much better if the foreign exchange markets could be left alone by the central banks.

The CHAIRMAN. Does it affect trade, or capital flows?

Dr. ARONSON. I think it influences industrial structure more.

The CHAIRMAN. If it doesn't affect trade or capital flows, I just wonder why we should intervene? Why the free market, which many people feel is likely to be more objective and certainly have greater integrity than the intervention by governments, why we shouldn't just leave it to the free market as long as it doesn't affect capital flows or trade deficits?

Dr. ARONSON. Because this kind of instability makes it very difficult for planning to take place; that this creates, really, distraction away from what the corporations should be doing.

I am not advocating that central banks should intervene to support exchange rates. I am not in any way suggesting the kind of exercises that central banks went through in the late 1960's of trying to hold off a market which perceives very clearly that exchange rates were out of line, and that political constraints were being brought to bear.

I believe however that exchange intervention by the central banks in the short term has prevented even greater potential instability in the short-term exchange rates—which would, if we're getting 3, 4, or 5 percent a day changes in the exchange rates with central banks, which is clearly moving into the wind against a market that is united, that has become in some ways disoriented where bid and offer rates have widened substantially. This provides some order in the readjustment that is needed.

The CHAIRMAN. Professor Blumberg?

Dr. BLUMBERG. I do not want to sound absolutist in stating that there's never any role for intervention. Obviously there occur, occasionally, crises in which policy makers charged with certain responsibilities come under pressure.

The CHAIRMAN. Like November 1?

Dr. BLUMBERG. That is not necessarily the best example. The failure of a major financial institution is a better example.

In my conversations with people at the New York Fed, when I tried to pin them down to "what do you mean by disorderly conditions?" they gave me what I believe essentially to be a correct answer: "We know what disorderly conditions are when we see them." But that gives them quite a bit of discretion. And then, sometimes the intervention may do some good; sometimes it may not.

I would again come back to the central theme of my statement: that we're dealing with symptoms, and that we should not pay so much attention to daily developments; that we should have somewhat longer range views.

Unfortunately, it is the traders and the other participants who take a very short-run view of markets, because that's in the nature of their business.

But the evidence that people like me can study with more leisure is: that no matter what you do, the actual rates eventually do conform. In the meantime, however, there may be volatility, and there may be significant movement.

The CHAIRMAN. Now you obviously believe that an anti-inflation policy is the key. But are there any policies dealing with the exchange market itself which could reduce this, ultimately?

Dr. BLUMBERG. I do not think so, sir.

The CHAIRMAN. You don't?

All right. Well, gentlemen, I want to thank you very much, again, for very competent and helpful testimony, for the fine statements and excellent responses.

We deeply appreciate it.

The committee will stand adjourned.

[Whereupon, at 12:50 p.m., the hearing was adjourned.]

[Additional material received for the record follows:]

BUSINESS ECONOMICS GROUP,
W. R. GRACE & Co.,
New York, N.Y., December 11, 1978.

HON. WILLIAM PROXMIRE,
*Chairman, Committee on Banking, Housing and Urban Affairs, U.S. Senate,
Washington, D.C.*

DEAR SENATOR PROXMIRE: I very much appreciate your invitation, in your letter of November 29th, to testify before the Committee on Banking, Housing and Urban Affairs hearings on "Trading in Foreign Exchange Markets" on December 20th. I regret that the demands on my time make it impossible to attend the hearing. I do, however, want to be of maximum possible assistance to the Committee and submit, as follows, my answers to your questions. Of course, these answers are my own personal viewpoints and do not necessarily represent positions of W. R. Grace & Co. or any of my colleagues.

Question 1. "To what do you attribute the recent, large movements in the foreign exchange market value of major currencies including the United States dollar, Swiss franc, Japanese yen and German mark? To what extent have exchange positions taken by U.S. banks and corporations contributed to the wide fluctuations?"

The U.S. trade deficit was the basic reason for the recent decline in the dollar and the rise in the Swiss franc, yen, and mark. But these exchange rate changes were probably exacerbated by movements out of dollars into other major currencies by foreign central banks that in earlier periods had held most of their reserves in dollars. While exact statistical data are not available, my conjecture is that U.S. banks and corporations were relatively unimportant in the recent exchange rate fluctuations. Actions of U.S. corporations appear to have been much more important in the 1971 dollar crisis when many companies with exposed dollar positions may have taken offsetting action in order to prevent losses. In the 1973 crisis leading to the second devaluation of the dollar, adjustments of U.S. bank positions may have been an important factor, but since the series of bank failures and foreign exchange losses, in 1974, I believe most U.S. banks have avoided large exposed foreign exchange positions.

Question 2. "What constitutes a 'disorderly' exchange market condition? What causes such condition to emerge and what causes it to disappear, that is, prompts the resumption of 'normal' trading?"

A disorderly foreign exchange market arises when buyers and sellers of a currency do not consider its basic purchasing power. Instead, they consider only past trends and sell currencies with falling exchange rates and buy currencies with rising exchange rates without reference to equilibrium values. Another feature of a disorderly currency market is that assets as well as working capital in a suspect currency are sold out while purchases of a favored currency extend beyond ordinary requirements for working capital.

There are cases—as with the German mark in 1923 and with some Latin American currencies—where a disorderly foreign exchange market does not disappear and the currency becomes nearly worthless. In the usual instance, however, the foreign exchange market—as with commodity markets—becomes "normal" when it becomes aware that the currency has fallen below its true value and has finally become a "good buy."

The main obstacle to returning a currency to "normal" trading is the vicious circle of currency depreciation and inflation so that—unlike in the case of a commodity where the price has fallen—a currency is not viewed as having been reduced in true value. Usually the vicious circle can be broken by some government action such as, for example, the UK stabilization program and IMF loan earlier in the 1970s or, as appears likely, the U.S. stabilization policies announced on November 1st.

Question 3. "What effect does the Eurocurrency market have on exchange rates, especially the rate for the dollar? Should Eurodollar holdings be subject to reserve requirements?"

The Eurocurrency market appears to have had an unfavorable effect on the dollar because relatively liquid dollar assets in the Eurodollar market have expanded more rapidly than in U.S. money markets. Thus there is a greater overall supply of dollars than would have occurred without the Eurodollar market. I do not believe that reasons for rapid expansion of Eurodollars have been fully explained in other than theoretical terms, but the lack of reserve requirements in the Eurodollar market is a very likely cause of this expansion. I believe that a high level committee should be appointed to study the effects of the Eurodollar market and to make recommendations, if considered necessary, for measures to restrain Eurodollar expansion.

Question 4. "Should banks be permitted to take positions for their own account in foreign currencies beyond those incidental to maintaining markets on behalf of their customers?"

In principle, U.S. banks operating in the U.S. should not take foreign currency positions that have nothing to do with customer requirements. I suspect, however, that this principle can be applied through existing bank regulations and inspection procedures.

Question 5. "Some countries require that foreign exchange positions be closed overnight. Are such measures effective in discouraging banks from taking large positions for their own account?"

This question, I believe, refers to the position of each foreign exchange trader and not necessarily to the overall position of all of a bank's borrowing and lending activities. It is a standard and desirable procedure, followed by many U.S. banks, that a trader's position at the end of the day be within prescribed limits, i.e. not too long or short in particular currencies and maturities. But the word "closed" in this question should not be interpreted to mean that a trader's position at the end of the day should be exactly even. Such a procedure would practically eliminate all late-in-the-day trading because traders would avoid taking any unmatched contracts for fear of ending the day in a long or short position.

Question 6. "Foreign exchange brokers in the United States are not presently subject to government supervision or regulation. Should foreign exchange brokers and dealers be licensed?"

I believe that foreign exchange brokers should be registered and possibly required to report a manageable amount of relevant information on the extent of their operations. Licensing of dealers and brokers, on the other hand, appear to be counter-productive. Based on experience with licensing in other occupations, it is usually the members of the occupation that determine requirements for a license and these requirements usually restrict entry into the field and make it less competitive. This would be a development that we certainly would not want in the foreign exchange market.

Question 7. "How could foreign exchange transaction monitoring and record-keeping by banks be improved? Would it be feasible to record oral transactions among traders as a cross-check on paper records of transactions?"

Monitoring and record-keeping of foreign exchange transactions by banks is not my specialty and I cannot comment on the first part of this question except to note that, since the bank failures of 1974, it is well-known that most banks have tried to improve their foreign-exchange-connected record-keeping. Aside from fundamental objections to the recording of conversations involving oral transactions, there would be the obvious problem of confidentiality of legitimate business discussed by bank customers with bank traders.

Question 8. "Should quotation of foreign exchange bids and offers by brokers be subject to regulation to insure accurate and uniform quotations and discourage the dissemination of false and self-serving rumors?"

In principle, brokers should make identical bids and offers to all participating banks who ask for this information at the same time. This principle is, however, of limited practical importance because equilibrium exchange rates tend to change within minutes. Thus, if at different times a broker makes varying bids and offers there is no way of determining whether the difference in bids/offers was due to (a) a change in the market or (b) discrimination against certain customers.

In connection with question 7, if your staff has not already seen it I would recommend an article by Richard Delbridge on "Foreign Exchange Dealings in

Banks—An Examination of Operations and Accounting Controls" in The Arthur Anderson Chronicle, April, 1975, of which I enclose a copy.

Please let me know if I can be of further assistance to you.

Sincerely yours,

JAMES L. BURTLE,
Vice President.

Enclosure.

[Reprinted from IMF Survey, Nov. 20, 1978]

MANAGING DIRECTOR SKETCHES PROCEDURES AND ROLE OF FIRM SURVEILLANCE
BY FUND

(Address by J. de Larosière, Managing Director of the Fund, on November 14:)

Announcement by the United States in August 1971 that it was discontinuing official convertibility of the U.S. dollar into gold or other reserve assets was soon followed by the start of an intensive examination of the international monetary system. At an early stage of these discussions it was thought that it would be desirable to establish something like a par value system, although with greater flexibility of exchange policies than under the original Articles of the Fund as well as symmetrical obligations for creditors and debtors. With the passage of time, and in the light of developments in 1973-74, it became clear that agreement on a complete plan of an international monetary system was not possible. It was thus decided to focus attention on an evolutionary process of reform. Certain amendments of the Fund's Articles of Agreement were seen to be among the early steps of this process, and these were completed with the entry into force of the Second Amendment on April 1, 1978.

Among the changes introduced by the Second Amendment were provisions which gave members of the Fund freedom of choice in respect of exchange arrangements but also gave the Fund newly formulated major responsibilities for surveillance over exchange rate policies. In my remarks today I will discuss the bases and scope of surveillance, how it is conducted, and what it is hoped to achieve through surveillance. It is my intention to describe general concepts and procedures. For reasons of confidentiality, I will not, and indeed may not, give attention to individual countries.

PROVISIONS OF ARTICLE IV

Under the new Article IV, which establishes the obligations of members regarding exchange arrangements, all members are expected to collaborate with the Fund and other members to assure orderly exchange arrangements and to promote a stable system of exchange rates. In particular, members are to endeavor to direct their economic and financial policies toward fostering orderly economic growth with reasonable price stability, and to seek to promote stability by fostering orderly underlying economic and financial conditions. These obligations of members reflect the philosophy of the new Article IV that lasting exchange market stability is most fruitfully pursued by encouraging stable domestic economic conditions. Therefore, the new provisions place less emphasis on exchange stability as an end in itself but see it rather as the reflection or product of stable underlying conditions.

As I have indicated, the Second Amendment gives members of the Fund the choice of exchange arrangements. A member can choose to allow its currency to float. It also can choose to maintain the value of its currency in terms of the special drawing right, another currency, or some composite of currencies; a member may choose to link its currency to another currency on a variable basis to take into account relative price movements. This right of members to maintain exchange arrangements of their choice does not relieve them of obligations relating to exchange rate policies or other policies that can affect the external value of the currency. All members are expected to avoid the manipulation of exchange rates or the international monetary system to prevent balance of payments adjustment or to gain unfair competitive advantage over other members. In other words, a member should not maintain an external value of its currency so high that the rate creates balance of payments difficulties for itself, nor a value so low that the member engages in unfair competition with other members.

The bases for the surveillance over exchange arrangements are established in the new Article IV. It is stated there that the Fund shall oversee the international monetary system in order to ensure its effective operation and the compliance of

each member with the obligations to which I have just made reference. To fulfill these functions, the Fund is to exercise firm surveillance over the exchange rate policies of members and to adopt specific principles for the guidance of members in regard to their exchange policies; these principles are expected to respect the domestic social and political objectives of members, and in applying the principles the Fund is to pay due regard to the circumstances of members. Each member is to provide the Fund with the information necessary for surveillance and to consult with the Fund on its exchange rate policies.

PRINCIPLES OF SURVEILLANCE

In response to the provisions of Article IV, the Fund adopted a decision on surveillance over exchange rate policies that elaborates principles for the guidance of members' exchange rate policies, principles of Fund surveillance over exchange rate policies, and procedures for surveillance. The decision is a first step, and it is understood that it may be modified or amplified as experience is gained in its operation or as developments occur in international monetary relations.

The principles for the guidance of members' exchange rate policies reiterate the injunction against the manipulation of exchange rates. The decision also states that members should intervene in the exchange market to counter disorderly conditions, and that in their intervention policies they should take into account the interests of other members, including those of the countries in whose currencies they intervene. This last injunction could be understood to imply understandings on intervention among members in certain circumstances.

The principles to guide the Fund in its surveillance over exchange rate policies highlight various developments which might point to a need for discussion by the Fund with a member on its policies in this area. The developments or warning signals cited include protracted large-scale intervention in one direction in the exchange market, unsustainable levels of borrowing or lending for balance of payments purposes, resort to restrictions or incentives for current or capital operations, the pursuit of financial policies that encourage or discourage capital flows to an abnormal degree, or a behavior of the exchange rate that appears to be unrelated to underlying economic and financial conditions. For the most part the indicators relate to policies or practices which are designed to limit exchange rate movements but may eventually lead to an undesirable degree of exchange rate instability.

I should make it clear that the developments I have just referred to are not intended to be applied in a mechanical way or to indicate an a priori judgment that the member's policies are not consistent with its obligations. Indeed, the decision on surveillance [see IMF Survey, May 2, 1977, page 131] specifically states that the Fund's appraisal of a member's exchange rate policies is to be based on an evaluation of developments in the member's balance of payments and is to be made within the framework of an analysis of the general economic situation and economic policy strategy of the member. The decision also prescribes that the appraisal must take into account the extent to which the policies of the members, including its exchange rate policies, serve the objective of the continuing development of the orderly underlying conditions necessary for the attainment of financial stability, sustained economic growth, and reasonable employment levels. This stipulation emphasizes the interrelationship of internal and external factors in exchange market behavior.

ROLE OF ANNUAL CONSULTATIONS

Procedures for surveillance are set forth in some detail for the decision that I referred to earlier. The Fund is to conduct annual consultations with members and periodic reviews of developments in exchange rates. Moreover, provision is made for discussions by the Managing Director with a member at other times, if the developments I have referred to suggest that there should be an examination of the question whether the principles for the guidance of exchange rate policies are being observed. I will be describing these procedures in some detail as I turn next to the question of how the Fund is conducting surveillance.

Annual consultations with members clearly take on a very important role in the exercise of surveillance, but it should be noted that consultations on the economic situation and policies of member countries have been a major feature of

the Fund's work for many years. The Fund's policy advice to individual members, as well as its handling of requests by members for the use of the Fund's resources, has relied heavily on the detailed understanding of a country's situation that can only be obtained through consultations. Also, the Fund's view of the evolving world economic situation and of policy responses that would be appropriate has been based to a substantial degree on the knowledge gained from these in-depth examinations of the economies of member countries. Thus, application of the principles of Fund surveillance does not call for major changes in the approach to consultations since comprehensive analysis of the general economic situation and economic policy strategy of the member always has been an objective of those discussions.

What is new is the increased responsibility of the Fund to ensure that members' policies contribute to, or at least do not impede, effective balance of payments adjustment. The Fund has this responsibility whatever the form of a member's exchange arrangements may be; indeed, the form of a country's exchange arrangements may not tell us a great deal about the way its exchange rate behaves in practice. For example, a member which ties the value of its currency to that of a country which follows a policy of floating may find that the effective exchange rate of its currency in fact fluctuates a great deal. In any event, the emphasis has to be on the need to avoid the development of situations where a member's exchange rate policy does not correspond to its underlying economic conditions, and to promote to the extent possible the policies that contribute to stable underlying conditions.

I should note that the mandatory consultations under Article IV—of which we already have had a large number—are being completed with "conclusions" of the Executive Director of the Fund; previously, regular consultations with countries that had accepted the obligations of official and market convertibility under the Articles of Agreement were voluntary and no conclusions were adopted because members were reluctant to have judgments made about their policies. As a result, this mode of influence by the Fund could not be exerted on the members that had the most prominent roles in international trade and payments. The "conclusions" that I have just referred to have focused on issues relating to the members' situation and policies, including their performance in respect of the principles and obligations under Article IV.

ROLE OF WORLD ECONOMIC OUTLOOK EXERCISE

Apart from consultations with individual countries, periodic reviews of exchange rate developments in general are conducted by the Executive Board in its discussion of the international adjustment process within the framework of an exercise on the "World Economic Outlook." This exercise was started several years ago to meet the need for an analysis of developments in and forecasts of production, prices, and international payments for a number of the larger countries and the main regions of the world. I should add that the staff of the Fund conducts special consultations with selected member countries in preparing for these discussions of the world economic situation; the countries covered include those whose policies are considered to be of major importance to the operation of the international monetary system, but other countries also are examined. They are selected according to changing developments and in an effort to obtain a comprehensive picture of the economic circumstances and policies of the member countries taken as a whole.

Recently, the world economic outlook exercise has been broadened to include the elaboration of a coordinated strategy of noninflationary growth and balance of payments adjustment. On the basis of discussions by the Fund's Executive Board, the Interim Committee of the Board of Governors on the International Monetary System, and the Board of Governors at the Annual Meeting of the Fund, broad understandings have been developed on what might be seen from time to time as a desirable economic strategy. These understandings now form part of the framework within which the policies of individual countries are appraised, and they are therefore a part of the process of surveillance. It is clear that for the major floaters the surveillance of exchange rate policies must be handled in part on a joint basis, and internationally agreed understandings about policies are needed to establish the standards for judging the economic performance of these countries and interpreting developments in their exchange rates. Of course, the ultimate responsibility for policies is that of the individual countries.

THE "DIFFICULT CASES"

Thus far I have discussed what might be termed the standard avenues to surveillance over exchange arrangements. That is, through the individual country consultations or joint examinations such as the world economic outlook exercise, problems are identified and discussed, with consequential effect on the authorities in question. Such procedures may be sufficient in most situations. But one cannot exclude the possibility of difficult cases in which serious questions arise whether the exchange rate and related policies of members are consistent with the agreed principles. In these circumstances, a special discussion with the member in question about its policies may be called for. I should add that over the years the Fund has gained a great deal of experience in formulating and conveying to the authorities of member countries its views on policy issues in these areas, not only when use of its resources has been involved but even when this was not the case.

In this discussion of how the Fund will go about its new task, I hope I have made it clear that surveillance cannot be limited to the examination of exchange markets, exchange rates, and exchange arrangements. It is not possible to understand or assess exchange rate developments without looking to the policies which create the underlying conditions; it is those policies which in the end determine the course of the balance of payments and the exchange rate.

I trust that we have learned that exchange rate stability—along with domestic price stability and sustained economic growth—can best be achieved through stable and compatible domestic policies adopted by all countries. Exchange market intervention alone cannot be counted upon to attain such stability, and exchange and trade restrictions are almost always undesirable, apart from generally being ineffective, as a means to exchange stability. I should also emphasize that a member which persists in inflating rapidly or in growing at a rate far below that of its potential output may not be fulfilling its obligations under Article IV, even though it may not appear to be contributing to exchange market disturbances in some overt way.

OBJECTIVES OF SURVEILLANCE

I turn next to why the task of surveillance is so important and what it is hoped to achieve through surveillance. I should say immediately that the Fund always has been concerned with, and has endeavored to deal with, problems that arise from exchange rate policies that appear to be inconsistent with the smooth and effective functioning of international adjustment. Also, there has been a keen awareness of the difficulties created by disorderly conditions in exchange markets. The Fund often made recommendations in practice to countries to modify their exchange rates or exchange rate policies, in connection with discussions of possible use of the Fund's resources and in the annual consultations.

But, under the par value system, the Fund often was not able to ensure that exchange rates were adjusted in a timely fashion, particularly by members with strong payments positions. The new Article IV, as I have indicated, envisages a more positive role of the Fund on exchange rate questions in fulfilling its obligation to exercise surveillance in this field. Nevertheless, the Fund cannot insist that a member change its exchange arrangements, and a member may change them without seeking the approval of the Fund.

Successful pursuit of surveillance would mean that exchange rate changes that are necessary for adjustment would not be delayed very long, as unfortunately occurred too often in the past. Experience has shown that such delays are costly because the maintenance of inappropriate exchange rates—and therefore of inappropriate price relationships—leads to an unsatisfactory pattern of investment and inefficiencies in the allocation of resources in general. Moreover, delays in adjustment can ignite strong speculative forces which bring disorder to markets and tensions among countries. The new approach to exchange rates recognizes that there can be substantial differences among countries in their economic priorities and policies, and the behavior of exchange rates must necessarily reflect such differences. Exchange rate flexibility is one of the means of accommodating divergences in circumstances and policies without resort to exchange restrictions or similar direct restraints that are damaging to economic prosperity.

While exchange rate flexibility can play an important role in adjustment, it should also be stressed that its effectiveness for that purpose is critically dependent on whether it is backed by suitable domestic policies. Considerable attention therefore has been given in the recent past to the need for countries whose

currencies have appreciated or depreciated by sizable amounts to be prepared to act on domestic demand to reinforce the beneficial effects of exchange rate changes. Without an adequate backup from domestic policies there is a risk that exchange rate flexibility may degenerate into rate volatility, with unfortunate repercussions on confidence in general and on investment in particular. This explains why the Fund has to be alert to the various factors influencing exchange markets. A major part of the task is to promote policies conducive to financial stability—it is evident that at present high and disparate inflation rates among the major countries contribute to instability in exchange markets. But at times the coordinated application of monetary measures and intervention may be needed to deal with erratic movements in exchange rates, i.e., movements that are clearly unrelated to underlying conditions.

Developing countries have been understandably apprehensive about the flexibility of exchange rates for the major currencies. This legitimate preoccupation does not mean that flexibility of rates for these currencies cannot involve benefits for the developing countries. Exchange rates that contribute to adjustment reduce the danger of protectionism, which can be very harmful to developing countries that are in the process of industrialization. Also, a smoothly functioning adjustment mechanism is helpful for the maintenance of a steady flow of capital to developing countries which typically run deficits in the current accounts of their balance of payments—in reflection of the abundance of opportunities for domestic investment relative to the availability of domestic saving.

Symmetry in the adjustment process is another important objective to be sought through surveillance. It is generally felt that the par value system worked in such a way that countries in a strong balance of payments position were under much less pressure to adjust than countries in a weak position. That is, a country running a payments surplus could exercise some choice as to whether it was prepared to accept more or less inflation—and thus had some freedom to decide on the extent to which it would facilitate or promote external adjustment—whereas a country experiencing a serious erosion of its foreign reserves position had little choice but to take remedial measures. Differences about the division of responsibilities among countries for initiatives to deal with external imbalances, undoubtedly have hampered adjustment and have been a source of political friction.

Under the new approach to exchange rate policies, the aim is to reduce—ideally, to eliminate—this asymmetry. Members are enjoined from gaining an unfair competitive advantage over other members or preventing effective balance of payments adjustment. To be sure, acceptance of this evenhanded approach in principle does not mean that its application is assured in practice. There is still a fear that the pressure on deficit countries to adjust will remain greater than that on surplus countries, and that surveillance will be exercised most effectively in the cases of members that turn to the Fund for financial support. Of course, it is not unreasonable that there should be some connection between conditionality in the use of the Fund's resources and surveillance. More generally, however, whether marked asymmetries can be avoided will depend in large measure on whether the domestic policies followed by member countries furnish a reasonably stable environment in which adjustments may be made.

NEED FOR COOPERATIVE SPIRIT

As I indicated earlier, surveillance by the Fund should help to limit the extent of disorderly conditions in exchange markets, although it has to be admitted that it is at times difficult to cope with erratic fluctuations of exchange rates. A factor that makes the handling of exchange policy, and therefore of surveillance, so difficult is the vulnerability of the balance of payments, particularly the capital amount, to short-term destabilizing influences. Some of the questions that arise in this connection go beyond the confines of the topic I am discussing today and relate to broad issues pertaining to the functioning of the international monetary system.

I have tried to sketch how we are proceeding to exercise surveillance over the exchange rate and related policies of members and what we hope to achieve. I should hasten to add that we are in the early stages of this process and our procedures undoubtedly will be refined as we gain experience in this endeavor. There is a full awareness on our part that assessment of exchange rate policies is a complex task, particularly because the economic setting in which exchange policy is framed and implemented has to be understood thoroughly and taken into account in the formation of judgments. Furthermore, we realize that most na-

tional authorities regard the exchange rate as a critically important price, and surveillance therefore has to be handled with a great deal of discretion. At the same time, however, surveillance needs to be both firm and impartial if the confidence of the member countries in the capacity of the Fund to discharge its new responsibilities is to be assured. In the final analysis the success of surveillance must depend on the members themselves—on the policies they follow and on their willingness to cooperate with the Fund and with each other.

