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On the SDR: Reserve Currencies and the Future
of the International Monetary System¹

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Summary

In attempting to forecast the role of the SDR in the future of the international monetary system, we begin by putting to rest a number of misunderstandings about the supply and demand for reserves. On the one hand, the rise of international capital mobility and exchange rate flexibility does not remove the need for international reserves. On the other hand, international capital mobility goes a long way toward removing the Triffin Dilemma: it is possible for all countries to obtain international reserves simultaneously, contrary to the view which arose in the control-ridden 1950s and 1960s. All central banks and governments can simultaneously obtain additional reserves on private markets.

To the extent that any single reserve-currency country begins to incur foreign monetary liabilities that grow alarmingly large relative to the size of its economy, new sources of reserve supply can spring up.

Thus, neither the total supply nor the total demand for reserves is likely to change dramatically. There is no compelling argument for an SDR allocation to avert a pending global liquidity shortage or to remove an intrinsic instability in the reserve-supply process. There is a consistent argument for an SDR allocation to provide the resources needed to manage national financial crises with international implications -- but there are more direct and desirable means of underwriting the relevant facility. European monetary unification, if and when it occurs, will have major implications for the demand and supply of reserves, but there is little reason to think that they will create a significant excess demand for international reserves or destabilize the reserve-supply process. In a future world with a single world currency or three relatively self-contained currency blocs floating against one another, the demand for international reserves would decline or disappear.

While there would be a role for the SDR or an instrument like it if the IMF is the world central bank that issues the single world currency, any such scenario is exceedingly remote.

In addition to the question of reserve currencies, we also consider the competition between the SDR, dollar, mark and yen, as vehicle currencies or as international currencies more generally. Here we find that the SDR is without the natural constituency that is one of the requirements for international currency status. Our conclusion, for better or

for worse, is that the future of the international monetary system is unlikely to entail a significantly expanded role for the SDR.

whether there will be a role for the SDR in the changed circumstances of the future, and if so whether it can be justified in terms similar to those of the past. Our topic in this paper is whether the future of the international monetary system will provide such a justification.

Answering this question requires a forecast of how the international monetary system will evolve from here. We construct our forecast using economic logic and by extrapolating historical trends, and distinguish three phases in the likely future evolution of the international monetary system. The first, the immediate future, will extend the movement toward exchange rate flexibility and capital mobility. Neither of these trends, we argue, will significantly enhance the role of the SDR; if anything, the opposite will be the case. The second phase, what we call the intermediate future, adds to this picture the possibility of monetary union in Europe. EMU, if and when it occurs, will have significant effects on the demand and supply of international reserves. Several of these work in opposite directions, however. On balance, they are therefore unlikely to create a significant demand for SDRs.

Any analysis of the third phase, the distant future, is necessarily the most conjectural. In the spirit of "social science fiction," we hazard a glance fifty years ahead and ask whether a world of monetary blocs or a single world currency

will create a role for the SDR. Again, our conclusion is largely negative.

Essentially, we conclude that the dollar will remain the leading international currency. Assisted by newcomer currencies, particularly the mark and the yen, it will satisfy the needs of the international monetary system.

What might the SDR supply that the others cannot? There are two possible answers: an adequate total supply of reserves and an attractive, stable unit of account.

If the supply of reserves were inadequate under a system where international reserves were created only by individual countries -- a modern Triffin dilemma -- new issues of SDRs could make up the difference. But we think that the Triffin dilemma is obsolete under the multiple reserve currency system. If dollar liabilities -- or mark or yen liabilities -- ever become so great in relation to the gold or other international reserves held by the issuing country (or the exports, or GDP, or net international investment position) as to bring their value in question, central banks could simply switch to the currencies of new rising countries in which they have confidence. The multiple reserve currency system may not make for stable exchange rates, but it does not want for reserves.

The story is somewhat different as regards a unit of account to use for pegging, invoicing trade, denominating debt

and so forth. Economies of scale tend to make a one-currency system more efficient than a multiple-currency system in these functions. The SDR, computed as a basket, is in some ways an intrinsically more attractive unit of account than the dollar or other single currencies. But a review of the attributes that make for a successful international currency suggests that the SDR is an unlikely candidate, even if the dollar were to fall from the number-one slot over the next 50 years. The SDR simply does not have a natural constituency, which is a prerequisite for a currency to come into widespread use.

We start with a section on analytical issues. We then analyze the bases for an international currency, with particular reference to the SDR but also considering its rivals. With this material in hand, we consider the likely future role of the instrument in the operation of the international monetary system. The paper closes with a conclusion and two appendices: one on institutional arrangements and one on the history of the SDR.

II. Analytical Issues

The SDR was originally created as a form of international reserves. Our discussion of its past and future therefore begins with countries' motives for holding reserves. We analyze how changes in the structure of the international macroeconomic environment -- toward greater exchange rate

flexibility and international capital mobility -- affect the demand for reserves. We seek to clarify several confusions: whether capital mobility and floating exchange rates obviate the need for reserves, whether all countries can accumulate reserves simultaneously, and whether the advent of exchange rate flexibility and capital-account convertibility has removed instability in the reserve-supply process of which Robert Triffin warned.

1. Capital Mobility and the Demand for International Reserves

According to traditional wisdom, countries hold reserves to smooth the time profile of production and consumption and to insulate their economies from balance-of-payments shocks. Consider, for example, a country linked to the rest of the world by merchandise trade alone (financial capital is immobile internationally). An adverse shock to its terms of trade will cut its capacity to import. If the country reduces imports of intermediate inputs, domestic production will be disrupted. A lower-cost strategy may be to maintain the flow of imported inputs, financing them out of reserves until the terms of trade recover or domestic sources of supply can be developed. Similarly, it will not be efficient for a country suffering a temporary disturbance to cut consumption when the shock hits, only to raise it once the shock passes. Rather, its government will wish to smooth consumption, using reserves

to finance the deficit in the country's trade.

This thought experiment assumes no international capital mobility. It is sometimes asserted that capital mobility removes the motive for holding reserves. It eliminates the need to hold reserves in order to smooth the time profile of production and consumption insofar as countries can accomplish this by borrowing or lending in the private market. The proposition that capital mobility renders reserve-holding obsolete is correct strictly within the confines of certain models. In practice, however, it is incorrect.

Obstfeld (1993) constructs a model of a world of perfect capital mobility in which the demand for reserves is zero. Some authors have taken the implications of such models quite literally. Thus, Schroder (1990) argues strongly that capital mobility reduces the demand for reserves and eliminates the rationale for SDRs. To quote, "as long as the international capital markets continue to function, there is no danger of a shortage in international liquidity and therefore no convincing economic reason for creating SDRs."²

But Obstfeld's result depends on the assumption that countries can borrow without limit at the world interest rate.

In reality, even when statutory and technological barriers to international capital mobility are absent, countries cannot borrow in unlimited amounts at that interest rate. Default

² Schroder (1990), p.70.

risk is a problem, particularly because of the absence at the international level of any sort of bankruptcy court. Asymmetric information and adverse selection therefore cause lenders to charge higher interest rates as the borrowers' indebtedness grows (Stiglitz and Weiss, 1981; Eaton and Gersovitz, 1981). In other words, governments must allow the domestic interest rate to rise to attract foreign capital.³ Periods when they especially need reserves -- namely, balance of payments crises -- are precisely when they *cannot* borrow at the going interest rate. They may be able to borrow, at least to an extent, at higher interest rates. But higher interest rates have costs; like lower supplies of intermediate inputs, they can disrupt production. Governments may find it intolerable to raise rates to whatever level is needed to finance balance-of-payments shocks.⁴ They may find it prudent to finance a portion of transitional payments deficits out of international reserves.

Ultimately the argument is an empirical one. Countries continue to hold reserves; therefore, they must find them useful.

³ Indeed, in models of asymmetric information and adverse selection like that of Stiglitz and Weiss, there may be no interest rate that clears the market. As the level of interest rates rise, so does the riskiness of the marginal borrower, who may find himself rationed out of the credit market.

⁴ Thus, the governments of Sweden and the United Kingdom found in 1992 that raising interest rates to extreme heights did not placate speculators. Possession of international reserves may help to deter at least certain kinds of speculative attacks in the first place.

One might think that the advent of capital mobility would nonetheless reduce the demand for reserves, since countries can finance at least a portion of their external deficits by borrowing abroad. But this assumes that the capital account is not itself a source of financial instability. Even countries with floating currencies continue to hold reserves with which to intervene in the foreign exchange market and dampen variability in the exchange rate. But a high degree of capital mobility can increase the variability of the exchange rate, thereby increasing the demand for reserves. Countries with pegged exchange rates may suffer larger balance-of-payments shocks when capital mobility is high. Sudden changes in the price or availability of external finance such as Mexico experienced in 1994 can destabilize balances of payments in general and those of heavily-indebted countries in particular. The existence of this additional source of disturbances may heighten the need for insulation. Hence, there can be no presumption that the advent of capital mobility either raises or lowers the demand for reserves. Which effect dominates is again an empirical question.

2. Exchange Rate Flexibility and the Demand for International Reserves

Similar statements regarding the obsolescence of reserves accompanied the move toward floating exchange rates in 1971-

73.⁵ It was anticipated that more frequent exchange rate adjustments would enhance the scope for using relative prices to adjust to balance of payments shocks. Countries with payments deficits could simply depreciate their currencies, improving their export competitiveness and the attractiveness of their assets. This mechanism would eliminate the need for reserves.

While the use of exchange-rate changes to offset shocks is a staple of international economics textbooks, governments are reluctant to make full use of the instrument. That exchange rates continued to be managed following the breakdown of Bretton Woods is no coincidence in our view. Large exchange-rate changes have economic costs that render governments reluctant to undertake them. Depreciations can lead to inflation, depress output by raising the prices of imported inputs, increase the burden of servicing foreign-currency-denominated debts, and threaten the solvency of banks with foreign-currency-denominated liabilities. Exchange rate volatility per se is undesirable because it can discourage international trade and investment.

In fact, with the demise of the Bretton Woods System, the demand for reserves did not decline, let alone disappear. Even the demand for reserves on the part of the industrial countries, most of which adopted some form of floating

⁵ For citations, see Heller and Khan (1978).

exchange rates, continued to grow in nominal terms, though some studies found a modest decline relative to appropriate benchmarks. And there was continued growth in the demand for reserves on the part of developing countries, the vast majority of which continued to peg in the short run and used reserves to accommodate fluctuations in the availability of debt finance (Heller and Khan, 1978; Frenkel, 1980).⁶ This difference in behavior was predicted by the literature on choice of exchange rate regime (e.g. Heller, 1978), in which it was argued that relatively large countries with diversified exports and well-developed financial markets can afford to float, while their smaller, less-diversified, less-developed counterparts will prefer to peg. Insofar as the former rely more on exchange rate changes for adjustment, they may have a lower demand for reserves.

Even for countries prepared to float, there can be no general presumption that this automatically reduces their demands for reserves. Just as with international capital mobility, this conclusion assumes that foreign exchange markets were not themselves a source of disturbances. Authors like Rose (1994) document that the increased volatility of exchange rates after 1973 has not been associated with increased volatility of fundamentals, suggesting that at least

⁶ A relatively recent review of the literature appears in Cangiano and Saracino (1990), with updated estimates.

some shocks are indigenous to the foreign exchange market.⁷ Authors like Woodford (1991) model these shocks in terms of extrinsic (sunspot) noise. The increased volatility of exchange rates for any given level of intervention, or the increased amount of intervention necessary to accomplish any given level of volatility, can then imply an augmented demand for international reserves.

3. Understanding the Triffin Dilemma

After World War II, the U.S. dollar was the only major currency that was freely convertible, even just for current account transactions. Aside from gold, whose supply was relatively inelastic and which did not pay interest, this made dollars the only form of reserves.

Under these circumstances, not all countries could accumulate net reserves simultaneously. As a group, other countries could accumulate net reserves only by importing gold or dollars from the United States. Collectively, they had to run balance-of-payments surpluses. But since the global balance of payments must sum to zero, the United States had to run deficits. In other words, the rest of the world could increase its claims on the United States only if the U.S. increased its liabilities to the rest of the world: the U.S. net reserve position had to fall for that of the rest of the world to rise. In a world without capital mobility, foreign

⁷ The literature is surveyed in Frankel and Rose (1995) and Frankel (1996).

central banks and governments could not borrow on the private U.S. market to obtain reserves; they could accumulate reserves only by acquiring claims against the U.S. authorities, implying a decline in the net reserve position of the latter.

This accounting identity is the source of the Triffin Dilemma.⁸ If the U.S. allowed its balance of payments to remain in deficit, accommodating the demands of the rest of the world for additional foreign exchange reserves, U.S. international monetary liabilities would rise relative to U.S. reserves. Because this meant that net U.S. reserves declined (rather than rising with the growth of the American economy), the system would have been in long-run disequilibrium. The ratio of dollar liabilities to U.S. gold reserves (or to American export capacity) would rise without limit. Eventually the ability of the U.S. to convert dollars into gold at the statutory price of \$35 an ounce would be called into doubt. Other countries would rush to convert their foreign exchange into gold before the U.S. gold window was closed, liquidating the gold-dollar system. On the other hand, if the U.S. raised interest rates and deflated to eliminate its balance-of-payments deficit, other countries would have been collectively unable to augment their dollar balances. In their desperate scramble for reserves, those other countries would have been tempted to deflate even more

⁸ Triffin's first warning to this effect is Triffin (1947). His best-known statement of the problem is Triffin (1960).

than the United States, subjecting the world economy to intense deflationary pressure.⁹

4. Does International Capital Mobility Remove the Triffin Dilemma?

In the post-World War II world of controls to suppress international capital movements, the only way for governments and central banks outside the United States to obtain additional reserves was by running balance-of-payments surpluses against the U.S. and importing gold or obtaining claims against the U.S. government.¹⁰ An increase in the net reserves of the rest of the world had as its counterpart a decline in the net reserves of the United States (an increase in its net monetary obligations to foreigners). Reserve distribution was a zero sum game, creating an argument for an SDR allocation to allow all countries to obtain additional reserves simultaneously to match the growth of their economies.

With the recovery and liberalization of international capital markets, this constraint has been removed. The Fed can now borrow or buy foreign currencies from private traders on foreign capital markets (and even in its own financial markets) at the same time foreign central banks borrow or buy

⁹ As we shall see below, this is the scenario that Triffin himself particularly feared.

¹⁰ For simplicity, this discussion puts aside alternative sources of reserve supply such as newly-mined gold, IMF quota increases, and SDR allocations. The ultimate question of interest is whether the system can function well without the latter.

dollars on the U.S. market (or in the Euromarkets). For every asset there is still a corresponding liability; international capital mobility does not remove the constraint that the global balance of payments must sum to zero. If the Fed sells treasury bonds (or dollars) to private foreign investors in order to augment its foreign exchange reserves, it incurs an additional financial liability to foreigners. But it does not follow that the Fed has failed to augment its stock of reserves. The name "reserves" is bestowed on the foreign-currency-denominated assets of the authorities precisely because they are in official hands. Compare the situation in which the authorities have foreign exchange in hand with one in which they hold treasury bonds of their own issue which they can sell for foreign exchange. While in the first situation we say they possess reserves, we don't say the same about the second precisely because there may be circumstances in which the market is unwilling to buy those treasury bills, or similar domestic-currency assets, at any price. These circumstances, of course, are precisely those times when reserves are most valuable.¹¹ In short, the world's central banks can indeed take advantage of international financial markets to create reserves.

This is not to deny that short-term dollar liabilities in the hands of foreigners (to continue with the example of the Fed) are a possible source of dollar instability. A measure of the dollar liabilities in the hands of foreign central banks has a place on the long list of variables that might

¹¹ Analogously, we do not add or subtract the dollars held by foreign central banks.

influence the probability of adverse speculation or the probability of successfully withstanding it.

Other possible variables on this list include the dollar liabilities in the hand of foreign private citizens, dollar liabilities in the hands of domestic citizens, aggregate short-term liabilities of domestic residents vis-a-vis foreigners (regardless of currency of denomination), domestic holdings of foreign short-term assets, net dollar indebtedness to foreigners (whether long-term or short-term), net foreign-currency indebtedness to foreigners (whether long-term or short-term), and the rate of change of some of these variables, especially of net overall indebtedness to foreigners (i.e., the current account).¹² But even if all these things may matter, there is still a distinct role for reserves per se -- as suggested by the observed continued desire of all central banks to continue holding them. Thus, there seems to us no particular argument for netting out foreign holdings of domestic currency from the measure of domestic reserves. If anything, liquid dollars held by private citizens are a greater possible threat to the Federal Reserve than those held by other central banks.

Hence, the advent of highly developed and integrated international financial markets has removed the zero-sum nature of reserve distribution. This is why the official statistics, reported in Table 1, show total foreign exchange reserves increasing year after year -- by 3 1/2-fold between 1978 and 1995. Indeed, so far as the authors are aware, no official source reports figures for the net balance of payments, or net holdings of reserves, with net defined as

¹² See Eichengreen, Rose and Wyplosz (1995).

netting out foreign central bank holdings of the domestic currency. A system in which the Fed, the Bundesbank and the Bank of Japan can all transact in one another's private markets simultaneously has eliminated one traditional argument for the creation of a synthetic reserve asset like the SDR.¹³

But if the foreign monetary liabilities of the U.S., Germany and Japan as a group continue growing relative to the size of their national economies (reflecting, presumably, the relatively rapid economic growth and incremental demand for reserves on the part of the developing world, though it could also reflect excessive money creation by the reserve-currency countries themselves), there might come a time when the ability of these countries to convert their liabilities into goods or other assets of value to those countries that hold their currencies as reserves would be called into doubt. The

¹³ An alternative respectable view does certainly exist. Williamson (1963), for example, argued that in a multiple reserve currency system, central banks' holdings of each other's currencies should be netted out. We think that this issue deserves more careful consideration than it has received in recent years. One could argue that the world needs a (growing) international reserve asset that is more "high-powered" than dollar reserves or other major currencies. The argument would go by analogy (Machlup, 1965).

While commercial banks can create money (deposits, which are "reserves" from the viewpoint of the portfolios of the private citizens who hold them), a country needs a (growing) high-powered monetary base to back up that money supply. Analogously, while central banks can create their national monetary bases (which are reserves from the viewpoint of the balance sheets of their commercial banks), the world needs a (growing) supply of international reserves, to back up these monetary bases. This much we have argued already.

The question is now whether a (growing) component of international reserves must be more high-powered than foreign exchange reserves, a component where all central banks' claims against each other *and against the private sector* are netted out. The argument would go through by analogy to the case of a country's monetary base, which nets out all of commercial banks' claims against each other *and against private borrowers*.

Triffin Dilemma could be resurrected in a new guise.

Competition among prospective reserve currencies might conceivably help stabilize the system, however. As additional countries develop and remove their exchange and capital controls, they will become candidates for supplying international reserves. This would simply be a repeat of the evolution of the system in the 1970s and 1980s, when Germany and Japan liberalized their financial markets and acquired reserve-currency status for the mark and yen. One can imagine Singapore, for example, gradually acquiring reserve-currency status (especially within East Asia). Countries that supply international reserves earn seigniorage. The advantages of seigniorage encourage those that meet the preconditions for supplying reserves to do so, holding constant other considerations.¹⁴ If the supply of reserves provided by the traditional reserve-currency countries appears to be approaching unsustainable levels, there will be a demand for the newcomers to do so.¹⁵

The elasticity of these alternative reserve supplies will be greater in the long than the short run; Le Chatelier's principle should apply in this context like any other. But

¹⁴ The costs and benefits to a country of having its currency attain international reserve currency status are discussed later (and in Frankel (1995)).

¹⁵ Historically, one can also see these dynamics at work in the rise of the dollar as a reserve currency relative to sterling prior to 1913, when the stability of Britain's reserve-currency status was threatened by its own Triffin Dilemma (de Cecco, 1984; Eichengreen, 1992).

our point still stands: the dilemma created by the fact that there are only a limited number of national sources of international reserves will be removed by the elimination of controls on international transactions in other countries and the emergence of alternative sources of supply. There may be an argument for an SDR allocation to permit countries to obtain international reserves without expending real resources (without having to service the debts they incur when borrowing on foreign markets, in other words), as suggested in Michael Mussa's paper in this volume. (This assumes, of course, that difficult issues of distributive equity can be finessed, and that the recipient governments will actually use their SDR allocations to acquire and maintain reserves, assumptions which should not be taken for granted.) But it does not alter our conclusion that open international capital markets remove the spectre of a global reserve shortage and therefore eliminate one of the most powerful of the traditional arguments for an SDR allocation.

III. International Currencies: The SDR and its Rivals

In this section we consider the extent to which different currencies are used internationally, both by governments and by private agents. Informed by the results of this "market test," we then describe the conditions that seem to make a unit suitable for international use. This leads us to a

judgment on the international role of the SDR.

It is worth flagging one theme from the start: while our discussion of the aggregate supply of reserves in Part II concluded that a multiple-reserve currency system might be more stable than the old dollar standard, Part III points to powerful forces (economies of scale and scope) encouraging actors to specialize in the use of a single international currency (Krugman, 1984; Matsuyama, Kiyotaki, and Matsui 1991). What is efficient at a point in time may not be stable over time, and vice versa.

1. The Choice of Currency in Which to Hold Reserves

International uses of currencies can be categorized according to whether the decision is made by public monetary authorities or by private actors. They can also be distinguished according to such traditional functions of money as store of value, unit of account, and medium of exchange (Kenen, 1983). We begin by considering the actual composition of reserve holdings of central banks (the subject of the preceding part of the paper), before proceeding to the authorities' choice of a pegging currency, and then to the various uses in private markets.

Table 1 shows the levels of reserve holdings in the form of various currencies, including the SDR, as it has evolved over the last two decades. Table 2 presents the same information as percentage shares.

The figures show that the share of the dollar fell steadily in the 1970s and 1980s, as it made way for the increase in the mark and the yen. The rate of increase in the use of the latter currencies looks particularly rapid because they started from relatively low levels (especially in the case of the yen).

This trend reversed in the early 1990s, though one would never know it listening to popular commentary on the declining role of the dollar.¹⁶ Contrary to widespread belief, the figures show that the dollar's share in reserve holdings was virtually flat in 1994, and substantially *up* relative to 1990.

The yen share, again contrary to expectations, was *down* slightly in 1994. The mark's share, while approximately flat in 1994, is down since 1990.¹⁷ In short, data for the 1990s show no acceleration of the downward trend in the dollar's share. If anything, they show the reverse.

What is going on in a short-term sense is that the Bank of Japan and major European central banks have in the 1990s bought the dollar on foreign exchange markets in order to prevent its value from falling more against their own

¹⁶ Hale (1995a, b), Kindleberger (1995), Kunz (1995), and many others.

¹⁷ The figures for the end of 1994 are available in the 1995 IMF Annual Report, published around October 1995. The descriptions in the text are based on the figures that count the dollar-backed portion of ECUs as dollars. If the ECUs are counted separately, then the qualitative conclusions are similar: The dollar in 1994 is up a small amount and is strongly up relative to 1990. The mark is up by 0.1 per cent, but clearly down relative to 1990. The yen is down slightly relative to either 1993 or 1990. (Counting ECUS separately became the preferred mode of presentation, for the first time, with the 1995 Annual Report.)

currencies. They may not be happy with this situation, but they find it preferable to the alternative. In a longer-term sense, the dollar remains the leading reserve currency. Figures for 1995 may turn out to show a switch away from dollar holdings toward yen and marks, particularly among East Asian central banks. But it is unlikely that such a switch, when viewed in the historical perspective of Tables 1 and 2, would constitute an abrupt acceleration of the gentle downward trend of the 1970 and 1980s.

The share of the SDR peaked at 6 per cent in 1982, which put it in third place, after the mark but before the yen. (The denominator in Table 2 is total foreign exchange reserves including SDRs, but excluding countries' reserve position in the IMF and excluding gold.) The SDR share has declined since then, levelling off at 2 per cent in the 1990s. The yen surpassed the SDR in 1984, and even the pound and French franc did so in 1992. This is not entirely a fair contest, since SDRs enter the system when the members of the IMF vote to create them, which they have not been doing. The other currencies become reserves when central banks choose to acquire them.

Perhaps the ECU is a more appropriate competitor for the SDR than are the national currencies. The ECU like the SDR is defined in value as a basket of currencies, and like the SDR is created by a collective body of national governments.

There is a private market in ECUs, unlike SDRs, so any central banks could in principle create ECU reserves by purchasing them on the private market. But most ECUs came into existence when the European Monetary System was established in 1979, and are backed by international reserves (dollars), so that they are not as yet fiat money to the extent that SDRs are. Indeed, although ECUs are reported in Table 2 as constituting the third largest share of international reserves (approximately tied with the yen), one point of view is that they are simply dollars in disguise. (This point of view is favored by the authors, until such time as EMU successfully takes place.)¹⁸

2. The Choice of Currency to Which to Peg

The other major arena in which countries' monetary authorities must choose among major international currencies is the choice of which currency to peg to, among those countries who choose to peg. A country will tend to hold more of its reserves in the form of a given currency, other things equal, if it also pegs to it. Conversely, it is more likely to peg to a given currency, other things equal, if it is already using that currency in international dealings.

There are a priori reasons to think that the SDR should

¹⁸ The IMF itself favored this interpretation until recently, counting the dollar-backed ECUs as dollars in the main part of Table I.2 in the Annual Report. Beginning with the 1995 Annual Report, dollar-backed ECUs have been granted equal status with the other foreign exchange reserves in the main part of the table. Tables 1 and 2 here follow the Fund in this change.

be a popular pegging unit. The dollar is the natural peg for Latin American countries which undertake much of their trade with the United States (and with other countries linked to the dollar). Similarly, the DM (or a prospective new EMU currency) is the natural peg for a typical European country, which undertakes much of its trade with other European countries. But in Asia, Africa, the Mideast and elsewhere, countries tend to distribute their trade more equally among Japan, Europe, and North America. Pegging to any single major currency exposes them to the risk of large fluctuations relative to other currencies.

An obvious solution is a basket peg, with the weights determined so as to suit the country in question. To be sure, 31 countries are currently classified as pegging to a composite of their own design. But these basket peggers tend to lose one of the principle advantages of a fixed exchange rate policy (after the first advantage, reducing exchange rate uncertainty). They lose the credibility of the nominal anchor to monetary policy. Basket-peggers tend to keep the weights secret, to change the parity secretly and frequently, or to change the weights secretly and frequently. (Keeping the weights secret to begin with, of course, facilitates making the changes in policy in secret.) As a result, the public is unable to ascertain on a day-to-day basis, or even a month-to-month basis, whether the central bank is abiding by its

officially stated policy of pegging the currency. Logically, this should undermine the credibility argument in favor of a currency peg.

One would think that the SDR would solve this problem. Its value is computed as a weighted average of five major currencies: the U.S. dollar, Japanese yen, deutschemark, pound sterling, and French franc. While the weights are unlikely to match exactly the trade weights on a country in Asia, Africa, or elsewhere, they come reasonably close.¹⁹ A country that pegs to the SDR will not experience the large changes in effective exchange rates that have discouraged East Asian countries, for example, from pegging to the yen.

3. The Choice of the SDR as a Peg

The use of the SDR as a currency peg showed the unit to its best advantage 15 years ago. Now this measure also shows its stagnation. Table 3 presents the statistics. The number of countries pegging to the SDR stood at 12 in 1979, and then peaked at 16 in 1982. Many of them were in Africa or the Mideast. As a percentage of peggers, this was a rise from 16.4 per cent in 1979 to 22.5 per cent in 1982. But by 1995 (including up to the third quarter), the number had declined to only three -- Libya, Myanmar, and Seychelles -- countries

¹⁹ There would be little point in matching basket weights precisely to a country's trade shares anyway; international capital flows and trade with smaller countries matter, in addition to bilateral trade.

hardly at the frontier of international trade and finance. As a percentage of peggers, they constitute a mere 6.4 per cent.

(As a percentage of all members of the IMF, the SDR peggers rose from 8.9 per cent in 1979 to 11.0 per cent in 1982, only to sink to 1.7 per cent in 1995.)

Despite a decline, the dollar remains the leading currency peg. In 1995, 23 currencies pegged to the dollar. This represented 49 per cent of peggers, down from 55 per cent in 1979 (=40/73) or 57 percent in 1975 (=46/80). The French franc has remained steady, in second place, with 14 clients; this is 30 per cent of 1995 peggers, up from 19 per cent of 1979 peggers and 16 percent of 1975 peggers. The pound and the peseta each lost its last pegger in 1986. The pound's fall was from a grace of 9 percent of peggers in 1975. It is still the case that no currencies anywhere are pegged to the yen. One currency (the Estonian kroon) pegged to the mark in 1990. The mark, of course, also plays a central, if unofficial, role in the European Monetary System.²⁰

If one broadens the test to include countries that peg to a weighted basket, whether tightly or loosely, one again concludes that the dollar remains dominant within the baskets.

Even among East Asian countries, where the yen occasionally has a statistically significant weight, the weight placed on the dollar is always far higher.²¹

²⁰ A few other currencies, such as the South African rand and the Russian ruble, also account for a few pegs in some years, depending in part on the vicissitudes of politics.

²¹ Frankel and Wei (1993).

3. The Choice of an International Currency in Private Use

Measures of international currency status in private use, for 1990 and 1994, are shown in Tables 4 and 5. These measures are relevant to a consideration of the international monetary system for two reasons. First, one attribute of an international monetary system (along with the exchange rate regime and issues of reserves and liquidity) is which currency or currencies are in international use generally. Second, even if we are only interested in the question of which currencies are used as a form in which to hold reserves, the answer is correlated with the question of which currencies are in international use privately. An Asian central bank, for example, is more likely to hold reserves in the form of yen, if the yen comes into use in foreign exchange trading (as opposed to the present system, where the dollar is almost always used as the vehicle currency in Asia) and if private financial markets are otherwise well-developed in yen.

The share of the SDR in private markets is small, generally negligible. The dollar is still on top, despite a gradual decline by some measures in its use versus the mark and yen over the last twenty years. The trend is so gradual that is hard to detect it over the four-year gap between the two tables.

A. Vehicle currencies in foreign exchange trading. In

the past, almost all trades in the foreign exchange market involved the dollar as the currency bought or sold. As recently as the mid-1980s, if a firm wanted to exchange pound sterling for deutschmarks, it had to trade pounds for dollars, and then dollars for marks. These days the firm would be more likely to be able to go directly from pounds to marks.²² Largely as a result, only 83 per cent of foreign exchange transactions in April 1995 involved the dollar, as opposed to 90 per cent only six years earlier. Yet this is still twice the share of the DM. The dollar's share is equal to that of the next four competitors (the DM, yen, pound and Swiss franc) combined. The figures are reported in Table 6. (When reported in the third column of tables 4 and 5 they have been divided by two so that the total does not exceed 100 per cent and they are comparable with the other measures).

B. Denomination of financing. Various measures of use of currencies to denominate private international financial transactions -- loans, bonds, and deposits -- show the dollar as the dominant currency. The yen has gained a bit in terms of external bank loans, and the mark in terms of external bond issues.

The yen's share of long-term external financing is particularly high among developing countries. This is especially true in East Asia, where the Japanese government

²² Bank of England (1992) or Bank for International Settlements (1995).

lent freely in the 1980s. Among five major East Asian debtors, the yen's share doubled in the 1980s.²³ The fraction of long-term debt denominated in yen crossed the 50 percent mark in Thailand in 1993, with Indonesia, the Philippines, Malaysia and Korea also above 30 percent. In East Asia and the Pacific overall, however, the yen's share has not yet surpassed the dollar's (at 30.0 percent in 1993, versus 31.1 percent).

Among long-term debt of developing countries in the aggregate, the yen remains a distant second to the dollar. The figures are reported in Table 7.²⁴ The mark is in third place, followed by the French franc, pound sterling, and Swiss franc. In the mid-1980s, the SDR broke into these rankings, but its share has been steady at a paltry 0.2 percent. SDR-denominated debt is heavily concentrated among low-income countries (where it constitutes 0.6 per cent of debt), particularly countries in South Asia and Africa (and to a lesser extent the Middle East and North Africa).²⁵

C. Currency of invoice in international trade. An important function of major currencies is as a unit of account and medium of exchange in international trade. Unfortunately, up-to-date global figures on the currency of invoicing and

²³ Frankel and Wei (1994, p.310).

²⁴ World Debt Tables 1994-95, The World Bank, p. 194, 198. We exclude the category "multiple currency" from the description of the rankings.

²⁵ These are mainly concessional loans and other loans from the international agencies themselves.

payment are not available. Calculations pertaining to 1987 show the dollar in first place, at 38 percent, followed by the mark at 21 percent, the yen at 13 percent, the french franc at 11 percent, and the pound at 10 percent.²⁶

Among the largest countries, only the governments of Japan and Germany maintain more up-to-date figures. The share of yen invoicing in Japan's imports rose from 2.4 per cent in 1979 to 14.4 percent in 1990 and 20.9 percent in September 1993 (with a larger increase in the case of imports from Southeast Asia). The share of the yen in Japan's exports rose from 25 per cent in 1979 to 39 percent in 1983 (again, with a concentration in Southeast Asia). It declined subsequently, and then recovered (to 37 percent in 1990 and 39.9 percent in September 1993). The dollar remains the dominant invoicing currency, even in Japan's exports.²⁷

The currency pattern of invoicing of Germany's exports was more stable in the 1980s, at about 82 percent marks, 7-10 percent dollars, and 5 per cent pounds, French francs, and Swiss francs combined. German imports, however, saw a shift from 43 per cent in marks in 1980 to 53 percent in 1988, at the expense of the dollar (from 32 percent to 22 percent).

²⁶ Reported in the last column of Table 4. Derived from Black (1989). The data pertain only to trade undertaken by the six largest industrialized countries, plus OPEC, and to their six currencies.

²⁷ Reported in Frankel (1984, p.37), Frankel (1994, p.80), and Tavlas and Ozeki (1992, p. 33) [and US-Japan Economic Policy Group, Dec. 1994]. The original data are from Japan's MITI Trade Bureau ("Final Figures for Exports" and "Import License Notification Statistics") and Ministry of Finance (Annual Report).

The other currencies were steady at a combined 8 percent, and the yen rose from negligible to 2.5 percent of German imports.²⁸

Occasionally OPEC discusses abandoning its policy of setting the price of oil in dollars, and perhaps switching to the SDR. These discussions generally begin when the dollar has undergone a large drop in value, and end when the dollar stabilizes or reverses.

D. Currency substitution in cash transactions. Figures on the use of international currencies as substitutes in local cash transactions are not available. The two leaders are certainly the dollar, for which internationally-circulating cash has been estimated by the Fed at roughly 60 percent of U.S. currency outstanding, and the mark, for which international circulation has been estimated by the Bundesbank at 35-40 percent of German paper currency outstanding. Thus, there were about 240 billion dollars and 66.8 billion marks, in cash, circulating in third countries in 1995.²⁹ At the October exchange rate, the dollar's share of this market works out to 78.2% and the mark's to 21.8%, counting other entries at zero.

²⁸ Reported by Tavlas (1993, p.570). The source is Deutsche Bundesbank (Annual Report).

²⁹ Bundesbank Annual Report, Federal Reserve Bulletin, Blinder (1995, p.6), and David Hale, "Will Asset Inflation Revive the U.S. Economy This Winter?" *Weekly Money Report*, Kemper Financial Services, Inc., Oct. 2, 1995, p.7. Seignorage and other aspects of the allegedly-declining role of the dollar are further discussed in Frankel (1995).

Wherever hyperinflation or social disorder undermines the public's faith in the local currency, the American dollar is the preferred alternative. (The drug trade and other illegal activities are another source of demand, of course.) The United States profits whenever people in Argentina or Russia hold dollars that do not pay interest. Seignorage is a growing source of effective revenue for the United States. A simple calculation -- multiplying the interest rate times foreign-held dollars -- suggests that the United States now derives about \$12 billion a year in seignorage from foreign holdings of U.S. currency.

IV. Implications for the Future

In this section we draw out the implications of the preceding analysis for future competition among aspiring international currencies.

1. Conditions for an International Currency

Having seen how the various candidates for international currency status currently rank, we now ask what are the attributes that make a currency suitable for this role. Four major sorts of conditions determine whether a currency is used internationally.³⁰

A. Patterns of output and trade. The currency of a country that has a large share in international output, trade

³⁰ For further discussion along these lines see Bergsten (1975), Tavlas and Ozeki (1991), Frankel (1992, 1995), and Hale (1995).

and finance has a natural advantage. By such measures, Japan should clearly be number two, ahead of Germany. The U.S. economy is still the world's largest, however, in terms of output and trade. Alarmist fears notwithstanding, it is not very likely that Japan, a country with half the population and far less land area or natural resources, will surpass the United States in sheer economic size.

If the measure of being a vehicle currency is how often it is used in the invoicing and financing of international trade, then other aspects of the pattern of trade may also be relevant. The fact that much of Japan's imports are oil and other raw materials and that much of its exports go to the Western Hemisphere, for example, helps explain why a disproportionately small share of trade is invoiced in yen as opposed to dollars. Raw materials still tend to be priced in dollars.

B. History. There is a strong inertial bias in favor of using whatever currency has been the vehicle currency in the past. An individual (exporter, importer, borrower, lender, or currency trader) is more likely to use a given currency in his or her transactions if everyone else is doing so. For this reason, the world's choice of international currency is characterized by multiple stable equilibria.³¹ The pound remained an important international currency even after the

³¹ Krugman (1984).

United Kingdom lost its position as an economic superpower early in the century. In the present context, the inertial bias favors the continued central role of the dollar.

C. The country's financial markets. Capital and money markets must be not only open and free of controls but also deep and well-developed. The large financial marketplaces of New York and London clearly benefit the dollar and pound relative to the deutschmark and the yen. The controls on international financial transactions that Germany and Japan only began to dismantle in the 1970s (1974 and 1979, respectively) and the domestic regulations that they continued to retain, made their currencies less attractive candidates for international use.³² This is the basis for our view that capital controls were one component of the Triffin Dilemma and for the argument for the SDR as a reserve currency. It is true that Japanese financial markets came a long way in the 1980s.³³ But Tokyo still lags behind New York and London as a financial center, while Singapore and Hong Kong have been gaining.

³² Not that they regretted it. Both governments were reluctant to see their currencies gain reserve status for fear that high and fluctuating demand for them would be destabilizing, particularly for their exporters.

³³ Many of the steps that the U.S. side urged on the Japanese in the 1984 Yen/Dollar negotiations were designed to encourage the development of markets in Tokyo in hedging instruments, bankers' acceptances, commercial paper, short-term government securities, and offshore banking. The explicit goal was precisely to facilitate the internationalization of the yen. While such steps have been taken in Japan over the last ten years, these markets remain as yet relatively less developed. (The U.S. campaign of ten years ago is ironic, in light of current concerns about the declining international role of the dollar.)

It has also been argued that a strong central bank, and large financial sector to counterbalance the political influence of the trade sector, are important. The point is to be able to resist political pressure in favor of depreciating the currency to help sell goods.³⁴

D. Confidence in the value of the currency. Even if a key currency were used only as a unit of account, a necessary qualification would be that its value not fluctuate erratically. As it is, key currencies are also used as a form in which to hold assets (firms hold working balances of the currencies in which they invoice, investors hold bonds issued internationally, and central banks hold currency reserves). Confidence that the currency will be stable and particularly that its value will not be inflated away in the future is critical. The monetary authorities in Japan, Germany and Switzerland established a better track record of low inflation in the 1970s than did the United States, which strengthened their bids for international currency status.

Given good U.S. inflation performance over the last ten years, this is no longer the concern it was formerly. A more important negative for the dollar is the fact that the United States is now a debtor country. Indeed, 1994 and 1995 were the first two years when the country actually paid out more in interest, dividends, and repatriated profits to foreigners, on

³⁴ See, for example, Hale (1995).

their past U.S. investments, than it received on its own past investments abroad. Even if the Federal Reserve never succumbs to the temptation to inflate away the U.S. debt, the continuing U.S. current account deficit is always a possible source of downward pressure on the dollar. Such fears make dollars less attractive.

2. The Prognosis for the Dollar, Mark, Yen and SDR

In light of these desiderata for an international currency, what is the prognosis for the aspirants to the top slot? It is unlikely that some other currency will supplant the dollar as the world's premier currency by, say, the year 2020. The dollar will still be the world's favorite currency for holding reserves, pegging minor currencies, invoicing imports and exports, and denominating bonds and lending. There is no plausible alternative for number-one position.

This is not to suggest that the dollar is ideally suited for this role. It has characteristics that mar its appeal: most importantly the United States is a debtor country with a large current account deficit. But an international currency is one that people use because everyone else is using it.³⁵ Three of the four determinants of reserve currency status -- economic size, developed financial markets, and historical

³⁵ In this U.S. presidential election year, one cannot help but think of the analogy with the Republican primaries. Voters complain about the existing candidates on the grounds that they all have characteristics which mar their appeal. But they have to vote for one, and there is a tendency to prefer a candidate with a serious chance of winning -- that is, one for which others are prepared to vote as well.

inertia -- support the dollar. The fourth determinant could in principle disqualify the dollar if the Federal Reserve produced a high-inflation strategy, but this is unlikely to happen.

The SDR lacks a natural constituency. While the mark and the yen have natural constituencies, they have three drawbacks relative to the dollar that have already been noted: their financial markets are not as liberalized or well-developed as those of the United States, their natural constituency is not as large, and a challenger is always at an inertial disadvantage relative to an incumbent.

Over the period 1970-1992, U.S. GDP fell from 24 per cent of Gross World Product, evaluated at purchasing-power-parity rates, to 20 per cent. It is possible that one can explain much of the downward trend in the dollar's share of world reserves over the last 25 years, and the upward trends in the yen and mark shares, by the falling share of U.S. GDP in the world economy and the rising share of the Japanese and German GDPs. A careful econometric study of the determinants of central bank reserve holdings is beyond the scope of this article. But a crude analysis of the role of relative growth rates may be worthwhile.

We have estimated econometrically that for every one percentage point of economic growth increase that one of the G-3 major countries experiences as a share of Gross World

Product (measured at purchasing-power-parity rates), its currency experiences a 1.33 percentage point increase in its share of central bank reserve holdings.³⁶ In a statistical sense, one can explain a decline of the dollar share over the period 1970-1992 of 5 percentage points by the shift in GDPs.³⁷

One can also explain increases in the mark and yen shares of 1 percentage point and 5 percentage points, respectively.

The tests described here are crude.³⁸ A careful analysis of a well-specified equation would require access to data on foreign exchange holdings broken down by central bank, rather than aggregated. Most central banks report their holdings to the International Monetary Fund, but under conditions of secrecy. The responsible department in the Fund does not analyze the data itself, nor, normally, will it even let researchers in other parts of the Fund do so. (Shockingly, there is no way for a reader of the aggregated tables that are reported each year in the IMF Annual Report even to know whether the currency composition has been drastically affected in a particular year by a change in the list of countries that

³⁶ For every percentage point increase that the country experiences as a share of Gross World Product measured at actual exchange rates, its currency experiences an estimated .55 percentage point increase in share.

³⁷ One can explain a decline of 3 percentage points in the dollar share by the shift in GDPs *evaluated at actual exchange rates*, the U.S. share having gone from 32 per cent to 26 per cent.

³⁸ Tests that added the lagged rate of dollar depreciation did not produce a significant coefficient. A thorough analysis would require access to reserve holdings by individual central banks as in Heller and Khan (1978) or Dooley, Lizondo, and Mathieson (1989). These data have never been made available outside the IMF, however [and are usually not available for research even inside the IMF].

have dutifully reported their holdings.³⁹⁾

The only exception, to our knowledge, is the study by Dooley, Lizondo and Mathieson (1989), who had blind access to the data (i.e., access without identification of the individual central banks). They estimated the responsiveness of country central bank holdings of dollars, marks, yen, pounds and French francs to the trade undertaken by the country in question with each of the five large countries. One could in principle combine these estimates with projections of rates of growth in income and trade to make forecasts of reserve demand for the five currencies. However, the equation estimated by Dooley, Lizondo and Mathieson includes also among its explanatory variables dummy variables indicating choice of peg (or other exchange rate regime), and the proportion of interest payments on external debt in the five currencies. These decisions regarding currency-pegging and debt-denomination are ones that we would wish to regard as determined simultaneously with the reserve-holding decision. If rapid growth of Japan's trade or an increase in confidence in the yen, for example, is making the yen a more attractive international currency than the dollar, this would show up in pegging and debt policies as well as in reserve policies.

³⁹ Furthermore, the reserve holdings of Taiwan Province of China -- the second largest in the world -- are not included in the Fund's tables. This problem is much more easily addressed than the others, however, because Taiwan does not guard the confidentiality of its reserves composition as jealously as other countries.

Thus we are unable to use their equation for forecasting.⁴⁰

What does our crude regression equation predict for the future? (The following calculation should be regarded as merely illustrative.) The United States is estimated to have a permanently higher intercept term than the mark or yen. This difference is presumably attributable to the openness and development of its financial markets and to inertial bias. At current exchange rates the aggregate GDP of the EC 12 is approximately equal to that of the United States (which is 26.1 per cent of Gross World Product). At purchasing-power-parity exchange rates, EC GDP is slightly smaller than that of the U.S. (which has a share of 22.5). Japan's share is smaller, but it has been gaining on the U.S. rapidly, when evaluated at current exchange rates. To take an extremely pessimistic scenario from the viewpoint of the dollar, imagine that by the start of the next century, the Japanese economy is as large as the United States, and the mark has become the common currency throughout a Western Europe of the same size.

If the aggregate size of the three regions together, evaluated at purchasing power parity, remains the same (one half of gross world product in 1992), then each becomes one-sixth of the world economy. Our equation predicts that the dollar's share of world reserves would in that case fall only

⁴⁰ The authors recommend that an updated study be undertaken within the Fund, involving if necessary Research Department staff (or even visiting consultants), in cooperation with the staff of the department responsible for the reserve numbers.

to 62 per cent (from 63 per cent currently), the mark's share would rise to 28 per cent (from 16 per cent), and the yen's share to 17 per cent (from 9 per cent). This would indeed be a continuation of the trend of the 1970s and 1980s. Yet the dollar would remain number one by a large margin.

This calculation rules out a priori a sudden "tipping" that would render the old constant terms obsolete. But why should the world equilibrium converge on a non-dollar currency? This would only happen in the event of a drastic change in some of the conditions enumerated above, such as either Japan or a deutschmark-dominated area actually surpassing the United States in economic size, which is unlikely. (The possibility of a single currency coming into use throughout Europe, which would indeed pose a challenge to the supremacy of the dollar if it were to happen, is discussed below.)

Why is the dollar the world's lingua franca, while the SDR is not? There is an analogy with the international use of the English language. Nobody would claim that English is particularly well-suited to be the world's lingua franca by virtue of its intrinsic beauty, simplicity, or utility. Yet it is the language in which citizens of different countries most often converse and do business, and increasingly so. One chooses to use a lingua franca, as one chooses a currency, in the belief that it is the one that others are most likely to

use.

If the dollar is the world monetary system's version of the English language, the SDR is the system's version of esperanto. The SDR was created by the IMF to be an ideal international currency. Its definition makes it intrinsically more useful than the dollar, just as esperanto is intrinsically superior to English. The reason that the SDR is even less widely used today than it was ten years ago is that, like esperanto, it lacks a natural base of constituents who would use it even if it were not in international use.⁴¹

V. Implications of the Evolution of the International Monetary System

The crucial characteristics of the international monetary system in the immediate future will be three: the movement of additional countries toward flexible exchange rates, continued high capital mobility, and the gradual diversification of reserve portfolios. Over the intermediate run, a European monetary union may be established. Peering very far into the future, one can envisage the possibility of a world of three currency blocs, centered on the United States, Western Europe

⁴¹ Some have anticipated our analogy, describing the ecu (or euro) as "esperanto money." But the ecu has at least attained a respectable amount of use in private financial transactions (or had, up to the 1992 crisis in the European Exchange Rate Mechanism). The SDR has not. If the European Union achieves EMU, then the new currency would acquire a larger natural base of constituents than the United States, and would constitute a major threat to the dollar's standing as the pre-eminent international currency.

and Japan, or even a single world currency. What would be the role of the SDR in these scenarios?

1. The Immediate Future

As late as 1984 fewer than a quarter of IMF member countries had adopted floating rates. But by the end of 1994 the proportion operating systems of managed and independent floating rates had risen to more than 50 per cent. There is good reason to think that the trend will continue. The existence of large, highly liquid international financial markets increases the difficulty of operating currency pegs.⁴²

While exceptional circumstances, such as a recent history of very high inflation (as in Argentina), political threat to confidence (as in Hong Kong) or close links with foreign governments (CFA franc zone), may induce a few developing countries to peg their currencies, the prevalent view, especially in the wake of the Mexican crisis, is that few developing countries are well advised to peg.⁴³

We noted in Section II that following the breakdown of Bretton Woods, there was some decline in the demand for reserves on the part of large, industrialized countries, but little change, and even an increase, in the reserve demands of smaller developing countries. We attributed this contrast to

⁴² This conventional wisdom is argued and reviewed by Obstfeld and Rogoff (1995).

⁴³ See for example Sachs (1995). We reserve discussion of another possible exception to this generalization, European monetary union, to the next subsection.

the reluctance of small, highly-specialized commodity exporters with underdeveloped financial markets to allow their currencies to float freely, as suggested by the literature on the choice of exchange-rate regime. As developing countries continue to grow, their exports diversify, and their financial markets deepen, their exchange-rate and financial arrangements will increasingly resemble those of the industrial economies, and so too will their demands for international reserves. This points to some decline in the global demand for reserves.

As we saw in Section II above, there is some empirical support for this view, although it suggests that the decline in reserve demand will be modest. This suggests no pressing role for the SDR to augment the supply of global liquidity.

Another common rationale for the SDR is to provide a unit of account that fluctuates less against each component currency than that currency fluctuates against the other component currencies.⁴⁴ This enables national governments, international institutions, and private parties to maintain accounts and denominate contracts in a more stable unit than would be available otherwise. As more currencies begin to fluctuate, this rationale would appear to acquire additional force.

But this argument was formulated before the development of today's highly liquid, low-cost foreign exchange markets.

⁴⁴ See IMF (1987), p.24.

If governments and private agents find it attractive to hold assets in the form of a composite basket of five currencies, they can do so without the IMF's help by undertaking foreign exchange transactions that replicate the SDR basket. With spreads on foreign exchange markets as low as five basis points, the relevant transactions can be undertaken at minimal cost. This would not obviate the need for the Fund to define, calculate and publish the value of the SDR, since services such as these would create the focal point encouraging basket peggers, for whom the attractions of a particular basket peg are likely to increase with the number of countries that also peg to that basket, to peg to the SDR rather than to another currency composite. But it would not create an immediate rationale for additional SDR allocations.

Another direction in which the international system will evolve is toward still higher capital mobility. As explained in Section II, we see this as blunting the Triffin Dilemma and weakening associated arguments for an SDR allocation. Capital mobility allows all governments and central banks to augment their reserves simultaneously by borrowing on private foreign markets. It removes the danger that the foreign monetary liabilities of the reserve currency countries will grow at an unsustainably faster rate than their domestic economies, calling into question their ability to convert their liabilities into other assets or commodities at prevailing

prices by allowing - indeed encouraging -- the emergence of alternative national sources of reserve supply.

Along with higher capital mobility will come greater access to and reliance on foreign bond and equity finance for developing economies. The role of the SDR, in the view of its founders, was to "permit the Fund to assure an appropriate level of international reserves."⁴⁵ Is this role obviated by this ability to borrow? While some have argued that ability to borrow diminishes the demand for reserves because it makes their supply more elastic, the volatility of the supply of commercial capital may actually increase the need for official reserves to smooth fluctuations in the external accounts. As illustrated by the Mexican crisis of 1994-95, countries in need may find themselves unable to obtain borrowed reserves at any price. To prevent a meltdown of the Mexican financial system, the IMF provided the government nearly \$20 billion of credit as part of a \$50 billion assistance program. The largest single transaction in the history of the IMF's SDR department was the sale of SDR 3.5 billion by Mexico from its stand-by purchase in February 1995.

The idea that an SDR allocation could provide the resources needed to head off national financial crises with global repercussions goes back at least to Group of Ten (1985). But the growth of international financial markets

⁴⁵ IMF Annual Report (1969), p.16.

renders existing Fund resources increasingly inadequate. Rather than being allocated to member countries in proportion to their quotas, the SDR issue could be allocated to the Fund itself to underwrite loans by a special financial-crisis facility targeted to where they are most needed. (For further discussion of this idea, see the paper in this volume by Marcello de Cecco and Francesco Giavazzi.)

But there are also other ways of financing international-lender-of-last-resort intervention. The relevant finance can be provided by national governments, as in the case of U.S. and European loans to Mexico in 1995. Still, it can be difficult, as that experience illustrates, to provide the needed resources with the speed required by the operation of modern financial markets, for political as much as economic reasons. Alternatively, resources can be mobilized by increasing IMF quotas. Members would pay in SDRs and reserve currencies in the amount of their quota increases, thereby providing the Fund the requisite resources. But there would be political resistance to the substantial quota increases that would be necessary to enable countries to draw automatically on the Fund in the amounts required to cope with modern financial crises. Mexico, for example, was allowed to draw five times its quota, in an exception to IMF rules.

Another option is to increase the General Arrangements to Borrow, under which the governments and central banks of the

G-10 countries and Saudi Arabia provide lines of credit which allow the Fund to borrow up to \$28 billion at market interest rates if its resources are sufficient to deal with an emergency. At the Halifax Summit the leaders of the G-7 countries agreed that the GAB should be doubled through a combination of increased contributions from existing members and the participation of new countries. But if the GAB is doubled by leaving the G-10 and its \$28 billion of credit lines intact and creating a parallel grouping comprised of the G-10 plus a number of smaller countries responsible for an additional \$28 billion of credits (a proposal which finds favor among the smaller G-10 members who fear that simple expansion would erode their influence), this two-tier arrangement might not be appealing to potential new members and might not attract their participation. And while GAB members can receive money "to forestall or cope with impairment of the international monetary system," the terms under which GAB credits can be extended to non-members are more restrictive. These require an "exceptional situation of a character or aggregate size that could threaten the stability of the international monetary system." Some would say that this would have been difficult to claim of the Mexican crisis, for example. Would Mexico therefore have been eligible to draw from the GAB?

Thus, there is a second-best (really, a third- or fourth-

best) case for an SDR allocation -- with the SDRs being allocated to the Fund itself rather than to member countries - - to finance a facility for dealing with Mexico-style crises, if and only if it proves impossible to expand Fund quotas and the GAB and to liberalize the provisions for drawing on either of them.

The final direction in which the international monetary system will evolve is toward some diversification of reserve portfolios. As argued above, we believe that the dollar will remain the dominant reserve currency for the foreseeable future. But there is some evidence that Asian countries, which hold an increasing share of global reserves, have been substituting yen for dollars in their reserves because their debts are increasingly denominated in yen. Japan, Taiwan, China, Singapore and Hong Kong are five of the six largest holders of international reserves, reflecting their rapid economic growth and the magnitude of the capital inflows they have received. It is sometimes inferred that, if these trends continue, the yen could supplant the dollar as a reserve currency.⁴⁶ But this argument overlooks two facts. First, Japan itself cannot hold yen as reserves. Second, there is reason to think that Asian economic growth in the future will not outstrip growth in other parts of the world to the same extent that it has in the past.

⁴⁶ Economist Magazine (18 November 1995), pp.81-82.

All this suggests that reserve portfolios may become slightly more balanced among currencies in the short run. None of it provides an obvious rationale for an SDR allocation to supplant national currencies in international reserve.

2. The Intermediate Future

In this subsection we assume, for sake of argument, that a European monetary union (EMU), encompassing some but not necessarily all members of the European Union, will come into existence in the intermediate run.⁴⁷ That event, assuming it occurs, will have important effects on supplies and demands for international reserves. Because several of these work in opposite directions, however, they are unlikely to give rise to a significant excess demand for reserves and to create an argument for an SDR allocation.

Because EMU members will no longer have to stabilize their exchange rates vis-a-vis one another, their demands for reserves will decline. Gros and Thygesen (1991) put the decline at \$100 billion, European Commission at \$200 billion.

But a further short-run impact of EMU is likely to be some increase in the demand for dollars as reserves and additional ability of the United States to provide them. The introduction of the Euro would reduce the fraction of reserves

⁴⁷ We stress that here we are exclusively in the business of analyzing scenarios, since the two coauthors disagree, to an extent, about the likelihood of this outcome.

denominated in European currencies, compared with the fraction held in EU currencies before the Euro is introduced, because European central banks' holdings of one another's national currencies will be transformed into domestic-currency claims.

Unlike the Bundesbank, which could hold francs, and the Bank of France, which could hold marks, the European Central Bank would only be able to hold its reserves in the form of non-European currencies like the dollar.⁴⁸ The dollar will account for an even larger share of global reserves. To the extent that a larger share of world reserves are denominated in dollars, network-externality effects may encourage countries to accumulate even more.

With time, the creation of a single European currency would lead to a concentration of foreign exchange transactions in that asset compared to the volume of transactions that take place currently in, inter alia, the French franc and the deutschmark. With both Frenchmen and Germans transacting in Euros, bid-ask spreads in the single currency would decline, since spreads are a decreasing function of the volume of transactions.⁴⁹ In turn, this will attract other currency traders to the Euro market. Prominent among them will be those holding the currencies of countries in Southern and

⁴⁸ The European Central Bank will of course be able to hold reserves in the form of currencies of countries that do not participate in EMU (the U.K.?), but these are likely to be of relatively minor importance.

⁴⁹ Black (1991) among others has documented the strong inverse relationship that exists between the volume of trading and the bid-ask spread.

Eastern Europe who are not among the founding members of the monetary union but wish to join subsequently; their currencies are likely to shadow the Euro, encouraging foreign exchange transactions to pass through it rather than the dollar. And as the Euro becomes more important as a vehicle currency, it is likely to gain use as an intervention currency and to become an increasingly popular form in which other countries hold their reserves. Ultimately, the creation of the Euro would mean a new and increasingly powerful rival for the dollar as the international monetary system's leading reserve currency.

One can imagine two ways in which this transition might take place. The first one gives rise to an argument for an SDR allocation to avert an incipient reserve shortage, but we find it far-fetched.

Assume that central banks around the world decide all at once to switch their holdings from dollars to Euros. This could imply considerable exchange rate instability between the major currencies, strains on the international monetary relations of smaller countries, and a rise in the demand for international reserves. The instability of a major reserve currency like the dollar could spook its major institutional holders, who might then dump their holdings, reducing the effective supply of international reserves. The consequent scramble for Euros and yen, and appreciation of those

currencies relative to the dollar, could place significant deflationary pressure on the European and Japanese economies.

In this scenario there might be a case for an SDR allocation to avert the incipient reserve shortage and a substitution account to absorb redundant dollars without destabilizing foreign exchange markets, as suggested by Kenen (1995).

But this sudden switch from dollars to Euros is unlikely. Central banks will be aware that they face a collective action problem; if they all scramble to sell dollars, they will depress the value of the claim they are attempting to sell. In the same way that they hesitated to liquidate their gold reserves at once in the 1970s, they are likely to adopt a similar attitude toward the management of their excess dollars, and to rebalance their portfolios by gradually acquiring other currencies as their need for reserves continues to grow. Even Kenen agrees that the disaster scenario that motivates his call for the creation of a substitution account is a low-probability event.

3. The Distant Future

Wyplosz (1995) envisages the emergence of a world of three currency blocs, organized around the dollar, the yen, and the European currency, respectively, sometime in the next century. The members of these blocs will be inclined to make their own monetary arrangements and organize them around a dominant national currency or a regional reserve unit like the

Euro.⁵⁰ Imagine, for example, that Canada, the United States and Mexico form a monetary union or a pegged rate system in which the members agree to extend unlimited intervention on behalf of one another's currencies. The dollar or an asset analogous to the Euro, not the SDR, would serve as this bloc's common unit of account. Intervention, in the event that the separate national currencies are maintained, would take place through purchases and sales of U.S. dollars for their Canadian and Mexican counterparts, leaving little obvious role for the SDR.

Because the three blocs will be larger and collectively less open to the rest of the world than today's nation states, they will be more inclined to float their common currencies against one another. Wyplosz predicts that the three blocs will tend to follow policies of benign neglect with regard to inter-bloc exchange rate fluctuations. Hence, there will be less need for international reserves than today if this three-bloc world comes about.

Cooper (1990) and Bergsten (1993), peering far into the future, suggest that there is an efficiency argument for the development of a single world currency to complement an increasingly integrated global trading system. In a world of a single currency, there is no need for international reserves to smooth balance of payments disturbances, any more than

⁵⁰ See Rhomberg (1991).

there is a need for Federal Reserve districts to hold international reserves to deal with disturbances to regional balances of payments. Some, following Gurley and Shaw, would argue that successful management of any financial system requires an "outside asset," and that in a world of a single international currency the SDR could play this part. The IMF would assume the role of world central bank and vary the volume of SDRs it supplied to commercial banks and other financial intermediaries that used the instrument as backing for their own liabilities, thereby controlling the money supply. The alternative, anti-Gurley and Shaw view, is that the entity vested with responsibility for controlling the volume of currency could simply hold, and operate through markets in, the debt instruments of national governments and other issuers.

Could greater reliance on SDRs in the intermediate run encourage the emergence of such a currency, along the lines of the competing-currency arguments of some architects of EMU? If governments and the Fund concentrated a greater share of their transactions in the form of SDRs, this argument goes, private agents might find it convenient to do the same, and the world might gravitate, without direction by national governments, toward a situation where a single world currency effectively prevailed.

We are skeptical of the relevance of this argument. Very

large quantities of SDR transactions would have to be undertaken before the network externalities they threw off dominated those associated with the dollar. The Yen and the mark, and even the French franc, Swiss franc and British pound, remain far ahead of the SDR in terms of natural constituency, as we showed in Section III. And if denominating assets in a composite basket is attractive to private agents, they themselves can do so by undertaking low-cost foreign exchange market transactions. It is not clear to us that additional SDR allocations will add significantly to the momentum for the development of a single world currency.

V. Conclusion

In attempting to forecast the role of the SDR in the future of the international monetary system, we began by putting to rest a number of misunderstandings about the supply and demand for reserves. The rise of international capital mobility and exchange rate flexibility does not remove the need for international reserves. To the extent that capital mobility allows countries to borrow reserves and exchange-rate flexibility provides an instrument of adjustment that can supplement reserve financing of balance-of-payments deficits, there could be some modest decline in the demand for reserves as capital controls are removed and additional countries gravitate toward exchange rate flexibility. But insofar as

international capital markets are themselves the source of shocks, greater exposure to these markets implies a greater demand for reserves.

In any case, contrary to the view that not all countries can obtain international reserves simultaneously, an argument that arose in the control-ridden 1950s and 1960s, international capital mobility goes a long way toward removing this Triffin Dilemma. All central banks and governments can simultaneously obtain additional reserves on private markets.

To the extent that any single country or group of countries begins to incur foreign monetary liabilities that grow alarmingly large relative to the size of its economy, new sources of reserve supply can spring up, in a world of convertible currencies.

Thus, neither the total supply nor the total demand for reserves is likely to change dramatically as the world moves further in the direction of international capital mobility and exchange rate flexibility. There is no compelling argument for an SDR allocation to avert a pending global liquidity shortage or to remove an intrinsic instability in the reserve-supply process, as was the case in the control-ridden world of the 1960s. There is a consistent argument for an SDR allocation to provide the resources needed to manage national financial crises with international implications -- crises of a sort that may grow more prevalent with the globalization of

markets -- but there are more direct and desirable means of underwriting the relevant facility. European monetary unification, if and when it occurs, will have major implications for the demand and supply of reserves, but several of these work in offsetting directions; there is little reason to think that they will create a significant excess demand for international reserves or destabilize the reserve-supply process. In a future world with a single world currency or three relatively self-contained currency blocs floating against one another, the demand for international reserves would decline or disappear. While there would be a role for the SDR or an instrument like it if the IMF is the world central bank that issues the the single world currency, any such scenario is so remote as to have no significant implications for short- or medium-term policy planning.

Our conclusion, for better or for worse, is that the future of the international monetary system is unlikely to entail a significantly expanded role for the SDR.

Appendix 1: The Institutions of the SDR

IMF members agreed to the creation SDRs in 1967, and the First Amendment to the Articles of Agreement authorizing their allocation was adopted in 1969. The First Amendment authorized the Fund to create SDRs to "meet the long-term global need, as and when it arises, to supplement existing reserve assets."⁵¹ Rejecting arguments for a link to the development needs of industrializing countries, it made SDR allocations proportional to each member's quota.⁵² Members also receive SDRs when they draw on the Fund. When an increase in IMF quotas is mandated, a quarter of each country's subscription is paid in SDRs. Three allocations, totalling SDR 9.5 billion, were made in 1970-72. Three further allocations, totalling SDR 12 billion, were made in 1979-81. No SDRs have been allocated subsequently.

SDRs may be used in transactions among the governments of participating IMF member countries, in transactions between those governments and the Fund, and in transactions with 16 other official entities. They may be used to settle financial obligations among the various holders. They may be exchanged for currencies, loaned, or given away as grants and aid. They can be used in forward market operations and swap arrangements and offered as security for the performance of financial

⁵¹ Article XVIII, Section 1 (a).

⁵² The initial proposal for a link came from Stamp (1958). On the subsequent literature, see Cline (1976).

obligations. An IMF member in balance-of-payments need is guaranteed its ability to obtain foreign exchange for SDRs by the "designation mechanism," which empowers the Fund to designate countries with reserve and balance-of-payments positions sufficiently strong to provide their national currencies in exchange. SDRs held with the Fund bear no interest, but when countries utilize a part of their allocation they pay interest to the recipient. The rate of interest was originally 1.5 per cent (not far above the zero return on officially-priced gold), but it is now set as a weighted average of three-month interest rates on the basket currencies, calculated daily. SDRs bear no maturity date. The composition of the SDR basket is revised every five years to reflect changes in the relative importance of the constituent currencies in international trade and finance.

SDRs accounted for more than nine per cent of the non-gold reserves of the Fund's member countries in 1972 but now represent scarcely four per cent. Their predominant use in the second half of the 1980s was in transfers among member countries and other prescribed holders rather than in transactions with the Fund.⁵³ Transactions by designation have declined relative to transactions by agreement.⁵⁴ SDR

⁵³ Details in this paragraph are drawn from Coats, Furstenberg and Isard (1990).

⁵⁴ The rise in the interest rate toward market levels and the fact that SDR balances are now smaller relative to total reserves presumably account for the greater willingness of countries to accept SDRs.

transactions with the IMF have taken place through interest paid to members on net credit positions with the Fund (where such countries have the option of receiving interest in the form of either SDRs or national currencies), interest charges and repayment of principal on IMF loans, and quota subscriptions and increases. Because SDRs paid into the Fund through this last channel have been returned to circulation via Fund loans, the decline in the relative importance of SDRs in the global system reflects the growth of other forms of international liquidity.

Private parties began issuing assets and liabilities denominated in SDRs, such as bank deposits, bonds and syndicated bank credits, in the late 1970s. The quantity of such claims surpassed \$5 billion by 1981. Since then, however, there has been no growth of this market, and the volume of SDR-denominated bank deposits has declined (IMF, 1987).

Appendix 2: The History of the SDR

Here we review the evolution of the international monetary system and the SDR in light of the framework provided by Sections II and III. Our account distinguishes two subperiods: those prior to and after the breakdown of Bretton Woods in 1971-3.

1. The Distant Past (Before 1973)

The crucial characteristics of the first period we distinguish, from the creation of the Bretton Woods System to the early 1970s, were pegged exchange rates and capital controls. Article XX of the IMF Articles of Agreement required countries to declare par values for their currencies in terms of gold or a currency convertible into gold and to hold their exchange rates within one per cent of those levels.

Article VIII required them to restore currency convertibility on current account but permitted the retention of capital account restrictions.

The United States was the only country to escape World War II with gold reserves adequate and external accounts strong enough to accept Article VIII.⁵⁵ With the U.S. dollar convertible into gold at \$35 an ounce but the convertibility and liquidity of other currencies restricted by exchange controls, the incremental demand for reserves in the postwar period essentially took the form of gold and dollars. While

⁵⁵ It did so on December 10, 1946.

the United Kingdom's Commonwealth, Dominions and trading partners had accumulated sterling balances in the 1930s and during World War II, just as the dependencies of other European powers had acquired official balances denominated in the currencies of their mother countries, they were loath to add to them subsequently. Only colonies tended to build up these balances in the 1950s. Independent members of the sterling area, for example, drew down their sterling balances from some L2 billion in 1951 to less than L1.5 billion by the decade's end.⁵⁶ (See Figure 1.)

Contemporary observers were not unaware of the difficulties of operating a gold exchange standard, having witnessed the collapse of one in the 1930s. Robert Triffin observed as early as 1947 that its tendency to meet the excess demand for reserves through the growth of foreign dollar balances would eventually destabilize the Bretton Woods gold-dollar system.⁵⁷ Accumulating dollar reserves was attractive only so long as there was no question about their convertibility into gold. But as foreign dollar balances grew relative to U.S. gold reserves, the credibility of this commitment might be cast into doubt. U.S. foreign monetary liabilities first exceeded U.S. gold reserves in 1960, U.S. liabilities to foreign monetary authorities in 1963. (See

⁵⁶ The colonies, meanwhile, more than doubled their holdings of sterling balances over the period. Schenk (1994), p.21.

⁵⁷ See Triffin (1947).

Figure 2.) If some foreign holders sought to convert their reserves, their actions might have the same effect as a queue of depositors forming outside a bank. Others would join for fear of being denied access. Countries would rush to convert their dollars before the U.S. was forced to devalue.

Another way of characterizing the dilemma described by Triffin was that not all countries could accumulate reserves simultaneously. Due to barriers to the international mobility of private capital, they could acquire reserves only by running surpluses on official settlements balance, which was not something all of them could do at once. If the U.S. defended the dollar by strengthening its payments position, it would force a reserve shortage on the rest of the world. But if it allowed its external accounts to deteriorate and other countries to accumulate reserves, the U.S. would suffer a reserve shortage itself. Triffin's own forecast was that the U.S., to fend off the collapse of the dollar's \$35 gold parity, would adopt deflationary policies and starve the world of reserves. To defend their currencies, other countries would then respond in kind, setting off a deflationary spiral like that of the 1930s. In fact, the Johnson and Nixon Administrations followed the other course. They pursued policies of benign neglect toward the U.S. balance of payments, rendering the problem an excessive supply of dollars and inflation, not deflation. Although the U.S. attempted to

bottle up the consequences by establishing the Gold Pool with its European allies and Japan and using moral suasion to encourage them to refrain from converting dollars into gold, the proliferation of dollars inevitably undermined confidence in the dollar's convertibility into gold and brought down the pegged-rate gold-dollar system.

Triffin's solution was to create a synthetic reserve asset to substitute for the dollar.⁵⁸ Governments would be able to buy the international currency from the Fund in exchange for dollars in order to begin eliminating the latter from official balance sheets. (This mechanism came to be known as a substitution account.) The Fund would also be empowered to issue that currency directly to its members and to engage in open market operations, buying and selling securities to adjust the level of reserves so as to offset deflationary pressure.

The point to note is that Triffin's case was predicated on the existence of pegged exchange rates and capital controls. While there was some growth in the use of currencies other than the dollar as reserve assets, capital controls in combination with historical factors slowed the growth of these markets, limiting the liquidity, convertibility and desirability of other potential reserve currencies. The commitment to peg the exchange rate and

⁵⁸ See Triffin (1960).

change it only in the event of a fundamental disequilibrium limited the scope for adjusting exchange rates instead of relying on reserves. The value of monetary gold reserves could be significantly supplemented only if the U.S. raised the dollar price of gold; this, however, threatened to erode the use of dollar reserves by undermining confidence in America's commitment to make available gold for dollars at the currently prevailing official price.⁵⁹ In this world of pegged exchange rates and controls on the markets for currencies, it followed that the creation of a synthetic reserve asset was required if both deflation and exchange rate instability were to be avoided.⁶⁰ Triffin's proposal was influential but ultimately too radical to be adopted.⁶¹ The U.S. was reluctant to create an asset that would compete with the dollar, while the French opposed creating an asset that would diminish the role of gold and reinforce what it perceived as the inflationary bias that already resulted from the United States' "exorbitant privilege." But the Johnson Administration, increasingly worried for the stability of the dollar, reversed itself in 1965, and the French extracted a

⁵⁹ It would have also conferred large benefits on the Soviet Union and South Africa, which other countries viewed as undesirable.

⁶⁰ In addition, policymakers were loath to permit the operation of the gold standard mechanism for augmenting international liquidity: namely, a decline in the price level which would raise the real value of outstanding reserves and enhance the incentive to devote resources to gold mining.

⁶¹ Reviews of the subsequent debate and variants of the SDR proposal may be found in Grubel (1963) and Solomon (1976).

concession that no SDR allocation would take place until the U.S. reined in its balance-of-payments deficit. This compromise allowed a scaled-back version of the proposal to be adopted.⁶² The instrument finally created could not be injected into circulation through open market operations, nor was a substitution account created. Each additional SDR allocation required the assent of countries accounting for 80 per cent of Fund voting power, providing protection against the specter of a liquidity glut.⁶³

The U.S. demonstrated the requisite payments surplus in 1969, as a result of anti-inflationary monetary policies adopted by the Federal Reserve Board (Figure 3). This permitted the first SDR allocation to be disbursed in 1970. The amounts actually allocated were even larger than foreseen by those who had negotiated the terms of the First Amendment.⁶⁴

The first three SDR allocations augmented the global stock of foreign exchange reserves by almost ten per cent. Thus, there was reason to think that efforts to supersede the dollar with a synthetic reserve asset were bearing fruit.

Why then did the creation of the SDR fail to save the

⁶² The French veto was imposed by designing procedures which gave the European Economic Community veto power over the timing and amount of any SDR allocation. See Dam (1982), pp.165-166. The French further insisted that the instrument be called a "right" so as to emphasize the analogy with a line of credit as opposed to an asset.

⁶³ This share was raised to 85 per cent at the time of the Second Amendment to the Articles of Agreement. See Gold (1978).

⁶⁴ Williamson (1984), p.10. Presumably officials were impressed by the force of U.S. monetary retrenchment and feared a reserve shortage.

Bretton Woods pegged-rate system? In part, the first set of allocations was disbursed too late, ten years after Triffin had sounded the alarm. Moreover, the SDR system lacked a mechanism to deal with the consequences of the delay. Although the U.S. balance of payments swung into surplus in 1969, U.S. deficits had already considerably augmented the volume of official dollar reserves. The temptation to liquidate these balances, which could be devalued against gold at any time, was restrained only by the collective desire of other countries to maintain the \$35-an-ounce link to gold that anchored the gold-dollar system. Doubts about the priority attached by the U.S. government to the \$35 peg might tempt countries to defect from these collective support efforts. And once the Nixon Administration escalated American involvement in the Vietnam War, it became clear that U.S. priorities lay elsewhere. Only a substitution account could have solved the resulting confidence problem by mopping up some of the outstanding dollars. But creating such an account might tempt a U.S. government intent on financing foreign military ventures to replace, via balance-of-payments deficits, any dollars absorbed by the Fund. The creation of SDRs would have helped to stabilize the pegged-rate Bretton Woods System only if accompanied by incentives for the U.S. to adjust, and this was hardly the effect of an SDR allocation that, among other things, partially replenished U.S. reserves.

International reserves exploded between 1969 and 1971, rising by roughly 50 per cent (total reserves rising from around \$80 billion to roughly \$120 billion). In addition to the SDR allocation, their growth took the form of both non-dollar currencies and dollars, the second of which the U.S. pumped out by relaxing its monetary policy and other governments absorbed in the collective effort to sustain the \$35 gold price. An SDR allocation turned out to be the last thing needed in this environment flush with liquidity.

2. The Not-So-Distant Past (1973-89)

The crucial characteristics of our second period, 1973-89, were rising exchange rate flexibility and international capital mobility. Neither shift was linear: a number of countries in Europe and the developing world adopted narrow bands designed to limit exchange rate variability and supported these with capital controls.⁶⁵ But notwithstanding these exceptions, the trend was in the direction of greater exchange rate flexibility and capital mobility.

It was widely anticipated that, with the transition to floating, the demand for reserves would decline. Countries would be able to accommodate adverse shocks to their balances of payments by depreciating their exchange rate instead of having to finance their deficits with reserves. This turned

⁶⁵ For example, Sebastian Edwards and Losada (1994) document that Guatemala and Honduras, which pegged their exchange rates to the dollar, tightened capital controls following the breakdown of Bretton Woods.

out not to be the case. Policymakers quickly concluded that freely floating currencies had costs and hesitated to allow the exchange rate to adjust in response to balance-of-payments shocks. They continued to intervene, using international reserves, to limit currency fluctuations. Floating exchange rates, as events transpired, did not mean freely floating rates. There was some modest decline in the demand for reserves by industrial countries, but it was small, and the demand for reserves by developing countries remained basically unchanged.⁶⁶

The economic explanation for this fact is not straightforward. In part, the exchange rate changes required to restore external balance were larger than had been anticipated by the academic advocates of floating. Such sizeable exchange rate changes had disconcerting effects: as mentioned in Section II, they depressed output by raising the prices of imported inputs, increased the difficulty of servicing foreign-currency-denominated debts, and threatened the solvency of banks with foreign-currency-denominated liabilities. The growth of private international transactions meant that more intervention, and hence more reserves, were needed to exert the same effect.

The other unanticipated consequence of the transition to floating was that this buoyant demand for reserves remained to

⁶⁶ See Heller and Khan (1978) and Frenkel (1983).

a considerable extent a demand for dollars. Some observers had predicted that the dollar's status as the leading reserve currency would evaporate when the \$35-an-ounce link to gold was broken, since holding dollars now exposed governments to the same risks as holding other currencies. There was some fall in the share of the dollar in the 1970s, as developing and small industrial countries diversified their reserve portfolios, but the share of the U.S. currency in their portfolios stabilized thereafter.⁶⁷ Those who inferred that the dollar's glory days were over neglected other features of the international financial environment. For historical reasons, the market for dollars remained deeper and wider than that for other currencies. In 1979, 99 per cent of all transactions in the London foreign exchange market involved the dollar, and figures for the Frankfurt and Zurich markets were similar.⁶⁸ Agents seeking to trade those currencies for one another still had to go through the dollar, paying transactions costs twice. And where markets existed for direct transactions between other currencies, spreads were generally larger. The United States was the leading source of merchandise exports.⁶⁹ Countries which contracted syndicated bank loans in the 1970s did so in dollars, New York banks having headed many of these syndicates; governments held

⁶⁷ See Kenen (1995), p.113.

⁶⁸ Group of Thirty (1980).

⁶⁹ In 1976, for example, U.S. exports amounted to \$115 billion, followed by Germany's \$102 billion and Japan's \$67 billion.

dollar reserves to reassure the banks and to avoid debt-service shortfalls.

If the transition to floating did not much alter the demand for reserves and the cases for and against an SDR allocation, what about the rise of capital mobility? The ratio of reserves to imports actually fell over the 1970s (when gold is valued at its old official price), from 30.5 per cent in 1969 to 25.8 per cent in 1979. Some contemporaries argued that, more importantly, the rise of capital mobility rendered the supply of reserves facing any one country more elastic, since these could be augmented not only by running current account surpluses, as before, but also by borrowing abroad. The problem, as we explained above, is that governments and central banks cannot borrow at the world interest rate, or even at that interest rate plus a risk premium, at all times. While many countries faced an elastic supply of bank finance in the 1970s, when this sanguine view was formed, they found themselves rationed out of the market after the debt crisis of 1982 struck.⁷⁰ Because the risk of default rose with the level of debt servicing obligations, there came a point beyond which the markets were unwilling to lend. And because debt service rose with the interest rate, a higher interest rate did not relax the credit constraint.

⁷⁰ Eaton and Gersovitz (1980) and Edwards (1984) provide some evidence that access to external capital reduced the demand for reserves on the part of developing countries in the 1970s.

Countries to whom credit is rationed can accumulate reserves only by running current account surpluses, a process which costs resources and is difficult to fine tune. Hence, developing countries tended to demand higher levels of reserves in the 1980s, when their economic difficulties deepened and it proved deficient to augment their reserves on private markets, than they had in the 1970s.⁷¹ Some authors took this fact as justification for an SDR allocation.

The other basis for an allocation was the possibility that a multiple reserve currency system would prove unstable and the belief that the SDR would provide a more durable basis for international monetary relations.⁷² In 1973 the Committee of Twenty resurrected the idea of a substitution account through which governments could transform their dollar reserves into SDRs. These dollars would then be redeemed by the United States as permitted by the country's balance of payments situation. But the U.S. again resisted a plan that would have diminished the reserve currency role of the dollar

⁷¹ While the revaluation of monetary gold could increase the value of reserves without requiring anyone to run surpluses, little of this gold was held by countries in the developing world. Not surprisingly, then, it was the non-oil developing countries that were unable to build up their reserves in the 1970s. Many saw their ratios of reserves to imports decline quite significantly over the course of the decade. (See Figure 4.) As a group, they had already used half of their cumulative allocation of SDRs by 1977. (See Figure 5.) Thus, the case for a new SDR allocation was partly a case for addressing the special problems of these countries. While the idea of a link between SDR issue and development aid was again rejected, as it had been in the 1960s, the special problems of non-oil developing countries surely contributed to the pressure for a new allocation.

⁷² See the discussion in Kenen (1987).

and forced it to bear the cost of retiring outstanding dollar balances.

Triffin's original problem associated with the rising ratio of dollar reserves to gold vanished once the link between gold and the dollar was severed. But if the ratio of official foreign dollar liabilities to U.S. exports continued to rise, the problem might resurface in a different guise. If holders of dollars all sold their balances, the currency would depreciate, cutting its purchasing power. In the manner of a bank run, any shock to confidence might lead to a contagious scramble to dump dollars. The larger official foreign balances relative to the U.S. economy, the larger the prospective depreciation, and hence the greater the temptation to liquidate one's balance. And the greater the availability of reserve assets denominated in other currencies, the easier would be the switch out of the dollar.

The Second Amendment to the IMF Articles of Agreement, ratified by the Executive Directors of the Fund in April 1976 and operationalized two years later, was designed to meet these dangers. It stated the intention of member countries to "collaborate with the Fund and with other members to make the SDR the principal reserve asset" of the international system.

Several steps were taken to bring this about. Member states were allowed to transfer SDRs among themselves without the

approval of the IMF.⁷³ The obligation of countries to reconstitute their SDR holdings was relaxed.⁷⁴ The Fund approved a new SDR allocation of \$4 billion a year for 1979, 1980 and 1981, roughly doubling the volume outstanding.

The official view was that these steps would allow the SDR to "come into its own."⁷⁵ In practice, they had little effect, since the U.S. opposed additional allocations and there was again no agreement on the creation of a substitution account.⁷⁶ Washington, D.C. continued to reject any scheme whose intent was to downgrade the dollar's international role.

The belief that fears for the stability of the dollar-based international system were overdrawn was borne out by events. While the volume of dollar-denominated reserves continued to expand, they did not do so at a significantly faster rate than U.S. exports and the U.S. economy more generally. The Volcker disinflation and the return to price stability diminished fears that the real value of U.S.

⁷³ Until 1976 transactions by agreement required that the user of SDRs have a balance of payments need as judged by the IMF. After that date, the requirement of need was waived provided that the transaction brought both parties' holdings closer to their cumulative allocations.

⁷⁴ The reconstitution requirement compelled each country to hold 30 per cent of its allocated SDRs on average over a five-year period. The requirement was reduced to 15 per cent in 1979 and eliminated in 1981.

⁷⁵ To paragraph the IMF's official historian: de Vries (199*), vol. 2, p.900.

⁷⁶ The latter had been discussed by the Interim Committee in Hamburg, without effect. The stumbling block was how the operations of the substitution account were to be financed. The U.S. wanted the IMF's gold to be used to redeem the dollar overhang, while other countries wanted the U.S. to redeem those dollars out of its own resources. See van der Wee (1986), p.500.

external liabilities would be inflated away. The worry that fluctuations in the foreign exchange value of the currency would erode the willingness of countries to hold it, giving rising to a hard landing, found no support in the pronounced currency fluctuations of the 1980s.

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