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To: Members of the Executive Board

From: The Secretary

Subject: Control of International Liquidity and Reserve Creation

The attached paper on some aspects of control of international liquidity and reserve creation has been prepared for a forthcoming meeting of the G-10 Deputies. It is now being circulated for the information of the Executive Directors before being transmitted to the G-10 Secretariat.

If Executive Directors have technical or factual questions relating to this paper, they should contact Mr. Hood (ext. (5)8977).

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INTERNATIONAL MONETARY FUND

Control of International Liquidity and Reserve Creation

Prepared by the Staff

June 25, 1984

Summary

The supply of international reserve assets and the availability of international credit to monetary authorities are important factors affecting countries' economic policies and thereby the performance of the world economy. In any assessment of the adequacy of international liquidity, these conditions of supply and availability, relative to the liquidity needs of the world economy, are likely to be more important than the aggregate reserve holdings reported by the monetary authorities. Indeed, official reserves and international liquidity may at times move in opposite directions.

In the interest of achieving adequate international liquidity, it is in principle desirable for the international community to be able to influence the supplies and availabilities that determine the state of international liquidity. It would be useful if these supplies and availabilities could be augmented whenever international liquidity was less than adequate and reduced whenever international liquidity was excessive. A fully articulated international liquidity policy of this kind is not, however, practical in present circumstances. Quite apart from the difficulty of achieving international agreement on the existing state of international liquidity, there is also a lack of effective control over some of the liquidity components.

Effective international control is exercised over those elements in international liquidity that are provided through the Fund--conditional access to Fund resources under various credit facilities and Fund-related reserve assets (SDRs and reserve positions in the Fund). In a similar vein, there is multinational control by the group of countries forming the European Monetary System (EMS) over the liquidity availabilities provided to its members through the System, and there are established limits for certain bilateral or multilateral short-term credit ("swap") arrangements between the U.S. Federal Reserve System and a number of other central banks.

Control over other forms of liquidity and reserve creation is exercised in the first instance through market processes, which do not lend themselves to being used as direct levers of international liquidity policy. Furthermore, the conditions that determine the availability of reserves through the capital markets--chiefly the access to and cost of international credit--may also affect exchange rates, balance of payments

adjustment, and, over time, the net accumulation or repayment of international indebtedness. National authorities bring their policies to bear upon these market processes in accord with their various objectives relating to domestic performance, balance of payments adjustment, and exchange rates.

In these circumstances, and in the absence of more direct means of constraining the policy actions of national monetary authorities, the scope for international liquidity policy is limited by the willingness of countries to give weight to international considerations in the determination of their policies and to respond to the representations made in international fora, especially in the Fund through the exercise of surveillance. International surveillance appears at present to be the only practical mechanism of comprehensive control over international liquidity.

In the Articles of Agreement of the International Monetary Fund, the Fund is given the tasks of overseeing the international monetary system and of exercising "surveillance over the exchange rate policies of members" (Article IV, Section 3). The Articles also require members to collaborate with the Fund and with other members in pursuit of the objective of "better international surveillance of international liquidity" (Article VIII, Section 7). The considerations advanced above suggest that surveillance over exchange rate policies and surveillance of international liquidity cover much the same ground and are highly interdependent. In practice, surveillance in these two areas has to be conducted in an integrated manner.

Introduction

This paper has been prepared as a complement to another background paper provided to the G-10 Deputies by the representatives of the BIS. Accordingly, it is not a comprehensive analysis of the issues of international liquidity. Rather, it addresses a specific aspect of the topic, namely, the control of international liquidity. In doing so, it stresses the distinctions to be drawn between international liquidity and international reserves and the implications of these distinctions for the control of liquidity and reserves. The paper is essentially expository in character. It has two main sections. The first, discusses the nature of liquidity and reserves and the problem of their measurement. The subject of control is addressed in the second main section.

I. International Liquidity and Reserves--Concepts and Indicators

Concepts

International liquidity is a broader concept than that of reserves. International liquidity embraces not only actual holdings by monetary

authorities of the reserve assets that may be used to make future international payments, but also various arrangements and even expectations as to arrangements that may be made by authorities in order to acquire such assets in the future. Official holdings of international reserve assets are nonetheless the component of international liquidity that is most amenable to measurement and quantitative comparison with other economic magnitudes.

Changes in reserve holdings do not necessarily indicate the magnitude, or even the direction, of changes in the overall state of international liquidity. There are three reasons for this looseness in the connection between changes in official holdings of reserve assets and alterations in the state of international liquidity.

First, as already noted, the holding of reserve assets is only one way in which the monetary authorities of a country can make provision for a future need for international financial resources. Other provisions may include swap arrangements, credit lines, maintenance of stocks of salable commodities other than gold (which is the only commodity conventionally counted as a reserve asset), holdings of foreign financial assets that are not counted as reserves, and preservation of assured access to international capital markets. An increase in a country's reserve holdings, for instance, may merely be a partial offset to a reduction in its access to liquidity in other forms; its reserves and its overall liquidity position would in this case have moved in opposite directions.

Second, in any assessment of the state of international liquidity more importance attaches to the conditions under which various amounts of financing could be provided than to the amount of funds actually available at a particular time. The capacity of present holdings and availabilities to finance future balance of payments deficits is always somewhat uncertain. As regards reserve assets, the main source of uncertainty is the volatility of asset prices, including exchange rates. For instance, as a result of changes in the price of gold, the market value of official gold holdings measured in SDRs rose 15-fold from 1971 to its peak in January 1980, sometimes doubling within a 12-month period, and then declined by 50 percent over the following 18 months. Fluctuations in the value of foreign exchange holdings as a result of exchange rate changes were much less pronounced but were nonetheless far from negligible. All the same, with gold markets having calmed in recent years, short-term changes in the availability of reserves as a result of price movements are generally small relative to the changes that can occur in the availability of international credit as a result of changes in the world credit markets or in the economic situation of countries seeking credit, or both.

The availability of credit expresses itself through the interest rates that must be paid, through other conditions (including changes in a country's policies) that must be accepted, and through limits (including zero) on the amounts that can be obtained. Clearly, the

degree of assured availability varies greatly between different types of credit, say, from an arrangement among central banks to swap currencies up to an agreed limit, at one end of the spectrum, to international bank loans expected by the authorities of a country to be available at reasonable interest rates when needed, at the other end. For this reason, the availability of credit cannot be measured with precision. To give an illustration, the doubling of the annual average of the London interbank offered rate (LIBOR) on three-month U.S. dollar deposits from under 9 percent per annum in 1978 to almost 17 percent in 1981 approximately halved the debt that could be supported at a given periodic debt service payment. ^{1/} After 1981, these interest rates fell back again, and in the first quarter of 1983 they almost reached the level of 1978. The swings in international liquidity implied by these interest movements are substantial. Nevertheless, the change in the credit component of a country's liquidity position caused by the disappearance of any access to credit markets that previously existed, or by its reappearance, is even greater than the effect of a change in the interest rate at which credit is available.

The third reason for the lack of a firm association between reserve movements and changes in the state of international liquidity has to do with variation in the need for reserves. The state of international liquidity is enhanced both by a rise in reserve holdings and by a decline in the need for reserves. When other components of international liquidity grow in proportion to world liquidity needs, the required growth of reserve assets may be assessed by reference to the trend growth of prospective external settlements. This prospective need for reserves has often been assumed to grow more or less in proportion to the value of external transactions, which has sometimes been proxied by the value of imports. Whenever the non-reserve components of international liquidity change, relative to the need for these liquidity components, the need for reserves is likely to be affected as well. In these circumstances, movements in the ratio of reserves to imports would not, by themselves, give a reliable indication of changes in the adequacy of reserves or of international liquidity as a whole.

Recent history contains several examples of sudden changes in the need for reserves. The shift from fixed to floating exchange rates, by itself, presumably reduced the reserves that it was optimal for countries to hold, even though other changes occurring at the same time appear to have offset this effect. Again, the reserve needs of countries relying to a substantial extent on borrowing in international capital markets are sharply increased when their access to these markets is impaired or

^{1/} The decline in availability would be even more pronounced if allowance were made for the effect of price movements on the real value of debt service payments. For instance, the unit value of exports of non-oil developing countries increased by 10 percent per annum in the period 1977-79 but decreased by 6 percent per annum in the years 1980-82.

when there is a sudden rise in international interest rates. It is, of course, precisely at times of an increase in the need for reserves for reasons of a decline in non-reserve liquidity that an actual increase in reserve holdings is most difficult and costly to achieve. For this reason, an impairment in non-reserve liquidity is unlikely to be offset to any large extent by an increase in reserve holdings.

Thus, developments in the demand for and supply of international reserves do not provide a sufficient basis for assessing changes in the adequacy of international liquidity because reserves afford only part of the total availability of liquid resources, because present holdings and availabilities do not fully indicate the command over liquid resources they will convey at the time they are needed, and because this command over resources must in any case be seen in relation to the prospective long-term global need for such resources as judged by the international community in the light of the situation of the world economy.

Indicators

While there are many accounts available of developments in international reserves, the historical evolution of international liquidity is much less well documented. This is not surprising, since international reserves are easier to measure, although this category is by no means free of conceptual and measurement problems. For instance, it is an arbitrary convention that gold holdings are part of reserves while holdings of silver or oil are not, and that certain financial assets held by the authorities are counted among reserves and others are not. Moreover, these conventions are not uniform among countries.

Another general problem is that the market value of reserve assets is generally subject to change, particularly when the reserves are being used, except when they are perfectly liquid. The liquidity of an asset depends on the speed with which it can be turned into ready cash without loss or, alternatively, on the loss expected to be sustained in selling the asset for cash without delay. The meaning of this concept is less clear in an international financial context, where the notions of "money" and "cash" are more ambiguous, than in a domestic setting. Nevertheless, there are two relevant practical implications: First, the liquidity of gold and currencies traded in a relatively small and thin market is less than that of major reserve currencies. Second, the liquidity of holdings of an asset other than money decreases with the amount held relative to the normal size of the market for that asset.

This second proposition also throws light on the proper interpretation of aggregate figures for reserves of groups of countries or all countries taken together. Such aggregates must be interpreted to indicate the availability of reserves to the typical country in the group, rather than the availability to the group as a whole. For instance, if many industrial countries were to sell their gold holdings in order to obtain U.S. dollars for intervention in the exchange markets, the price of gold would decline and the proceeds from these sales would fall far

short of the recorded market value of these gold holdings. The same is true for other assets, including currency holdings, whose prices are determined in markets that are small relative to the aggregate official holdings of these assets.

This caveat does not apply to reserve assets whose prices are not determined in the market, for instance, SDRs today or gold under the international gold standard before the first world war or under arrangements in effect up to 1971.

In the aggregate, countries' official holdings of reserves have borne a similar relation to their imports in the last two decades as they did before the start of the Great Depression, in 1928 (Table 1). Both then and in more recent years, reserves represented, in the aggregate, about five months' imports. In the 1930s and 1940s, when imports were relatively depressed and reserves had been sharply raised, in part by the increase in the price of gold in 1933, the ratio of reserves to imports had been very much higher--reserves represented 14 months of imports in 1938. It took a lengthy period of unusually slow growth in reserves during the first two decades after the end of World War II to re-establish the relationship between reserves and imports that had prevailed in the 1920s.

Even though the overall size of reserves relative to imports has shown little net change from the 1920s to date, the composition of reserves is quite different now from what it was then. More than three fourths of reserves was held in the form of gold in 1928, with the remainder accounted for by currency balances (chiefly sterling). In the 1970s and 1980s, the market value of official gold holdings represented less than one half of total reserves as conventionally defined. Moreover, in view of the volatility of gold prices in recent years, gold must at present be considered a reserve asset of relatively low liquidity and its contribution to total liquidity is probably considerably less than one half of the contribution of all reserve assets. If allowance is made for the reduced liquidity of gold reserves in recent years, the ratio of total reserves to imports in the 1970s and 1980s would seem to overstate the liquidity afforded by these reserves in comparison with earlier decades. The ratio of non-gold reserves to imports in 1983 was 23 percent--a little higher than the ratio of total reserves to imports in 1913 but substantially lower than that ratio in 1928.

Since the 1920s, foreign exchange holdings have become a much more prominent part of reserves. The bulk (almost three fourths at the end of 1983) is denominated in U.S. dollars, with one half of the remainder consisting of balances of deutsche mark. Finally, there has been a shift toward currency composites. 1/ SDR-denominated assets (SDRs proper and

1/ In view of the provisions with respect to value maintenance, reserve positions in the Fund could be considered currency composites even before they were denominated in SDRs.

Table 1. World Reserves and Their Composition, World Imports, and the Ratio of Reserves to Imports, Selected Years 1913-83 ^{1/}

(In billions of SDRs)

	Reserves									Memorandum:	
	Total		Gold		Non-Gold					World imports	Ratio of reserves to imports (Percent)
					Foreign exchange			Fund-related			
					Total	Cur-rencies	ECUs	Total	Reserve positions		
1913	5	4	1	1	1	--	--	--	21	21	
1928	13	10	3	3	3	--	--	--	31	42	
1938	28	26	2	2	2	--	--	--	24	117	
1948	48	32	15	14	14	--	2	2	60	79	
1953	51	34	17	15	15	--	2	2	79	65	
1958	58	38	20	17	17	--	3	3	105	55	
1963	67	40	27	23	23	--	4	4	148	45	
1968	86	46	39	33	33	--	7	7	230	37	
1973	213	95	118	103	103	--	15	6	9	457	47
1978	427	180	247	224	224	--	23	15	8	994	43
1983	708	345	364	310	268	43	54	39	14	1,617	44

^{1/} Reserves are at the end of years shown, imports are for calendar years, and ratios are calculated from (unrounded) data for year-end reserves and corresponding calendar year imports. Figures for 1913, 1928, and 1938 are taken from IMF, International Reserves and Liquidity, Washington, D.C. 1958.

reserve positions in the Fund) made up almost 8 percent of reserves and 15 percent of non-gold reserves in 1983, while all currency composites (ECUs and SDR-denominated reserves) accounted for 14 percent of reserves and 26 percent of non-gold reserves.

A matter of some surprise in the historical record of reserve ratios contained in the last column of Table 1 is the low ratio for 1913, which was less than half of what seems to have been the normal relation in the last two decades. In 1913, when reserves are generally judged to have been adequate, the world economy appears to have functioned with reserves, most of which in the form of gold, worth only two and one half months of imports. This was possible because an effective balance of payments adjustment process, based on the monetary role of gold, kept external imbalances small in relation to the volume of external trade and because remaining imbalances were settled largely through accommodating private capital movements. Reflection on the liquidity situation in 1913 highlights the importance of international credit conditions in the assessment of the adequacy of international reserves and liquidity.

As already noted, the availability of international credit cannot, in general, be quantified with any precision, except insofar as it represents credit availabilities that are prearranged up to specified limits by governments or central banks. Credits have been available under swap arrangements maintained between the Federal Reserve System in the United States and other central banks since the beginning of the 1960s (Table 2). When the amounts agreed between central banks are doubled to reflect the fact that these lines are available to either party, the contribution of these arrangements to the liquidity position of the countries involved appears significant. In the 1980s, these availabilities have been augmented by the credit lines maintained among members of the EMS. As a result, the total amount available under these two credit networks at the end of 1983 was equivalent to almost SDR 80 billion. The larger part of these credit lines was available without significant policy conditionality.

While the two credit arrangements just discussed are concluded among a limited number of participants, credit available through the Fund enhances the liquidity of the vast majority of countries participating in international trade and exchange and thereby constitutes an important element in global liquidity. Fund credit can be obtained under various facilities, including some special facilities related to export performance and the cost of cereal imports that require particular circumstances for their activation. In order to keep the presentation simple, Table 2 shows only the access members have to Fund credit under the regular stand-by and extended arrangements, including the increased availabilities under the policy of enlarged access in effect since 1981.

The resources of the Fund are generally available to members in connection with policy programs, agreed between the member and the Fund, designed to achieve a viable balance of payments situation in the medium

Table 2. Indicators of International Liquidity,
Ends of Selected Years 1948-83

(In billions of SDRs)

	Available Liquidity				Memorandum:		
	Reserves		Credit lines between central banks <u>1/</u>	Unused access to Fund <u>2/</u>	Net international bank loans <u>3/</u>		Net new issues of international bonds <u>4/</u>
	Total	Non- gold			Outstand- ing loans	New loans	
1948	48	15	--	7	n.a.	n.a.	n.a.
1953	51	17	--	9	n.a.	n.a.	n.a.
1958	58	20	--	8	n.a.	n.a.	n.a.
1963	67	27	4	15	n.a.	n.a.	n.a.
1968	86	39	26	18	n.a.	n.a.	n.a.
1973	213	118	32	28	175	n.a.	8
1978	427	247	46	57	407	73	24
1983	708	364	79 <u>5/</u>	[338, 421]	1,036	62	56

1/ Except for 1983, this column represents swap facilities maintained as part of the Federal Reserve network of credit lines. As amounts agreed under these arrangements are available to either party, the amount recorded in this column is twice the amount of the agreed credit lines. For 1983, see footnote 5.

2/ This represents the summation of the unused portions of members' maximum access to Fund credit under stand-by and extended arrangements, but excluding access to credit under the special facilities. A member's maximum access is taken to be equal to 100 percent of quota for the selected years from 1948 to 1963; 160 percent of quota for the years 1968 and 1973; 165 percent of quota for 1978; and, alternatively, 408 or 500 percent of quota for 1983.

3/ Equal to net international bank lending identified in: Bank for International Settlements, International Banking Statistics, 1973-1983, Basle, April 1984, Table 2.

4/ Taken from Organization For Economic Cooperation and Development, Financial Market Trends, March 1984 and IMF, International Capital Markets, Developments and Prospects, various issues.

5/ In addition to the swap lines described in footnote 1, this item contains SDR 21 billion of unused short-term and medium-term credit facilities available as part of the EMS arrangement.

term. Although these credit lines cannot be drawn upon simultaneously by all countries, their sum can nevertheless be compared with similar aggregations of assets or credit facilities. In the first two decades of the Fund's existence, unused Fund credit available was approximately one half the size of non-gold reserves held and one fifth of total reserve holdings. In the 1970s, the credit facilities in the Fund increased much more slowly than countries' reserves, and unused Fund credit was generally less than one quarter of the size of non-gold reserve holdings. With the advent of the enlarged access policy, these tendencies were reversed, and the unused access to Fund credit at the end of 1983 was of the same order of magnitude as non-gold reserves.

This comparison suggests the importance of recalling a qualification discussed earlier in the context of the interpretation of global reserve figures. Just as all, or even most, reserve holdings could not be used at the same time without affecting their aggregate value, so also could the total amount of credit available through swap arrangements or through Fund facilities not be taken up simultaneously without exceeding the resources supporting these facilities. The global figures must therefore be interpreted as indicators of the liquidity available to the typical country. It is clear that this indicator cannot be applied to countries that, because of their size or for other reasons, cannot be considered typical. For instance, the United States, with a present quota of close to SDR 18 billion, could not count on access to Fund credit of 400-500 percent of quota, since the resources of the Fund, including its present borrowing possibilities through the General Arrangements to Borrow and other channels, would be exhausted long before a credit of that magnitude could be given. All global representations of available amounts of reserves or credit must be understood with these limitations in mind.

A comparison that would be of great interest is one between credit available from the Fund and credit that countries could obtain through private capital markets. However, it is not possible to estimate the unused access of countries to these markets. That the potential amounts available from private credit sources have recently become quite large relative to other sources of finance can be seen by comparing the amount of outstanding international bank loans to all non-bank customers of about SDR 1 trillion at the end of 1983 (Table 2) with the outstanding Fund credit of SDR 30 billion at that date or with the total value of world reserves of some SDR 700 billion. Another indication of relative magnitude can be obtained by comparing the credit flows in 1983 through the banking system and the international bond market of SDR 62 billion and SDR 56 billion, respectively, with the net increase in Fund credit of SDR 11 billion and the increase in non-gold reserves of SDR 33 billion in the same year.

Changes in the ease or stringency of international liquidity cannot be measured by reference to movements in a single aggregate or a single ratio. The sources of liquidity are disparate, and the amounts that

could be provided from them are not additive; they are provided under different conditions (including costs) and with different--and on occasion varying--probabilities. At the end of the spectrum represented by holdings of the principal monetary assets of the system, the quantity or value held are useful indicators of the availability of international liquidity. At the other end, represented by access to private international credit, the rate of interest in relation to inflation and the spread above LIBOR may be the relevant indicators, supplemented in some instances with information about the market's perception of the credit-worthiness of various countries.

The overall assessment of the global adequacy of international liquidity, taking into account the contribution of all components as well as the position of all countries, depends necessarily on a qualitative judgment. This paper does not pursue the problems of arriving at such judgments, but passes instead to an exposition of the controls over the generation of liquidity, including reserves, that are currently exercised in the system.

II. International Liquidity and Reserves--Control

In considering the issue of control over international liquidity and reserves, it is useful to distinguish the channels through which reserves and other components of liquidity are generated. Control in one form or another may be exercised over the generation of liquidity in each of these channels. Beyond the controls that operate at the level of these specific channels are those that operate more generally by affecting the generation of liquidity in more than one or in all channels. Both the specific controls and the more general controls may operate on either or both the supply of and the demand for liquidity or reserves. To the extent that the controls affect the felt need for liquidity, they may be thought of as affecting the state of international liquidity as well as the effective supply of such liquidity, for, as suggested in the previous section, the state of international liquidity is to be regarded as a function of the supply of liquidity relative to the need for it.

Countries may acquire liquid resources, or establish access to such resources through a variety of channels: through operations in the gold market, through arrangements among monetary authorities, through purchases in the exchange market, through market borrowings, through SDR allocations, through transactions with the Fund. It is proposed, first, to discuss controls over the generation of reserves and liquidity that operate through these specific channels and afterwards to refer to the Fund's surveillance activities, which operate at the more general level.

Operations in the gold market

Although monetary authorities may acquire reserves and liquidity by acquiring gold in the gold market, the value of these reserves has in recent times been much more affected by changes in the market price than

by changes in the amounts of gold held in official reserves. In these modern times, the control over the generation of international liquidity through the gold channel is exercised by the gold price. Although at the present time the official demand for gold as a reserve asset is evidently not responsive to the price of gold, the price establishes the exchange value of such gold as is held in reserves.

Arrangements among monetary authorities

The types of arrangements among monetary authorities that lead to the generation of forms of international liquidity are the EMS, other less comprehensive standing arrangements such as the bilateral swap network centered on the Federal Reserve System, and more ad hoc arrangements entered into usually in some time of crisis. There is no general observation to be made about the control of international liquidity through such arrangements save the observation that each arrangement prescribes its own terms under which credits may be provided.

For example, liquidity creation by the EMS is determined by a number of credit arrangements. The total amount of liquidity that could remain continuously outstanding for more than about two months is limited to about ECU 31 billion. The very short-term financing arrangement provides credit facilities for countries that participate in the exchange rate mechanism of the EMS. Credits are automatically available for participants whose currency values have reached the maximum permitted within the established margin of fluctuation. Such credits are not limited in amount but are expected to be liquidated in a short time period (45 days from the end of the month in which the debt was incurred). The short-term monetary support system provides credit facilities for somewhat longer time periods and is available to all EEC member countries. This facility could provide ECU 14 billion in credit for as long as nine months (an initial duration of three months, twice renewable). The use of this facility is linked to the need for short-term financing caused by a temporary balance of payments deficit. Finally, two medium-term facilities could provide as much as ECU 17 billion in credits for longer periods to members with serious balance of payments difficulties. Credits from these facilities are subject to a Council decision and are linked to economic policy conditions.

The outside limit of the creation of liquidity by any particular bilateral swap arrangement between a national monetary authority and the Federal Reserve authorities is set forth in the arrangement itself as well as the conditions under which the provision to create such amounts of liquidity may be activated. The overall total of the Federal Reserve swap network is fixed as a policy matter by the Federal Reserve authorities.

Ad hoc arrangements, such as the arrangement made by the Mexican authorities with the BIS in 1982, provide explicitly for the amount of liquidity to be created under each such arrangement.

Acquisition of reserves through exchange market intervention

Control over the extent of this activity is on the whole very diffuse and difficult to define. At the level of the individual monetary authority, practice ranges all the way from extreme forms of exchange control to intermittent intervention in an otherwise free market with the object of influencing the exchange rate.

In the extreme forms of exchange control, there is, to all intents and purposes, no exchange market. Residents who acquire foreign exchange are required to sell it to the authorities and residents who require exchange must buy it from the authorities. The net acquisition of official foreign exchange reserves through the exchange control mechanism depends upon the balance of the demands and offers at the price at which the authorities deal. If there is a commitment to deal at a given price--a fixed rate regime--the authorities are obliged by the nature of that commitment to deal at that price and the effect of their dealings upon their reserves will depend on the market forces generating demands and supplies at that rate. With such an extreme form of exchange control, no impact on the balancing at that rate can be expected from the adjustment of exchange holdings in the portfolios of residents in the private sector. In the absence of exchange controls, but with a firm commitment to the rate, the net balance to be taken up or surrendered by the authorities will be affected by all the forces in the market that operate under an exchange control regime, plus the additional adjustments that the private sector is prepared to make to its holdings of exchange in response to market forces. There is a sense in which, therefore, a commitment to a fixed exchange rate implies a surrender to market forces of the determination of that portion of a country's international reserves that is acquired by purchases in the exchange market. Of course, the country may influence the forces of demand and supply in the market for its currency and thereby indirectly modify the market's impact upon its reserves. Equally, other countries' policies are among the forces operating in the market for a given country's currency and accordingly may affect that country's exchange reserves. Indeed, if the commitment to the fixed rate is to be sustained, then the monetary policies of countries may not be chosen independently of this commitment. In particular, comprehensive sterilization of reserve movements is not consistent with maintaining a fixed rate. The history of reserve movements in the recent period of fixed rates, as indeed under the gold standard, offers illustrations of the consequences for reserve movements of varying degrees of acceptance of this principle by national monetary authorities.

It follows that a general commitment to fixed exchange rates as under the original Bretton Woods Articles implies that the market governs the extent to which reserves are created through the channel of market intervention. Of course, under such a regime, other channels for the creation and distribution and potentially the control of international liquidity may be activated. And, as noted above, the exchange market itself may be affected by a variety of national policy measures, which, in principle, may be coordinated internationally in varying degrees.

The less firm is the commitment to fixed exchange rates, the less is the role of the exchange market in determining the level of reserves of a country and the less a country's need to depend upon other channels of supply in order to adjust the level of its reserves. The market may still play some role, of course. Clearly this is the case if the authorities continue, albeit only occasionally, to intervene in the exchange market with the object of influencing the rate. Naturally it is more difficult to acquire reserves if the external value of the currency is falling, and conversely.

Both among countries committed to fixed rates, as for example within the EMS, and among the major industrial countries with respect to floating dollar rates, there have been efforts to concert the exchange market intervention that is undertaken by national authorities. This has been a more formal effort within the EMS in respect of cross rates for the currencies of EMS members than among the major industrial countries in respect of dollar exchange rates. It is probably fair to say, however, that the concertation has been focused most upon the exchange rates, to a lesser degree upon the distribution among countries of the reserve effect of intervention, and least of all upon the effect on total international liquidity. Two possible effects of concerted intervention upon liquidity may be distinguished in principle. It is arguable that the total intervention required in a concerted effort would normally not be greater than that required in an unconcerted effort. This proposition has, however, to be modified by considerations relating to the distribution of the intervention effort among the authorities whose currencies are appreciating and those whose currencies are depreciating. Intervention by the appreciator induces an increase in reserves, while the converse tends to be true for intervention by a depreciator. Accordingly, the net effect depends upon the distribution of the intervention effort, and the respective shifts in monetary policy; this distribution will almost certainly be a key element in any understanding that underlies a coordination effort.

A conclusion of some generality from this discussion might then be that an undertaking by nations to defend their currency values through official exchange market transactions is in itself a device for leaving the control of the creation of international liquidity through intervention to the interplay of market forces in the exchange market. It may or may not be decided that other supplementary means of controlling international liquidity are called for in these circumstances. Conversely, a relaxation of the commitment to fixed rates widens the opportunities for countries to adjust their reserve positions through actions in the exchange markets.

Acquisition of reserves by borrowing in foreign capital markets

As mentioned above, international capital markets may be the source of reserve accumulations in a given country in at least two ways, one indirect and the other direct. The indirect route is illustrated by the issue of securities in a foreign capital market or, indeed, simply

denominated in a foreign currency, by the residents of a country and the sale of the proceeds in whole or in part to the country's authorities in exchange for domestic currency. One may regard this route as an illustration of the case just discussed, and regard it as a subcategory of acquisition of reserves through exchange market intervention. That is the point of view taken in this subsection, even though to do so understates to a degree the importance of international capital markets in the generation of reserves. But the focus here is on the control of reserves, and accordingly attention is focused on official borrowing in international capital markets as the capital markets may be a direct source of a country's reserve accumulation. Some official borrowing is directly from official bodies. This type of transaction is not considered in this subsection. It may properly be thought of as an illustration of arrangements among monetary authorities discussed earlier. One further observation may be useful. An official loan from the private capital market may be funded, in effect, by the financial institution involved, by borrowing from an official lender that is prepared to invest a portion of its reserve holdings with the institution. This intermediation by the institution is an aspect of the role of international capital markets in reserve creation and management, but is not taken up further in the following remarks on control.

The overriding control mechanism operating on the acquisition of reserves through official borrowing in foreign currencies on international capital markets, or official expectations as to such acquisition, is the totality of market forces operating in these markets and having their expression in the cost of credit to the borrower. The amounts that may be borrowed in these markets in total or by specific borrowers are regulated basically by the prices charged for borrowing in these markets. These prices in turn induce a flow of financial resources to these markets, and they essentially perform the rationing among the takers of funds from these markets. Of course, the markets may be and are influenced by public policies. Also, the markets display certain imperfections in the performance of their regulatory role.

The influence of public policy on the operations of international capital markets takes a variety of forms, both direct and indirect. It is not necessary in this paper to provide an exhaustive discussion of these influences; it will suffice to illustrate the nature of these influences through public policy.

There is a variety of direct measures taken by governments that affect the supply and demand forces in international capital markets. There are tax measures that affect the treatment of earnings on investments made in such markets. There are reserve requirements and other specific regulations (such as the rates of interest that may be paid on specific classes of deposits) affecting the assets and liabilities of institutions operating in these markets. Sometimes these regulations may treat an institution's assets or liabilities denominated in domestic currency differently from foreign-currency denominated items. In addition, the authorities in given countries may exercise a variety of

controls, formal or informal, over the access of borrowers, including sovereign borrowers to their markets and to the withdrawal of the proceeds of the borrowing in foreign exchange.

The indirect measures affecting the cost of borrowing in international capital markets include, in particular, the monetary and fiscal policies of the countries that are the major participants in such markets. Thus Hungary's cost of borrowing in the New York market depends upon the combined effect of the fiscal and monetary policies of the United States on interest rates in the United States, and her cost of borrowing in Euro-dollar markets reflects the influence of these policies as well. To a lesser degree the policies of other major suppliers of funds also influence the cost of borrowing U.S. dollars by sovereign governments. There is accordingly a degree of control exercised by authorities, albeit indirectly, over the prices prevailing in international capital markets. To a limited extent there is some coordination of this control effort, and there is a felt need for strengthening this coordination. This subject is returned to below.

There are respects in which the operations of the international capital markets in the supplying of reserves (and in serving certain other functions) are generally regarded as unsatisfactory. These features of unsatisfactory performance are ordinarily attributed to "imperfections" in the markets. Again, the purpose of this paper is served by illustrating these imperfections.

An important imperfection in the international capital markets--and in domestic markets, too--in recent history has been the readiness to make judgments as to the risk of lending (and the appropriate charge for lending) on the basis of limited information. At least on the basis of hindsight, it appears that the information used in making these judgments has led to appraisals that do not meet an adequate standard.

One of the methods used by some lenders to economize on the cost of acquiring information has been to rely on the apparent judgment of other, perhaps larger, institutions as revealed by their readiness to provide credits. The result of this practice has been to produce a sort of "herd reaction" among lending institutions. This style of behavior has been fortified on occasion by the unwillingness of individual institutions, for competitive reasons, to incur the disfavor of a borrower by requiring what would otherwise be regarded as an appropriate return on a credit to that borrower.

Another feature of the market that might qualify as an imperfection is substitution in certain circumstances of a rough and ready direct rationing system for price as the rationing mechanism. Moreover, the transition from price to direct rationing, or from direct to price rationing, for any particular borrower may be rather abrupt. A borrower may be denied further credit after having contracted a number of loans on the grounds that the creditor or creditors have reached "country

limits." Lenders may decide to deny credit (at any price) to a borrower which has experienced an unfavorable turn in its fortunes. A would-be borrower may be denied credit if it has no borrowing record at all or if in the past it has had an unsatisfactory record. This denial may result from some myopia in the market deriving from the high cost or presumed high cost of obtaining information, or, in some instances, it may be that in the nature of things, the costs of obtaining information per unit borrowed tend to be higher for small borrowings than for larger ones, at least over the lower segment of the borrowing range.

The summary of these observations is that the control of international liquidity acquired through the channel of official borrowing in the international capital markets is through the market forces operating in those markets, attenuated as those forces are by public policies of direct and indirect kinds and by various imperfections in the operation of those markets.

Acquisition of reserves through allocations of SDRs

The position of allocated SDRs in the international reserve system is unique. The control over their amount rests with the Fund under the Articles which state that:

In all its decisions with respect to the allocation and cancellation of special drawing rights the Fund shall seek to meet the long-term global need, as and when it arises, to supplement existing reserve assets in such manner as will promote the attainment of its purposes and will avoid economic stagnation and deflation as well as excess demand and inflation in the world. (Article XVIII, Section 1(a).)

The SDR thus far has played a rather limited role in the international liquidity system. Allocated SDRs comprise approximately 6 percent of total reserves (excluding gold) of Fund members. It is sometimes suggested that further allocations of SDRs would be more acceptable if controls on the use of allocated SDRs could be established, for example, by reinstituting the reconstitution requirement or by establishing a penalty interest rate on SDR use. There is no provision in present arrangements for relating the issue of SDRs to the making of loans by the Fund and thereby using controls over Fund lending as an indirect control over the issue of SDRs by the Fund. A quite limited proposal of this general character has recently been officially offered for discussion. Of course, there is no provision in present arrangements whereby leverage over the use of currencies as reserves or over the domestic issue of currencies--reserve currencies as well as others--may be exercised through control of the issue of SDRs, although the matter continues to be analyzed in the academic literature and discussed in various technical fora from time to time.

Acquisition of liquidity and reserves through transactions with the Fund

The Fund generates reserves for its members by making loans to them and through the financing of these loans. There is a tendency to think of its role in reserve creation only in terms of the second of these activities, namely, the generation of reserve positions in the Fund. However, a country wishing to acquire reserves may achieve its objective by borrowing from the Fund just as it may by borrowing from the market. Thus, the contribution of Fund lending to reserve creation must not be overlooked. By contrast with the control of liquidity generated through official borrowing in international capital markets, the control of reserve creation through transactions with the Fund is exercised primarily through some form of rationing.

The nature of the control over the Fund's reserve-generating activity is varied and rather complex. Creation of reserves in the form of reserve positions in the Fund derives from the Fund's lending activity, and therefore the total of such derivative reserve creation depends upon the factors governing the total of lending activity. These factors are discussed below. Reserve positions in the Fund arise from two principal activities: the lending of currencies to the Fund by members, and the use by the Fund of subscribed currencies to finance loans to members. These reserve positions may be offset by changes in official currency reserves, as, for example, when a country lends to the Fund from its official currency holdings or reduces these holdings in converting its own currency for a borrower from the Fund.

The direct control of the amount of borrowing by the Fund, and the creation of reserve positions by this route, is exercised from time to time through decision of the Executive Board. Lines of credit with particular members or groups of members are the subject of negotiation, as are the amounts and other terms and conditions of drawing that may be made by the Fund under these lines. Reserve positions in the Fund are affected secondly by the use of subscribed currencies in the financing of loans to members. If the member's subscribed currency is used to finance Fund lending, that member's reserve position is thereby enhanced. The decisions as to currencies to be drawn are based upon Fund policies on the matter fixed by the Executive Board from time to time. It is not the purpose here to go into the details of the policies on currencies to be drawn, but merely to note that the amounts and their distribution among members are governed by a specific set of policies that exercise a rationing effect, rather than by the operation of market forces.

Equally, the allocation of its credit by the Fund to members is not controlled primarily through a price mechanism, although the price at which the Fund lends has a relation to prices prevailing in international markets. The principle of uniformity of treatment has been interpreted to mean that the same pricing formula shall be applied to all borrowers. This formula reflects the structure of the Fund's funding costs; it does not reflect differences in the riskiness of the loans to the various debtors serviced.

The Fund's control over the international liquidity generated by its loans to members is exercised by the rules of access to its resources and by the conditions imposed on individual borrowers on each occasion of borrowing. Together, these rules and conditions comprise a rationing system that has the effect of limiting the creation of international liquidity by the Fund and exercising some control over its distribution.

It may be noted that the rules of access, whereby a member seeking to make a reserve tranche purchase shall not be subject to challenge, guarantee the reserve character of the reserve tranche position. Similarly, rules that give the overwhelming benefit of the doubt to Fund creditors who seek early repayment, and rules that facilitate the transfer of claims on the Fund assure the reserve character of such claims.

It may also be noted that the leverage upon the total of international liquidity of the Fund's rationing system extends well beyond the creation of liquidity through the Fund's own financial transactions. This is the case when, as lately, international lending institutions and governments have been inclined to base their decisions as to whether to restructure credits and extend new credits upon the debtor's "credit standing" with the Fund.

The broad control of liquidity through surveillance

The ultimate influence of the Fund over international liquidity is exercised through its more general surveillance activities. The Articles require the Fund to "exercise firm surveillance over the exchange rate policies of its members." They also require members "to collaborate with the Fund and with other members in order to ensure that the policies of the member with respect to reserve assets shall be consistent with the objectives of promoting better international surveillance of international liquidity . . ." In reality, at least in the present state of affairs, there are not two kinds of surveillance, one related to exchange rates and one related to liquidity. There is only one surveillance function and it relates both to exchange rates and to international liquidity.

This surveillance is exercised at several levels. The development of the conditions of particular loans from the Fund may be considered an aspect of surveillance. The participation of the Fund in various bodies, G-10, G-5, the Interim Committee, and the Executive Board, in which countries' policies and the coordination of policies are discussed is another aspect. The bilateral discussions held from time to time by the Fund with its members under Article IV are a further aspect.

Of course the control of international liquidity through the exercise of surveillance is very largely indirect. (It is only direct to the extent that the rationing through conditionality is thought of as an aspect of surveillance.) The indirect influence on international liquidity is exercised through whatever impact the Fund may have on the policies of its members. The influence affects both the demand for and supply of liquidity through various channels. This indirect control

through Fund surveillance is the only control in the present international monetary system which may be brought to bear upon the creation of liquidity through each of the four channels discussed above.

To the extent that surveillance affects the performance of economies and exchange markets, it will also affect the felt need for international liquidity as well as the provision of liquidity in response to demand. Accordingly, surveillance activities have the capacity for affecting the state of international liquidity as that idea has been set out in this paper. The state of international liquidity, as reflected by the relation between the need for it and the provision of it, is a matter of judgment about matters that are not ultimately quantifiable. But in the end, it must be such judgments that guide the exercise of control of the surveillance activity itself. There is thus an interactive cycle whereby surveillance affects liquidity and liquidity affects surveillance.

Overview

The means of controlling international liquidity are disparate and tend to be specific to the channels through which liquidity is supplied to the system. Limitations on the provision of international liquidity under arrangements among monetary authorities are ad hoc. The role of the market mechanism, and in particular the exchange market, in determining the movements of reserves through acts of official intervention depends upon the commitment of authorities to the management of exchange rates through intervention and the nature and extent of the coordination of their intervention activities. The role of the market mechanism, and in particular the international capital markets, in controlling the creation of liquidity through official borrowing is dominant, modified as it is by relevant public policies and imperfections in the markets themselves. By contrast, control over the creation of liquidity through transactions with the Fund, whether in the creation of SDRs or in the extension of credit, is exercised through rationing. That rationing may affect the provision of reserve funds through international capital markets, if the institutions in those markets choose to relate their activities to Fund judgments. The Fund's surveillance activity has the potential for affecting the creation and distribution of international liquidity through all channels and is the only general means of influence available in the present system.

III. Routes into the Future

The purpose of this section is not to prepare a prescription for the future or even a set of alternative prescriptions. The purpose is more modest and perhaps more appropriate for a background paper. An effort is made to extend the logic of the paper itself by focusing on imminent developments in the international monetary system as the means of improving and adapting the system in the immediate future. Accordingly, since the principal channels for the creation and distribution of liquidity are capital markets and Fund operations, one would naturally look to these two domains to find the routes into the future.

Capital markets

Attention has been drawn earlier to certain imperfections in the performance of international capital markets. One set of routes into the future may well be reductions in or ways around these imperfections. In fact some action to effect some of these changes is already well advanced.

One of the imperfections to which explicit attention has already been drawn is the inadequacy of information available to creditors concerning the nature of the risks involved in proposed credits. A significant improvement has already been made in this area. Reference might be made to two recently established institutions devoted to the dissemination of information in this sphere, namely, the Institute of International Finance in Washington and the Japan Center of Finance in Tokyo, each of which has recently been established. The relationship of the Fund to the banking community is undergoing change and it could well be developed in ways that would enhance the information available to these creditors. Banks themselves as well as other lenders have become more cognizant of gaps in their information and have taken steps to establish firmer bases for the judgments that international lending requires.

Another area for possible improvement in the performance of the international capital markets pertains to the supervision of lending institutions in that market and the provision of the facilities of lenders of last resort to them. Here, too, recent studies have been launched and certain changes have been effected. Further developments in this area may be expected.

The capital markets cannot serve as a channel for the provision of international liquidity to countries that are not regarded in the market as creditworthy. It is perhaps not an imperfection of the capital market that it does not serve such countries. Many of these countries, however, have need of capital resources and reserves. The international community has made some provision for the servicing of this need. The willingness of the community to meet that need ebbs and flows, however, and it is reasonable to think that one of the improvements that should be sought in the international liquidity system is to improve the functioning of the processes through which financial resources may be made available (by credits, grants, or other means) to countries whose lack of creditworthiness arises mainly or solely from their extreme poverty.

Fund operations

The role of the Fund has evolved since its founding. Given the limited membership of that day, and the preoccupation of the founders with the evils of the competitive depreciations of the thirties, the resources of the Fund were originally expected to be used mainly to enable a country to buy its own currency in the exchange market so as to avoid devaluation, although currency realignments were not ruled out in cases of fundamental disequilibrium. As circumstances have changed,

less stress has been placed on providing resources for the defense of the currency. More stress has been placed on providing finance during a period of adjustment; the period of temporary disequilibrium during which financial assistance for the adjustment is required has been extended, and the availability of resources in relation to quotas has been substantially increased.

There has also been some inclination to rethink the role of the Fund as a provider of liquidity, as an outlet for the investment of reserves, and as a regulator of the system. One pattern in the evolution of the Fund that might suggest itself would give more emphasis to the Fund's surveillance function relative to its lending function. Among the factors contributing to such a re-emphasis might be tendencies toward reducing access to the Fund's resources, confining its resources to subscriptions rather than borrowings of currencies, or reducing the average term of loans. Were such a re-emphasis to be an element of the pattern to which the Fund is evolving, its direct contribution to the creation of liquidity through lending and its role as a medium for the holding of reserve positions would be curtailed. On the other hand, its indirect influence on international liquidity might be increased to the extent that the effectiveness of its surveillance activities (beyond formal programs with borrowing members) is enhanced. It might be that if, while continuing to emphasize short-term stabilization in its conditions for lending, it successfully encouraged member countries generally to give more attention to the medium term in the formulation of their fiscal and monetary policies, the Fund could help to bring more stability and perhaps convergence at high levels of performance. Should that be the case, the need for reserves and the need for borrowing from the Fund might be perceived to be less, in appropriate relative terms, than it is today.

The above route would accent the Fund's indirect influence on international liquidity and de-emphasize its direct role as a supplier. Its indirect influence on liquidity and on the performance of the system might, however, be enhanced to the extent that the monetary character of the institution were assured by making it a significant provider of base money to the system. Conditions do not seem to be ripe for establishing this element in the pattern for the Fund's evolution. But perhaps it would be desirable to keep open the door to this route to the future.

To keep this door open would seem to require, at a minimum, the provision of rather more than a token amount of SDRs to the system on some regular basis. The door would more assuredly be kept open if efforts were made to accustom the world to the holding and exchange of Fund liabilities and to the general use of financial claims denominated in SDRs.